Summary Proceedings

Eighteenth Annual Trachoma Program Review

Focusing on 2020: 4 Years Remaining

THE
CARTER CENTER

Waging Peace. Fighting Disease. Building Hope.

Atlanta, Georgia

March 22-24, 2017

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"Focusing on 2020: 4 Years Remaining"

The Eighteenth Annual
Trachoma Control Program Review

The Carter Center

Atlanta, Georgia

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And to many others who may not be listed, our sincere gratitude.

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Acronyms

ARHB	Amhara Regional Health Bureau
CF	Case finders (specific to Uganda)
CI	Confidence interval
CHV	Community health volunteer (specific to Kenya)
CLTS	Community-led Total Sanitation
CRS	Catholic Relief Services
Ct	Chlamydia trachomatis
FMOH	Federal Ministry of Health
GET 2020	Alliance for the Global Elimination of Blinding Trachoma by 2020
GTMP	Global Trachoma Mapping Project
HEW	Health Extension Worker
HKI	Helen Keller International
HPW	Health promotion worker (specific to SWIFT study)
ICTC	International Coalition for Trachoma Control
IDP	Internally displaced persons
IECW	Integrated eye care worker (specific to Ethiopia)
ITI	International Trachoma Initiative
JMP	Joint Monitoring Programme on Water Supply and Sanitation
LSHTM	London School of Hygiene and Tropical Medicine
MDA	Mass Drug Administration
MDG	Millennium Development Goal
MIS	Management Information System
MOH	Ministry of Health
NGO	Nongovernmental Organization
NPPB	National Program for Prevention of Blindness
NTD	Neglected Tropical Disease
OD	Open defecation
ODF	Open defecation free
PCR	Polymerase Chain Reaction
PCT	Preventative Chemotherapy
PNLC(C)	Programme National de Lutte contre la Cecité (National Prevention of Blindness Program)
PNSO	Programme National de Soins Oculaire (National Eye Health Program)
SAFE	Surgery, Antibiotics, Facial Cleanliness, and Environmental Improvement
SDG	Sustainable Development Goal
STHP	School Trachoma Health Program
SWIFT	Sanitation, Water and Instruction in Face-Washing for Trachoma
TAITU	Targeted Antibiotic Intervention for Trachoma in Under-5s
TAP	Trachoma Action Plan
TEO	Tetracycline Eye Ointment
TF	Trachomatous Inflammation-Follicular
TI	Trachomatous Inflammation-Intense
TIS	Trachoma Impact Survey
TS	Trachomatous Scarring
TT	Trachomatous Trichiasis
UIG	Ultimate Intervention Goal
UNICEF	United Nations Children's Fund (formerly United Nations Children's Education Fund)

UNHCR	United Nations High Commissioner on Refugees
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization
WUHA	Water Uptake in Amhara

Executive Summary

The 18th Annual Trachoma Program Review was held at The Carter Center in Atlanta from March 22-24, 2017. The theme of this year's review was "Focusing on 2020: 4 Years Remaining". Attending this year's review were President and Mrs. Carter alongside representatives from the Ministries of Health, including the Ethiopian Federal Minister of Health, Prof. Yifru Berhan Mitke, and Carter Center field offices in the six countries where the Center currently provides assistance: Ethiopia, Mali, Niger, South Sudan, Sudan, and Uganda. Partners and donors in attendance included representatives from Abbott, the Children's Investment Fund Foundation, Helen Keller International, Conrad N. Hilton Foundation, International Coalition for Trachoma Control, International Trachoma Initiative, Lions Clubs International Foundation and Lions Clubs of Ethiopia, Noor Dubai Foundation, OPEC Fund for International Development, Pfizer Inc, Francis I. Proctor Foundation of the University of California at San Francisco, The Queen Elizabeth Diamond Jubilee Trust, Rollins School of Public Health at Emory University, RTI International, Sightsavers, the Task Force for Global Health, Trachoma Expert Committee, the U.S. Agency for International Development, the U.S. Centers for Disease Control and Prevention, WaterAid, and the World Health Organization.

As with past program reviews, the 2017 program review provided an opportunity to assess the status of each national program and discuss progress towards meeting trachoma elimination goals. With the global trachoma elimination target of 2020, the review emphasized that only four years remain and all partners must remain focused.

The Carter Center-assisted National Programs made great strides towards reaching elimination in each of their countries. In 2016, The Carter Center assisted 119,365 trachomatous trichiasis (TT) surgeries, more than 60% of which were provided to women, who are twice as likely as men to suffer from the blinding disease. The Center assisted in the distribution of 17,523,949 doses of Pfizer-donated Zithromax® (azithromycin) and 337,993 doses of tetracycline eye ointment (TEO) through mass drug administration (MDA). Over 14,000 people were trained to provide health education and continued support of household latrine construction in their communities.

Special attention was given to the historical accomplishments by the Trachoma Control Program in the Amhara region of Ethiopia. For the second year in a row, the Amhara Regional Trachoma Control Program exceeded its annual surgery target. Notably, in 2016, the highest number of patients were operated in the history of the program, with 111,687 surgeries completed. This was largely a result of the Fast Track Initiative, which was launched by the Federal Ministry of Health in 2015 to clear the backlog across Ethiopia. After a successful pilot in the region in 2015, the initiative was rolled out across all zones in 2016. The initiative called for the use of an established integrated strategy, in which static surgery sites, outreach campaigns, and dedicated mobile teams would be combined to clear the backlog of TT patients. The Fast Track Initiative also includes a commitment to TT surgeon training.

A panel discussion on finding the last TT surgery cases, moderated by Ms. Aisha Stewart, highlighted the efforts in Mali, Niger, and Uganda to address the issue of reaching all those affected by TT. The panel discussion provided an opportunity to share practices, lessons learned, and experiences from national programs in East and West Africa and facilitate discussion to assist national programs in devising and refining their strategies to meet the TT elimination target and sustain services following elimination.

There were multiple presentations from Carter Center partners including Ms. Dionna Fry, of the Francis I. Proctor Foundation, presenting the initial work done in the Sanitation, Water, and Instruction in Face-Washing for Trachoma (SWIFT) study in Amhara; Dr. Kadri Boubacar, of the National Eye Health Program (PNSO) in Niger, presented the PNSO experience of surveying and completing MDA in refugee camps in the Diffa region; Ms. Caroline Roan, of Pfizer, presented an update on Pfizer's commitment to the global program; and Dr. Paul Emerson, of the International Trachoma Initiative, presented the performance of the Initiative over

the past year and introduced the new Zithromax® Shipment Tracker, a tool that can be used by all stakeholders to better manage the MDA process.

To close out the meeting, attendees agreed on general and country-specific recommendations that will guide the program over the next year as well as to their respective elimination goals. National coordinators will present on progress made towards these recommendations at next year's review. With only four years remaining, The Carter Center Trachoma Control Program remains focused on measurable and achievable goals for each country and reaching elimination by 2020.

SAFE in Ethiopia

Presented by Mr. Biruck Kebede, NTD Team Leader, Federal Ministry of Health, Ethiopia

Background

The National Survey on Blindness, Low Vision, and Trachoma conducted in 2006 revealed that 2.8 million people in Ethiopia had low vision and 1.2 million people were blind. It was estimated that 87% of blindness was from avoidable diseases. The survey revealed that active trachoma was endemic in virtually all regions of the country, with more than 1.3 million people in the country living with TT. The results of the survey showed that Ethiopia had approximately 30% of the burden of trachoma in sub-Saharan Africa.

There is growing momentum on the issue of Neglected Tropical Diseases (NTDs) in Ethiopia. In 2013, a national NTD master plan was launched, with regional states preparing their own NTD master plans. An NTD team was formed within the Federal Ministry of Health (FMOH) and NTD indicators became part of the national health management information system. National treatment registers and health extension worker (HEW) pocket guidelines are in the process of being developed, with plans for NTDs to be integrated into the existing health system. To better understand the NTD burden in Ethiopia, mapping of diseases that can be treated with preventative chemotherapy (PCT), such as lymphatic filariasis, schistosomiasis, and soil-transmitted helminthiasis, was conducted. The results from the Global Trachoma Mapping Project (GTMP) will further assist with the NTD effort related to trachoma elimination.

Timeline of Events

2001: National guideline for Primary Eye Care developed[1]
2003: Trachoma Control Program launched in 4 districts
2006: National guideline for mass antibiotics distribution developed; national taskforce for trachoma control established
2006-2007: Amhara region's baseline survey at zonal level
2008: Trachoma Campaign, formerly MalTra, launched in Amhara region[2]
2012: National Trachoma Action Plan (TAP) was prepared
2010-2014: GTMP completed in 672 districts
2013: Trachoma becomes part of national NTD program under disease prevention and control directorate
2015: Fast Track Initiative launched by FMOH; Health Sector Transformation Plan finalized
2015: SAFE Scale up to 358 districts
2016: Further scale up of trachoma program to 521 districts; SAFE activities launched in 26 districts in SNNPR and 4 districts in Ethiopian Somali region; Fast Track Initiative scaled up
2020: Target date for elimination of trachoma

[1] A five-year document, currently in 3rd cycle.
[2] MalTra (Malaria and Trachoma) week was a biannual weeklong outreach campaign that involved the mass distribution of azithromycin to prevent and treat trachoma. Additionally, recipients were provided with health education and testing and treatment for malaria with Coartem®.

Table 1. Program Achievements in 2016

Indicator	Goal	National	
		Target	Achieved
# of persons operated	526,586	420,134	184,192 (44%)
# of women operated			N/R[3]
# of surgeons trained		1,117	887 (79%)
Doses of azithromycin distributed during MDA	74,204,512	66,065,289	50,364,976 (76%)
Doses of TEO distributed during MDA			1,171,042
# of villages with health education		Not reported	
# of household latrines built		Not reported	

Surgery (S)

Ethiopia's National Program supported a significant scale up of surgical activities from 2014-2016. In 2016, the program supported 184,192 TT surgeries. This accounts for 44% of its annual target of 420,134 surgeries. The program trained 887 new integrated eye care workers (IECWs) out of a targeted 1,117 in 2016. Impact surveys in 2016 showed that 33 districts had a TT prevalence below the elimination threshold of 0.1% among the total population, compared to only eight districts in 2014. 276 districts had a prevalence between 0.1% and 0.9%, 357 districts had a prevalence between 1% and 4.9%, and 32 districts had a district above 5%. Surveys also showed at that TT surgery service is needed in 665 districts.

The Fast Track Initiative, launched in 2014 and piloted in 2015 in four regions, was scaled up to all regions in the country by January 2016. Since its launch, the initiative has supported 301,279 TT surgeries throughout Ethiopia. The Amhara region has operated 53.42% of the total Fast Track Initiative achievements, the highest number of surgeries under the initiative. 50 *woredas* successfully cleared their TT backlog in 2016. As of March 2017, 391,758 patients require surgery to clear the TT surgery backlog. At the current surgical rate, the program expects to clear the backlog in 2.5 years.

The program also focused efforts on TT surgery quality assurance in 2016, with different approaches being used throughout the country. Quality assurance activities included a surgical outcome assessment, in which surgeons follow up with patients, validation of surgeries, in which 10% of patients are surveyed to confirm surgery was performed, and a surgical audit, in which supervisors audited 10% of cases to classify surgeons as either high post-operative TT and low post-operative TT. 2,386 patients were included in the activities, which were completed 3-6 months following each TT surgery. 82.4%, or 1,965 patients, were found to have a good surgical outcome in which the TT surgery was a success and the eyelid was well corrected.

Antibiotic Therapy (A)

The National Program completed 75 impact surveys in 2016. Data from impact surveys through 2016 show that 40 districts have a trachomatous inflammation-follicular (TF) prevalence below the elimination threshold of 5%. Of the districts that have reached this target, eight are in the Oromia region, 14 are in the SNNP region and 18 are in the Amhara region. 259 districts across the country remain highly endemic for trachoma,

[3] The number of women operated on in 2015 was not reported during the program review.

with a TF prevalence above 30%. While data is available for almost all districts in the country, 20 districts remain to be mapped. In-country resources are being mobilized to reach 100% of the population in Ethiopia. Additionally, the National Program is focusing on standardizing the methodology for impact surveys which will be used in all regions.

The program reported a significant increase in people treated in 2016. Through MDA, 50,364,976 doses of Pfizer-donated Zithromax® were distributed in Ethiopia in 2016. Additionally, 1,171,042 doses of TEO were distributed. Of those districts that received drug, 88% reported adequate therapeutic coverage at or above 80%.

The National Program is piloting an integrated initiative in NTD MDA interventions in SNNP and Oromia regions. One reason that coverage might be low for MDA coverage is because NTD programs are mainly implemented vertically. The program is piloting a revised HEW refresher training module that demonstrates how NTD interventions can be integrated at the community level through MDA. Results from the pilot are being evaluated by the National Program. Additionally, the program is planning to conduct a community-level trial in which azithromycin, ivermectin, and albendazole would be co-administered.

Facial Cleanliness (F) & Environmental Improvement (E)

Ethiopia completed a Demographic and Health Survey in 40 *woredas* in 2014-2015. The results from the survey show that 14% of household latrines are classified as improved and 41% of the population in the surveyed districts have low knowledge of water, sanitation, and hygiene (WASH). While some improvement has been made in the WASH sector, a significant amount of work remains to improve coordination between the WASH and NTD sectors to see positive results at the community level. Additionally, the NTD sector should not rely solely on the WASH sector to implement activities related to behavior change.

Data collected in 2016 within the WASH sector showed that 73% of available latrines are being utilized among data collected in Tigray, Amhara, Oromia, and SNNP regions. To measure latrine use, three criteria are used to determine if a latrine is being utilized: the presence of fresh excreta inside the pit, the presence of a foot path to the latrine, and the presence of flies in the latrine. The presence of flies in the latrine does not align with trachoma indicators. This provides additional evidence of the need for capacity building and coordination between the NTD and WASH sectors to improve efforts.

In 2016, the National Program focused on increasing collaboration and coordination between the NTD and WASH sectors. The FMOH held a series of discussions with the Hygiene and Environmental Health teams. The discussions resulted in a national-level NTD-WASH forum and increased engagement from both sectors. At the regional level, consultative meetings were held and NTD and WASH stakeholders developed action plans. Additionally, the National Program is in the process of revising the post-open defecation-free guidelines for communities. These guidelines will link to behavior change interventions for NTD programs.

Programmatic Challenges:

The program faced several challenges in 2016. There are districts that have had continuous rounds of MDA but still show a high TF prevalence. The program is working to change this. The program has also been unable to reach 100% coverage in SAFE implementation in the country. However, the government has mobilized resources to improve implementation and reach all districts in 2017 not currently supported by an implementing partner. Resources from the government were also mobilized to map 20 districts, which were previously unmapped and were challenging to access in 2016. The program will implement SAFE interventions if any of the districts are found to be endemic for trachoma.

Targets for 2017:

Surgery (S)

- Operate on 391,758 TT patients; clear backlog by end of 2017
- Train 224 IECWs and 150 IECW supervisors

Antibiotic Therapy (A)

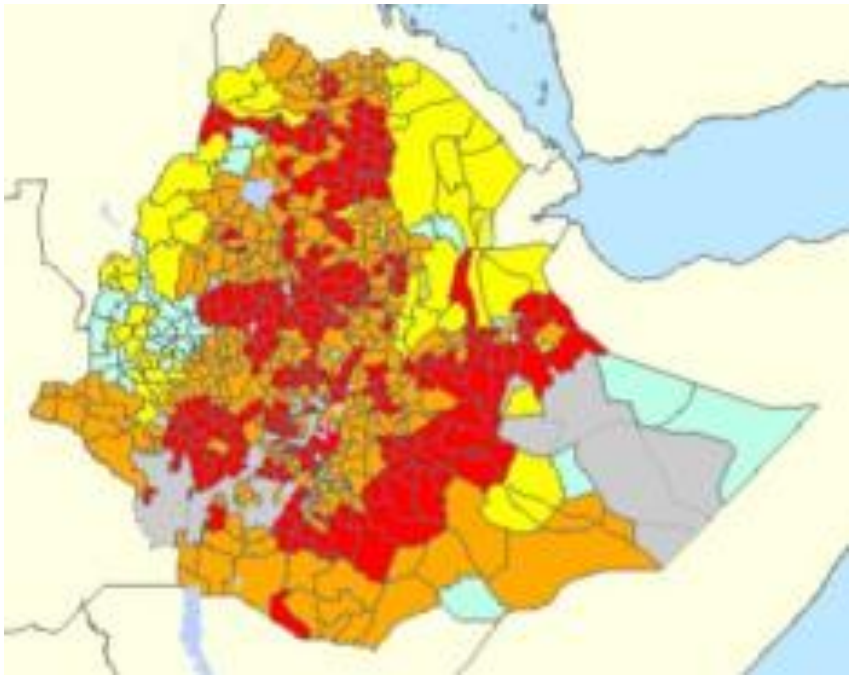
- Distribute 74,487,150 doses of azithromycin
- Distribute 1,586,743 doses of TEO
- Complete 48 impact surveys and 9 surveillance surveys

Facial Cleanliness (F) & Environmental Improvement (E)

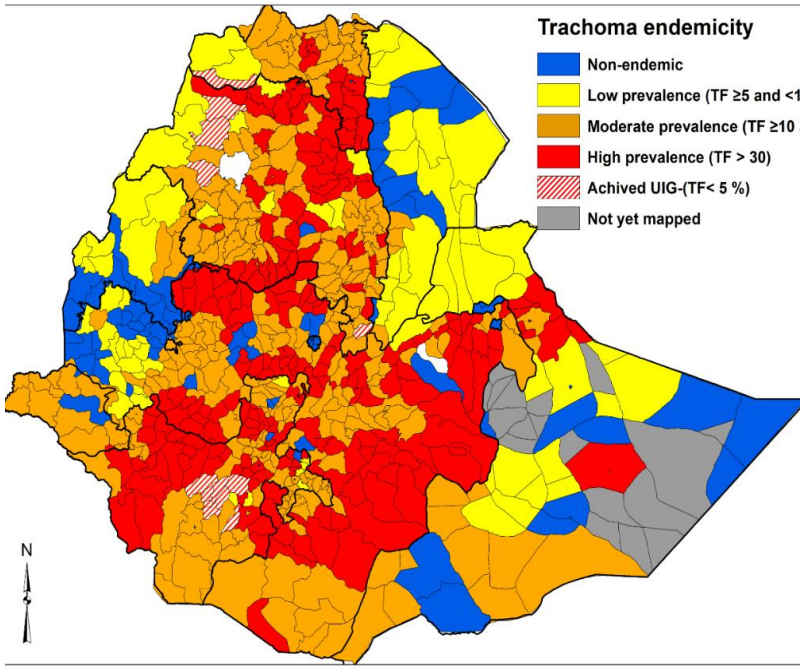
The FMOH plans to launch the School Health Program across the country, reaching 25 million students in 38,000 schools. The School Health Program is being piloted in 100 urban schools and 100 rural schools. The program includes 10 sections focusing on general healthy behavior and the provision of major health services targeting school-age children and adolescents. WASH is one of main focuses of the curriculum. Additionally, the program will support intensified community engagement on WASH efforts with the NTD framework, highlighted in the integrated HEW refresher training curriculum.

Ethiopia: TF Prevalence among Children 1-9 years

Baseline, 2012



2016



Source: GTMP

SAFE in Amhara, Ethiopia

Presented by Mr. Bizuayehu Gashaw, Deputy Regional Health Bureau Head, Amhara Regional Health Bureau

Background

In the Amhara region of Ethiopia, a trachoma prevalence survey at the zonal-level was conducted in 2007 to quantify the zonal prevalence of trachoma and TT. This survey estimated that over 17 million people were at risk of trachoma and 643,904 people required surgery to correct TT in the Amhara region alone. Critically, the survey indicated that all zones in the Amhara region were eligible for the full SAFE strategy, which was scaled up to all districts in 2008. The regional trachoma program is part of the National Committee for the Prevention of Blindness.

Following 1 to 7 years of the SAFE strategy implementation, a trachoma impact survey should be conducted to assess progress towards meeting the elimination targets and determine need for continued intervention, particularly through MDA. Impact surveys were conducted in all 167 districts of the Amhara region from 2010-2015 through collaboration with the Amhara Regional Health Bureau (ARHB) and The Carter Center. These surveys showed dramatic reductions in all clinical signs of trachoma. Results indicated that nine of the 167 districts had meet the elimination criteria for TF, reducing the prevalence of TF among children ages 1 to 9 nine to less than 5%. The results also indicated that the remaining districts continue to warrant the full SAFE strategy. Beginning in 2015, surveillance surveys were conducted in districts that had TF prevalence below 5 percent at their first impact survey. Results from the surveillance surveys indicate that reductions in TF below the elimination threshold have been sustained. Additionally, in 2015-2016, eligible districts received a second impact survey to determine SAFE-strategy impact and progress towards elimination targets. Currently, 17 districts in Amhara have reached the elimination target for TF.

Timeline of Events

2001: Phase I agreement (4 districts); first 5-year TAP, updated every 5 years; S, F, & E implementation begins in 4 districts
2003: Full SAFE implementation begins
2004: SAFE expansion to 19 districts
2006: National baseline survey; SAFE expansion to entire region (167 districts)
2006-2007: Amhara zonal-level baseline survey
2008: Trachoma Campaign, formerly MalTra, launched
2015: 167 districts completed 1st impact survey after 5 years of SAFE; Fast Track Initative piloted in East Gojjam zone
2016: Fast Track Initiative scaled up to all zones in Amhara region; region-wide School Trachoma Health Program (STHP) launched
2020: Target date for elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	Amhara Region (Carter Center-Assisted)	
		Target	Achieved
# of persons operated	334,351	102,476	111,687 (109%)
# of women operated			72,050
# of surgeons trained		136	56 (41%)
Doses of azithromycin distributed during MDA	15,898,610	15,898,610	15,004,271 (94%)
Doses of TEO distributed during MDA	333,638	333,638	323,355 (97%)
# of villages with health education		3,459	3,459 (100%)
Latrine ownership		4,924,416	3,772,103 (77%)

Surgery (S)

Data from impact surveys completed in 2016 show changes in TT prevalence in several districts in the Amhara region. The program assisted a record number of TT surgeries in 2016. 111,687 patients received TT surgery, which exceeds the annual target of 102,476 surgeries by 9%. This historical achievement is attributed to the scale up of the Fast Track Initiative, dedicated leadership from the ARHB, and continued support from The Carter Center. Of the 111,687 patients operated, 72,050 surgeries, or 64.5%, were provided to women, who are twice as likely as men to suffer from TT. The program also supported the training of 56 IECWs, 41% of its annual target. The remaining backlog of patients to be operated is 267,823. At the current pace, the program will clear the backlog in 2.4 years.

In addition to assisting TT surgeries in 2016, the program collected data on TT screening and refusals. 177,802 people in the Amhara region were screened for TT through a house-by-house search. Of those screened, 118,787 people were identified as needing TT surgery and 94%, or 111,687 people accepted the surgery. 7,100, or 6%, of those identified as needing surgery refused TT surgery services.

The program continued to conduct TT surgery validation in all zones in the Amhara region. Validation is conducted to verify that patients received TT surgery services in accordance with reports. 7,073 patients were selected from health center registries to be interviewed by a validation team, which includes zone and *woreda* focal persons, project coordinators, and IECWs. Of those selected, 6,340 were interviewed, with 99.4%, or 6,305, of surgeries confirmed as having been completed. Validations teams also conducted a TT surgery quality audit. 2,887 eyelids were examined on 1,982 people as part of the audit. 2,492 eyelids, or 86.3%, were found to be well corrected.

Antibiotic Therapy (A)

Impact surveys show that 18 districts in Amhara have a TF prevalence below 5%. In 2016, 94% of the population received antibiotics through MDA. The program assisted in distributing 15,004,271 doses of Pfizer-donated Zithromax® and 322,355 doses of TEO. The program achieved 80% or greater coverage in most districts. Many of the districts with less than 80% coverage were towns. The program also carried out 43 impact surveys in 2016.

Facial Cleanliness (F) & Environmental Improvement (E)

The ARHB supports health education in communities and schools throughout the region. In 2016, 3,459 villages received health education. HEWs carry out hygiene promotion activities at the community level

throughout the year as well as during MDA and TT surgery campaigns. Monthly F&E monitoring also is conducted in all communities at the household level.

In 2016, the ARHB launched a regional School Trachoma Health Program (STHP). Working with Regional Education Bureau and The Carter Center, the ARHB revised health education materials which are incorporated into primary school curriculum in all schools in the region. The STHP is expected to enhance behavior change in school children, who may serve as agents of change within their communities as they share lessons learned in their classrooms. In order to roll out the new curriculum, teachers and school principals attended trainings to review the new materials and learn how to incorporate them into their existing lesson plans.

Programmatic Challenges:

The program had several challenges in 2016. First, insecurity in some districts in North Gondar zone prohibited survey teams from completing impact surveys. The program plans to survey these districts in 2017, security permitting. The program also recognizes that there is limited care for recurrent TT cases in the region and is awaiting guidance from the FMOH and National Program on this matter.

Status of 2016 Program Review Meeting Recommendations

Recommendation 1: The program should evaluate teacher and student understanding of new F&E curricula after a specific period of time.

Status: The training started at the end of 2016. The evaluation will be conducted after training is complete.

Targets for 2017 and Plans to Meet Targets:

Surgery (S)

- Operate on 110,921 TT patients, all with Carter Center assistance
- Train 63 surgeons

Antibiotic Therapy (A)

- Distribute 17,312,928 doses of azithromycin with Carter Center assistance
- Distribute 353,325 doses of TEO with Carter Center assistance
- Complete 50 impact surveys and 8 surveillance surveys

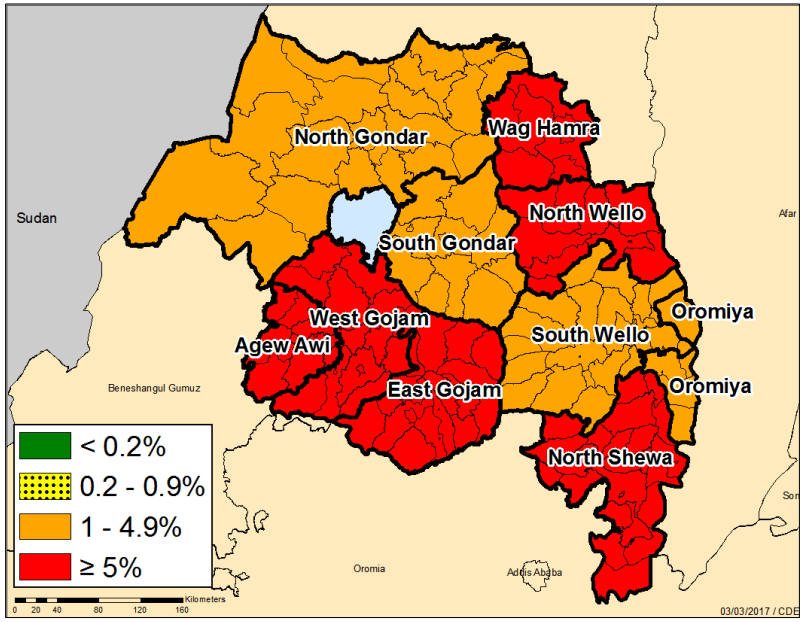
Facial Cleanliness (F) & Environmental Improvement (E)

- Support health education in 3,459 villages with Carter Center assistance
- Construct 1,152,313 latrines with Carter Center assistance.

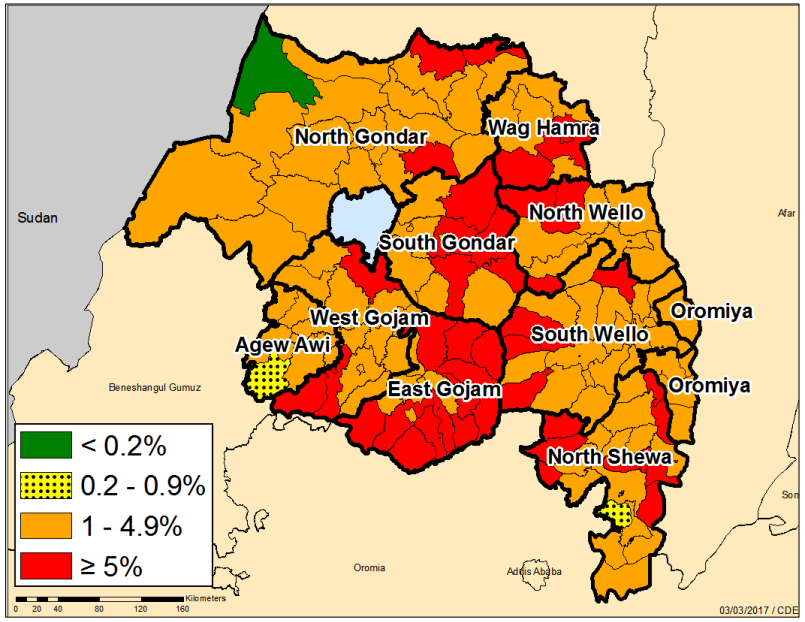
The STHP trainings of teachers and school principals will be completed in 2017 and the curriculum will be rolled out to all schools. Additionally, the program will train hygiene and sanitation officers and trachoma focal persons in each zone on F&E monitoring activities, which will be implemented at *woreda* health and education offices. Finally, the program will work with the ARHB to finalize the regional hygiene and sanitation transformation plan.

