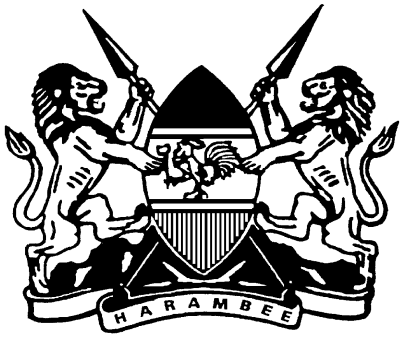
The Republic of Kenya

Ministry of Public Health and Sanitation

DIVISION OF LEPROSY TUBERCULOSIS AND LUNG DISEASE

ANNUAL REPORT

2007



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EDITORIAL BOARD

DIVISION OF LEPROSY TUBERCULOSIS AND LUNG DISEASE

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ACKNOWLEDGEMENTS

The DLTLD appreciates the support that it continued to receive from the Minister for Health, the Permanent Secretary in the Ministry of Health and the Director of Medical Services throughout 2007. Without the support of the holders of these offices, the DLTLD would not have been able to carry out the activities it carried out in 2007. The DLTLD extends its sincere gratitude to all provincial medical officers and District medical officers who continued to offer strong support to core staff of the DLTLD at these levels of the health care system. The DLTLD would not have achieved much if it were not for the input of the innumerable health workers across Kenya, some of whom are working under difficult circumstances.

DLTLD acknowledges the tremendous support it received from Dr Rene L'Herminez the DLTLD technical advisor from the KNCV. The same gratitude is extended to Dr. David Okello, the WR, Kenya and Dr. Joel Kangangi, the TB NPO for unwavering support to the program. The TB team at CDC –Kenya: Dr. Joseph Odhiambo, Dr. Nicholas Wambua and Ms. Margaret Mburu have become a great help to the program to the extent that this team is now considered part and parcel of the DLTLD family. We appreciate the entry of new partners into the war against TB in Kenya and in particular the contribution of PATH to the development of the communication and social mobilization plan, IMC working at the Kibera slum, AMREF working in hard to reach areas, Malteser supporting Nairobi slums, KAPTLD who have ensured that TB control in the private sector meets internationally accepted standards and KANCO. Other partners who have started to work closely with the division are also commended since it is only through such partnerships that the TB patient is enabled to access quality care and support.

Staff working within the division: central unit, provinces, districts and health facilities are highly commended for making TB control in Kenya a success. It is expected that they will continue to work with renewed energies to ensure that TB and poverty become history and that Kenya becomes, one day, a society free from tuberculosis.

LIST OF ABBREVIATIONS

ALERT	ALL AFRICAN LEPROSY AND REHABILITATION TRAINING CENTER
CDR	CASE DETECTION RATE
CIDA	CANADIAN INTERNATIONAL DEVELOPMENT AGENCY
CNR	CASE NOTIFICATION RATE (NUMBER OF CASES NOTIFIED/100,000 POP