Amhara, Ethiopia: TT Prevalence among Adults ≥ 15 years

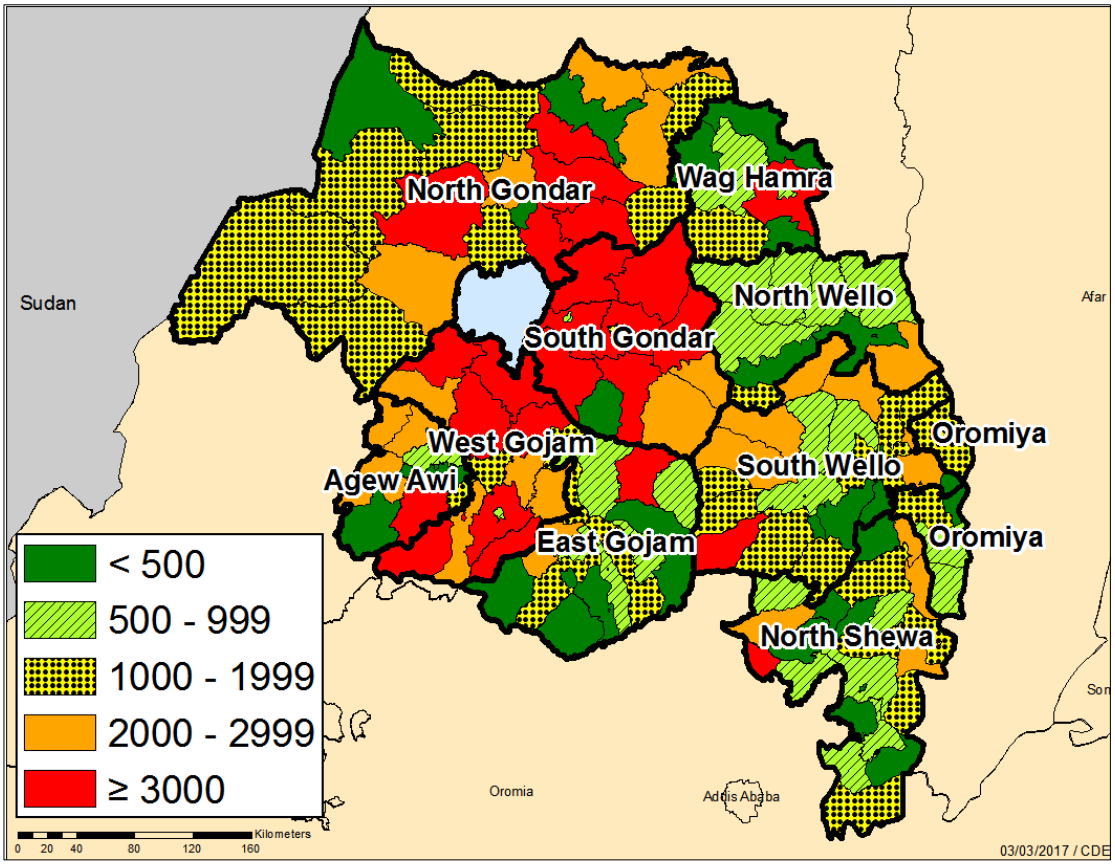
Baseline, 2007



2016

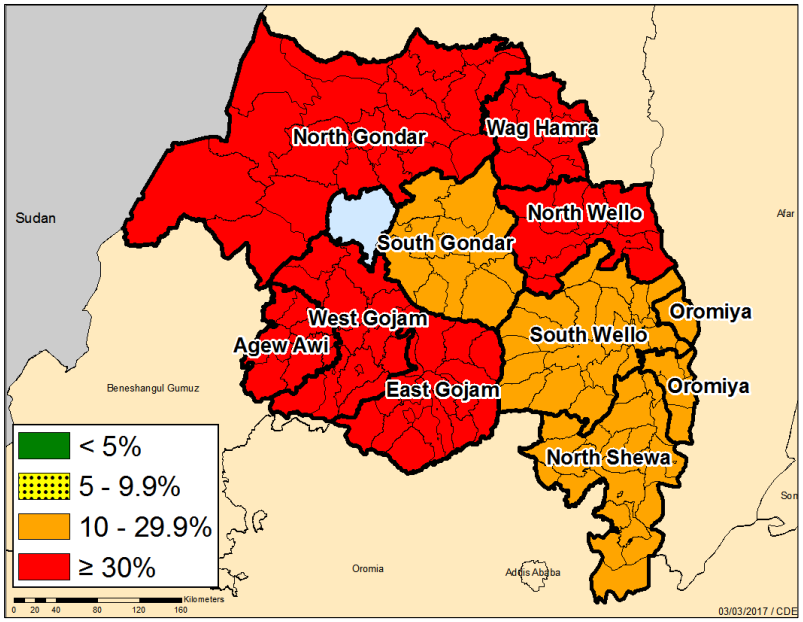


Amhara, Ethiopia: Surgical Backlog, 2016



Amhara, Ethiopia: TF Prevalence among Children 1-9 years

Baseline, 2007



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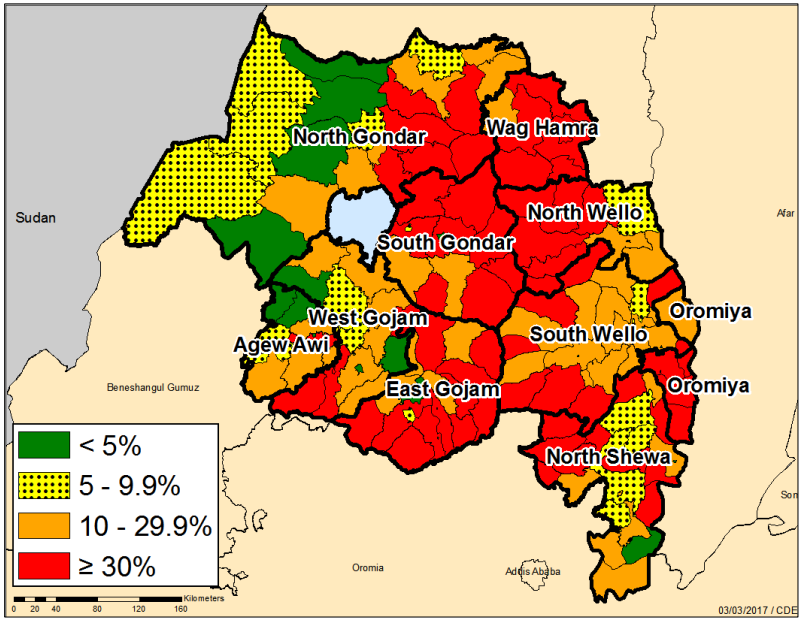
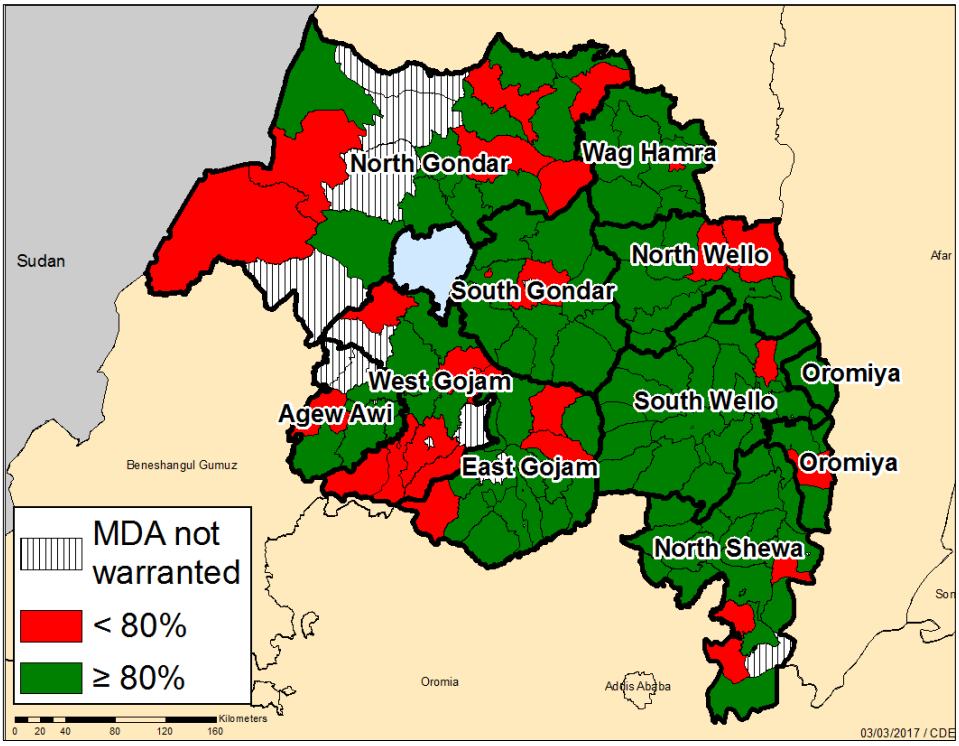
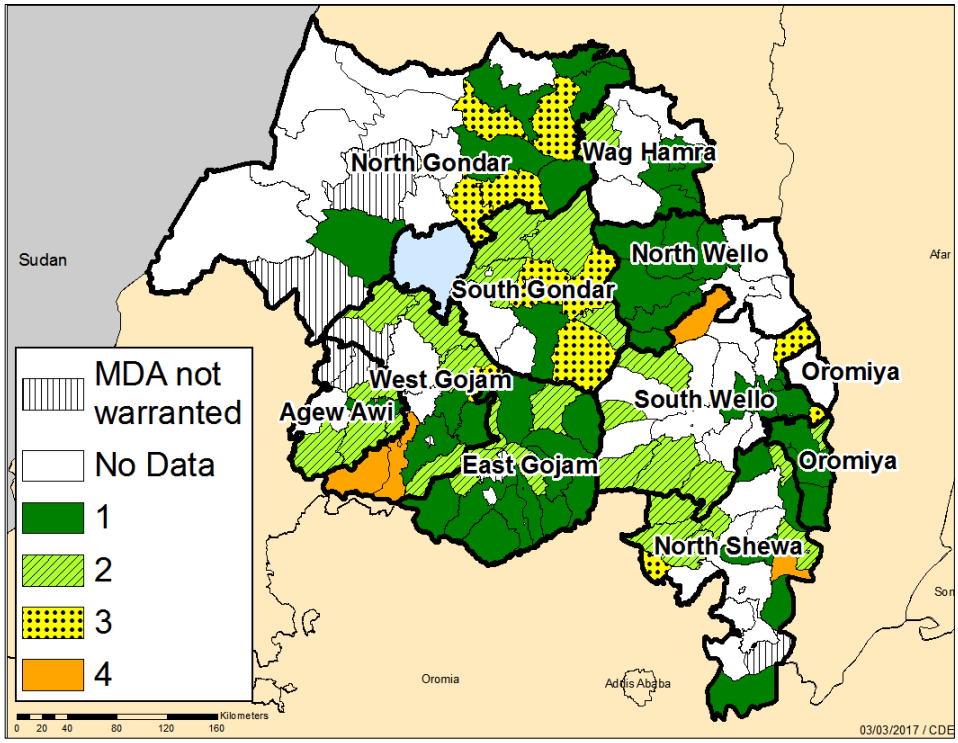


Amhara, Ethiopia: MDA Coverage, 2016



Amhara, Ethiopia: MDA Rounds Remaining, 2016



SAFE in Mali

Presented by Professor Lamine Traoré, Coordinator PNSO, Ministry of Health, Mali

Background

In 1994, the Malian National Blindness Prevention Program (PNLC) was created; however, since December 2014 it has been known as the PNSO. Following prevalence surveys conducted in 1996-1997, trachoma was identified as a major public health issue in Mali. Despite the Ministry of Health's (MOH) three priorities being malaria, HIV, and tuberculosis, a national trachoma control program was established in 1999. Though Mali does not have a formal TAP, at the end of each year, the PNSO develops a plan of action during its annual program review meeting. The Carter Center, along with other partners, currently supports the implementation of the S, F and E components, as the A component is not warranted in Mali.

Timeline of Events

1994: PNLC launched
1996-1997: National baseline prevalence survey
1999: National Trachoma Control Program launched
1999: Surgeries initiated
2001: Distribution of Pfizer-donated Zithromax® begins
2003: Facial cleanliness and Environmental improvement activities initiated
2005-2016: Impact and surveillance surveys conducted
2018: Target date for elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	14,222	6,000	2,276 (38%)	2,400	366 (15%)
# of women operated			1,242		283
# of surgeons trained		11	14 (127%)	N/A[4]	N/A
Doses of azithromycin distributed during MDA	60,153	60,153	42,199 (70%)	N/A[5]	N/A
Doses of tetracycline distributed during MDA	1,000	1,000	1,302 (130%)	1,302	1,302 (100%)
# of villages with health education		300	227 (76%)	300	227 (76%)
# of household latrines built		7,000	5,660 (81%)	7,000	5,660 (81%)

Surgery (S)

The 1996 baseline survey in Mali revealed that 75% of districts surveyed were trachoma-endemic. After 20 years of program implementation of the SAFE strategy, great progress has been made towards the elimination of trachoma as a public health problem. In 2016, the program operated 2,276 TT patients, 38% of its annual target of 6,000 surgeries. The Carter Center assisted 366 of the total number of surgeries completed in 2016. Of the total number of people operated, 54.5%, or 1,242, were women. 77% of Carter Center-assisted surgeries were performed on women. The National Program also trained 14 new TT surgeons in 2016, exceeding their annual target by 27%.

Through *ratissage*, a door-to-door case search method carried out by ophthalmologists and eye-health specialists, the program screened 546,082 people for TT. Of those screened, 0.5%, or 2,524, were found to have TT and require surgery. 90%, or 2,276, of those people needing surgery accepted the service and 10%, or 248, refused to have TT surgery.

Impact surveys completed in 2016 revealed that TT surgery is no longer needed in Menaka and Kidal regions. Three districts in Kayes, 1 district in Koulikoro, and two districts in Mopti still have TT backlogs between 500 and 1,999 people. A total of 7,051 people remain to be operated in the country. At the current rate of work, it will take approximately three years to clear the backlog. A detailed plan created in July 2016 will allow the program to make significant progress towards elimination.

Antibiotic Therapy (A)

The 1996 baseline survey revealed that all regions, except for Segou, had a TF prevalence above 30%. Districts in Segou had a prevalence between 10% and 29.9%. The National Program has made significant progress to reduce the TF prevalence across all districts. Impact surveys show that all but three districts have reached the elimination threshold of 5% or less TF prevalence. The three remaining districts will be surveyed in 2017 and the National Program is hopeful that the 2017 impact surveys will show that all districts have reached their target for active trachoma.

The program completed two impact surveys and 11 surveillance surveys in 2016. The program was able to complete surveys in Kidal in 2016, which has previously been inaccessible due to insecurity in the region.

[4] The Carter Center did not assist surgeon trainings in 2016.

[5] The Carter Center does not assist MDA in Mali.

MDA activities stopped across Mali in 2016, with 1 sub-district receiving MDA in 2016. However, in 2016 the program supported the distribution of a limited quantity of antibiotics to treat patients with trachoma identified during impact surveys, as well as to post-operative TT patients. The program distributed 42,199 doses of Zithromax and 1,302 doses of TEO.

Facial Cleanliness (F) & Environmental Improvement (E)

To carry out F&E activities, the National Program collaborates with its partner as well as various ministry departments. The National Program supported health education in 227 villages in 2016. The program continues to support the training of women's groups, who act as community educators and share messaging about trachoma and ways to prevent the spread of the disease. Additionally, the program continues to use radio broadcasts to share messages about trachoma prevention and best hygiene practices. The National Program contracts two radio stations per district. Pre-recorded messages are shared with the stations for regular broadcasts. District-level officials monitor radio broadcast activity. While the National Program does not currently support health education in schools, it has been working towards developing a program throughout 2016. Teachers are supportive of this addition to their curriculum. In 2017, the program plans to begin training students.

The program continues to promote construction and use of latrines in all districts. In 2016, the program trained masons and assisted in the construction of 5,660 latrines, which is 81% of the annual target. The program is working towards integrating latrine data from all partners. The Ministry of Hydraulics, working with partners such as Islamic Relief and WaterAid, support the creation and maintenance of water points in communities throughout Mali.

The program also supports community-led total sanitation (CLTS). By instituting CLTS, communities can be certified as open defecation free (ODF). In celebrating ODF certification, other communities are encouraged to achieve certification as well. CLTS is being implemented through the departments of sanitation and pollution, which are in the process of creating a nationwide database tracking the results of this project.

Programmatic Challenges:

The program faced several challenges in 2016. Finding the last TT cases is very challenging. The program will continue to use *ratissage* to identify TT patients. However, the program hopes to learn from other countries' experiences and potentially modify case search methods in areas that are difficult to access. Additionally, managing refusals is challenging. The program will continue to work towards minimizing the number of refusals. Finally, insecurity in the northern regions is an ongoing issue for the National Program. Peace accords have been signed, however there are many attacks still ongoing in the north and central parts of the country. The program will continue to carry out activities where possible.

Status of 2016 Program Review Meeting Recommendations

Recommendation 1: Mali should develop a detailed plan of action with partners by July 2016 to clear TT backlog by the end of 2018.

Status: The plan was created in July 2016 and is currently being implemented.

Recommendation 2: Mali and Niger should continue cross-border collaboration.

Status: There were many opportunities for cross-border collaboration in 2016. The Mali PNSO participated in the trachoma program review in Niger in October 2016 and representatives from Niger attended program review in Mali in December 2016. The PNSOs also worked together to restore the HEAD START survey, which yielded several important results related to TT surgeon training. Additionally, both countries, along with Burkina Faso, have received funding from the World Bank to combat Malaria and NTDs. This provides

additional opportunities for collaboration as the countries meet to discuss use of the funds for joint activities.

Targets for 2017 and Plans to Meet Targets

Surgery (S)

- Operate on 6,000 TT patients, 2,400 with Carter Center assistance
- Maintain training centers to support TT surgeon training

Antibiotic Therapy (A)

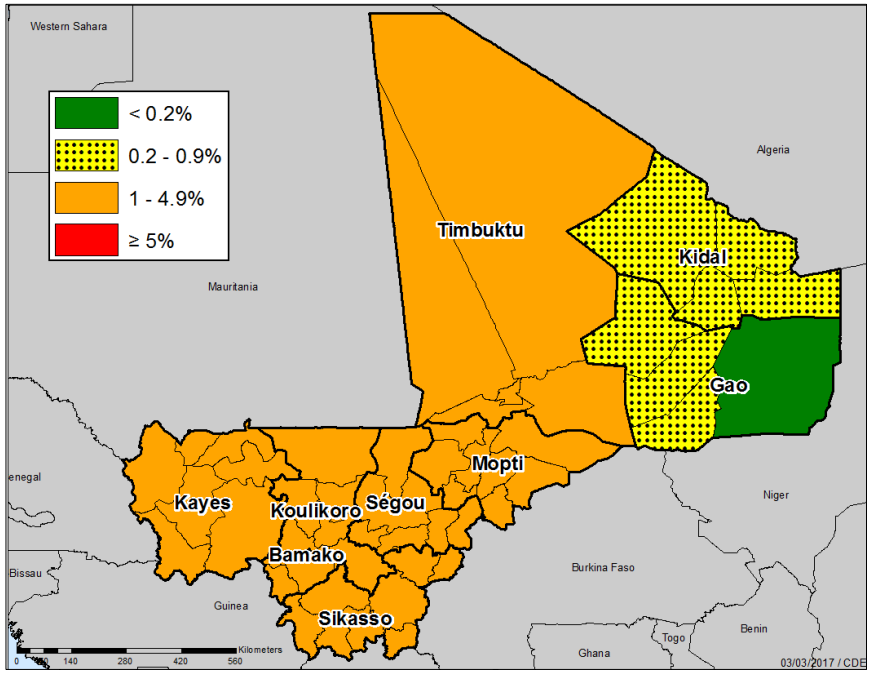
- Complete 3 impact surveys to confirm if MDA is warranted. If survey results show that MDA is required in these districts, the MOH will carry out MDA with assistance from partners
- Complete 14 surveillance surveys

Facial Cleanliness (F) & Environmental Improvement (E)

- Support health education in 375 villages with Carter Center assistance
- Construct 6,300 latrines, 4,000 with Carter Center assistance
- Continue current F&E activities

Mali: TT Prevalence among Adults ≥ 15 years

Baseline, 1996



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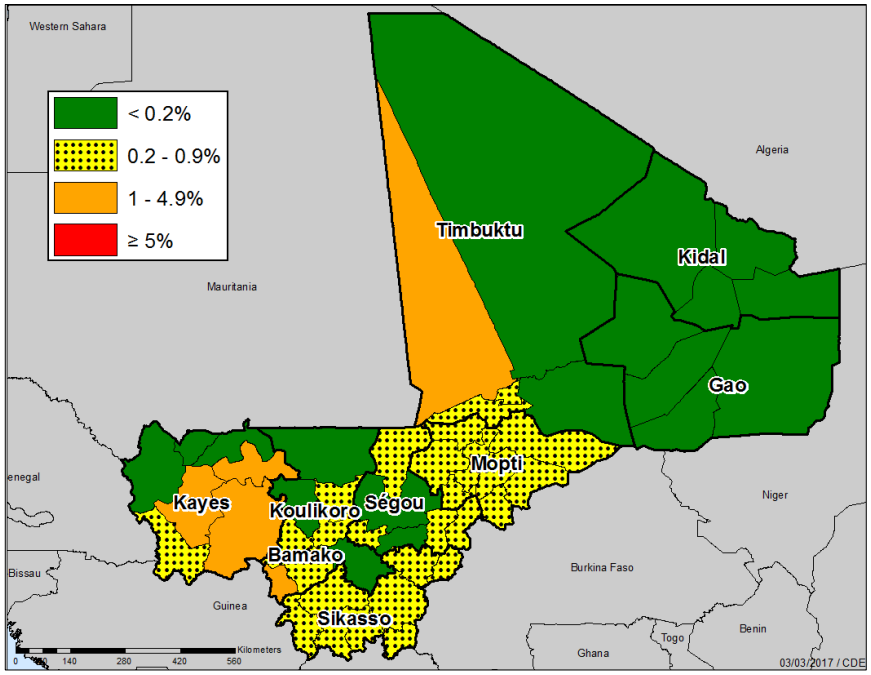
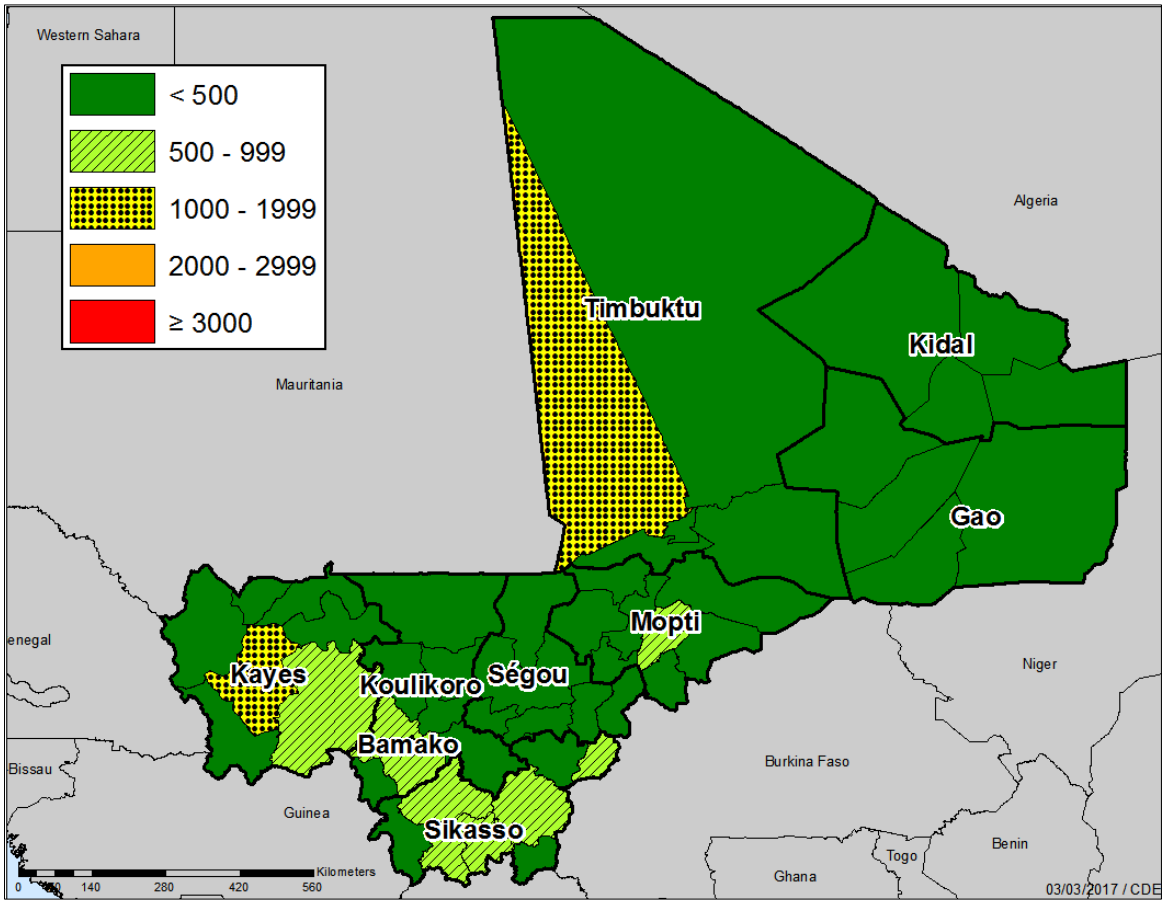
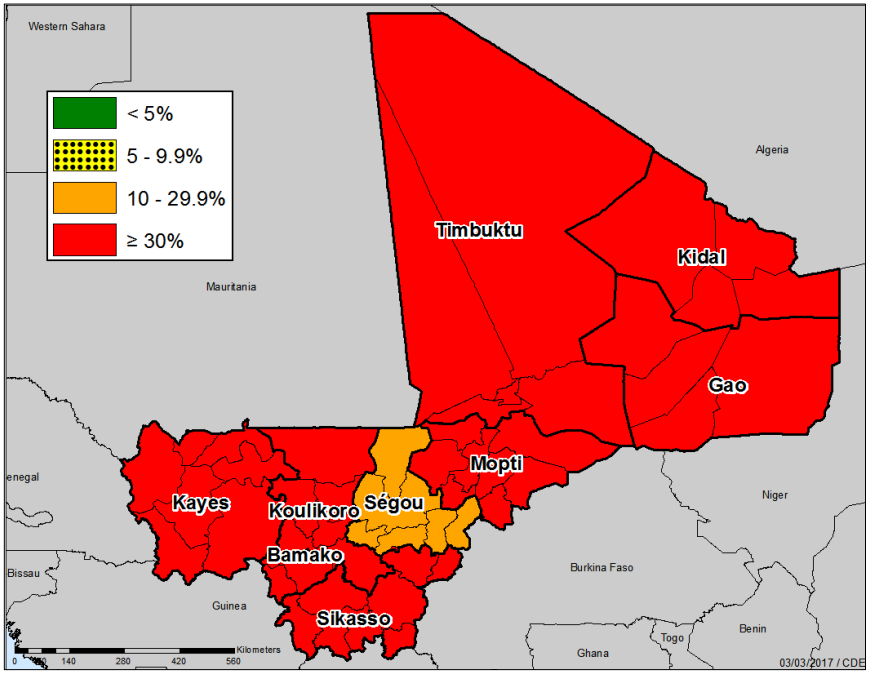


Mali: Surgical Backlog, 2016



Mali: TF Prevalence among Children 1-9 years

Baseline, 1996



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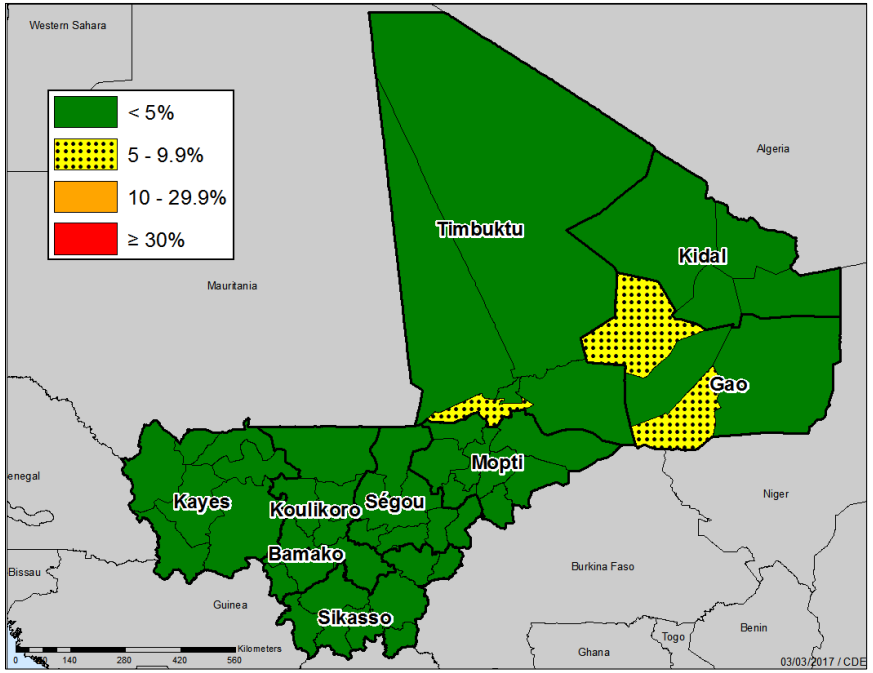


SAFE in Niger

Presented by Dr. Kadri Boubacar, Deputy Coordinator PNSO, Ministry of Health, Niger

Background

The PNLC was established in 1987 following national surveys showing a prevalence of blindness of 2.2%, with 25% due to trachoma. Regional baseline surveys conducted from 1997 to 1999 found that 44% of children ages 1 to 9 had active TF and/or trachomatous inflammation-intense (TI) and 1.7% of women over 15 years of age had trichiasis. In 1999, the PNLC formed the National Trachoma Task Force and, beginning in 2001, prevalence surveys were conducted at the district level. Currently, trachoma is part of the Department of NTDs and is not considered a high priority disease. Though trachoma is integrated into the NTD department, trachoma partners organize trachoma specific coordination and annual review meetings at the regional level. The program implements all components of the SAFE strategy where warranted.

In 2013, the Minister of Health made a statement of appreciation for the work of the MOH trachoma coordinators and the two main partners, The Carter Center and Helen Keller International (HKI). These statements were made during a TT surgical outreach week in March 2013. Also in 2013, the program name changed from PNLC to PNSO.

Timeline of Events

1987: PNLC started
1997-1999: Baseline surveys conducted at regional level
2000: The Carter Center begins support of the program
2001: District level baseline surveys started
2002: SAFE strategy implementation begins
2006: Trachoma Impact Survey (TIS) conducted
2007: NTD Program launched
2010 and 2012: TIS completed
2013: PNLC becomes PNSO
2016: TIS completed
2020: Updated target date for the elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	40,529	15,000	8,139 (54%)	10,000	6,465 (65%)
# of women operated			4,738		3,790
# of surgeons trained		40	34 (85%)	20	20 (100%)
Doses of azithromycin distributed during MDA	3,928,475	3,928,475	In process	N/A[6]	N/A
Doses of tetracycline distributed during MDA	172,248	116,948	In process	116,948	In process
# of villages with health education		10,000	8,203 (82%)	8,000	8,203 (103%)
# of household latrines built		11,000	9,528 (87%)	11,000	9,528 (87%)

Surgery (S)

The National Program has been providing TT surgery in Niger since 1999. The Carter Center began assisting TT surgeries in 2009. The program has had a significant increase in outputs since 2009. It reached 54% of its annual surgery target, operating on 8,139 TT patients in the country in 2016. The Carter Center provided assistance for 65% of the total achievement, or 6,465 surgeries. 34 TT surgeons were trained in 2016, 20 of which were assisted by The Carter Center. Impact surveys show that two districts in Zinder have a backlog remaining above 3,000 people; nine districts along the southern border of Niger have a backlog between 1,000 and 1,999; 1 district in Diffa has a backlog between 500 and 999 people. The total remaining backlog in Niger is 32,120. At the current rate of work, the program will reach its target of elimination by 2020.

Since 2011, the National Program has been monitoring the quality of TT surgery through follow-up surveys, including post-operative interviews with TT patients. The validation team records the name of the surgeon, if the patient complied with post-operative instructions from the surgeon or nurse, which includes keeping on the bandage, taking antibiotics, resting, and having stitches removed on 1 week following surgery. The validation team also asks the TT patients if they are satisfied with the surgery and if the surgery was technically successful. The program has achieved significant progress with its TT surgery validation method.

Antibiotic Therapy (A)

Baseline surveys, conducted in 2002, indicated that the southern regions of Niger were endemic for trachoma and many districts had a TF prevalence above 30%. The program has made significant progress to reduce the TF prevalence across the country. The program supported four impact surveys and four surveillance surveys in 2016, which have helped to inform how the National Program implements activities in 2017.

Recent impact surveys show that all districts in Dosso, Tahoua, and Tillaberi have achieved a TF prevalence below 5%. In Maradi, two districts have a TF prevalence between 10% and 29.9%, and two districts have a TF prevalence between 5% and 9.9%. In Zinder, two districts have a TF prevalence between 10% and 29.9%, and 1 district has a TF prevalence between 5% and 9.9%. Agadez has 1 district with TF prevalence between 5% and 9.9%. All districts in Diffa have a TF prevalence between 10% and 29.9%. Based on this data, the program will continue to support MDA in districts where it is warranted. Data from 2016 MDAs, including

[6] The Carter Center does not currently assist MDA in Niger.

doses distributed and MDA coverage, was not yet available at the time of this program review due to a delay in distribution.

Facial Cleanliness (F) & Environmental Improvement (E)

In 2016, the National Program supported ongoing health education in 8,203 villages across Niger. The program also supported health education training for 296 *marabouts* (Muslim religious leaders), 300 community leaders, and 207 women, who were specifically trained in soap making. In addition to local trainings, the National Program contracts radio stations to broadcast trachoma-related messages. In 2016, 24,022 messages were broadcast across the country.

11,685 schools also received support for health education. This included training 270 school principals in Tahoua and Dosso, 280 school principals in Maradi, and 240 school principals in Zinder, where 240 teachers also received trainings. The trainings were carried out with assistance from HKI, in Tahoua and Dosso, and The Carter Center, in Maradi and Zinder. The program provided a revised curriculum which includes more information on trachoma and how spread of the disease can be prevented. Maradi and Zinder regions significantly increased trachoma-related health education in 2016.

The National Program continued its efforts to increase the construction and use of latrines in 2016. The program supported 9,528 new latrines, assisted by The Carter Center, and the training of 280 new masons.

Programmatic Challenges:

The program continues to be challenged by the organization of MDA per the forecast. Additionally, the program needs new and additional TT kits and loupes to continue to support TT surgeries. Finally, the program is focused on improving mobilization within communities by community leaders in order achieve elimination targets.

Status of 2016 Program Review Meeting Recommendations

Recommendation 1: Niger should consider a trachoma-specific MDA if the integrated plan cannot be put into place in time.

Status: The program supported two distribution rounds emphasizing distribution of Zithromax.

Recommendation 2: Niger should investigate options for cross border collaboration with Nigeria.

Status: Cross-border collaboration with Nigeria has not been implemented. However, funding from the World Bank to combat Malaria and NTDs in West Africa will support increased cross-border collaboration. Nigeria is a neighboring country to Niger and therefore will be invited to meetings related to this new initiative.

Recommendation 3: Mali and Niger should continue cross border collaboration.

Status: The program has improved cross-border collaboration with Mali in 2016. The Mali PNSO participated in the trachoma program review in Niger in October 2016 and representatives from Niger attended the program review in Mali in December 2016. The PNSOs also worked together to restore the HEAD START survey, which yielded several important results related to TT surgeon training. Additionally, both countries, along with Burkina Faso, have received funding from the World Bank to combat Malaria and NTDs. This provides additional opportunities for collaboration as the countries meet to discuss use of the funds for joint activities.

Recommendation 4: Niger should consider implementing a plan to increase the TT surgeries to reduce the number of years required to clear the TT backlog.

Status: The program has created a plan to locate the remaining TT cases in Niger.

Targets for 2017 and Plans to Meet Targets

Surgery (S)

- Operate on 18,000 TT patients, 9,000 with Carter Center assistance
- Train 60 new TT surgeons, 24 with Carter Center assistance

Antibiotic Therapy (A)

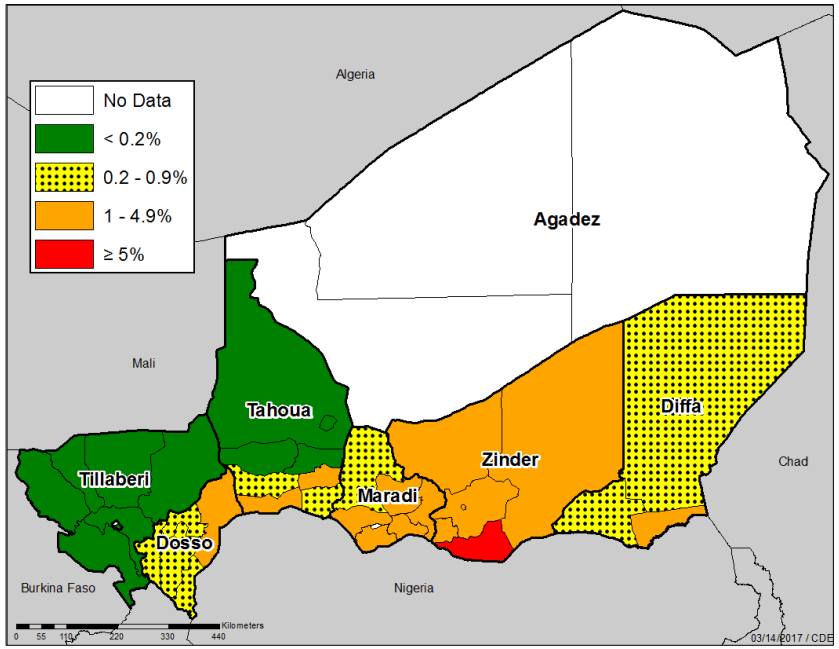
- Distribute 3,933,971 doses of azithromycin
- Distribute 80,286 doses of TEO, all with Carter Center assistance
- Complete 6 impact surveys and 8 surveillance surveys

Facial Cleanliness (F) & Environmental Improvement (E)

- Conduct health education in 600 villages, all with Carter Center assistance
- Train 207 women in soap making
- Train 300 *marabouts,* 300 community leaders, and 240 teachers to provide health education
- Continue contracting radio stations to broadcast trachoma-related messaging
- Construct 12,000 latrines, all with Carter Center assistance
- Train 300 masons, all with Carter Center assistance

Niger: TT Prevalence among Adults ≥ 15 years

Baseline, 2002



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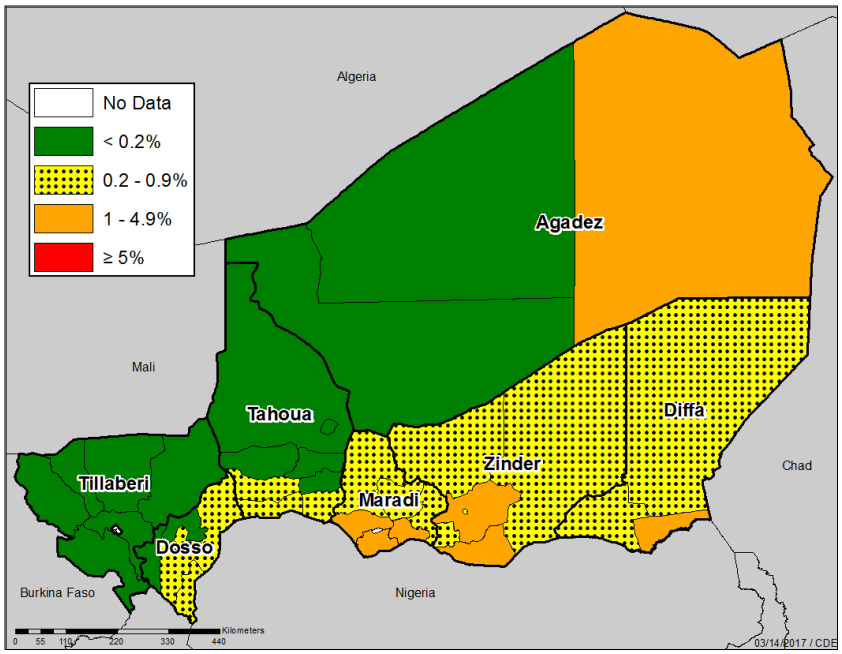
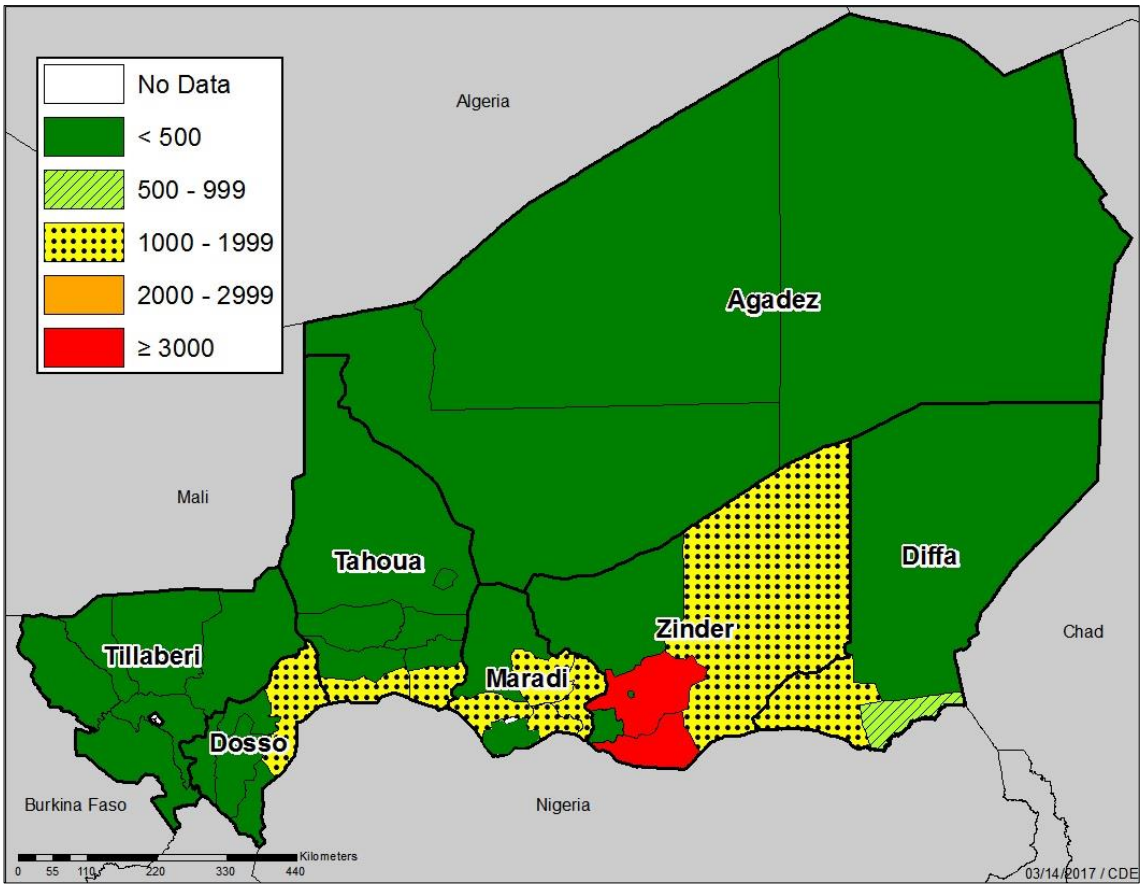
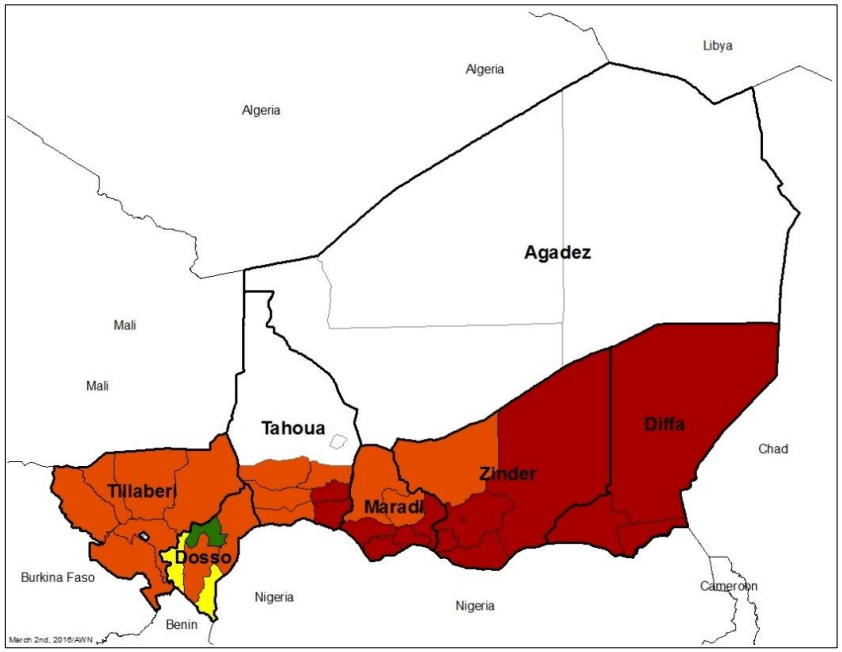


Niger: Surgical Backlog, 2016



Niger: TF Prevalence among Children 1-9 years

Baseline, 2002



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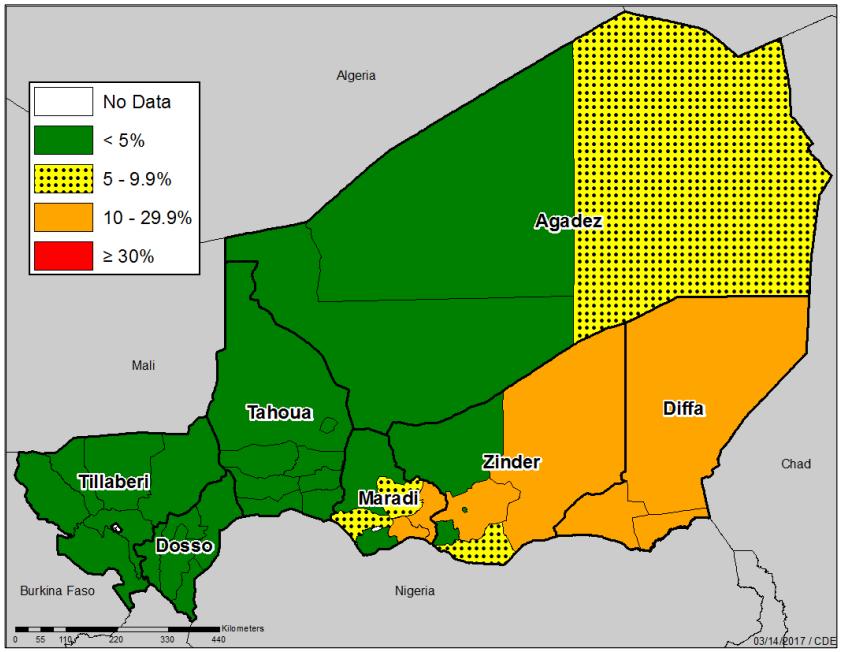


SAFE in South Sudan

Presented by Ms. Aja Isaac Kuol, Deputy Director for Preventive Chemotherapy NTDs, Ministry of Health, South Sudan

Background

Prevalence surveys conducted between 2001 and 2006 showed TF prevalence as high as 77.2% among children 1 to 9 years old and TT prevalence as high as 15.1 percent among adults 15 years and older in some districts in the Greater Upper Nile region. Despite the high prevalence, trachoma currently is not a top priority for the government. The trachoma program was previously under the Department of Eye Care Services; however, in late 2013 it was relocated to the Department of NTDs. SAFE activities have not been conducted in all the districts due to a lack of resources. In the districts receiving SAFE interventions, most activities focus on the S&A components. The TAP was completed in 2012.

The program had originally planned to conduct baseline surveys in five states in South Sudan as part of the GTMP and impact surveys in eight districts in Carter Center-assisted areas; however, fighting throughout most of 2014 prevented these surveys from occurring. Since the conflict began, more than 1.5 million people have fled their homes, many of which were located in districts supported by the Trachoma Control Program.

Timeline of Events

1999-2010: Baseline mapping
2001: Trachoma control activities began
2005: Comprehensive Peace Agreement signed
2007: MOH Government of Southern Sudan Trachoma Control Program established
2008: Trachoma Taskforce established
2011: South Sudan gains independence
2012: TAP finalized
2013-2014: Fighting in parts of the country causes displacement of population
2014 Jan-Sept: Suspension of program activities
2015: TIS conducted in Budi, Lafon, Kapoeta East, Kapoeta North and Kapoeta South
2016: May-Dec: Suspension of program activities
2020: Target date for elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	88,840 (29 of 29 districts)	2,500	0	1,000	0
# of women operated			0		0
# of surgeons trained		10	0	0	N/A
Doses of azithromycin distributed during MDA	1,699,994	245,440	175,088 (71%)	245,440	175,088 (71%)
Doses of tetracycline distributed during MDA	33,999	7,363	6,811 (93%)	7,363	6,811 (93%)
# of villages with health education		200	776	75	776
# of household latrines built		80	0	80	0

Surgery (S)

The National Program has been supporting TT surgery activities across South Sudan since 2001. The program has made progress in mapping districts, with data from Unity, Upper Nile, Western Equatoria, Central Equatoria, and Eastern Equatoria. However, due to insecurity, much of the country remains to be mapped. Impact surveys completed in 2015 show that some districts in Eastern Equatoria have a lower TT prevalence than originally recorded, ranging from 1% to 4.9%, as opposed to greater than 10%, as shown in the baseline data.

The program suspended surgical activities in May 2016 due to insecurity. The program hopes to be able to resume these activities in 2017. Impact surveys completed in five districts in Eastern Equatoria showed that 3,702 people remain to be operated.

Antibiotic Therapy (A)

Baseline surveys show that many of the districts surveyed were hyper-endemic for trachoma. Impact surveys completed in 2015 show that four of the five districts in Eastern Equatoria have a TF prevalence above 30%. Despite insecurity in much of the country, the National Program focuses on distributing antibiotics in areas that are accessible. In 2016, 175,088 doses of Pfizer-donated Zithromax® and 6,811 doses of TEO were distributed in three districts in Eastern Equatoria. The program achieved 80% or greater MDA coverage in all three districts. Three to five rounds of MDA are still warranted.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program implemented F&E activities in 776 villages in 2016. Materials and training was provided to each village. The community members trained to provide health education conducted activities as MDA took place in each village.

Programmatic Challenges:

The program continues to face many challenges including insecurity on the roads, displacement of much of the population due to fighting, and food insecurity. The government and much of its resources are focused on the humanitarian crisis. Additionally, much of the country remains to be mapped to determine if SAFE interventions are needed. The program also lacks trained TT surgeons to support surgery activities.

Status of 2016 Program Review Meeting Recommendations:

Recommendation 1: The Program should strive to implement the full SAFE strategy (with emphasis on F&E) in states considered secure. To achieve this, the program should consider engaging WASH partners to contribute toward latrine construction and water provision.

Status: No progress.

Recommendation 2: The trachoma community should consider supporting South Sudan in developing a strategy to clear the TT backlog and complete mapping for trachoma in the country.

Status: No progress.

Targets for 2017 and Plans to Meet Targets:

Surgery (S)

- Operate on 1,000 TT patients, all with Carter Center assistance
- Train 2 TT surgeons with Carter Center assistance

Antibiotic Therapy (A)

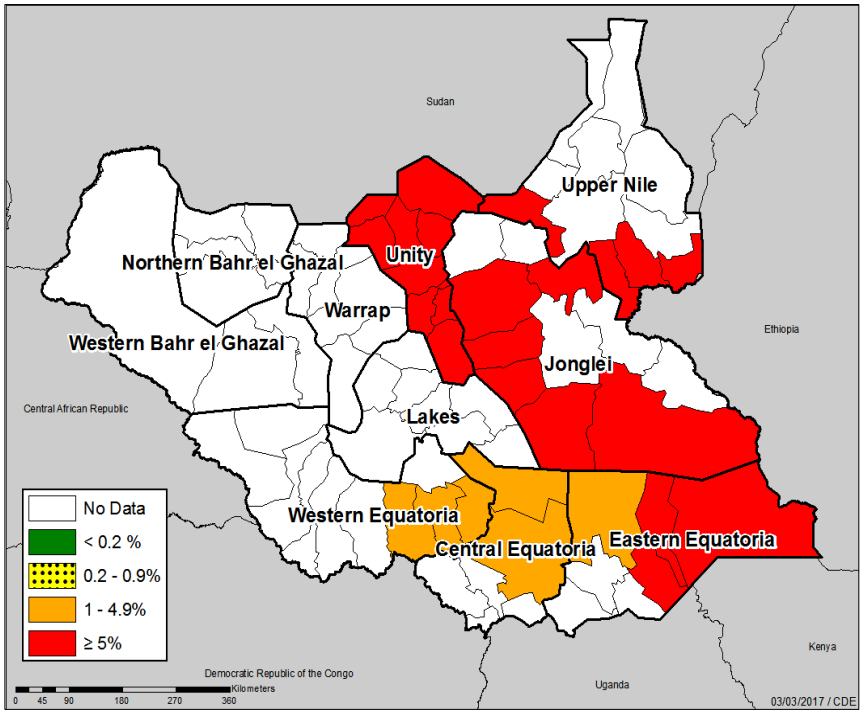
- Distribute 468,061 doses of azithromycin, 245,440 doses with Carter Center assistance
- Distribute 9,552 doses of TEO, 7,363 with Carter Center assistance

Facial Cleanliness (F) & Environmental Improvement (E)

- Conduct health education in 776 villages, all with Carter Center assistance

South Sudan: TT Prevalence among Adults ≥ 15 years

Baseline, 2001-2014



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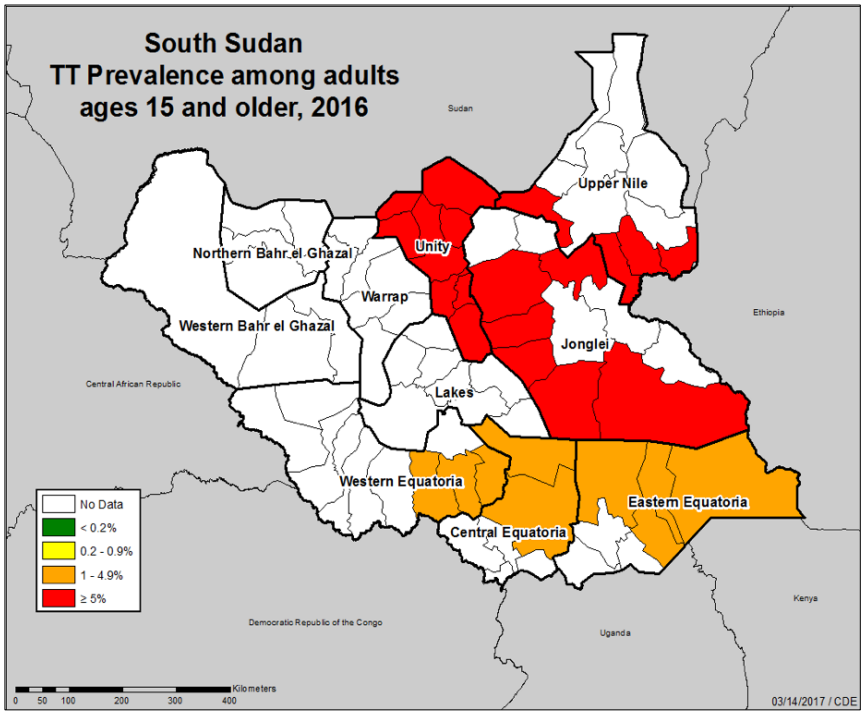
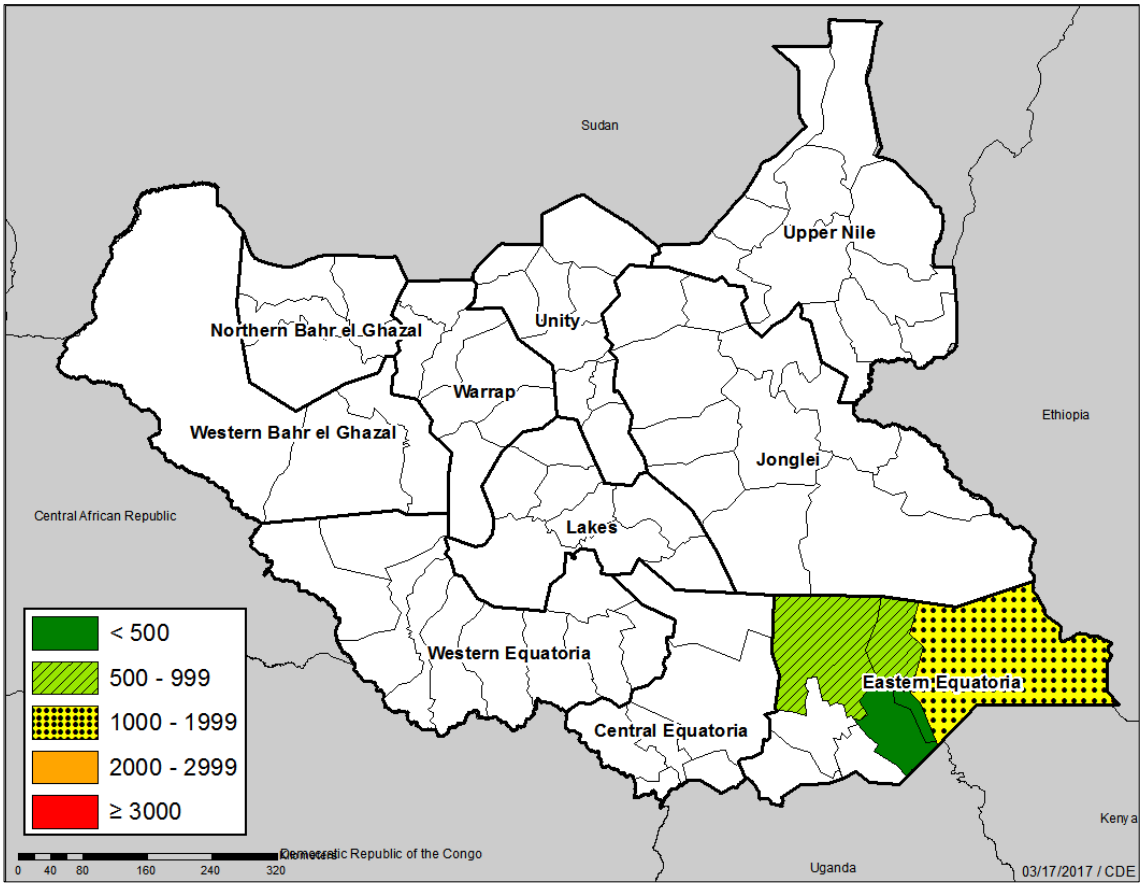
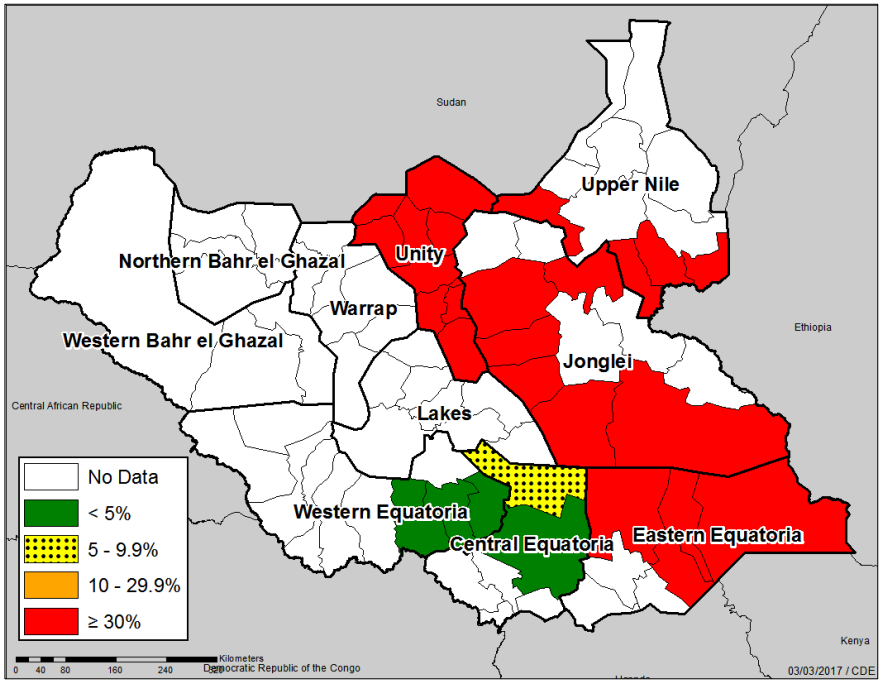


South Sudan: Surgical Backlog in Five Counties, 2016



South Sudan: TF Prevalence among Children 1-9 years

Baseline, 2001-2014



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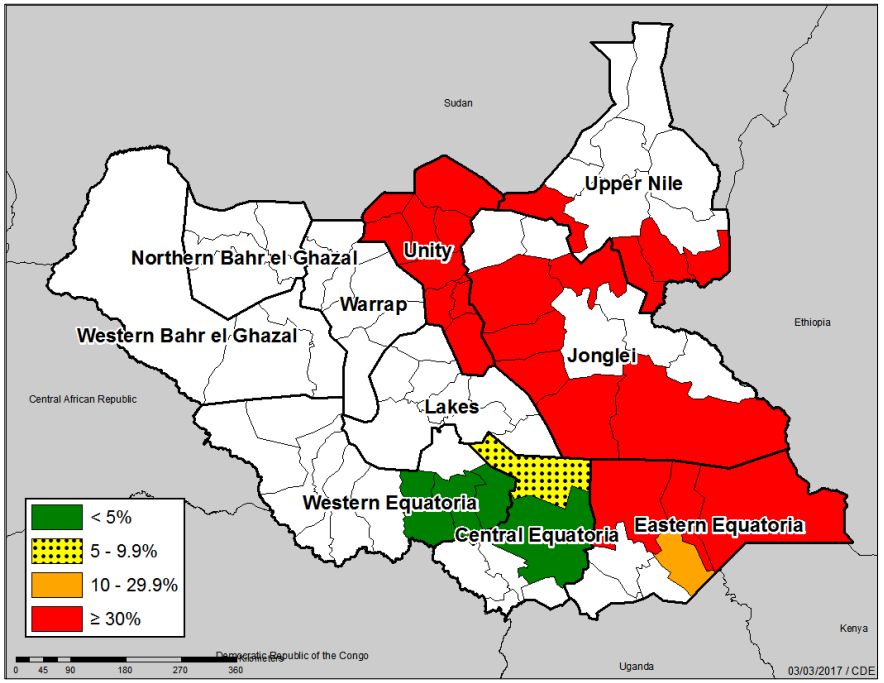
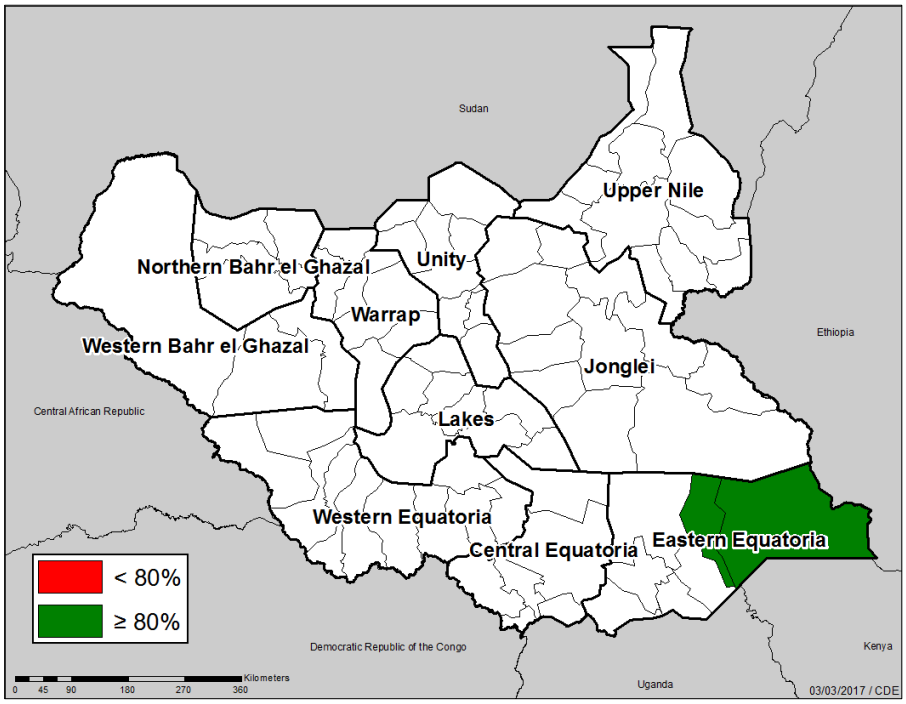
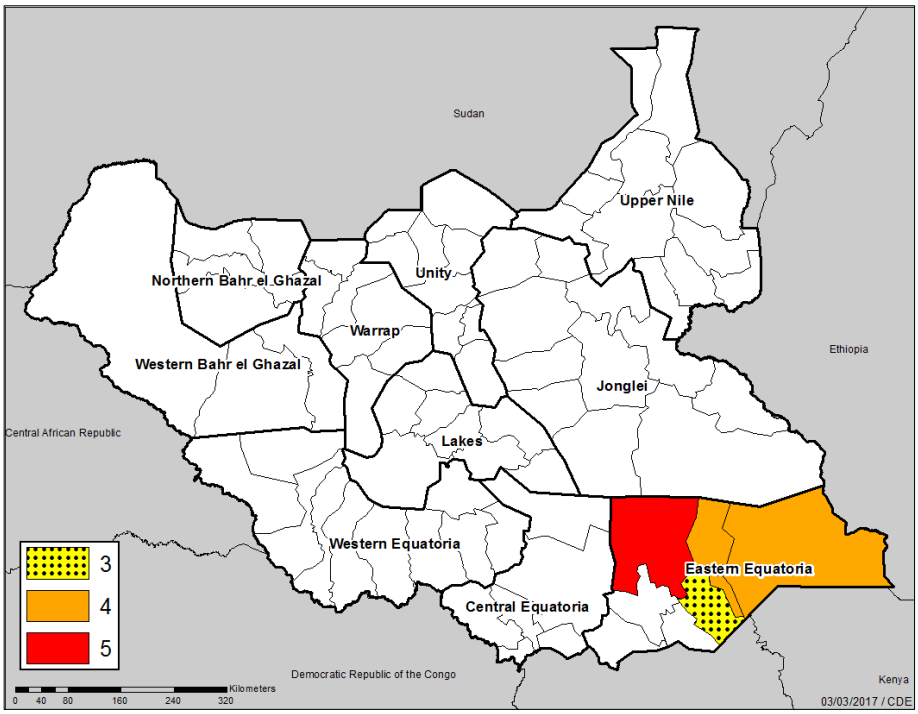


South Sudan: MDA Coverage by District, 2016



South Sudan: MDA Rounds Remaining in Five Counties, 2016



SAFE in Sudan

Presented by Dr. Balgesa Elkheir Elshafie, National Coordinator, Trachoma Control Program, Federal Ministry of Health, Sudan

Background

The FMOH has been working towards trachoma control since 1962, when trachoma was incorporated into the National Program for the Prevention of Blindness (NPPB). The Academy of Medical Sciences and Technology took over the leadership of the program in the 1990s as contractors on behalf of the FMOH. In 2005, the FMOH relocated the Trachoma Control Program to the NPPB. The elimination of blinding trachoma is one of the FMOH's priorities and government funds are allocated to support the program. In 2012, the government allocated 1.5 million USD for five years to help support The Carter Center's partnership for trachoma control. There is a strong coordination mechanism between the government, represented by the FMOH and Federal Ministry of Finance, and implementing partners such as The Carter Center and Sightsavers.

National prevalence mapping began in 2006 and finished in 2010. Mapping was completed in Darfur and Khartoum in 2015 through the coordination of the FMOH, GTMP, Sightsavers, and The Carter Center. S, A, and F interventions are assisted by The Carter Center, Sightsavers, and the FMOH. The E intervention is implemented by various federal and state ministries, and supported by UNICEF and other organizations. Though The Carter Center does not directly fund E activities, it supports advocacy for this component.

Timeline of Events

1999: The Carter Center began supporting the trachoma control program
2000: Zithromax® donation by Pfizer Inc began
2005: National Trachoma Program moved to the FMOH
2005-2010: Baseline prevalence surveys conducted (except for Darfur and Khartoum states)
2006: TT surgery training manual locally adapted in Arabic
2010: Impact surveys conducted in Northern and Blue Nile states
2011: National Program started mobile TT campaigns
2013: Sightsavers begins support of Trachoma Control Program
2014: School health curricula and teacher guidelines on trachoma elimination were completed
2015: Mapping in Darfur and Khartoum is completed in accessible areas; trachoma curricula teacher's training
2016: TAP launched; MDA started in Darfur states
2020: Target date for elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	National		Carter Center-Assisted	
		Target	Achieved	Target	Achieved
# of persons operated	42,008	8,056	1,103 (14%)	2,100	847 (40%)
# of women operated			686 (62%)		512 (56%)
# of surgeons trained		30	30 (100%)	N/A	N/A
Doses of azithromycin distributed during MDA	3,601,942	3,601,942	2,065,954 (57%)	1,439,315	1,202,135 (84%)
Doses of tetracycline distributed during MDA	72,038	72,038	20,521 (29%)	22,986	5,521 (24%)
# of villages with health education		350	280 (80%)	350	119 (34%)
# of household latrines built		No target set	5,006	N/A	N/A

Surgery (S)

In 2016, the National Program supported 1,103 TT surgeries in Sudan, reaching 14% of its annual target of 8,056 TT surgeries. The Carter Center assister 847 TT surgeries, achieving 40% of its annual target of 2,100. Of the total number of surgeries performed, 686 women were operated, which is 62% of the total. The program also trained 30 new surgeons, reaching its target for surgeons trained in 2016. 42,008 people remain to be operated to clear the TT backlog. At the current rate of work, it will take 38 years for the program to reach its target. In order to improve program performance and locate patients to be operated, the program is piloting the use of TT Case Finders. After completing training, case finders will be responsible for mobilizing patients for surgery and patients will be operated immediately following the screening. Case finders also will work with community leaders to assist with three to six-month follow-ups with each TT patient. In areas where original TT prevalence data is believed to be inaccurate and there are no impact surveys warranted, the program would like to conduct TT only surveys.

One reason for low outputs in 2016 is the limited number of certified surgeons who can operate in the field. The FMOH only allows ophthalmologists to perform TT surgery. The Carter Center, working with the FMOH, has submitted requests to the Sudan Medical Council for the policy to be changed so that more people can be trained and sent to the field to provide TT surgery. All requests have so far been rejected.

In some locations, the program collected data on TT surgery refusals in 2016. 12,943 people were screened for TT. Of those screened, 567 people were found to need surgery. 518 people, or 91%, accepted surgical services and 49 people (9%) refused surgery. No TT validation activity was conducted in 2016.

Antibiotic Therapy (A)

The National Program has reached the TF elimination threshold in many districts since the baseline surveys were completed in 2007. In Gedaref state, three districts remain above 5% TF prevalence. In Blue Nile state, 1 district remains above 5% TF prevalence. Darfur still requires baseline surveys in some districts to understand where SAFE interventions are needed.

In 2016, the National Program distributed 2,065,954 doses of Pfizer-donated Zithromax®, which is 57% of its target for 2016. The Carter Center assisted the distribution of 1,202,135 doses of Zithromax® through MDA, reaching 84% of the Carter Center's target. Additionally, the program distributed 20,521 doses of TEO. MDA coverage was above 80% in all treated districts, except for 1 district in Darfur in which the population

has changed since the application for drug was submitted. The National Program completed five impact surveys in 2016.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program carries out F&E activities during MDA in each district. By integrating these activities, the program reaches more people in the community. To carry out activities, volunteers are trained to provide health education, specifically focused on ways to prevent and treat trachoma. The program also provides pre-recorded radio messages which are broadcast before and during the MDA.

The National Program continued to support health education in schools throughout Sudan by including trachoma-related lessons in primary and secondary school curricula. Groups of students form Trachoma Friendship Societies to further promote health education activities, focusing on hygiene and how good hygiene can stop the spread of trachoma. Students are also encouraged to share the lessons they learn about preventing trachoma with their families and communities.

Approximately 5,000 latrines were constructed in 2016. The National Program receives support for latrine constructions from dam companies. During construction of dams, villages are often relocated. The program works with these companies to support latrine construction once villages have moved.

Programmatic Challenges:

The program continues to face challenges in terms of insecurity in parts of the country, specifically Blue Nile and Darfur states. The insecurity makes these areas inaccessible for SAFE implementation or populations have not fully returned. Challenges related to TT surgery include a lack of partners to support surgery activities in Darfur state as well as the need for TT only survey in certain areas where impact surveys are no longer warranted. In 2016, the program also had an issue with drug supply for MDA in Darfur due to a change in population after drug was requested. The program is working to avoid this issue in the future.

Status of 2016 Program Review Meeting Recommendations:

Recommendation 1: Sudan should develop a detailed plan of action with partners by June 2016 to clear the TT backlog by end of 2019.

Status: Partners and the FMOH developed a detailed implementation plan for 2017 surgical activities.

Recommendation 2: Sudan should investigate options to reduce the length of time required for a TT surgical camp to allow more female residents (surgeons) to participate.

Status: The program investigated options and determined that female surgeons contribute effectively, except in insecure areas.

Recommendation 3: The Program should evaluate teacher understanding of new F&E curricula after a specified period of time.

Status: An evaluation survey is planned for 2018.

Recommendation 4: Sudan should identify ways to collaborate with other NGOs conducting TT surgeries to ensure appropriate reporting and alignment with FMOH recommended practices for conducting TT surgery.

Status: Discussions are ongoing between the FMOH, Sudan Medical Council, and the National Program.

Targets for 2017 and Plans to Meet Targets:

Surgery (S)

- Operate on 10,000 TT patients; 2,100 with Carter Center assistance
- Train 30 surgeons

Antibiotic Therapy (A)

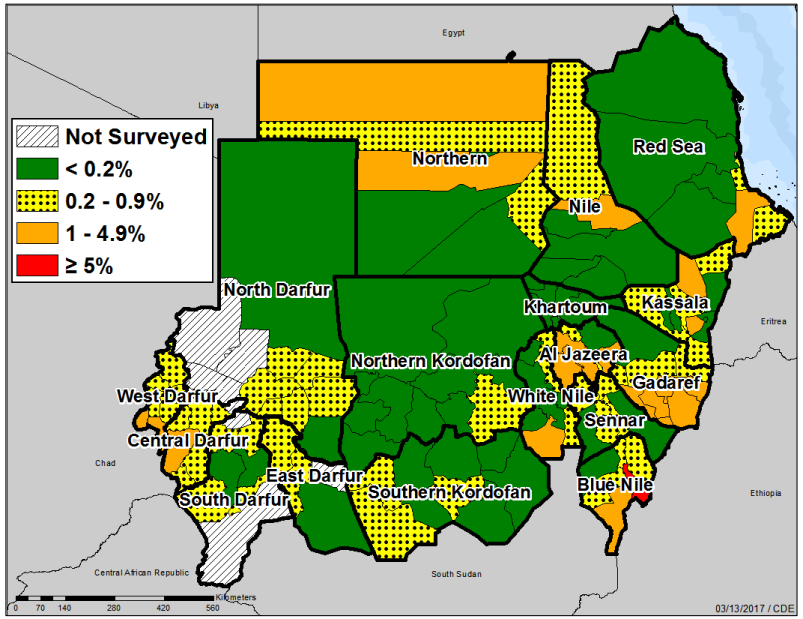
- Distribute 2,344,762 doses of azithromycin; 490,264 with Carter Center assistance
- Distribute 46,895 doses of tetracycline; 9,805 with Carter Center assistance
- Complete 7 impact surveys and 1 post-endemic surveillance survey

Facial Cleanliness (F) & Environmental Improvement (E)

- Conduct health education in 233 villages, all with Carter Center assistance

Sudan: Prevalence of TT among Adults ≥ 15 years

Baseline, 2007-2015



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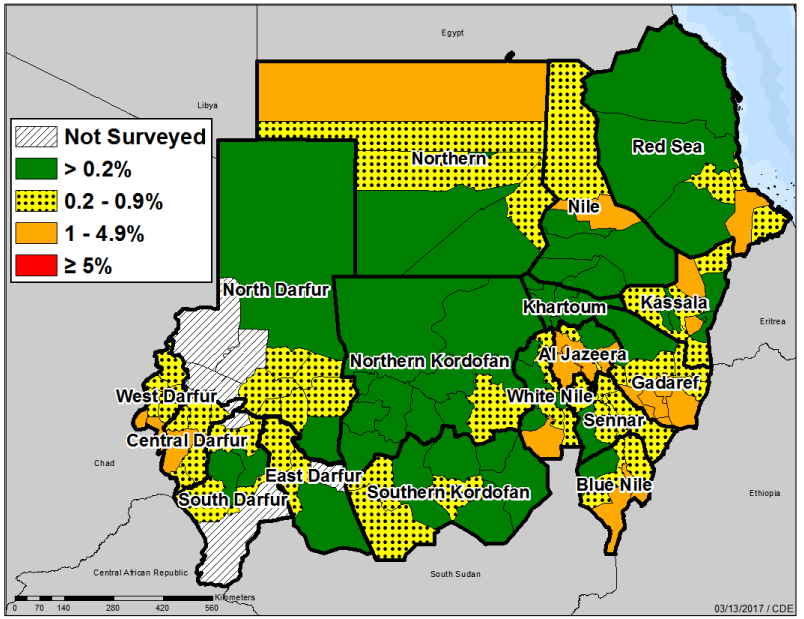
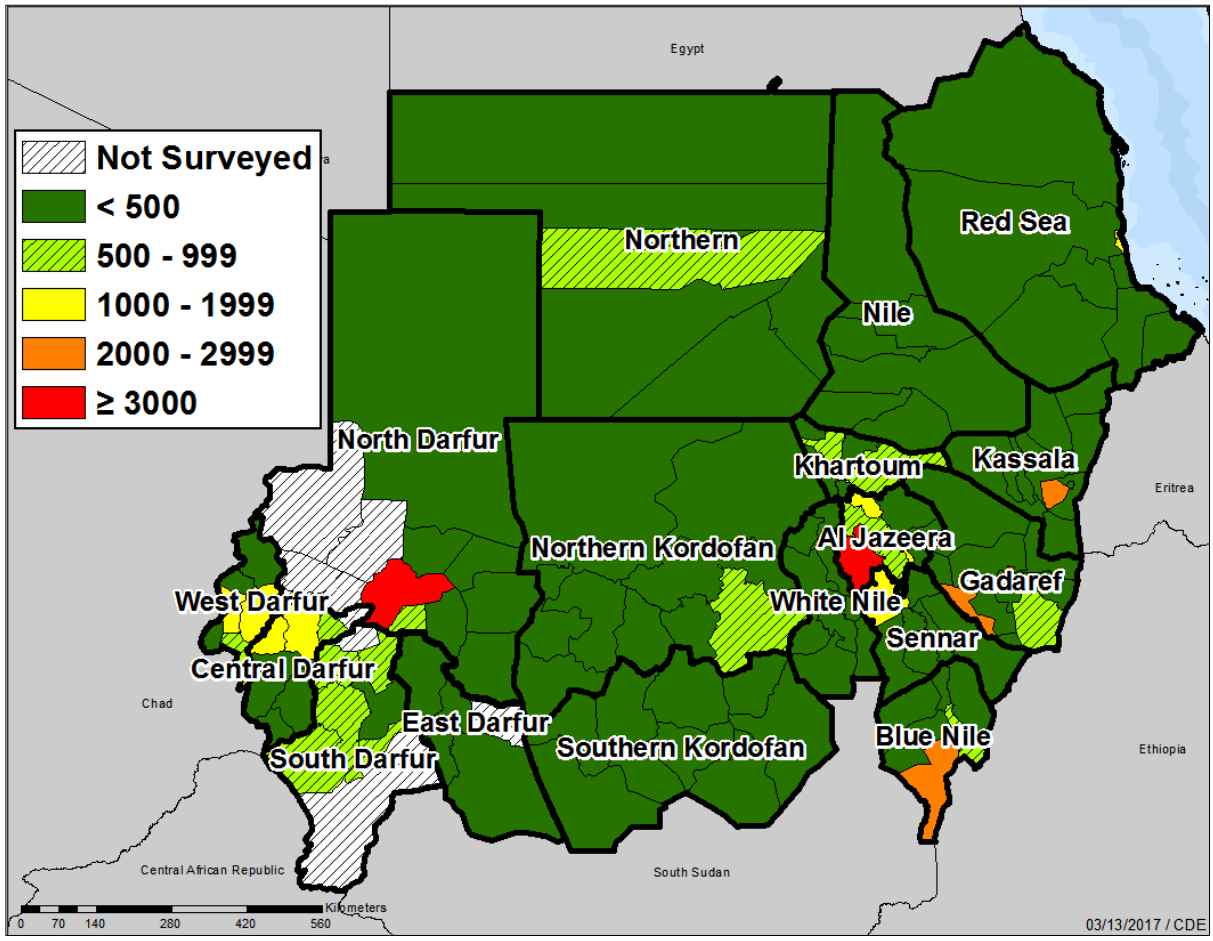
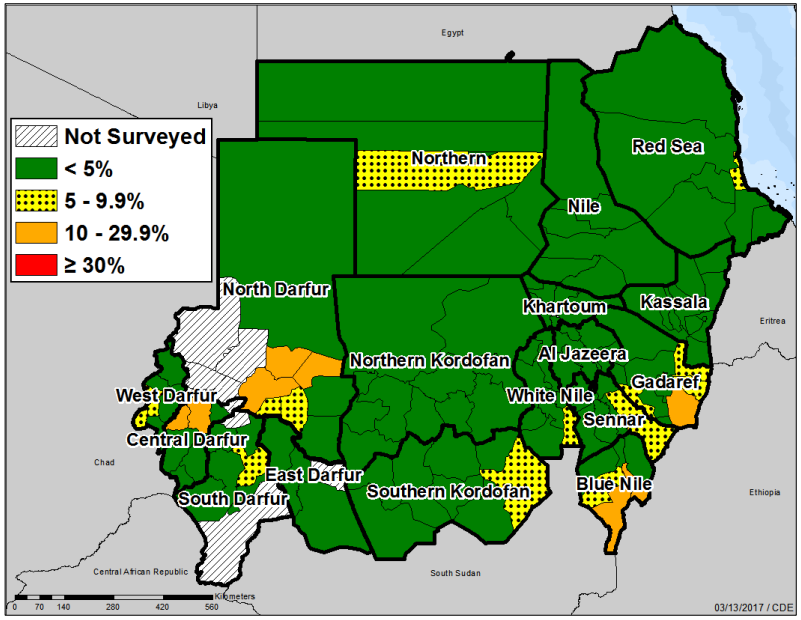


Sudan: Surgical Backlog, 2016



Sudan: TF Prevalence among Children 1-9 years

Baseline, 2007-2015



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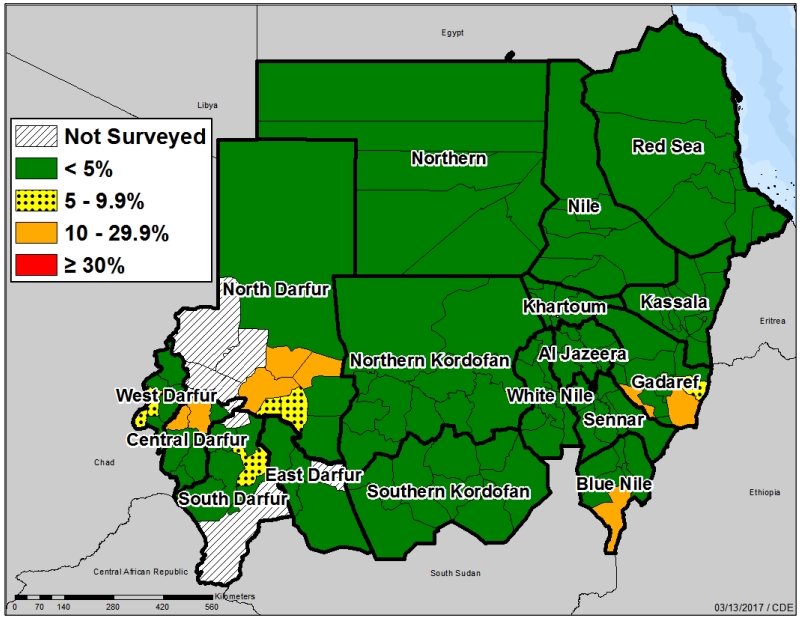
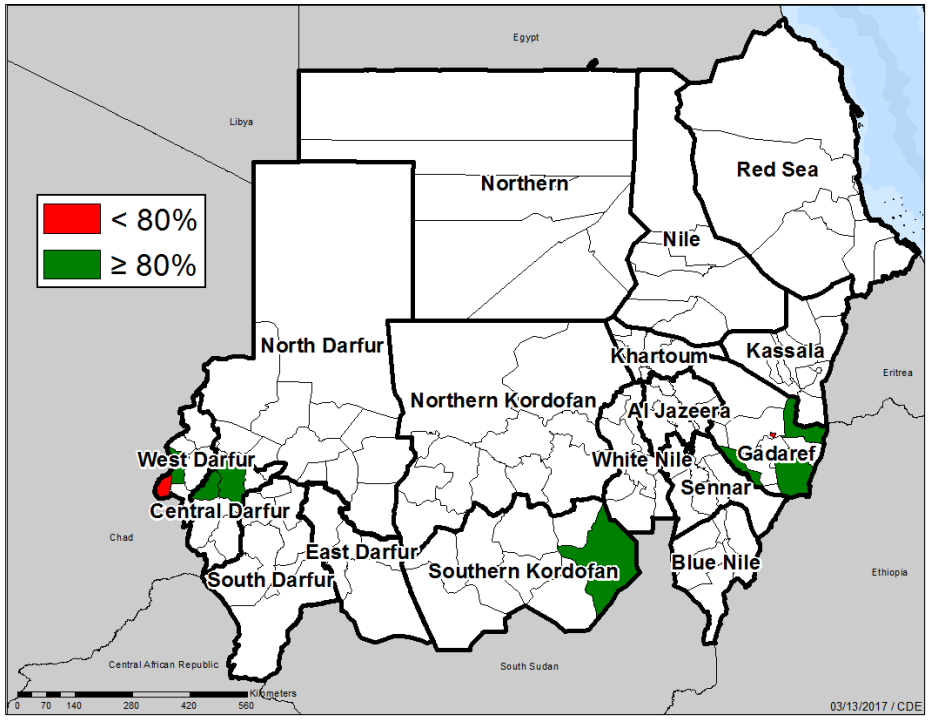
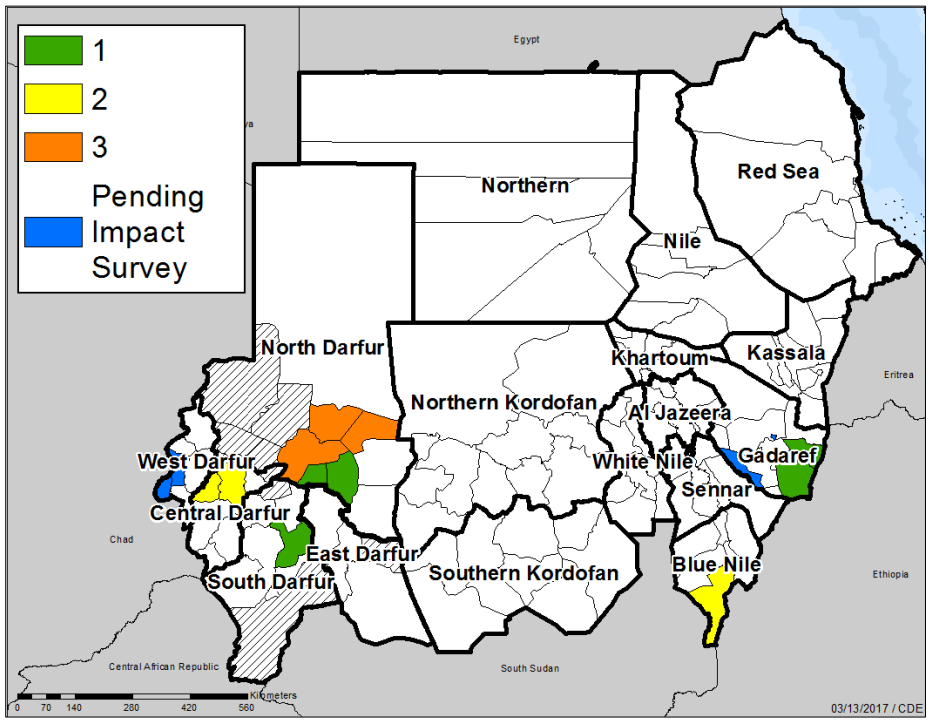


Sudan: MDA Reported Coverage, 2016



Sudan: MDA Rounds Remaining, 2016



SAFE in Uganda

Presented by Dr. Patrick Turyaguma, National Trachoma Program Manager, Ministry of Health, Uganda

Background

Eye care is a key component of the Uganda National Minimum Health Care Package. Trachoma is included in the five-year Integrated NTDs Master Plan and is highlighted in the Uganda National Development Plan. Trachoma and four other NTDs are earmarked for elimination by 2020 in the Health Sector Strategic and Investment Plan.

In regards to the implementation of the SAFE strategy, TT surgical camps have been conducted in the two regions of Busoga and Karamoja and antibiotic distributions have been conducted annually in all known endemic districts. The facial cleanliness and environmental improvement components of SAFE have been incorporated into some WASH partners' activities in the Busoga and Karamoja region.

Following at least three years of MDA, impact assessments have been on-going since 2013. So far, these impact surveys have shown a drastic reduction in TF in most of the surveyed districts. The NTD program has developed advocacy strategies and tools to support the program, and the Ministry of Health launched a TAP in 2014.

Timeline of Events

2006-2014: Baseline mapping
2007: National Trachoma Control Program began
2007: MDA for trachoma control with Pfizer-donated Zithromax® officially launched
2013: TAP drafted and impact assessments began
2014: The Carter Center becomes coordinating partner for the Queen Elizabeth Diamond Jubilee Trust Trachoma Initiative
2014: TAP launched
2014: Initiation of TT surgeon refresher trainings
2015: Cross-border meetings initiated
2017 Feb-Mar: F&E baseline survey
2020: Target date for the elimination of trachoma

Table 1. Program Achievements in 2016

Indicator	Goal	National	
		Target	Achieved
# of persons operated	10,213	5,789	4,992 (86%)
# of women operated			3,606
# of surgeons trained		0	0
Doses of azithromycin distributed during MDA	1,958,866 (10 districts)	1,958,866	1,108,594* *missing 2 districts
Doses of TEO distributed during MDA	39,976	39,796	26,684* *missing 2 districts
# of villages with health education		23,246	23,246 (100%)
# of household latrines built		3,880	3,420 (88%)

Surgery (S)

The National Program supported 4,992 TT surgeries in 2016, reaching 86% of its annual target. Of the total surgeries completed, 3,606 were performed on women, 72% of the total. The program has made significant progress towards its goal of elimination by 2020. 5,686 people remain to be operated to clear the backlog. At the current rate of work, the program expects to clear the backlog in two years.

In 2016, the program collected data on TT refusals. 38,339 people were screened for TT. Of those screened, 4,992 were found to require TT surgery, approximately 13%; 4,653, or 93%, accepted surgery; 276 people (6%) refused; and 62 patients were epilated.

The program also supported a surgical audit in 2016. The goals of the audit were to detect surgical failure among TT patients who received TT surgery within the last six months, identify TT surgeons with a TT surgical failure greater than 10% and to develop a remedial intervention plan for those surgeons. A total of 10 TT surgeons were audited. For each surgeon, the auditors examined 40 eyes operated within the last six months. A total of 313 eyes were examined during the surgical audit. 236, or 76% were successful surgeries, while 74, or 24%, were failed surgeries. Of the 10 surgeons audited, three had good performance, three had failure rates from 10% to 20%, and four surgeons had a failure rate greater than 20%. The program has responded to these results by implementing a plan to improve surgical outcomes. The surgeons with a failure rate greater than 10% to 20% will be retrained to improve their surgical skills. Surgeons who had a failure rate greater than 20% were immediately stopped from conducting surgeries and assigned to other activities that take place during surgery camps.

Antibiotic Therapy (A)

Impact surveys show that TF prevalence has been greatly reduced and many districts have reached the threshold of less than 5% TF prevalence. 27 of 36 districts have stopped MDA. One district has a TF prevalence greater than 30%, five districts have a TF prevalence between 10% and 29.9%, and three districts have a TF prevalence between 5% and 9.9%.

In 2016, the program distributed 1,108,594 doses of Zithromax® and 26,684 doses of TEO in eight districts. Two districts also participated in MDA, however the results of the distribution have not yet been reported despite the MDA being completed 3 months prior. Of the districts that reported data from the MDA, six reported coverage at or above 80%, while two districts reported coverage below 80%. The National Program completed six impact surveys and two post-endemic surveillance surveys in 2016. The surveys show that two districts are still above 10% TF.

Facial Cleanliness (F) & Environmental Improvement (E)

The National Program increased F&E activities in 2016. Some of these achievements included conducting 229 community dialogues and advocacy events, and training 3,335 cluster head and hygiene educators, who lead the village health teams, on how to implement health education activities in their communities. The program reviewed, revised, and printed health education behavior change communication materials and broadcast 1,540 radio messages about trachoma. F&E activities in schools included the formation and training of 10 health clubs and the distribution of 30 handwashing facilities. At the national level, meetings were held to discuss updating the school sanitation guidelines. New partners, Concern Worldwide and World Vision, were contracted to implement F&E activities in the Karamoja region.

Programmatic Challenges:

The program dealt with some challenges in 2016. Several districts have low surgical backlogs, making it difficult to locate the remaining TT patients in those areas. Additionally, the program has difficulty following up with migratory populations within endemic districts. As in previous years, the program continues to have issues with receiving treatment coverage data in a timely manner from some districts. This delays planning for activities in these districts. The program is also dealing with inadequate access to safe and clean water in some Karamoja districts.

Status of 2016 Program Review Meeting Recommendations

Recommendation 1: The Program should reach at least 80% MDA coverage in all districts.

Status: 10 districts conducted MDA in 2016. Of the 10 that received MDA, six districts reached 80% or more coverage.

Recommendation 2: The Program should conduct post-MDA coverage surveys in as many trachoma endemic districts as possible to validate the coverage, and present those results at the next Program Review.

Status: Post-MDA coverage surveys are ongoing.

Targets for 2017 and Plans to Meet Targets

Surgery (S)

- Operate on 2,500 TT patients
- Train 20 TT surgeons for expansion areas

Antibiotic Therapy (A)

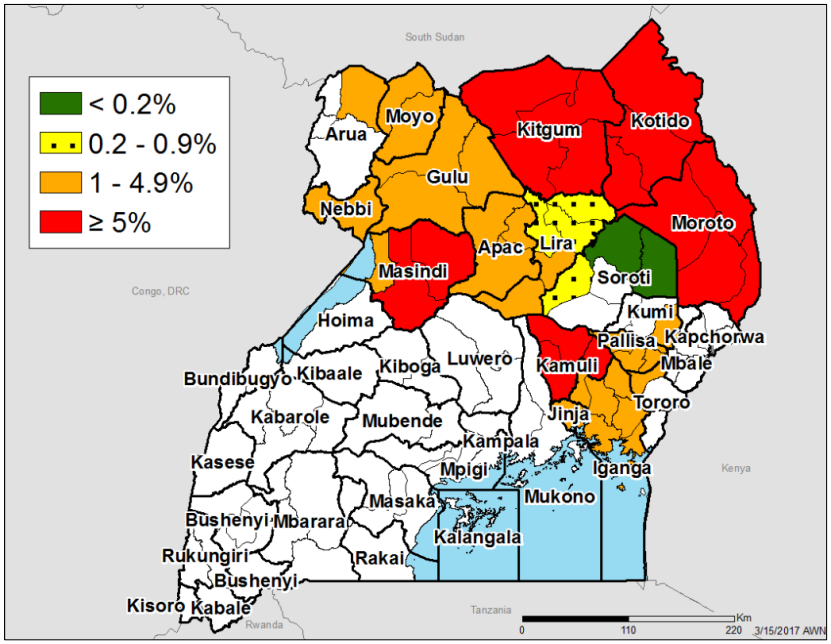
- Distribute 285,102 doses of azithromycin
- Distribute 5,865 doses of TEO
- Complete seven impact surveys and 12 post-endemic surveillance surveys

Facial Cleanliness (F) & Environmental Improvement (E)

- Conduct health education in 23,246 villages
- Construct 3,880 latrines

Uganda: Prevalence of TT among Adults ≥ 15 years

Baseline, 2006-2012



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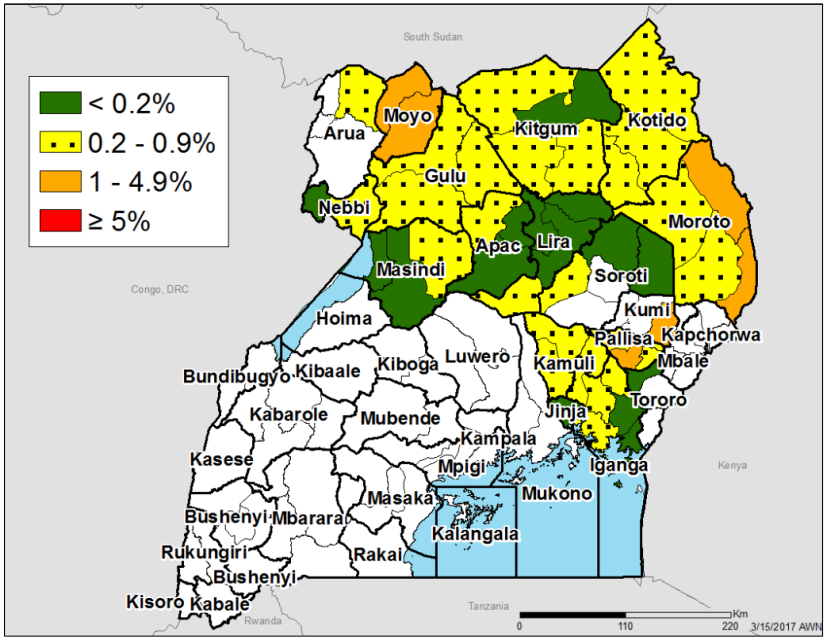
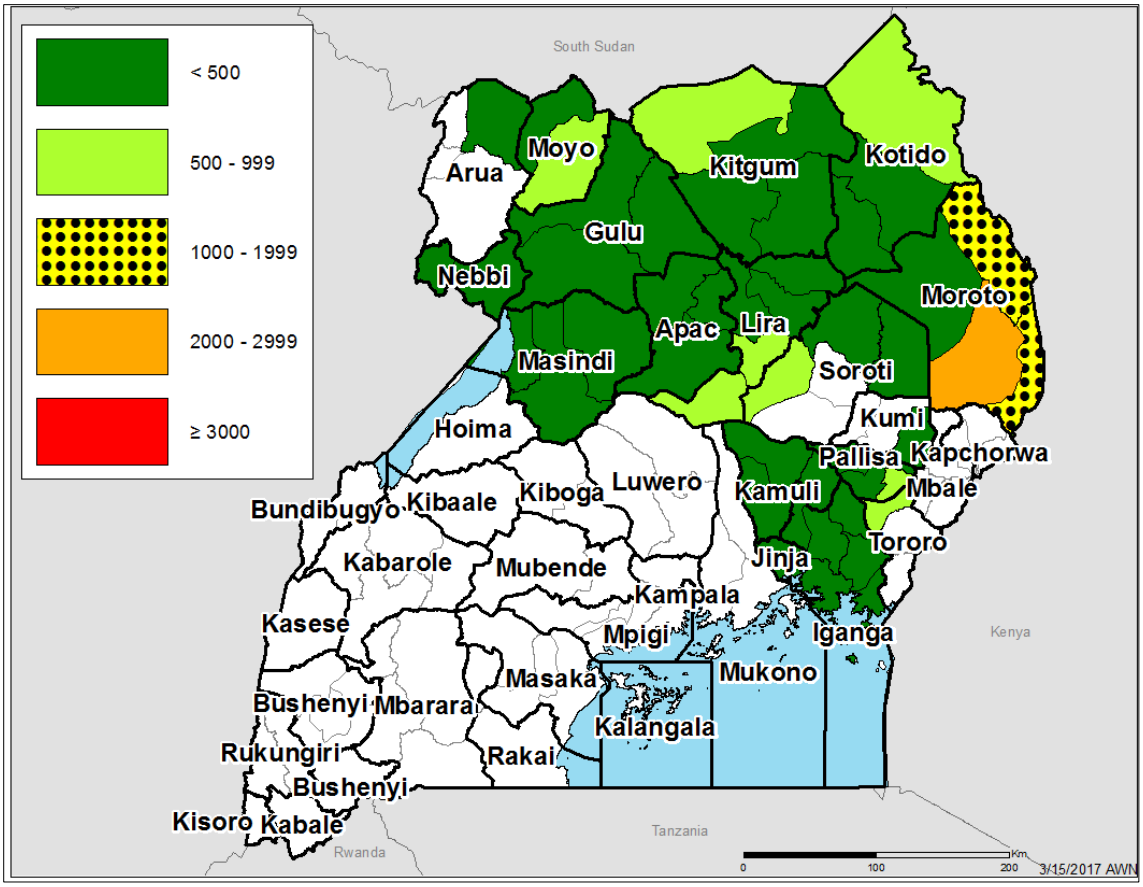
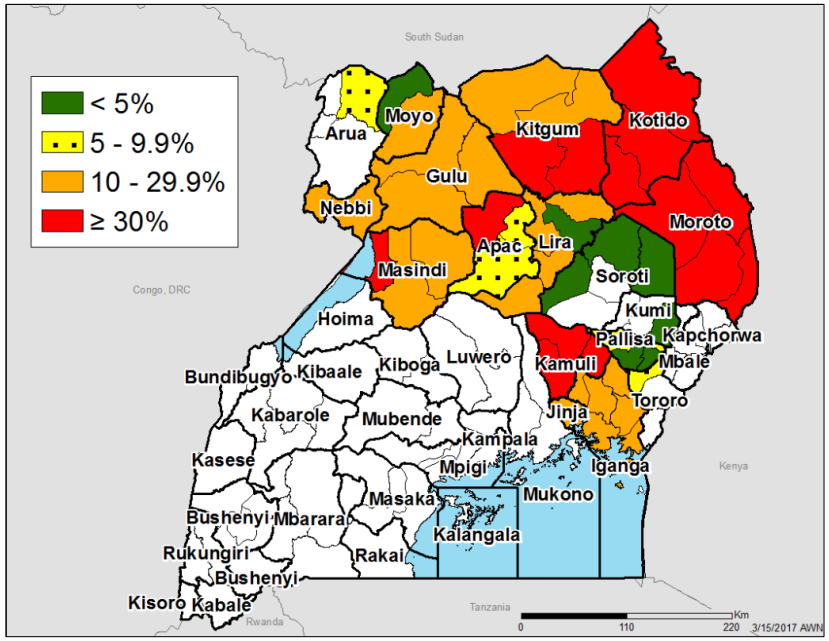


Uganda: Surgical Backlog, 2016

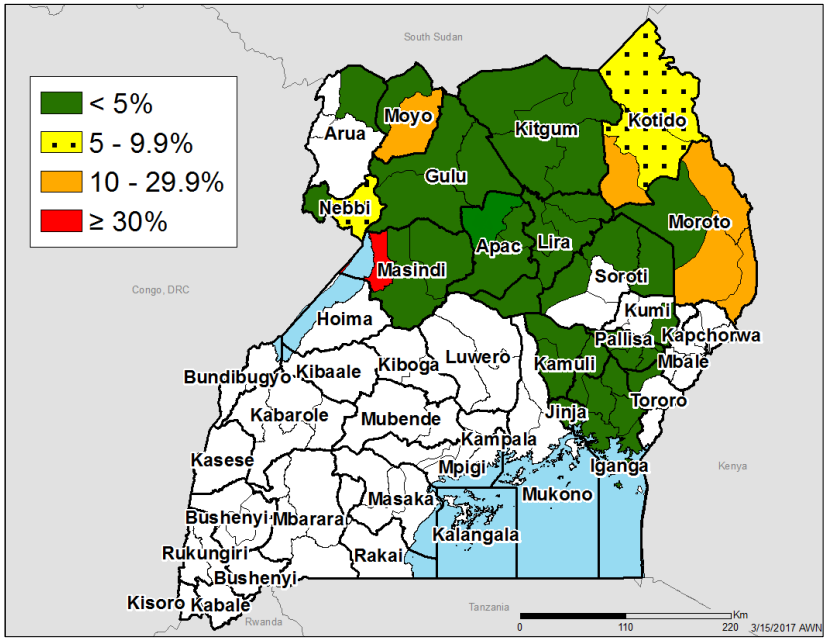


Uganda: TF Prevalence among Children 1-9 years

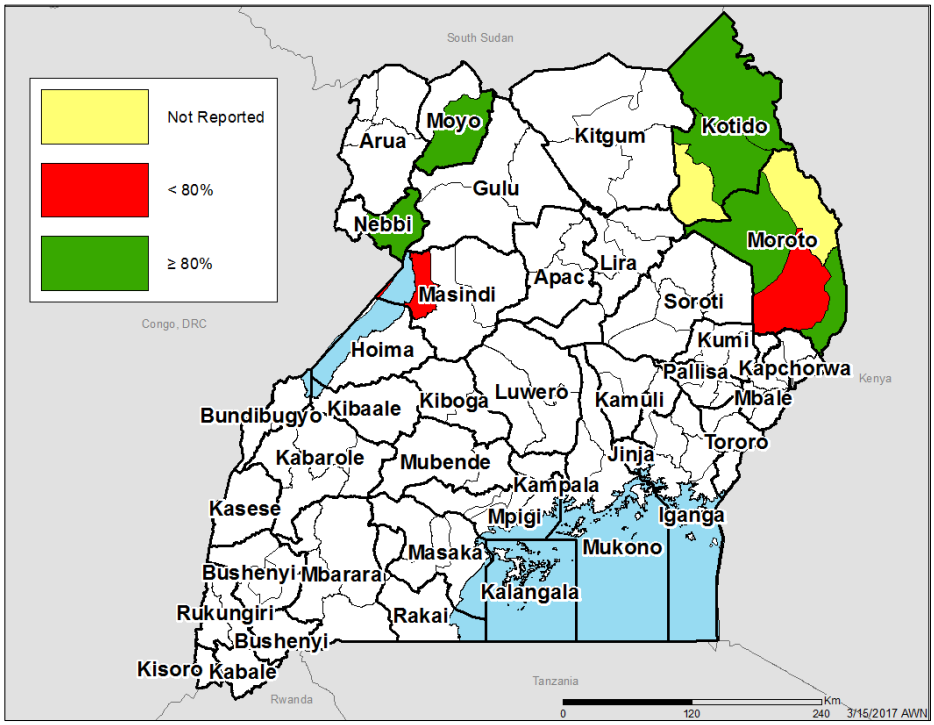
Baseline, 2006-2012



2016



Uganda: MDA Coverage, 2016



Uganda: MDA Rounds Remaining, 2016

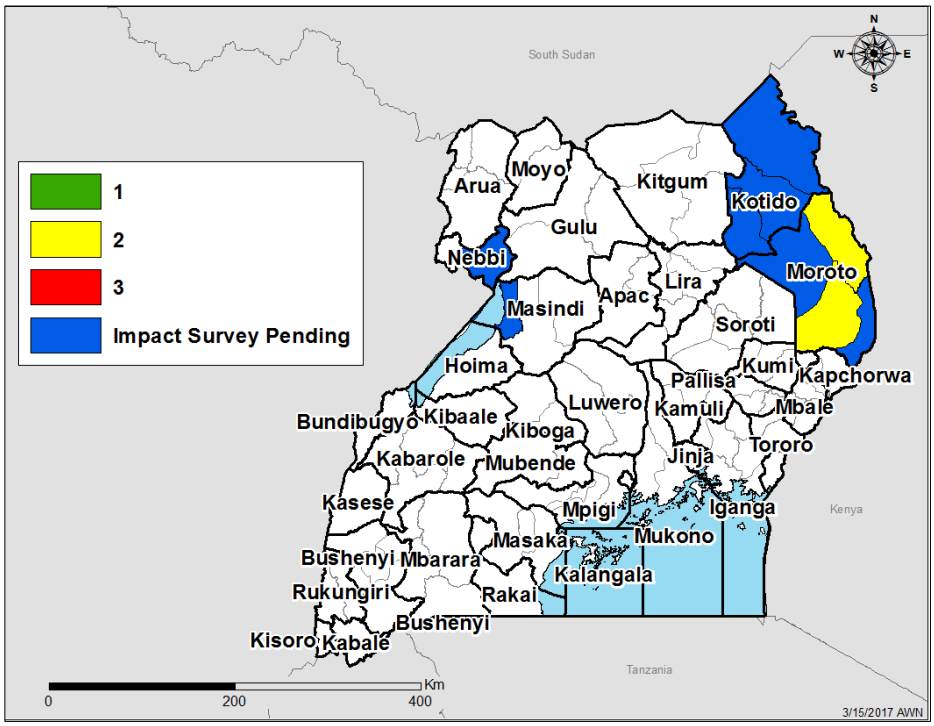


Table 1. Summary of National Data from Trachoma Control Programs (Carter Center-Assisted Countries)

National Data as Reported for 2016 at the Seventeenth Annual Program Review, Atlanta, Georgia, March 22-24, 2017

	Mali	Niger	Sudan	South Sudan	Ethiopia	Uganda	Total
Surgery							
Surgeries	2,276	8,139	1,103	0	184,192	4,992	**200,702**
2016 Target	6,000	15,000	8,056	2,500	420,134	5,789	**457,479**
Percent Coverage	37.9%	54.3%	13.7%	0.0%	43.8%	86.2%	**43.9%**
Antibiotics							
Azithromycin							
Doses	42,199	N/R	2,065,954	175,088	50,364,976	1,108,594	**53,756,811**
2016 Target	60,153	3,928,475	3,601,942	245,440	66,065,289	1,958,866	**75,860,165**
Percent Coverage	70.2%	N/R	57.4%	71.3%	76.2%	56.6%	**70.9%**
Tetracycline Eye Ointment							
Doses	1,302	N/R	20,521	6,811	1,171,042	26,684	**1,226,360**
2016 Target	1,000	116,948	72,038	7,363	N/R	39,796	**237,145**
Percent Coverage	130.2%	N/R	28.5%	92.5%	N/R	67.1%	
Facial Cleanliness and Health Education							
Villages with Health Education	227	8,203	280	776	N/R	23,246	**32,732**
2016 Target	300	10,000	350	200	N/R	23,246	**34,096**
Percent Coverage	75.7%	82.0%	80.0%	388.0%	N/R	100.0%	**96.0%**
Environmental Improvements							
Latrines	5,660	9,528	5,006	0	N/R	3,420	**23,614**
2016 Target	7,000	11,000	N/A	80	N/R	3,880	**21,960**
Percent Coverage	80.9%	86.6%	N/A	0.0%	N/R	88.1%	**107.5%**

N/A=Not Applicable

N/R=Not Reported

Totals only include countries and districts where data are available.

Table 2. National Trachoma Control Program Annual Targets 2017 (Carter Center-Assisted Countries)

Targets[§] as Presented at the Seventeenth Annual Program Review, Atlanta, Georgia, March 22-24, 2017[§]

	Mali	Niger	Sudan	South Sudan	Ethiopia	Uganda	Total**
Surgery							
Persons to operate for TT	6,000	18,000	10,000	1,000	391,758	2,500	**429,258**
Antibiotics							
Doses of azithromycin to distribute during MDA†	N/A	3,933,971	2,344,762	468,061	74,487,150	285,102	**81,519,046**
Doses of TEO to distribute during MDA	N/A	80,286	46,895	9,552	1,586,743	5,865	**1,729,341**
Facial cleanliness							
Villages to reach through health education	375	600	233	776	N/R	23,246	**25,230**
Environmental improvement							
Household latrines to construct	6,300	12,000	N/A	N/R	N/R	3,880	**22,180**

N/A=Not Applicable

N/R=Not Reported

[§]All targets are subject to change.

†Antibiotic targets do not reflect ITI-approved allocations of Zithromax®

**Totals only include countries where data are available.

Table 3. Carter Center-Assisted Implementation of SAFE (Carter Center-assisted output)

Summary of Interventions per Country, January - December 2016

Indicators	Mali	Niger	Sudan	South Sudan	Ethiopia-Amhara	Total
Surgery						
Persons operated for TT	366	6,465	847	0	111,687	**119,365**
2016 Target	2,400	10,000	2,100	1,000	102,476	**117,976**
Percentage	15.3%	64.7%	40.3%	0.0%	109.0%	**101.2%**
Antibiotics						
Doses of azithromycin distributed	N/A	N/A	1,202,135	175,088	15,004,271	**16,381,494**
2016 Target	N/A	N/A	1,439,315	245,440	15,898,610	**17,583,365**
Percentage	N/A	N/A	83.5%	71.3%	94.4%	**93.2%**
Facial cleanliness and health education						
Villages with ongoing health education	227	8,203	119	776	3,459	**12,784**
2016 Target	300	8,000	350	75	3,459	**12,184**
Percent Coverage	75.7%	102.5%	34.0%	1034.7%	100.0%	**104.9%**
Environmental improvement						
Household latrines constructed	5,660	9,528	N/A	0	N/R	**15,188**
2016 Target	7,000	11,000	N/A	80	N/R	**18,080**
Percentage	80.9%	86.6%	N/A	0.0%	N/R	**84.0%**

N/A=Not Applicable

N/R=Not Reported

Table 4. Carter Center-Assisted Implementation of SAFE

Cumulative Interventions per Country, 1999-2016

Indicators	Mali	Niger	Sudan	South Sudan	Ethiopia-Amhara	Total
Persons operated for TT	29,636	64,128	10,021	9,668	567,568	**681,021**
Doses of azithromycin distributed (MDA)	698,083	3,780,384	6,285,795	2,866,711	141,114,968	**154,745,941**
Villages with ongoing health education	2,622	8,203	2,561	3,574	3,459	**20,419**
Household latrines constructed	105,999	113,190	N/A	646	3,225,495	**3,445,330**

N/A=Not Applicable

Figure 1. Persons Operated for TT, Carter Center-Assisted Countries

National Program data as presented for January - December 2016

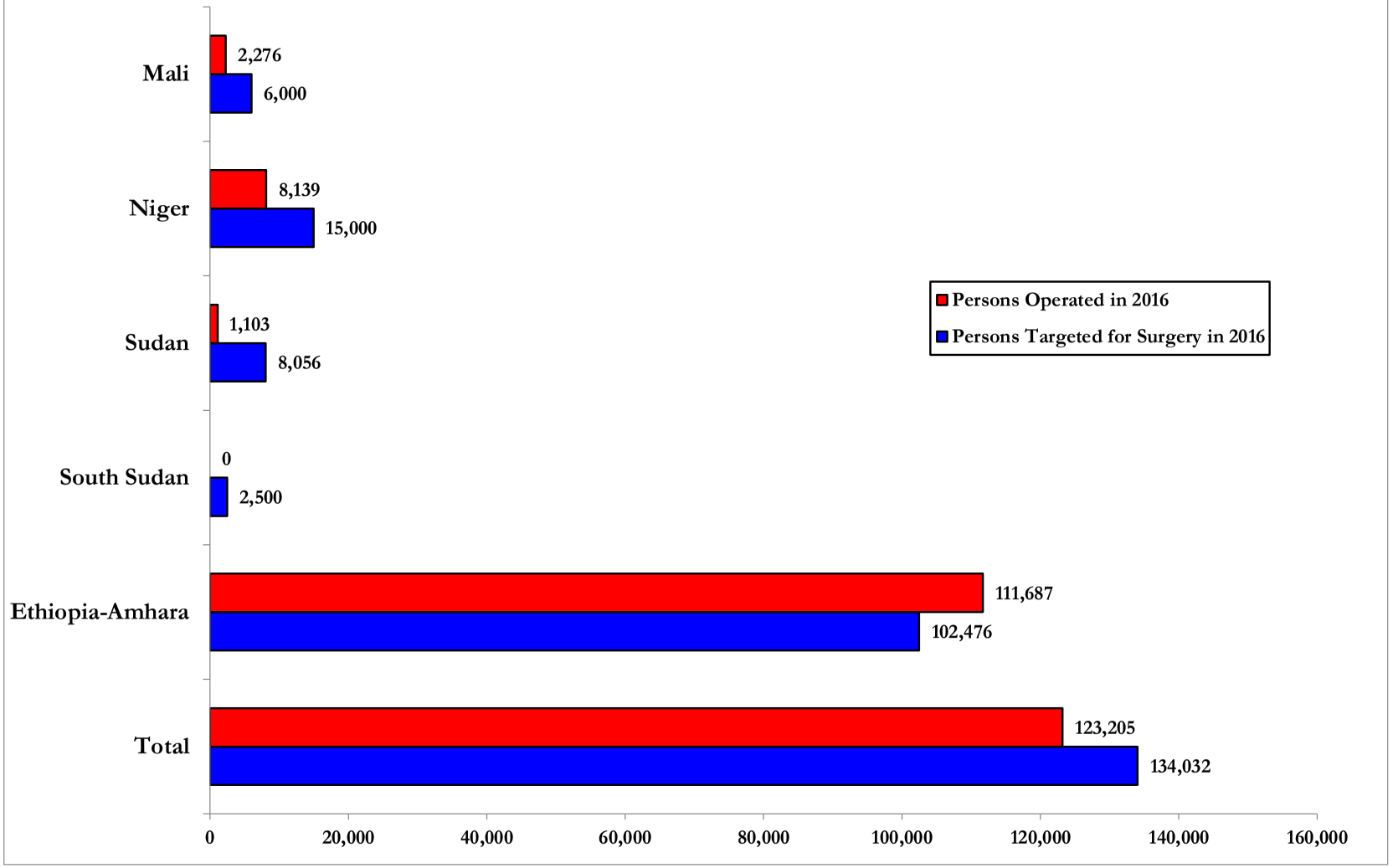


Figure 2. Azithromycin Distribution, Carter Center-Assisted Countries

National Program data as presented for January - December 2016

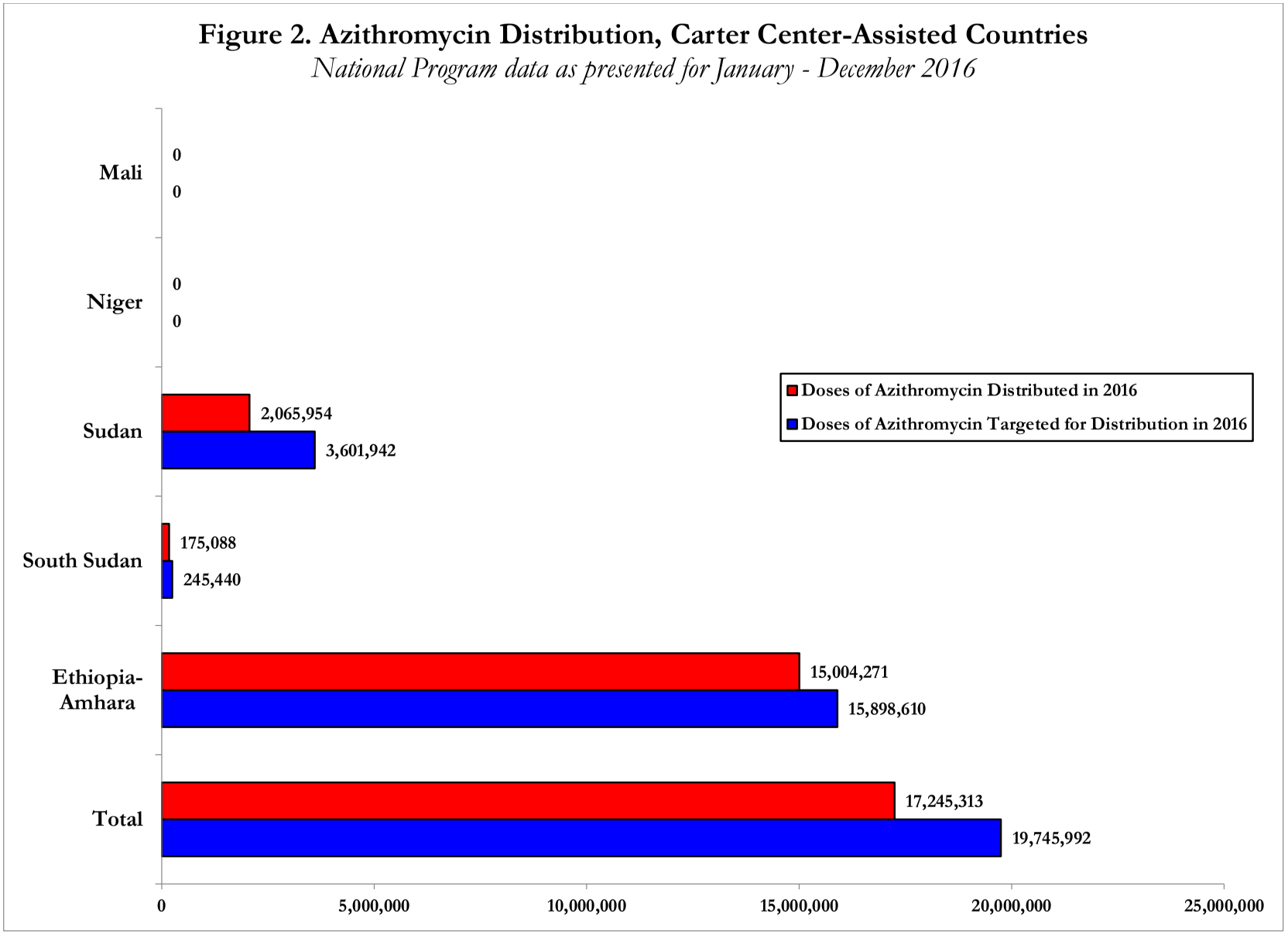


Figure 3. Health Education, Carter Center-Assisted Countries

National Program data as presented for January - December 2016

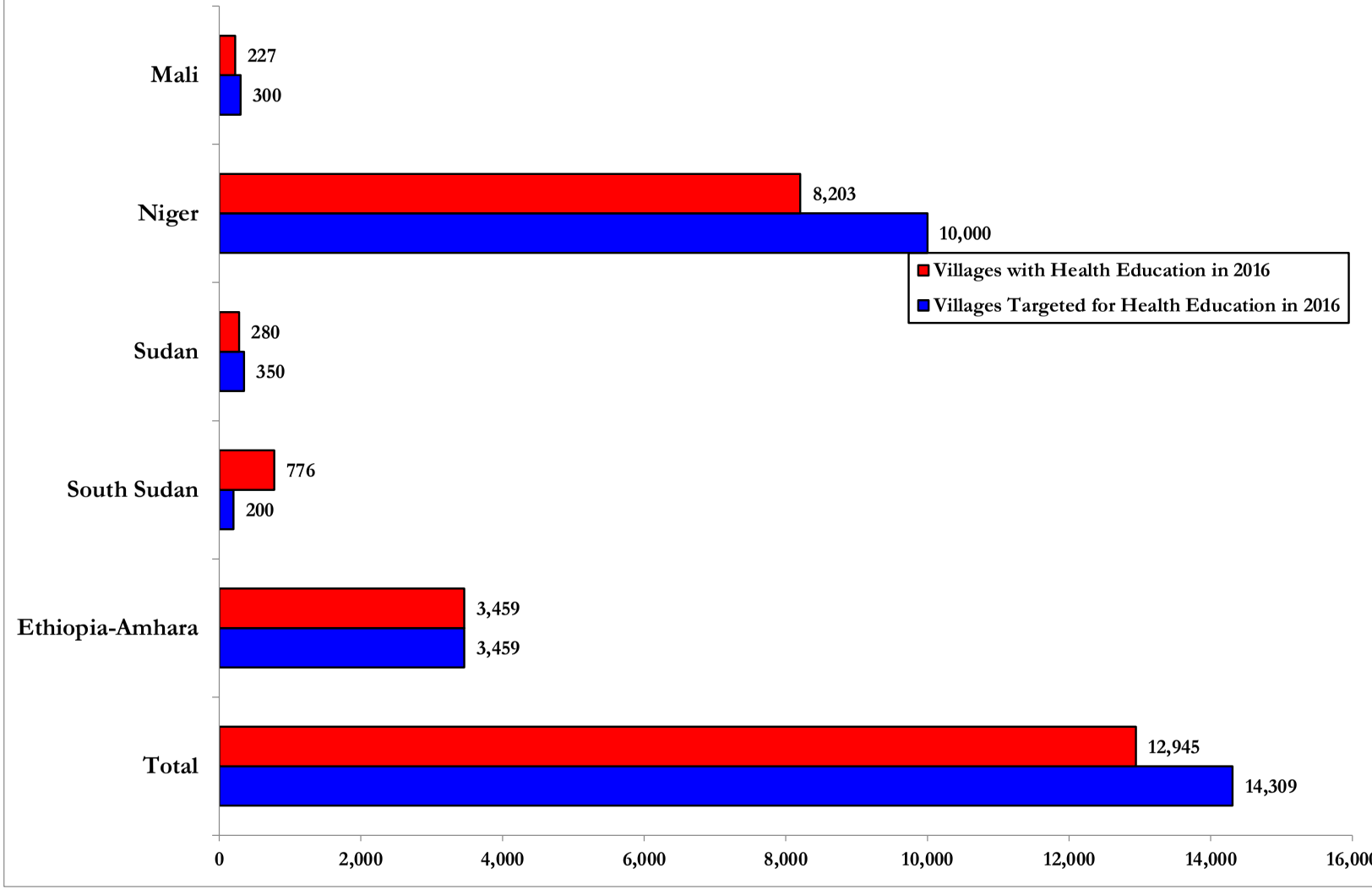
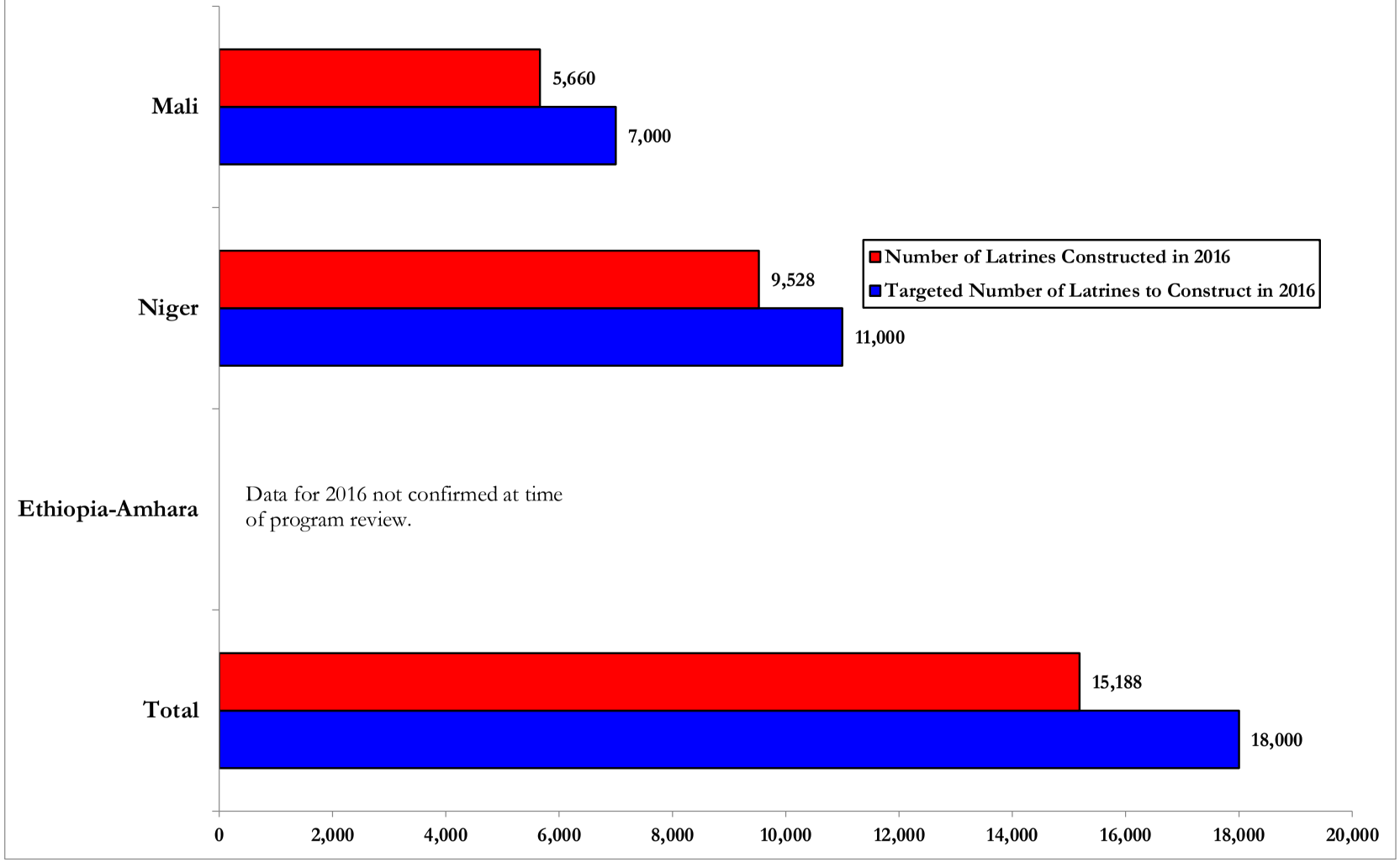


Figure 4. Household Latrines Constructed, Carter Center-Assisted Countries

National Program data as presented for January - December 2016



Measuring MDA Coverage in Amhara

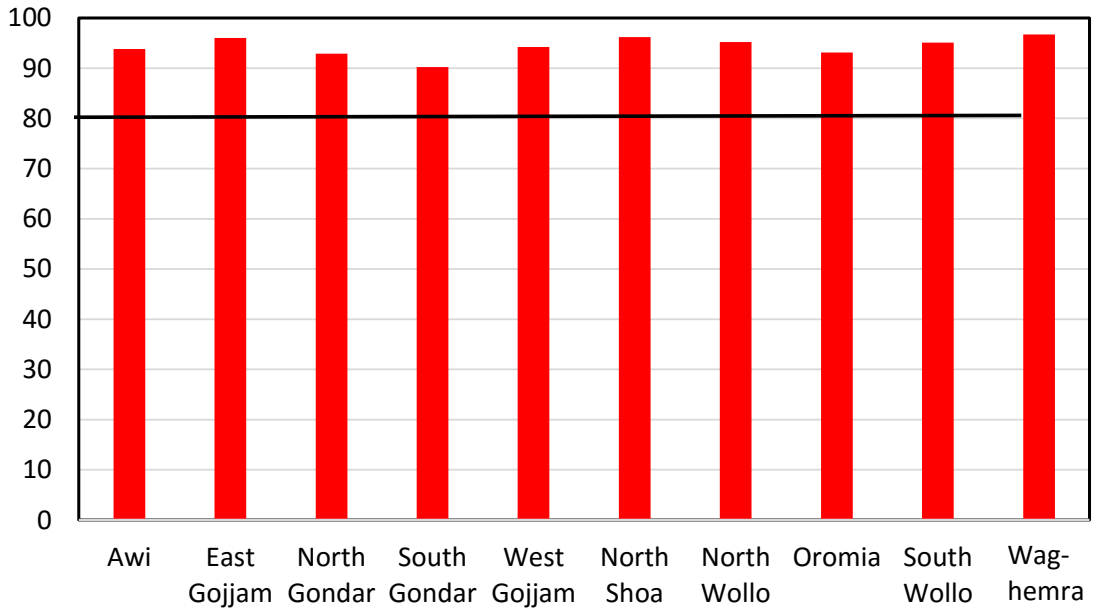
Presented by Scott D. Nash, PhD, Epidemiologist, The Carter Center, and Mr. Alex Jordan, Graduate Student, Rollins School of Public Health, Emory University

Background

Trachoma is the leading cause of preventable blindness worldwide. In communities where the district level prevalence of TF among children ages 1–9 years is ≥5%, the World Health Organization (WHO) recommends annual community-wide MDA of antibiotics. The WHO further recommends for trachoma programs to achieve 80% antibiotic coverage within treated communities. In Amhara, Ethiopia, training for MDA is a step-wise process where the ARHB and partners train zonal health officers, zonal project coordinators and district health officers. These individuals, in turn, train HEWs, who are responsible for distributing azithromycin to the communities they serve. At the end of an MDA campaign, post-MDA antibiotic coverage is calculated from administrative data as the number of doses administered divided by the total population. This information rolls up from the HEW to the district officers and finally to the zonal health officers and is reported by zone.

To date, published population-based post-MDA coverage surveys, which are essential to understand the effectiveness of MDA programs, are few in trachoma. In the Amhara region of Ethiopia, a trachoma MDA occurred in January 2016 in West Amhara, and in July 2016 in East Amhara, each a sub-region comprising 5 zones. A population-based coverage survey was conducted 3 weeks following the MDA to estimate the zonal prevalence of self-reported drug coverage and to compare self-reported drug coverage to administratively reported drug coverage. A medication logbook audit also was conducted in surveyed communities to assess the quality of the data tracking and to assess the logbook recorded drug coverage.

Figure 1. Administratively reported mass drug administration coverage with azithromycin in ten zones of Amhara, Ethiopia, 2016



Methods

Administrative antibiotic coverage data from the 2016 MDA campaigns were collected from zonal health offices. For the zonal-level population-based survey, survey households were selected using multi-stage cluster random sampling design, and all individuals in selected households were presented with a drug sample and asked about taking the drug during the campaign. A total of 32 clusters per zone and 15 households per cluster were targeted for the survey. Using electronic tablets with custom built software, data collectors recorded household-level and individual-level responses. Zonal estimates were weighted based on the inverse of the probability of selection at each level of the survey and confidence intervals were calculated using survey procedures.

To audit the MDA logbooks, data collectors sought the appropriate health post for each of the 320 survey clusters (villages) to assess whether log books were present, whether pages for each family were present, and what percentage of individuals had been recorded as having received MDA. For each household enumerated in the household post-MDA survey, the data collection team attempted to locate its page in the log book and enter the household dosage information. HEWs or other health personnel at the health posts were not told of the study ahead of time to allow for a more realistic assessment of log book data.

Results

Administrative coverage data, collected during the 2016 campaign, demonstrated that all 10 zones of Amhara achieved ≥90% antibiotic coverage (Figure 1). For the zonal coverage survey, a total of 24,248 individuals from 5,184 households were enumerated. Among the enumerated individuals, 20,942 (86.4%) were present at the time of the survey and 99.9% of those responded to the MDA questions. The overall regional self-reported drug coverage for individuals of all ages was 76.8% (95% Confidence Interval (CI): 69.3-82.9%) and ranged from 67.8% (95%CI: 55.7-77.8%) in West Gojjam zone to 90.2% (95%CI: 85.7-93.4%) in Oromia zone (Figure 2). At the district level, the highest and lowest percent coverage was observed in Dangila Zuria (97.7%) in Awi zone and Raya Kobo (42.0%) in North Wollo zone respectively, and 19 out of 40 (48%) districts had a point estimate greater than 80%.

Out of 320 clusters which were assessed for presence of MDA logbooks, 296 (93%) were found to have logbooks at their respective health post. Selected clusters for the household survey contained a total of 4,809 surveyed household, and of these, 3,495 (72.7%) had a page in the logbook. Overall, 76.3% of individuals found in logbooks were recorded as having received treatment with antibiotic during the 2016 campaign. East Gojjam had the highest total recorded coverage at 89.7%, while South Gondar and North Gondar had the lowest total coverage with 64.9% and 66.9% respectively. Treatment in children aged 1-9 years was higher than total population coverage across all zones (81%).

In all 10 zones, self-reported coverage and the logbook recorded coverage were similar. However, the administratively reported coverage was higher than both self-reported MDA coverage and the logbook recorded coverage for all 10 zones (Figure 3). The discrepancy was the greatest in North and South Gondar zones.

Figure 2. Geographic distribution of self-reported mass drug administration coverage with azithromycin in 10 zones of Amhara, Ethiopia, 2016

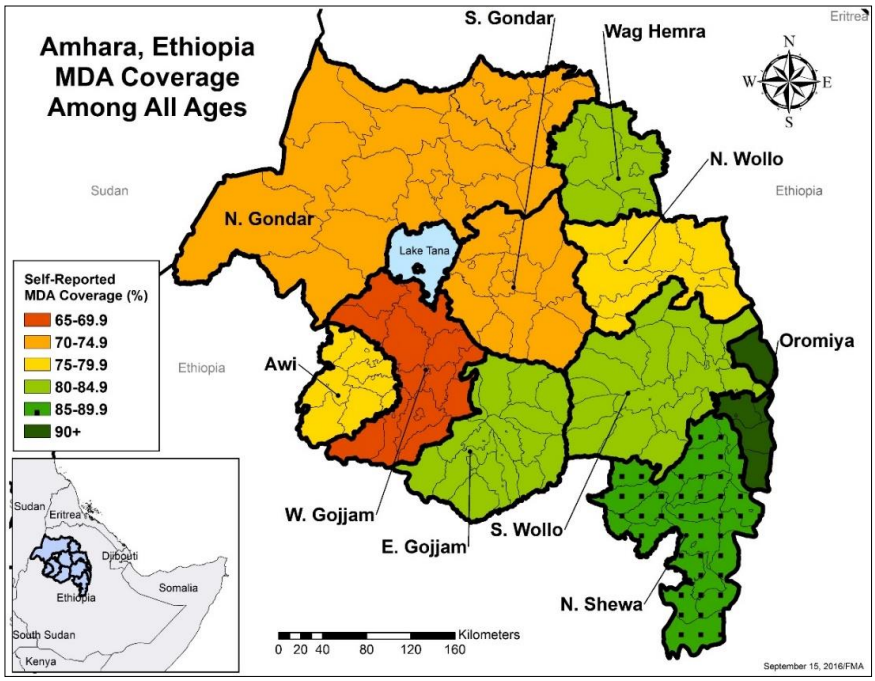
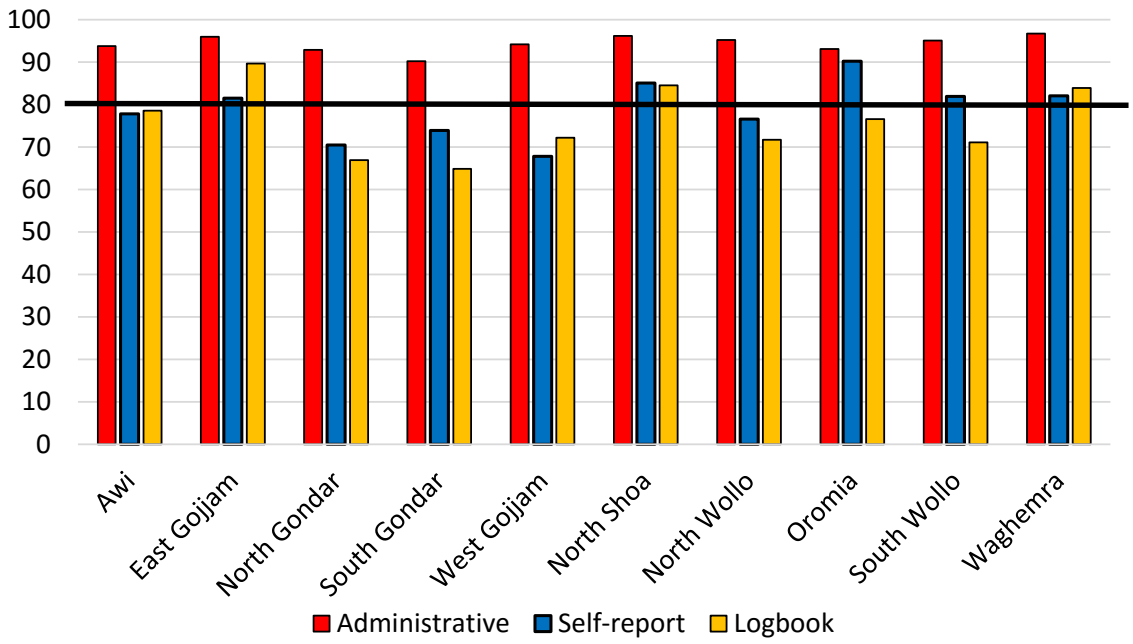


Figure 3. Comparison between administrative, self-reported, and medication logbook recorded mass drug administration coverage with azithromycin in ten zones of Amhara, Ethiopia, 2016



Conclusions and Next Steps

Region-wide self-reported MDA coverage was near the WHO recommended 80% threshold measured either through self-report or through treatment recorded in medication logbooks. The coverage survey demonstrated that nine out of 10 zones had coverage ≥70%, five out of 10 had achieved a coverage ≥80%. Zonal and district level data that were below the desired coverage levels will require follow-up for improvements. Those health offices within woredas which had clusters with missing books, and clusters with a high percentage of missing pages should be contacted to see whether new books and new training is needed for HEWs in those health posts. Low recorded treatment coverage should be further identified to understand whether this is reflective of low treatment of communities, or whether it reflects poor record keeping. Data collected as part of this survey will continue to be analyzed to try to answer this question.

The TT End Game: A Panel Discussion

Moderated by Ms. Aisha Stewart, Associate Director, The Carter Center

Panel Members:
Prof. Lamine Traoré, National Coordinator, PNSO, Ministry of Health, Mali
Dr. Kadri Boubacar, National Coordinator, PNSO, Ministry of Health, Niger
Dr. Edridah Muheki Tukahebwa, National NTD Program Manager, Ministry of Health, Uganda
Ms. Michaela Kelly, Grant Manager, Sightsavers

Summary

As countries approach the elimination thresholds for trachoma, finding and offering surgery to the final TT patients may require new approaches that differ from those traditionally implemented when trachoma programs scaled up. Additionally, as countries achieve the elimination targets, particularly that of less than 1 TT case per 1,000 total population, plans must be made to ensure that TT patients who present post-elimination can be managed by the local health system. To share practices and lessons learned, a panel discussion was conducted to provide a platform to share experiences from national programs in East and West Africa and facilitate discussion to assist national programs in devising and refining their strategies to meet the TT elimination target and sustain services following elimination.

Implementing Door-to-Door Surgical Approach to Clear the Backlog—Niger

Between 2001 and 2016, the PNSO, in collaboration with implementing partners, reduced the TT backlog from 110,000 to 32,120. To achieve these results, several key surgical approaches were used including conducting surgery at health centers, surgical outreach campaigns, and local and national-level TT surgery weeks. While the backlog has decreased, three regions hold the majority of the TT burden, while two regions harbor a low backlog. To plan for elimination, in late 2016/early 2017, the PNSO, regional health authorities and implementing partners shifted the primary surgical outreach approach to focus on a door-to-door method, or *ratissage*. This approach will be conducted in regions with both high and low surgical backlogs, allowing for "hard to reach" TT patients to be identified and offered surgery, and continuing to reduce the backlog in high-burden regions.

Using Case Finders to Identify the Last TT Patients—Uganda

The MOH in Uganda, with support from the Queen Elizabeth Diamond Jubilee Trust, has been conducting TT surgeries in 17 districts, located in the most trachoma-endemic regions of Karamoja and Busoga. To identify TT patients, the MOH trains TT Case Finders (CFs). CFs are responsible for identifying TT patients in the community and then linking TT patients with nearby surgery outreach camps so they can receive surgery. The number of CFs depends on the TT backlog in a given area. CFs are engaged in mobilizing patients two to three weeks before planned surgical camps. By using CFs, the program can screen many people, although most are non-TT cases as TT cases become rarer. However, when TT cases are identified, the program has learned that support and involvement by diverse stakeholders including community, religious, and political leaders, can reduce the number of refusals and increase surgical uptake. CFs have been an instrumental part of the scale-down of TT surgeries in Uganda identifying the "final" TT patients in all endemic communities, including hard to reach places.

Resources Required for a Door-to-Door Surgical Approach—Mali

Since independence, trachoma has been a public health problem in Mali. Notably, in 1953 the Institute for Tropical Ophthalmology in Africa was relocated from Dakar, Senegal to Bamako, Mali, providing a platform to train health care professionals to conduct TT surgery. From 1978-1986, health care professionals were trained to conduct TT surgery in at least five regions throughout Mali. The national survey for trachoma was conducted from 1997-1998 and evidenced the prevalence of trachoma in each region, indicating that both TF and TT were high, and intervention was required. Since the national survey, strategies have been put in place to operate TT patients, whereby patients can access surgery at health centers and through surgical outreach campaigns. As the backlog of TT decreased throughout Mali through 2010, it became more time consuming and resource intensive to identify and offer surgery to TT patients.

In 2013, in accordance with WHO recommendations at the time, the PNSO and partners surveyed areas at the sub-district levels. The results of the sub-district level surveys were used to inform a new surgical outreach approach: *ratissage*, a door-to-door strategy. This strategy enabled surgeons to move house-to-house to screen household members and offer surgery to those with TT. In 2015, although sub-district surveys were no longer required, the PNSO adopted *ratissage* as the sole surgical approach to be used to find the final TT patients in endemic areas, as this approach has proven to allow for the maximum number of TT patients to be identified and offered surgery.

Although the *ratissage* approach has been used throughout Mali, it is costly, with each surgery estimated to cost $86-164 USD. In addition, this approach is time-intensive, as teams of surgeons spend on average 15 days in the field during each *ratissage* outing and may only identify a handful of cases. Still, to meet the elimination targets, the PNSO and implementing partners will continue to support this approach in order to identify and offer surgery to the final remaining TT patients.

Transitioning Capacity to the Health Care System to Manage TT Patients Post-Elimination—Sightsavers

According to WHO, when impact surveys demonstrate that the district is below the WHO threshold for TT, case finding and outreach services can be discontinued; however, TT management services need to be continued at static facilities and integrated into the health system to meet the needs of incident TT cases (and management or referral of recurrent cases). Health systems strengthening should focus on ensuring that TT related activities are maintained within the existing health system. Revising the approach to TT management requires planning and advocacy with health officials to ensure that elimination thresholds are maintained. The presentation will discuss the issues around the transition based on experiences in Trust supported countries.

Everyone, Everywhere by 2030 – a new global ambition for WASH and NTDs

Presented by Ms. Yael Velleman, Senior Policy Analyst (Health & Hygiene), WaterAid – on behalf of WHO

The past few years have seen rapid advances in collaboration between the WASH and NTDs communities. Much of this progress has been enabled by focused collaboration on the WASH aspects of trachoma prevention and control. 2016 has seen several new developments with important implications for the continued success of this collaboration. This presentation provides an overview of these developments, by:

- Highlighting implications of the Agenda 2030 for Sustainable Development for the WASH sector, particularly new developments in global monitoring.
- Reviewing progress made on the 2015 WHO Strategy "*Water sanitation and hygiene for accelerating and sustaining progress on neglected tropical diseases*"[7], with particular emphasis on trachoma.
- Providing an overview of relevant emerging research on WASH and trachoma

1. Implications of the 2030 Sustainable Development Goal (SDG) agenda on WASH– "Everyone, Everywhere by 2030"

While much progress was made in improving access to water and sanitation services under the Millennium Development Goals (MDGs), the ambition set by Agenda 2030 requires global WASH monitoring to take account of aspects that were not included under the previous development agenda. The relatively slow progress on improving sanitation, particularly in rural areas, requires a monitoring agenda that can drive investment and prioritisation. While the MDG indicators focused on reducing the proportion of the population without access to *improved* services by half from 1990 levels, Goal 6 requires *universal* access, to services meeting stricter criteria for *accessibility* and *quality*. As such, the indicators not only include the need to **eliminate open defecation**, but also refer to **faecal waste management**, reducing **inequalities** in access, measuring **hygiene** practices and ensuring access **everywhere** beyond the household level, including in schools and healthcare settings.

The new monitoring framework

The scope and detail of the new targets and indicators represent encouraging prioritization of sanitation and hygiene, and for the first time, explicit links have been made with other relevant goals (SDG3 on health, and SDG4 on education). The Goal 6 monitoring framework includes six technical targets and two targets on means of implementation, supported by 11 indicators. While building on the previous MDG targets (targets 6.1 and 6.2), it also addresses the broader water context as emphasized at Rio+20 (targets 6.3-6.6), and acknowledges the importance of an enabling environment and means of implementation.

Perhaps of most importance to trachoma, the new sanitation target 6.2 on sanitation and hygiene is defined as: *"By 2030, achieve access to* ***adequate*** *and* ***equitable sanitation*** *and hygiene for all, and* ***end open defecation****, paying special attention to the needs of* ***women and girls*** *and those in* ***vulnerable situations"*****.** Indicator **6.2.1** under this targets relates to "**Population using safely managed sanitation services including a handwashing facility with soap and water"**. Safely managed sanitation is defined as "an improved sanitation facility which

[7] World Health Organization (2015). Water sanitation and hygiene for accelerating and sustaining progress on neglected tropical diseases - A global strategy 2015-2020. http://www.who.int/water_sanitation_health/publications/wash-and-ntd-strategy/en/

is not shared with other households and where excreta are safely disposed in situ or transported and treated off-site".

A new sanitation "ladder" has been developed, which monitors progressive improvement in quality of services – moving from open defecation (OD) to unimproved to limited services to basic (corresponding to the old definition of 'improved' under the MDGs) to safely managed services – which imply safe management of faecal waste along the whole sanitation chain from containment, through transport, treatment and disposal/reuse. Global burden of disease estimates for diarrhoea suggest provision of higher levels of sanitation services that protect the whole community from faecal exposure provide greater health benefits - moving from 'no sanitation' to 'improved sanitation' yields only modest health gains (16% reduction in diarrhoea), yet that when excreta is properly removed (safely-managed sanitation and wastewater) from households, health gains are much higher (additional 63% reduction in diarrhoea)[8] .

	Service ladder	Progressive realization
SDG 6.2	Safely managed sanitation services	Private improved facility where faecal wastes are safely disposed on site or transported and treated off-site
	Basic service	Private improved facility which separates excreta from human contact
	Limited service	Improved facility shared with other households
	Unimproved	Unimproved facility does not separate excreta from human contact
	No service	Open defecation

Realisation

Progressive

Open defecation remains a priority:

Evidence increasingly highlights that health gains can be achieved when a high threshold of community-level sanitation coverage is attained, making the elimination of open defecation an ongoing priority. Open defecation persists in many low-income countries and settings. Demographic patterns mean that most OD takes place in South East Asia. Elimination of OD can be considered as the first 'step' on the sanitation 'ladder'. There are some encouraging trends: OD has decreased over the 1990-2015 period, with the overall proportion of population practicing OD reducing from 24% to 13% (and in absolute numbers from 1,280 to 946 million) (WHO/UNICEF 2015). However, greater efforts are still needed to fully eliminate OD. Some encouraging initiatives are under way, including at political level such as the UN SG's call to eliminate open defecation by 2025. Further, the CLTS approach, which promotes ODF communities with households

[8] Prüss-Ustün A, Bartram J, Clasen T, Colford JM Jr, Cumming O, Curtis V,Bonjour S, Dangour AD, De France J, Fewtrell L,Freeman MC, Gordon B, Hunter PR, Johnston RB, Mathers C, Mäusezahl D, Medlicott K, Neira M, Stocks M, Wolf J,Cairncross S. Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. Trop Med Int Health. 2014 Aug; 19(8):894-905.

building their own latrines with available materials, while not without flaws, has raised country level interest in sanitation.

Hygiene:

While questions on hygiene have been recommended for inclusion in national surveys throughout the MDG era, hygiene has finally been included officially within the SDGs, with a focus on handwashing with soap. As noted earlier, indicator 6.2.1 refers to "Population using safely managed sanitation services, **including a handwashing facility with soap and water**". This inclusion should result in globally-representative data on proxy measures for hygiene practices gradually becoming available in coming years. Emerging data on handwashing show that the presence of facilities with water and soap varies widely between countries and regions, with a global prevalence of 19%[9].

WASH *Everywhere:*

The "Everyone, everywhere" ambition requires monitoring WASH access beyond the household level. **Access to WASH in schools** is currently inadequate, with less than 70% of schools globally having access to water and sanitation. This need is covered under Global Goal 4, "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", with indicator 4.a.1: including "proportion of schools with access to basic drinking water, single-sex basic sanitation facilities, and basic handwashing facilities".[10] The Joint Monitoring Programme on Water Supply and Sanitation (JMP) has developed harmonized indicator definitions of basic service for schools, as well as a service ladder for school settings.

Access to WASH in healthcare settings is crucial, given the ambition of Universal Health Coverage by 2030, the unfinished agenda of reducing maternal and newborn mortality, and the emerging threats of facility-related disease outbreaks and drug-resistant infections. A landscape report released by WHO and UNICEF in 2015 including data from 54 countries, showed that 38% of healthcare facilities lack improved water sources, 19% lack improved sanitation, and 35% lack water and soap for adequate handwashing. While no specific target has been set relating to this issue, JMP has developed normative definitions of **core indicators for "basic" WASH services in health care facilities**[11] and will be including available data in future reports.

The focus on universal access means that targets must be achievable for all countries globally, a great challenge for many countries. Service ladders, moving from no service, to limited service, to basic services, and an additional tier of 'advanced' services, allow progressive realisation of targets.

Greater focus on reducing inequalities

Building on the human right to water and sanitation enshrined by the UNGA in 2010, reporting against the new goal will included disaggregating indicators, where relevant, along aspects such as income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other relevant characteristics. It also means

[9] Freeman MC, Stocks ME, Cumming O, Jeandron A, Higgins JP, Wolf J, Prüss-Ustün A, Bonjour S, Hunter PR, Fewtrell L, Curtis V. Hygiene and health: systematic review of handwashing practices worldwide and update of health effects. Trop Med Int Health. 2014 Aug;19(8):906-16.
[10] UN-DESA (2017). Official list of SDG indicators. https://unstats.un.org/sdgs/indicators/indicators-list/
[11] WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (2016). Monitoring WASH in Health Care Facilities - FINAL Core indicators and questions (revised November 25th, 2016). https://www.wssinfo.org/fileadmin/user_upload/resources/160825-FINAL-WASH-in-HCF-Core-Questions.pdf

placing an emphasis on identifying and better targeting vulnerable groups through better collaboration with disease programmes – such as NTDs, which affect the poorest.

Supporting countries in achieving SDG targets on sanitation.

WHO is currently developing new guidelines on sanitation and health to provide guidance on the development and implementation of health-protecting sanitation policies and programmes. The guidelines will support countries in the context of the SDG 2030 agenda. The guidelines will 1) summarise the evidence on the effectiveness of a range of sanitation interventions on health and intermediate outcomes on the causal chain 2) provide evidence-based recommendations to ensure sanitation policies and programmes are designed, implemented and monitored in a way that protect public health, including reinforcing links between sanitation s and disease control efforts as it in the case of trachoma 3) serve identifying gaps in the evidence-base to guide future research efforts to improve the effectiveness of sanitation interventions.

2. Progress on implementation of the Global WASH and NTDs strategy – focus on trachoma

Progress has been made across all four Strategic Objectives included in the strategy, and a full draft report was compiled for the 2016 meeting of the NTDs NGDO Network. Achievements related to trachoma are highlighted below.

- **SO1: Increase awareness about the co-benefits of joint WASH and NTDs action by sharing experiences and evidence from improved delivery:** At national level, the trachoma programmes provided an important opportunity to share the strategy as part of the enabling environment for collaboration. Further efforts were made to develop and support collaborative platforms, with The Carter Center extending engagement with the education sector through its work in Ethiopia and Sudan, building trachoma-related health education messages and materials into school curricula and teacher training. Within the trachoma programme in Malawi, implementation plans were developed with government departments at national and district levels as well as Area Development Committees and local leaders to ensure ownership and sustainability. To improve documentation and sharing of lessons learnt, WHO and NNN collaborated on developing and sharing a case study template, resulting in almost 20 case studies being submitted. These are being analysed for a brief publication, and several efforts within trachoma programmes are highlighted. Examples of WASH and trachoma collaboration were also included in the WHO Alliance for GET2020 2016 publication "Eliminating Trachoma: Accelerating Towards 2020".

- **SO2: Use WASH and NTD monitoring to highlight inequalities, target investment and track progress:** WHO has begun providing guidance on WASH and NTD monitoring systems and indicators by engaging WASH experts in the review of the WASH sections of the Tropical Data questionnaire and of the F & E sections of the guidelines for validating trachoma elimination, and data on implementation of the F&E components of the SAFE strategy and access to WASH services is collected from all trachoma endemic countries as part of the Trachoma Elimination Monitoring Form process. Following a NNN-led process to develop joint WASH and NTDs indicators (presented separately by Geordie Woods, Sightsavers) all Queen Elizabeth Diamond Jubilee Trust trachoma programmes (Kenya, Uganda, Malawi and Tanzania) have adopted joint WASH and trachoma indicators.

- **SO3: Strengthen evidence on how to deliver effective WASH interventions for NTDs and embed the findings in guidance and practice:** An operational research agenda for trachoma focusing on strengthening implementation of F&E was established through the Network of WHO Collaborating Centres for Trachoma, and several subsequent studies are mentioned in Section 3 below. Further, all

trachoma funded programmes include a focus on sharing experiences on WASH best practices. WHO has involved NTD (and among them, trachoma) experts in the development of guidelines on sanitation and health through participation in meetings and reviewing disease-specific chapters. The NNN WASH working group has begun building on the International Coalition for Trachoma Control (ICTC) F&E planning tool to develop a WASH toolkit for other NTDs.

- **SO4: Plan, deliver and evaluate programmes with mutual inputs from WASH, health and NTDs stakeholders at all levels:** much momentum has been achieved in engagement of WASH stakeholders in NTD national taskforces or forums and vice versa, and trachoma programmes have played a central role in enabling improved intersectoral collaboration, and collaboration among external partners. To improve efforts for adequate costing and resourcing for trachoma elimination, the ICTC Global SAFE Implementation Cost Estimates have been released and include best available information on likely costs of these integrated interventions. In terms of improvements to joint planning, trachoma funded programmes are conducted under the leadership of ministries of health, and work closely with other line ministries such as Water and Education to develop and deliver the programme. All funded trachoma programmes conducted extensive situational analyses covering burden of disease as well as WASH services available in endemic zones to facilitate joint planning and action. In Ethiopia, RTI developed maps contrasting endemicity with WASH and NTD programme coverage. Further, data from the Global Trachoma Mapping Project includes a module on basic WASH data alongside key prevalence data. The fact that information on on-going F&E activities is required for countries to receive Pfizer-donated Zithromax® for trachoma treatment acts as an incentive to ensure continued collaboration and information-sharing. To support capacity building, modules on F&E are included in the WHO/London School of Hygiene and Tropical Medicine (LSHTM) massive online open course on trachoma, due for launch in April 2017.

3. Evidence – what recent reviews tell us for improving sanitation programming and monitoring

Grey literature review on F&E: Commissioned by WHO, Emory University researchers Maryann Delea, Hiwote Solomon and Matthew Freeman conducted a review of 'grey' literature[12] to inform F&E intervention design, planning, and implementation. The review highlighted that F&E interventions are likely to be more effective when targeting *multiple* behaviour determinants, and that they must elicit behaviour change and facilitate the maintenance of changed behaviours. The review shows that, with exception of some current work, F and E-related interventions have not aligned well with intervention techniques and activities that facilitate sustainable behaviour change; these have largely focused on disseminating information to improve knowledge regarding trachoma, while evidence suggests that knowledge alone does not typically translate into sustained behaviour change. Interventions should move beyond information dissemination, and appropriately target a variety of behaviour change antecedents and determinants to facilitate sustainability of improved F&E practices. There is also a need to more rigorously document how behaviour change interventions are implemented in practice.

Trachoma and sanitation: A study on active trachoma and community use of sanitation in Amhara, Ethiopia[13] was conducted by William Oswald and other researchers from LSHTM, The Carter Center, Rollins

[12] Delea MG, Solomon S and Freeman, MC (2017). Interventions to improve facial cleanliness & environmental improvement for trachoma prevention and control (forthcoming).
[13] Oswald WE, Stewart AEP, Kramer MR, Endeshaw T, Zerihun M, Melak B, Sata E, Gessese D, Teferi T, Tadesse Z, Guadie B, King JD, Emerson PM, Callahan EK, Flanders D, Moe CL, Clasen (2017). Active trachoma and community

School of Public Health, Emory University and the ARHB, investigating the association between prevalence of active trachoma among children aged 1–9 years and community sanitation usage. The study concluded that a negative correlation was observed between community sanitation usage and prevalence of active trachoma among children, highlighting need for continued efforts to encourage high levels of sanitation adoption and support sustained use throughout the community, not simply at the household level.

Sanitation and water supply coverage and trachoma: Research[14] led by Emory University (Josh Garn and Matthew Freeman) and the WHO (Sophie Boisson and Anthony Solomon) in collaboration with the GTMP government partners analyzed secondary data on coverage of water supply and sanitation gathered through the GTMP to establish the associations between household access to water and sanitation and trachoma, as well as whether there are community coverage thresholds for water or sanitation that confer herd protection against trachoma. The study analysed data from 13 countries in sub-Saharan Africa and Oceania, relating to 884,850 children ages 1-9, employing multivariable mixed effects modified Poisson regression models. The outcome of interest was set as TF in either the right or left eye, or both, and exposures included household-level sanitation, household-level water for face washing available within 30 minutes, cluster-level sanitation prevalence, and cluster-level water for face washing prevalence. The results of the analysis showed that both household-level sanitation and water have a protective effect (PR=0.87 (0.83, 0.91)) and PR=0.81 (0.75, 0.88) respectively). The study also observed a herd effect for sanitation, showing a significant linear trend suggesting a threshold of 80%-90% is needed for the effect to emerge. No clear threshold emerged for water. The study provides insights into the community water and sanitation coverage levels that might be required to best control trachoma. The results suggest access to adequate water, sanitation and hygiene can be important in working towards the 2020 target of eliminating trachoma.

4. Conclusions

Progress continues to be made, with collaboration within the trachoma space often leading the way in terms of developing tools, approaches and platforms for collaboration for broader collaboration between WASH and NTDs stakeholders.

The implication of the SDG agenda on the WASH sector and the emerging evidence from the reviews mentioned, highlight the need for a continued emphasis on close collaboration with WASH stakeholders, to implement approaches that contribute to the achievement of universal access to quality WASH services that support sustain disease control outcomes. This means considering a further emphasis on universal access to basic services and a progressive move towards higher levels of services, and on enhancing the effectiveness of behaviour change communication efforts within trachoma programmes.

The global strategy on WASH and NTDs continues to be a helpful tool to ensure action on information-sharing, joint monitoring efforts, enhancing evidence and guidance, and improving joint planning and delivery processes.

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use of sanitation, Ethiopia. Bulletin of the World Health Organization; Research Article ID: BLT.16.177758 http://who.int/bulletin/online_first/BLT.16.177758.pdf

[14] Garn JV, Boisson S, Willis R, Bakhtiari A, al-Khatib T, Amer K, Batcho W, Courtright P, Dejene M, Goepogui A, Kalua K, Kebede B, Macleod CK, Kouakou IIunga MM, Abdala Mbofana MS, Mpyet C, Ndjemba J, Olobio N, Pavluck AL, Sokana O, Southisombath K, Taleo F, Solomon AW, Freeman MC (2017). Sanitation and water supply coverage thresholds associated with active trachoma: modelling cross-sectional data from 13 countries (forthcoming).

School Trachoma Health Program in the Amhara Region

Presented by Mr. Eshetu Sata, Trachoma Program Manager, The Carter Center, Ethiopia

Trachoma control with the integrated four-pronged SAFE strategy, promotes personal and environmental hygiene through the F&E components. Specifically, these components aim to promote face washing and latrine ownership and utilization. The Carter Center, in partnership with the ARHB, has promoted the comprehensive SAFE strategy since 2003 when MDA with azithromycin began. Although the S and A components occur at distinct moments during the year, the F&E components are on-going and reliant upon behavior change in order to increase uptake.

To promote the F&E components of the SAFE strategy, The Carter Center and ARHB promote and assist with the implementation of several activities. At the community-level, face washing is promoted among families, particularly those with young children. Additionally, every household in a community is encouraged to build, maintain and use household latrines. At the regional-level, The Carter Center and ARHB seek to collaborate with WASH partners to target WASH improvements in communities where trachoma is highly prevalent. Finally, trachoma prevention and hygiene education are taught in primary schools through the recently revised STHP.

Beginning in 2015, the ARHB, the Amhara National Regional Education Bureau, The Carter Center, and the University of California, San Francisco Francis I. Proctor Foundation, revised the school trachoma health curriculum, originally developed in 2003 and modified in 2008. The revision complements the recently launched FMOH School Health Program. The new STHP was rolled out in the fall of 2016, beginning with a training of trainers and plans to train over 15,000 teachers and school directors throughout the region.

In brief, the revised STHP aims to arm school children with knowledge about trachoma and empowers them to share that knowledge with their families and community members, acting as agents of change. Newly revised, grade-specific STHP materials were developed, which included hygiene and sanitation promotion materials, a manual for trainers and for teachers, as well as visual aids for use in the classroom to accompany lesson plans. In addition to providing classroom lessons about trachoma, hygiene and sanitation, the STHP also elaborated guidelines for establishing and strengthening school trachoma health clubs, or groups of students focused on spreading messages about trachoma at the school and in the community. To track progress of the STHP, a robust monitoring and evaluation plan was developed, which included regular facial cleanliness assessments at schools.

From October 2016 through February 2017, 8,229 school principals, teachers and school cluster supervisors were trained as trainers in the five eastern zones of the Amhara region. These trainers have been tasked with cascading the training to others within the school systems. While the training of trainers was underway, the regional bureaus of health and education conducted a baseline assessment to better understand access to WASH interventions at schools throughout Amhara. A total of 8,384 schools were visited, representing almost all schools in the region. Of the schools assessed, 62.8% had a functional latrine, 20.2% had water available for hand and face washing, 25.5% had active school trachoma clubs and 66.4% of the 822,326 children met presented with a clean face free of ocular and nasal discharge. Following a full year of implementation of the STHP, this assessment will be conducted again to identify changes in WASH implementation and availability at schools in the region. To monitor progress on a regular basis, a set of indicators have been developed for schools to report monthly.

F&E: A Story of Joint Planning

Presented by Ms. Angelia Sanders, Associate Director, The Carter Center, and Mr. Geordie Woods, Behavior Change and Communication Advisor NTDs/WASH, Sightsavers

F&E Toolkit and Partner Collaboration

The ICTC currently defines F&E within the context of the SAFE strategy as a set of targeted interventions primarily focused on behavioral change and the promotion of healthy behaviors around hygiene and sanitation for the elimination of trachoma; creation of social norms and habits driven by community dialogue; and capacity building around WASH integration. A F&E planning tool, *All You Need for F&E*, was developed as a planning resource for all partners supporting national trachoma programs and was written in an easily understandable language that does not require readers to have specialist expertise in either trachoma or WASH. It provides step by step planning approaches and tools to coordinate WASH and other initiatives as part of an integrated SAFE program. The toolkit can be downloaded from the ICTC website at: http://www.trachomacoalition.org/FandEtoolkit.

Uganda's national trachoma elimination program used this toolkit to scale-up their F&E activities. First, they conducted a situational analysis that included information at the district level on WASH statistics, WASH related activities conducted and WASH partners operating in the district. A stakeholder meeting was then held with representatives from the MOH, Ministry of Education and Sports, Ministry of Water and Environment, surgical and antibiotic partners, WASH organizations working in Busoga and Karamoja regions and donors. The meeting identified gaps in current programming, listed ways different ministries and partners could work together, prioritized which activities should be funded with the funds available, and agreed on qualities that a WASH partner should have in order to be chosen for funding. Terms of reference were established and circulated for NGOs to apply. A working group reviewed proposals and selected partners for funding. Five organizations were chosen: Concern Worldwide, Johns Hopkins University Center for Communication Programs, WaterAid, Water Mission, and World Vision. The priority activities the program identified were: integration of face washing and trachoma messages into existing WASH strategies and activities in Busoga and Karamoja regions (17 districts); revision and dissemination of national school sanitation guidelines; revision and dissemination of national sanitation guidelines; and development of a social and behavior change communication strategy to be used as part of mass media campaigns.

Monitoring and Evaluation Indicators

Common indicators are critical to cross sector collaboration. To effectively do this, it is useful to bring together the WASH and NTDs sectors and arrive at consensus for joint NTD and WASH monitoring. In this fashion, the Delphi Method consulted expert opinion and built consensus around joint indicators. The effort was a result of the European roundtable that was held in September 2014, where we sought to propose a core set of indicators to support collaboration between the sectors. The final list of indicators represents general agreement of the opinions of a large number of diverse experts from both the WASH and NTD sector. The core indicators identified through this work are broadly applicable across many NTDs, for which there is a direct WASH link in terms of prevention and control. The joint list is aligned and should supplement the proposed indicators under the WASH target of SDG6 as part of routine monitoring for programmes. They are not meant to be an exhaustive set of indicators, but a minimum set that would be consistent across programmes. Additionally, many of the indicators chosen represent information that is normally already collected by the WASH sector at the district/national level.

These indicators are the basis of a F&E Monitoring and Evaluation framework that was developed in Uganda in 2016. Currently there are two outcomes: % of children with clean faces; % of villages in project areas certified as ODF. There are four outputs: promotion of healthy hygiene behaviors; increased environmental cleanliness and improve sanitation practices; increased access and availability to improved water sources for all domestic uses; and promotion of key behaviors to encourage the prevention and treatment of trachoma. Under each output category are activities that partners report to the MOH each quarter. Implementation of these activities help make progress on achieving the broader outcomes and outputs.

Experiences from Zambia and Kenya

The Zambia program piggybacks on Zambia's mobile-to-web WASH Management Information System (MIS), built and expanded with Akros support, now active across all rural districts. The WASH MIS protocol delivers monthly indicators on sanitation and water access into a cloud-based server housed at the Ministry of Local Government and Housing. To include monitoring of F&E monitoring, village-level committees conduct monthly inspections of children's faces and record the number of children appearing with and without faces free of mucous and flies. A volunteer, community WASH advocate then visits the village, recording the data into a basic mobile phone with a user-friendly application. The data is then sent over mobile network to the Ministry's cloud-based server and aggregated in DHIS2, a web-based open-source information system. The platform builds out indicators of facial cleanliness coverage, showing a percent of cleanliness within each village. Data is then automatically redirected to community change agents. Chiefs learn which villages are performing well, and those that still need support, through tablets. District health officers have access to dashboards with real-time sanitation indicators throughout their service area, enabling targeted interventions. Provincial officers can monitor district-level performance without costly fuel expenses. These same change agents, and the community volunteers equipped with mobile phones, receive SMS reminders of upcoming MDAs in their area and are advised to encourage participation.

In Kenya, national and district level trachoma taskforces have been established and are active in all 12 trachoma endemic counties. WASH, education and municipal government representatives are represented and active in these taskforces. A F&E baseline was established to help capture key F&E indicators. In primary schools with children ages between four to 13 years, the health programme teacher or patron grades by observation the clean faces based on three main markers: ocular discharge, nasal discharge and flies alighting of the face within three seconds' interval. This procedure was repeated for five consecutive days and an average proportion deduced on the percent of clean faces among the school children population. Environmental health workers supervised community health volunteers (CHVs) in collecting data on environmental improvement markers; absence or presence of functional latrine, rubbish/compost pit, hand washing facility and access to water. The data was tabulated and analysed to deduce ratios and proportions of community: village access to reliable water source, presence of hand washing vessels, latrines and compost/rubbish pits: and schools: ratios of access to latrine by gender, presence of hand washing vessel and percentage of pupils with clean faces. The Kenya experience showed that it is possible to quickly gather basic data for programming by the existing systems, structures and community resource persons, such as CHVs and local administrators. The analyzed data was presented at the county and sub-county levels and helped catalyze program planning that would not be possible from a national level analysis.

Serological Methods for Evaluation of Trachoma

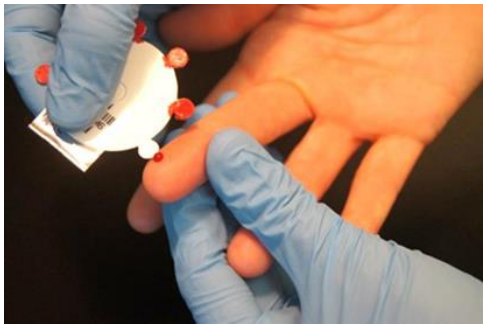
Presented by Dr. Diana Martin, Research Microbiologist, U.S. Centers for Disease Control and Prevention

Background

A 2010 WHO-led NTD diagnostics meeting proposed that antibodies against *Chlamydia trachomatis* (Ct) antigens would be a valuable marker for trachoma. Antibody responses develop when, in response to an antigenic stimulus, B cells with surface receptor that recognizes the antigen (normally a surface protein from the bacteria) start to divide and secrete that surface antigen as antibody, normally IgG. After the pathogen clears, the B cell population contracts, but remains at higher levels than pre-infection, and remain primed to rapidly respond to a subsequent infection. Since trachoma is caused by repeated ocular infection with Ct, we anticipate that a high proportion of children living in trachoma-endemic communities will have high levels of antibodies.

Methods

Data shown emanate from a variety of studies in different countries at different stages of program activity. All studies were conducted with the appropriate protocol ethics approval from local and national institutions in each country. All participants gave informed consent, or consent was obtained from parents or guardians for children under 18.

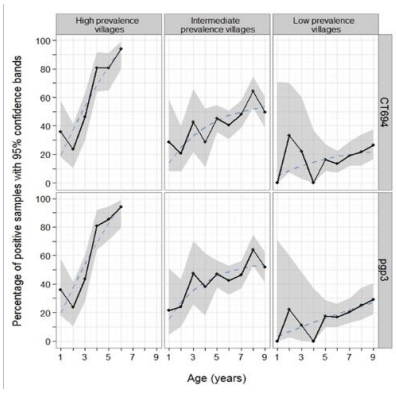


Fingerprick blood was collected onto filter paper (see right), air dried, stored at -20C, and shipped to CDC for analysis. Serum was eluted from dried blood spots and tested for antibodies to Ct using a multiplex bead array.

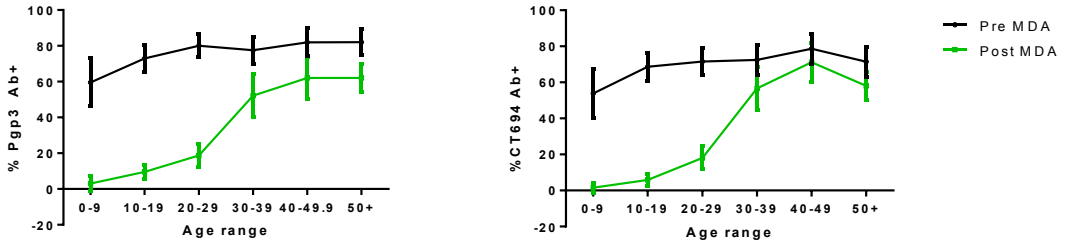
Data

Preliminary data suggests that antibody responses in children living trachoma endemic communities are proportional to the amount of TF and ocular infection: the more TF/infection, the higher the proportion of children with antibody responses against the Ct antigens Pgp3 and CT694 (Figure 1). The increase in seropositivity with age also suggests that antibody responses represent cumulative exposure to ocular Ct infection and potentially a marker of transmission that could be used for surveillance, as opposed to a diagnostic tool for specific case detection.

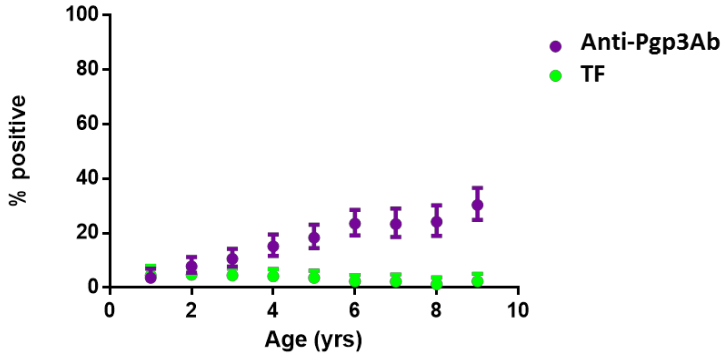
	High	Medium	Low
Age	1-6	1-9	1-9
N	208	969	538
TF (%)	47.0	14.5	2.8
Infection (%)	24.0	8.1	2.0
Pgp3+	62.0	33.0	21.2
CT694	61.5	34.0	18.4



Data from Nepal show that antibody age seroprevalence curves are very different when evaluating responses from the same community before and after mass drug administration.



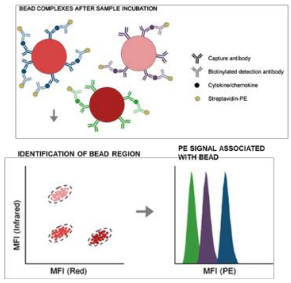
A key outcome showing active or recent transmission is the increase in age seroprevalence among 1 to 9 year-olds. This is observed even at impact survey:



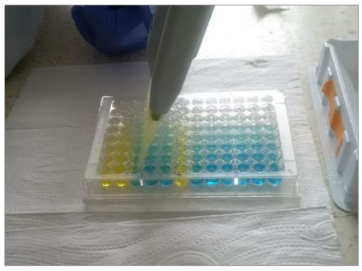
The best usage for serology in a post-endemic setting may be not an absolute seroprevalence threshold, but looking at that increase in age seroprevalence, such as evaluating the slope of the curve or using that data to calculate a seroconversion rate. More data are needed to determine the best use of serology and how to estimate these parameters.

Finally, we want the tools for surveillance to be as readily useful to the countries as possible. To ensure that antibody testing could be done anywhere regardless of capacity or resources, we have adapted the multiplex bead array testing to an ELISA and to a rapid lateral flow assay. Each test has best usage scenarios:

- **Multiplex Bead Array**
  - Test for responses to many different pathogens at once
  - DCIM WASH study (Mali), SWIFT study (Ethiopia), PRET (Niger)



- **ELISA**
  - Can only test for responses to one protein at a time
  - Semi-quantitative
  - Malawi, Ghana, Ethiopia



- **Lateral Flow Assay**
  - Pgp3 antigen
  - Field testing in Tanzania, Nepal, Ethiopia, SI
  - Rapid turnaround
  - Not quantitative

Conclusion

Antibody testing presents a potential measure of transmission that requires minimal training and could potentially be integrated into other surveillance activities for which blood is collected.

The Trachoma Validation Process

Presented by Dr. Anthony Solomon, Medical Officer, Trachoma, World Health Organization

In 2016, the WHO published "Validation of Elimination of Trachoma as a Public Health Problem", which is a set of standard operating procedures for the process of carrying out official validation of elimination of trachoma. The document sets out the information that National Programs should provide to WHO, includes a template dossier to facilitate optimal structuring of that information, and outlines the process that WHO will follow to review it.

There are several actions recommended before submitting a dossier. In general, these include the following: 1. Surveys should be completed to determine if interventions are needed. 2. The SAFE strategy should be implemented where required. 3. Impact and surveillance surveys should be completed to confirm that elimination thresholds for TT and TF have been reached. As these activities are undertaken, National Programs are encouraged to populate the template dossier with information, rather than trying to complete it all in retrospect.

When completing the dossier, countries should provide information in all the "required" sections. There are also "optional" sections of the dossier that programs are encouraged to complete. The dossier is available online in English, French, Spanish, and Portuguese: http://www.who.int/neglected_diseases/resources/who_htm_ntd_2016.8/en/.

SWIFT: Sanitation, Water, and Instruction in Face-Washing for Trachoma

Presented by Ms. Dionna Fry, Study Coordinator, University of California at San Francisco Francis I. Proctor Foundation

Rationale and Background

Trachoma, caused by ocular chlamydial infection, is the leading infectious cause of blindness worldwide and a focus of elimination efforts.[1] The WHO recommends the four-component SAFE strategy for the elimination of trachoma: Surgery, Antibiotics, Facial cleanliness, and Environmental improvement.[2] Numerous randomized clinical trials have demonstrated the efficacy of mass azithromycin distributions, but in areas with hyperendemic trachoma antibiotics alone do not appear to be sufficient for elimination.[3-10]

Many in the trachoma community believe that facial hygiene promotion and environmental improvements (i.e., the F&E components of SAFE) are crucial for preventing the return of trachoma after mass azithromycin distributions have ended. However, the evidence base suggesting efficacy of non-antibiotic measures for trachoma is extremely weak.[11-13] Moreover, very few studies have implemented a comprehensive WASH package for trachoma, even though many in the trachoma community believe that only the combination of all WASH components together will be effective to prevent transmission of trachoma.

SWIFT is a cluster-randomized trial sponsored by the National Eye Institute (grant number U10EY023939, PI Keenan) to test the efficacy of a comprehensive WASH intervention for trachoma and other neglected tropical diseases. We are also testing a competing strategy to prevent the return of trachoma after mass treatments, which consists of quarterly azithromycin treatments of infected children only. Our goal is to help elucidate the efficacy of these expensive and difficult-to-implement WASH interventions. Knowledge of the potential health benefits provided by a WASH package will help better assess the ultimate cost-effectiveness of implementing WASH in sub-Saharan Africa. The results of the trial will be informative to a broad range of stakeholders dedicated to the elimination of trachoma, including non-governmental organizations, ministries of health, and funding agencies.

Specific Aims

Specific Aim 1: To determine the efficacy of non-antibiotic measures for trachoma control.

- *Hypothesis 1:* The prevalence of ocular chlamydia will be lower in clusters randomized to a WASH package compared to clusters not receiving this intervention.

Specific Aim 2: To determine the efficacy of targeting antibiotics to infected children for trachoma control.

- *Hypothesis 2A:* The incidence of ocular chlamydia in uninfected pre-school children will be lower in clusters where infected pre-school children are periodically treated with azithromycin than in clusters not treated with azithromycin.
- *Hypothesis 2B:* The prevalence of ocular chlamydia in clusters randomized to periodic targeted azithromycin treatments will be non-inferior to those treated with a single mass azithromycin treatment.

Specific Aim 3: To model the long-term cost-effectiveness of competing strategies for trachoma control after completion of several rounds of mass azithromycin distributions.

- *Hypothesis 3:* We will assess the incremental cost effectiveness of an integrated WASH package versus a targeted antibiotic strategy versus no specific intervention over a 10-year time horizon, and anticipate that the incremental cost effectiveness will favor the WASH package over the long-term.

Study Design

We are conducting a cluster-randomized trial of 88 study clusters in the WagHimra District of Ethiopia's Amhara Region. The trial includes the Water Uptake in Amhara (WUHA) study and the Targeted Antibiotic Intervention for Trachoma in Under-5s (TAITU) study. Twenty WUHA clusters receive a comprehensive WASH package (to be compared with 20 clusters that do not receive any interventions until the end of the trial). In the TAITU study, 16 clusters receive quarterly azithromycin treatment of infected children (to be compared with 16 clusters that do not receive antibiotics and 16 that receive delayed antibiotics).

Randomization unit and study population: The village is the randomization unit for TAITU. For WUHA we randomized school catchment areas because a portion of the intervention takes place at the school-level. However, WUHA outcomes will be assessed only in a single cluster per school district, which consists of all households within the 1.5-kilometer radius surrounding a selected potential water point.

Monitoring populations: During the three year WUHA trial, we will perform annual monitoring of a random sample of 30 children aged 0-5 years and 30 children aged 6-9 years in each cluster. We will also examine 30 individuals aged ≥10 years at baseline and 36-months. In addition, we will continue to examine the cohort of 0-5 year olds that were randomly selected for baseline examinations. During the two year TAITU trial, we will perform monitoring of all 0-5-year-old children in each cluster as well as a random sample of 30 children aged 8-12 years. Additionally, we will continue to examine all children from the original 0-5-year-old cohort each year.

Outcomes

- ***Primary outcome:*** Prevalence of ocular chlamydia in 0-5-year-old children at 24-months for TAITU and 36-months for WUHA
- ***Secondary outcomes:*** Ocular chlamydia in the remaining age groups, clinically active trachoma in all age groups, anthropometry (height and weight) in the cohort of children aged 0-5 years at baseline, nasopharyngeal pneumococcus in 0-5-year-olds, presence and density of soil-transmitted helminth infection from polymerase chain reaction (PCR) and SAF media preparations in 0-9 year olds, antibody tests from dried blood spots in 0-9 year-olds, and age-stratified health post visits for diarrhea and other infections.

Study Progress

Formative research: We fine-tuned messaging and identified barriers to improving hygiene behaviors through the use of focus group discussions at the beginning of the study. We are focusing our hygiene promotion on two key messages encouraging habit formation (e.g., "wash your face every morning and evening" and "use the latrine every time you defecate").

Census and examinations: We will perform a population census and examinations within all selected study clusters each year of the trial. The baseline and 12-month census was completed in December 2015 and December 2016 respectively. Census workers visited every household in the 88-cluster study area. Census workers entered the household's mobile phone number and demographic information for every person in the household, including name, age, and gender. Households were asked to list all schools, health facilities, and water points they utilize. GPS was taken for all households as well as schools, health facilities, and water points. Baseline and 12-month examinations took place from January- March 2016 and 2017 respectively. Census and examination data was collected via a custom-designed electronic data capture system.

TAITU intervention: In the 16 targeted clusters, 0-5-year-old children who tested positive for chlamydia at baseline were given treatment in April, July, and October 2016. Antibiotic treatment was given to all consenting individuals in the 16 MDA clusters in April 2016. MDA treatment will again take place in those 16 communities in April of this year. This year in the targeted clusters, 0-6-year-old children who test positive for chlamydia during the 12-month examinations will receive three rounds of treatment throughout 2017.

WUHA intervention: One local hygiene officer and ten health promotion workers (HPWs) assist the study coordinator with WASH package implementation to help ensure high uptake of the WASH intervention in all study clusters.

- ***Water:*** We are working with Catholic Relief Services (CRS) to construct a water point (spring development, hand dug well, or shallow borehole) in each intervention community and give training to the local water committee. Water point construction started after the baseline examinations (March 2016) and 19 out of the 20 water points are completed.
- ***Sanitation:*** We are promoting construction of 1 latrine per household.
- ***Hygiene****:* We are implementing both household-based and school-based hygiene education and behavior change promotion. In both, we focus on habit formation surrounding face washing, hand washing, and latrine use.
    - *Household-based hygiene promotion*: Health promotion workers, who live in the intervention communities, visit each household at least once per month to promote positive hygiene behavior change. We developed an illustrated, 65-page hygiene book with guidance from health and education bureaus at the regional, zonal, and *woreda* levels and input from community members via pilot testing. This hygiene education book is utilized by the HPWs. A copy of the book and a wash station (jerry can with a faucet and a mirror) were distributed to all households in August and September of 2016. Four bars of soap per household are distributed to households on a monthly basis. We are also utilizing currently existing community infrastructure in the form of government-appointed health extension workers, health development army members, and local priests to help facilitate hygiene improvements. 49 priests and 224 health development army members attended a WASH training conducted by the SWIFT team. Finally, all WUHA pre-school age children received a single mass albendazole distribution in July 2016 to supplement the school-based albendazole distribution that occurs throughout the Amhara region.
    - *School-based hygiene promotion:* In partnership with The Carter Center we developed a grade-specific, interactive primary school hygiene curriculum. Numerous focus groups and workshops at the regional, zonal, and *woreda* level were undertaken during the development of this curriculum. 166 teachers were trained on the curriculum in July 2016, and they started utilization of the curriculum this fall.
    - *Trainings:* The Ethiopia-based SWIFT team attended CLTS training. The Ethiopia-based SWIFT team and school WASH club advisors attended Children's Hygiene and Sanitation training. Both were given by CRS.

WASH process indicators: We are using the RE-AIM framework (Reach, Efficacy, Adoption, Implementation, and Maintenance) to assess whether the WASH interventions are being implemented as planned. We are continuously monitoring uptake in order to take measures to improve the uptake if necessary. Monitoring occurs via random spot-checks of households, newly constructed water points, and schools in the intervention clusters. The hygiene promotion workers are also utilizing mini-spot checks in order to track individual household's progress and set goals. We are also conducting a yearly survey for one-

third of households during the census. The survey focuses on WASH access and utilization. The baseline and 12-month household surveys were completed in December 2015 and December 2016 respectively.

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Trachoma in Refugee Camps in the Diffa Region, Niger

Presented by Dr. Kadri Boubacar, National Coordinator, PNSO, Ministry of Health, Niger

For over three years, insecurity in the Diffa region of Niger, near the borders of Chad and Nigeria, has been on-going as a result of Boko Haram activity in the area. Because of this insecurity, refugees from Nigeria have settled in camps in Diffa, Niger, and Nigeriens living in the region, particularly those located near the border, have been internally displaced. Refugees and internally displaced persons (IDPs) have settled in camps, as well as in neighboring villages. Critically, refugees arriving in Niger originated from northern Nigeria, an area suspected to be endemic for trachoma. While SAFE activities are on-going in the Diffa region, interventions have been limited as a result of on-going insecurity and extend only to those living in established villages. Interventions have not extended to cover refugees and IDPs living in camps, as these areas are managed by agencies of the United Nations.

In 2016, the PNSO conducted a prevalence survey in 11 refugee camps in the Diffa region in collaboration with United Nations High Commissioner for Refugees (UNHCR) and the regional health authorities. The survey included 100 children ages 1 to 9 years from each refugee camp, as well as 100 adults ages 15 years and above to provide an estimate of the prevalence of TF and TT at each camp. A total of 1,102 children ages 1 to 9 years and 1,136 adults ages 15 years and above were surveyed among the 11 refugee camps.

The results from the survey indicated that the prevalence of TF among children ages 1 to 9 years was above 5% in the 11 refugee camps, ranging from 6%to 23%. The prevalence of TT among adults ages 15 years and above ranged from 1.9% to 10%. The prevalence of TF and TT indicate SAFE strategy interventions, including MDA, are warranted in each of the surveyed refugee sites.

Following the prevalence survey, in the fall of 2016, the PNSO, in collaboration with UNHCR, conducted MDA in the 11 surveyed refugee camps. 10,849 refugees were treated, of which 10,454 received Pfizer-donated Zithromax and the remaining 395, ineligible for azithromycin, received tetracycline eye ointment. Among the 13,000-population living in the 11 refugee sites, about 85.8% were treated through MDA.

Although insecurity remains a challenge in the region of Diffa, disrupting routine SAFE activities, the PNSO, in collaboration with partners including the UN, realized the possibility of both surveying and treating refugees living in established camps to reduce the prevalence of trachoma. Given the refugees originated from an area suspected to be endemic for trachoma, continuing to implement the SAFE strategy in camps and the surrounding Diffa region remains an important aspect of the National Trachoma Program in Niger in order to make progress towards the elimination target of 2020.

GET2020 Update

Presented by Dr. Anthony Solomon, Medical Officer, Trachoma, World Health Organization

The WHO Alliance for GET2020 is a partnership of health ministries of trachoma-endemic countries, nongovernmental organizations (NGOs), academic partners, donors, and other interested parties, led by WHO. The Alliance exists to support endemic countries as they work towards the elimination of trachoma as public health problem.

The Alliance remains focused on quality and this focus grows stronger every year. This has been specifically seen in the data being collected, in both the GTMP and its successor, Tropical Data. The focus on quality is also evident in the area of surgery, where innovation has been a key to ensuring quality outcomes. A particular example of this can be found in the creation of HEAD START, a tool that trainee (and experienced) TT surgeons use to improve their surgical skills.

In antibiotics, there has been massive scale-up over the past few years. Data show a >50 percent increase from 2014 to 2016 in the annual number of doses distributed in endemic countries, from 52 million doses in 2014 to more than 80 million doses in 2016, with final numbers now being determined using reports from national programs. Going to scale was first demonstrated in the Amhara region of Ethiopia, with assistance from The Carter Center, prompting scale-up in other countries. The International Trachoma Initiative and Pfizer have made this success possible, as well as commitment from health ministries, their staff, the donor community, and the communities affected by trachoma.

The global program still has many challenges in all components of the SAFE strategy as endemic countries work towards elimination. The Alliance is working to tackle these challenges, by supporting progressively increasing quality of TT surgery and surgery data collected, identifying more resources for distribution of antibiotics, funding research to find new tools for fighting trachoma, and working with organizations to find solutions for sustainable F&E interventions.

Progress has been made across the globe, but much work remains. As of March 2016, an estimated 3.2 million people need TT surgery, and nearly 200 million people live in districts requiring A, F and E. WHO expects that these figures will drop in 2017. Impact survey data from 2015 shows that A, F, and E interventions are having an impact. Ethiopia remains the greatest challenge for the global program, with 75 million people needing A, F, and E interventions. The Alliance remains committed and focused on the elimination of trachoma.

International Trachoma Initiative Update: Doing More, Smarter

Presented by Dr. Paul Emerson, Director, International Trachoma Initiative

Performance

At the end of 2016, the cumulative number of azithromycin treatments shipped by the International Trachoma Initiative (ITI) for trachoma elimination was 628 million to a total of 36 countries. With over 120 million shipped to 24 countries in 2016, this marked an historic milestone in the global program.

This achievement of shipping sufficient drug for 60 percent of people known to live in trachoma endemic areas is not ITI's achievement alone. It is the result of collaboration between multiple partners, many of whom have been represented at The Carter Center's trachoma program reviews over the years. It is the result of years of groundwork in mapping, delivery, and program refinement, and the demonstration by Carter Center-assisted programs that it was possible to go to scale when delivering the complex, integrated SAFE strategy. The survey methodology refined in the programs and presented at the reviews more than six years ago, coupled with accurate costing data from a range of countries, allowed the methodology for the GTMP to be developed and implemented by a team led by Sightsavers. The development, trialing, and presentation of electronic data capture methods at the reviews demonstrated that the technology could be applied in at-scale surveys. The commitment of forward-thinking donors, such as the governments of the U.K. and the U.S., funded surveys in over 1,500 districts. Nongovernmental organization (NGO) partners could apply the lessons learned from Carter Center-assisted programs in Ethiopia, Mali, Niger, Ghana, Sudan, and Nigeria that were summarized in ICTC "Preferred Practices" manuals. Under the leadership of the ICTC, the NGOs worked together to prioritize countries, and with the commitment of the Ministries of Health, secured additional funding from major donors including the Queen Elizabeth Diamond Jubilee Trust, the UK Department for International Development and US Agency for International Development, and the Lions Clubs International Foundation. Pfizer remains committed to eliminating trachoma and doubled the quantity of azithromycin manufactured for the donation program. The role of ITI in this grand coalition of public, private, and for-profit partners was simply to get the right quantity of drug, to the right place, at the right time, every time.

Scale-up and scale-down

In 2016, ITI shipped to five new countries and provided azithromycin for 277 new districts, with a total population of 37.8 million people. In the same year, 77 districts with a total population of 14.2 million people that had previously received azithromycin reached the elimination targets and no longer warranted MDA. Over the past three years, ITI has provided azithromycin for 82.2 million new program participants spread across 607 new districts in 11 countries. In the same period, impact surveys have demonstrated that 43.9 million people in 220 districts no longer warrant MDA and now live free of the fear of trachoma.

Zithromax® shipment tracker

In collaboration with WHO, ITI has successfully developed the GET2020 Alliance database. This state of the art database facilitates the country submission of trachoma elimination monitoring forms, and Zithromax® applications by pre-populating data fields and automatically summarizing the data. As an additional module, the Zithromax® shipment tracker automatically pulls data from the database to show nightly updates in the progress of each shipment of Zithromax® for each country. Accessing the tracking tool does not require access to the database, so it is available to any interested party. The tool will ensure that ITI remains accountable to recipient countries and implementing partners.

International Coalition for Trachoma Control Update

Presented by Ms. Virginia Sarah, Chair, International Coalition for Trachoma Control

Accelerating towards 2020

The trachoma community has been privileged to celebrate astounding progress in recent years but the hardest part is still to come. Current data suggests 144 districts require urgent intervention. It's 2017. That means there are only four years left to 2020, the key date we've been working towards for achieving elimination. As such, this is a critical moment in our journey. At one and the same time, we need to build current momentum while engaging new partners to ensure the remaining gaps are closed and the hard-won progress of recent years is sustained.

How did we get here?

Partnership lies at the heart of the success the trachoma community has seen so far. A number of initiatives have focused discussion on the priorities for driving forward and focusing on impact. This includes:

- **Strong global partnership** – through the GET2020 Alliance. The Alliance brings together governments, international organizations and nongovernmental organizations for coordinated action to advance eliminations goals – as laid out in the 2016 Blue print for action (see p20-23 in *Eliminating Trachoma: Accelerating Towards 2020* www.trachomacoalition.org/GET2020).
- **Shared mapping initiative** - the innovative GTMP which has laid the foundations for a standardized methodology across NTDs which is now being delivered by Tropical Data.
- **Shared cost estimates for elimination** – together the trachoma community has identified the funding needed to reach elimination, support gap analysis and prioritization.
- **Well-coordinated implementation** – as a result of the mapping initiatives, there has been tremendous scale up of intervention programs leveraging the Pfizer/ITI donation program. In just over two years, 126,500 trichiasis surgeries have been performed and 40 million antibiotic treatments have been distributed in 13 countries.
- **Well-coordinated funder perspective** – including through the newly established GET2020 Alliance donor group**.**

While partnerships have been critical to our success, they are not easily established or maintained. These relationships require work, support, encouragement and recognition. It is thanks to the shared passion, commitment and drive of the individuals involved that these partnerships have grown and thrived. And nowhere is that more strongly felt and keenly appreciated than in Ethiopia.

Transformation in action – spotlight on Ethiopia

Enormous change in the way Ethiopia is responding to the trachoma challenge is underway, providing an inspirational example of what can be achieved.

- **Knowing precisely where the disease exists** – GTMP, the world leading disease mapping study revealed 90 percent of districts in Ethiopia have trachoma at levels demanding a public health solution.
- **Political buy in**
    - National TAP incorporated into the country's NTD Master Plan.

    - Country hosted the 2014 GET2020 Alliance meeting where the Government announced Fast Track Initiative to clear the trichiasis backlog and allocated Government funding to trachoma elimination.
    - One WASH national program brings together ministries and development partners to provide universal access to water.
- **Significant scale up and coordination** – with the vast majority of districts implementing full SAFE.
- **Challenge remains** to close the gaps with SAFE coverage particularly in the Somali and the Southern Nations, Nationalities and Peoples' Regions.

Developments in 2016

- GET2020 Alliance to develop ***Eliminating Trachoma: Accelerating towards 2020*** – a roadmap outlining what needs to be done to scale up programs and strengthen health systems to achieve the global elimination of trachoma by the year 2020. Through the **Global SAFE Implementation Cost Estimates** – we also know how much it's going to cost.
- **Tropical Data** – a free service that builds on GTMP to support the full survey process for NTDs. Launched in July 2016, it has already supported over 200 surveys in 15 countries.
- **Emerging focus on resource mobilization and advocacy** – including the donor group launch of Trachoma Free Africa – bringing together public and private partners who share a vision and are galvanized by the unprecedented opportunity to eliminate trachoma in Africa.

Foot on the pedal

Year on year the trachoma community has been advancing towards elimination, tackling challenges and increasing the profile of elimination work nationally, regionally and globally. We've been busy ticking off the easy quick wins. The remaining work to 2020 is more challenging and we'll be digging deeper to engage new supporters, position trachoma in the broader development landscape and collaborate more closely with other NTD communities.

To achieve elimination by 2020, we are working differently to reach new audiences:

- Harnessing **annual data updates** – of disease prevalence, costs of elimination and country elimination projections to identify gaps and priorities in the global SAFE implementation program.
- Working to establish a **pooled fund** – a shared funding pot that responds to immediate gaps in implementation efforts.
- Supporting the NNN to develop a **conceptual framework for sustainable NTD interventions** beyond the end game by focusing on the BEST approach – Behavior, Environment, Social inclusion and equity and Treatment and care.

The elimination of a major public health problem is in reach – within our lifetime

A central driver for many of those working on trachoma elimination is a personal passion and commitment to see the end of a painful and debilitating disease – knowing that this is doable in our lifetime. You're all here at this annual review after all.

- This is recognized by the **Government of Ethiopia** in its leadership to tackle trachoma in the country.

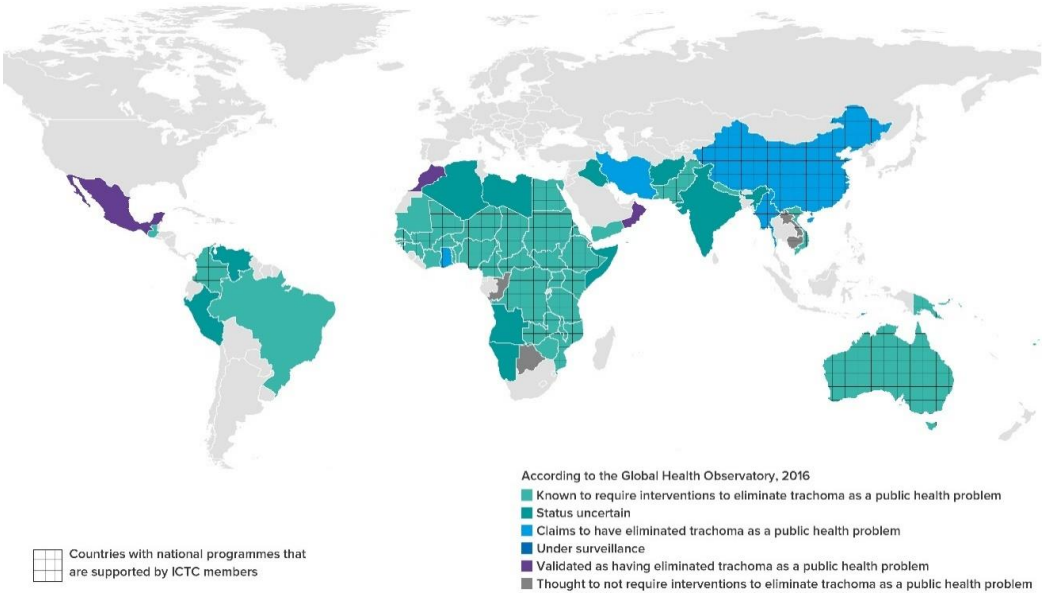
- It is recognized by the Queen Elizabeth Jubilee Trust, which aims to leave a lasting legacy, owned by the whole Commonwealth, to honor **Her Majesty The Queen**. It is reflected in the work by **The Countess of Wessex**, Vice Patron of The Queen Elizabeth Diamond Jubilee Trust, who is a great supporter and champion of the cause.
- The work undertaken by The Carter Center is testament to the wonderful and much valued support provided by **President and Mrs. Carter** to eliminate this disease.

To those already involved we say a sincere thank you, to the rest we say, it's not too late, there's still a lot to do to achieve our shared goals – welcome aboard!

About us

The ICTC is a coalition of 44 non-governmental, donor, private sector and academic organizations proudly working together to support the GET2020 Alliance.

Where ICTC members work



2017 Trachoma Control Program Review Recommendations

General Recommendations:

1. National Trachoma Control Programs should publish quantitative and qualitative data documenting success, lessons learned and their experiences building the validation dossier. The Programs should consider levels of TF, stopping MDA, surveillance surveys, and the number of districts and the sum of the population that were formerly endemic and now have TF1-9 < 5 percent as well as TT surgeries performed as success stories.

2. National Trachoma Control Programs should assess refugee and internally displaced camps to understand if trachoma is a problem. If prevalence data indicate that treatments are warranted, the National Program should identify funding and an implementing partner and work with the International Trachoma Initiative in applying for MDA.

3. National Trachoma Control Programs should prioritize immediate surgical interventions to reduce ocular morbidity while continuing with A, F&E components of the SAFE strategy.

4. National Trachoma Control Programs should consider additional research to understand the nature of TT surgery refusals in an effort to reduce refusal rates.

5. To achieve elimination objectives and support effective use of resources, WHO GET2020 Alliance should consider a forum for discussion of issues surrounding the TT threshold and reaching TT validation thresholds.

6. National Trachoma Control Programs which have a funding gap in any aspect of SAFE should consider maintaining an updated gap analysis spreadsheet to regularly share with the ICTC for advocacy purposes. Prioritization of gaps should be based on direct barriers to 2020 goals (i.e. discern between the number of districts that need funding immediately – 30% and above etc.).

7. Building on the 2016 recommendations, and on research findings presented in 2017, National Trachoma Control Programs should obtain information on community-level sanitation coverage and/or information on latrines constructed by other organizations to present a more accurate picture of sanitation access and use in program areas.

8. National Trachoma Control Programs implementing the ICTC toolkit "All you need for F&E: A practical guide for partnering and planning" should document performance improvements as a result of the toolkit. The Programs should consider documenting additional persons reached with F&E activities and improved WASH services to share lessons learned.

Country-Specific Recommendations:

Ethiopia

1. The Ethiopia National Trachoma Control Program should present, when and where possible, TT patients' data by age, sex and severity of disease. If possible, these data should be compared with historical data (treatment of TT studies).

2. The Program should consider, when and where possible, working with the National Guinea Worm Eradication Program to promote awareness creation and knowledge of cash rewards.

3. The significant financial contributions of the Ethiopia FMOH to the trachoma program should be quantified and highlighted as a laudable example of program ownership as evidenced by domestic investment.

Amhara, Ethiopia

1. The Amhara Region Trachoma Control Program should leverage the STHP data with partners responsible for provision of latrine and hand-washing facilities in schools. STHP should provide monitoring data to the responsible organizations for advocacy.

2. The Program should review program monitoring data from 2008 through 2016 including clinical signs (TF and TI), *Chlamydia trachomatis* PCR results, F&E uptake and MDA coverage survey results to evaluate progress to date and publish these results.

Sudan

1. The Sudan Program should aggressively implement activities that were previously planned in the trachoma action plan to clear the TT backlog, using detailed planning and simultaneous activities, by 2020.

2. The Program should identify ways to collaborate with other non-governmental organizations conducting TT surgeries to ensure appropriate reporting and alignment with FMOH recommended practices for conducting TT surgery.

3. The Program should ensure the FMOH complete the baseline mapping in Darfur states.

4. Where TT prevalence data is in question, the Program should conduct TT only surveys as soon as possible to provide updated TT surgical backlog estimates.

5. The significant financial contributions of the Sudan FMOH to the trachoma program should be quantified and highlighted as a laudable example of domestic investment.

Mali

1. Given the current TT backlog and using a detailed TT plan, the Mali Program should aggressively plan to clear the TT backlog, using detailed planning and simultaneous activities, by 2018.

2. Mali and Niger should continue cross border collaboration and bring in neighboring countries to discuss issues and how they have been resolved.

3. The Mali Program should consider whether to utilize different TT case finding methods for different contexts.

4. The Program should consider, when and where possible, working with the National Guinea Worm Eradication Program to promote awareness creation and knowledge of cash rewards.

Niger

1. The Niger Program should investigate options for cross border collaboration with Nigeria.

2. Mali and Niger should continue cross border collaboration and bring in neighboring countries to discuss issues and how they have been resolved.

3. The Program should continue working in the internally displaced camps to provide SAFE as much as possible, where warranted.

4. The Program should aggressively plan to operate all TT cases (including Agadez) using detailed planning and simultaneous activities before the end of 2019.

South Sudan

1. The South Sudan Program should strive to implement the full SAFE strategy (with emphasis on F&E) in states considered secure and in internally displaced and protection of civilian camps.

2. The trachoma community should consider supporting South Sudan in developing a strategy to clear the TT backlog and complete mapping for trachoma in the country.

3. The Program should utilize TT and TF historical and current data, any available WASH information, and IDP/refugee camp information to develop a plan to assist partners to provide interventions.

4. The Program should consider, when and where possible, working with the National Guinea Worm Eradication Program to promote awareness creation and knowledge of cash rewards.

Uganda

1. The National Program should ensure high MDA coverage (>80%) in the two districts to be treated in 2017. The National Program should conduct post-MDA coverage surveys in these two districts to validate coverage.

2. The Program should identify and strengthen effective efforts to improve data collection and reporting from districts.

3. The National Program should conduct Trachoma Rapid Assessments as soon as possible in districts bordering previously endemic districts that have never been mapped, particularly in the south-west.

Trachoma: The Disease

Trachoma, the world's leading cause of preventable blindness, can be found in over 50 countries. More than 200 million people are at risk for trachoma, and approximately 3.2 million are at immediate risk for blindness from trichiasis. Trachoma is caused by repeated infections of the conjunctiva (the lining of the eye and eyelid) by the bacterium *Chlamydia trachomatis*, and can be prevented through simple hygiene practices. Most cases occur in rural, arid areas of developing countries, such as the Sahelian region of Africa, where access to clean water is limited.

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

Recent developments have brought new hope that we can effectively control this disease. In 1987, eye care experts and the WHO developed a simplified trachoma grading scale, which facilitated and standardized the diagnosis and identification of all stages of trachoma. In 1997, the WHO established the GET 2020 Alliance, which brought 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 and WHO, the *SAFE strategy* was created to control trachoma through community-based interventions. In 2004, ICTC, a coalition of NGDOs, donors, academic institutions, and other partners, was created to support GET2020 and to advocate for the implementation of the SAFE strategy.

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. In 2009, Pfizer Inc, manufacturer of Zithromax®, recommitted to supporting the WHO GET2020 goal of eliminating blinding trachoma by the year 2020. Since the beginning of the donation in 1998, approximately 500 million doses of Zithromax® have been donated by Pfizer Inc and managed by ITI. The donation has reached more than 30 countries with plans to continue expansion in 2016. The existence of the donation program has served to invigorate national trachoma programs and global support for the elimination of blinding trachoma.

"Focusing on 2020: 4 Years Remaining"

The Eighteenth Annual Trachoma Control Program Review
The Carter Center
March 22-24, 2017

Wednesday, March 22		
8:15	***~Depart the Sheraton Hotel for The Carter Center~***	
8:30 – 9:00	Breakfast	
9:00 – 9:10	Welcome, Opening Remarks, & Introductions	Amb. Mary Ann Peters CEO The Carter Center
9:10 – 9:30	Program Review Overview & Chairperson Announcements	Ms. Kelly Callahan (Chairperson) Director, Trachoma Control Program The Carter Center
9:30 – 10:15	Ethiopia SAFE Update	Mr. Biruck Kebede Neglected Tropical Diseases Team Leader Federal Ministry of Health - Ethiopia
10:15 – 10:45	Coffee Break	
10:45 – 11:30	Amhara SAFE Update	Mr. Bizuayehu Gashaw Deputy Head, Regional Health Bureau Amhara Regional Health Bureau
11:30 – 12:20	Measuring MDA Coverage in Amhara	Dr. Scott Nash Epidemiologist, Trachoma Control Program The Carter Center Mr. Alex Jordan Graduate Student Rollins School of Public Health, Emory University
12:20 – 1:30	Lunch	
1:30 – 1:35	Chairperson Announcements	
1:35 – 2:50	The TT End Game: A Panel Discussion • Prof. Lamine Traore (PNSO, Mali) • Dr. Kadri Boubacar (PNSO, Niger) • Dr. Edridah Muheki (MOH, Uganda) • Ms. Michaela Kelly (Sightsavers)	Moderated by Ms. Aisha Stewart Associate Director, Trachoma Control Program The Carter Center
2:50 – 3:20	Coffee Break	
3:20 – 4:05	WHO WASH Update & Strategy: One Year Later	Ms. Yael Velleman Senior Policy Analyst on Health and Sanitation on behalf of WHO WaterAid
4:05 – 4:35	School Trachoma Health Program in the Amhara Region	Mr. Eshetu Sata Trachoma Program Manager The Carter Center - Ethiopia
4:35 – 5:20	F&E: A Story of Joint Planning	Ms. Angelia Sanders Associate Director, Trachoma Control Program The Carter Center Mr. Geordie Woods Technical Advisor, Neglected Tropical Diseases Sightsavers
5:30 – 7:00	Reception (The Carter Center Library and Museum Lobby)	

"Focusing on 2020: 4 Years Remaining"
The Eighteenth Annual Trachoma Control Program Review
The Carter Center
March 22-24, 2017

Thursday, March 23		
8:15	***~Depart the Sheraton Hotel for The Carter Center~***	
8:30 – 9:00	Breakfast	
9:00 – 9:05	Chairperson Announcements	
9:05– 9:50	Niger SAFE Update	Dr. Kadri Boubacar National Coordinator, Trachoma Control Program Ministry of Health - Niger
9:50 – 10:20	Serological Methods for Evaluation of Trachoma	Dr. Diana Martin Research Microbiologist U.S. Centers for Disease Control and Prevention
10:20 – 10:50	Coffee Break	
10:50 – 11:35	South Sudan SAFE Update	Ms. Aja Isaac Kuol Deputy Director for Preventive Chemotherapy NTDs Ministry of Health - South Sudan
11:35 – 12:20	The Trachoma Validation Process	Dr. Anthony Solomon Medical Officer, Trachoma; and Chief Scientist, Global Trachoma Mapping Project Department of Control of NTDs, World Health Organization
12:20 – 1:30	Lunch	
1:30 – 1:35	Chairperson Announcements	
1:35 – 2:20	Mali SAFE Update	Prof. Lamine Traoré National Coordinator, National Eye Health Program Ministry of Health - Mali
2:20 – 2:50	SWIFT: Sanitation, Water, and Instruction in Face-Washing for Trachoma	Ms. Dionna Fry Study Coordinator Francis I. Proctor Foundation, University of California at San Francisco
2:50 – 3:20	Coffee Break	
3:20 – 4:05	Sudan SAFE Update	Dr. Balegsa Elshafie National Coordinator, Trachoma Control Program Federal Ministry of Health - Sudan
4:05 – 4:35	Trachoma in Refugee Camps	Dr. Kadri Boubacar National Coordinator, Trachoma Control Program Ministry of Health - Niger
4:35 – 5:20	Uganda SAFE Update	Dr. Patrick Turyaguma Trachoma Program Manager Ministry of Health - Uganda
5:20	***~Shuttle Departure to Sheraton Hotel~***	
6:15	***~Shuttle Departure from Sheraton Hotel to Atlantic Station Shopping Center~ (6:15-9:00)***	
7:00	***~Shuttle Departure to Sheraton Hotel~***	

"Focusing on 2020: 4 Years Remaining"
The Eighteenth Annual Trachoma Control Program Review
The Carter Center
March 22-24, 2017

Friday, March 24		
9:00	***~Depart the Sheraton Hotel for The Carter Center~***	
9:15 – 9:50	Breakfast	
10:00 – 10:05	Group Photo	
10:05 – 10:15	Chairperson Announcements	
10:15 – 12:15	Summary Session - Carter Center-Assisted Programs: Amhara, Ethiopia, Mali, Niger, South Sudan, Sudan, & Uganda	**Ethiopia: Mr. Biruck Kebede** NTD Team Leader, Federal Ministry of Health **Amhara: Mr. Bizuayehu Gashaw** Deputy Head, Amhara Regional Health Bureau **Mali: Prof. Lamine Traore** National Coordinator, National Eye Health Program **Niger: Dr. Kadri Boubacar** National Coordinator, National Eye Health Program **Sudan: Dr. Balgesa Elshafie** National Coordinator, Trachoma Control Program **South Sudan: Mr. Makoy Samuel** Director of PC-NTDs, Ministry of Health **Uganda: Dr. Edridah Muheki Tukahebwa** National NTD Program Manager, Ministry of Health
12:15 – 1:30	Lunch	
1:30 – 1:35	Chairperson Announcements	
1:35 – 2:05	GET2020 Update	Dr. Anthony Solomon Medical Officer, Trachoma; and Chief Scientist, Global Trachoma Mapping Project Department of Control of NTDs, World Health Organization
2:05 – 2:25	Pfizer Update	Ms. Caroline Roan Vice President of Corporate Responsibility Pfizer
2:25 – 2:45	International Trachoma Initiative (ITI) Update	Dr. Paul Emerson Director International Trachoma Initiative
2:45 – 3:10	Coffee Break	
3:10 – 3:40	International Coalition for Trachoma Control (ICTC) Update	Ms. Virginia Sarah ICTC Chair
3:40 – 5:15	Recommendations	Chaired by Ms. Kenya Casey Associate Director, Office of Program Support The Carter Center
5:15 – 5:30	Closing Remarks	
5:30*	***~Depart The Carter Center for the Sheraton Hotel~***	

****Time subject to change. Bus will depart The Carter Center shortly after the conclusion of the meeting.***

Ethiopia
Mr. Bizuayehu Gashaw (ARHB)
Mr. Biruck Kebede (FMOH)
Dr. Zerihun Tadesse (The Carter Center)
Mr. Eshetu Sata (The Carter Center)
Mr. Mulat Zerihun (The Carter Center)
Mr. Berhanu Melak (The Carter Center)

Mali
Prof. Lamine Traoré (MOH)
Mr. Sadi Moussa (The Carter Center)
Mr. Yaya Kamissoko (The Carter Center)

Niger
Dr. Kadri Boubacar (MOH)
Mr. Mohamed Salissou Kane (The Carter Center)
Mr. Barmou Moudi (The Carter Center)

South Sudan
Mr. Makoy Samuel (MOH)
Ms. Aja Isaac Kuol (MOH)
Ms. Sarah Yerian (The Carter Center)

Sudan
Dr. Balgesa Elkheir Elshafie (FMOH)
Dr. Nabil Aziz Awad Alla (The Carter Center)
Ms. Zeinab Abdalla (The Carter Center)
Ms. Maha Adam (The Carter Center)

Uganda
Dr. Edridah Muheki Tukahebwa (MOH)
Dr. Patrick Turyaguma (MOH)
Ms. Peace Habomugisha (The Carter Center)
Ms. Ruth Tushemeweire (The Carter Center)

Abbott
Mr. Al Reid

The Children's Investment Fund Foundation UK
Ms. Laura Barrett

Helen Keller International
Mr. Benoit Dembélé
Ms. Stephanie Palmer
Dr. Steven Reid
Mr. Toudja Tchouloum
Ms. Amy Veinoglou

Conrad N. Hilton Foundation
Mr. Robert Miyashiro

International Coalition for Trachoma Control
Ms. Virginia Sarah

International Trachoma Initiative
Dr. Menbere Alemu
Ms. Birgit Bolton
Dr. Paul Emerson
Ms. PJ Hooper
Dr. Teshome Gebre Kanno
Ms. Girija Sankar

Lions Clubs International Foundation
Mr. Phillip Albano
Hon. World Laureate Dr. Tebebe Y. Berhan
Ms. Karen Kilberg

Noor Dubai Foundation
Mr. Omar Ba

OPEC Fund for International Development
Dr. Walid Mehalaine

Pfizer Inc
Mr. Darren Back
Ms. Julie Jenson
Ms. Caroline Roan

Francis I. Proctor Foundation, UCSF
Ms. Dionna Fy

The Queen Elizabeth Diamond Jubilee Trust
Dr. Andrew Cooper

Rollins School of Public Health, Emory University
Dr. Matthew Freeman
Mr. Oumer Shafi
Dr. Paul Weiss

RTI International
Mr. Scott McPherson
Ms. Lisa Rotondo

Sightsavers
Dr. Agatha Aboe
Mr. Philip Downs
Ms. Sarah Huntbach-Noel
Mr. Elie Kamate
Ms. Michaela Kelly
Mr. Tom Millar
Mr. Geordie Woods

The Task Force for Global Health
Mr. Pat Lammie
Mr. Williams Nichols
Dr. David Ross

Trachoma Expert Committee
Dr. Joseph Feczko

U.S. Agency for International Development
Mr. Aryc Mosher

The U.S. Centers for Disease Control and Prevention
Dr. Stephanie Bialek
Dr. Diana Martin
Mr. Eric Mintz
Ms. Sharon Roy

WaterAid
Yael Velleman

World Health Organization
Dr. Gautam Biswas
Dr. Anthony Solomon

The Carter Center
Mr. Forest Altherr
Ms. Marsha Base
Ms. Laurie Baxley
Ms. Nina Bloch
Dr. Stephen Blount
Ms. Kelly Callahan
Ms. Kenya Casey
Mr. Don Denard
Ms. Erika Dillingham
Mr. Caleb Ebert
Ms. Madelle Hatch
Ms. Alicia Higginbotham
Mr. Alex Jordan
Mr. Curtis Kohlhaas
Ms. Nicole Kruse
Dr. Scott Nash
Dr. Greg Noland
Mr. Andrew Nute
Ambassador Mary Ann Peters
Dr. Frank Richards
Ms. Angelia Sanders
Ms. Alethia Sanon
Ms. Janet Shin
Dr. Dean Sienko
Mr. Randy Slaven
Ms. Emily Staub
Ms. Aisha Stewart
Mr. Craig Withers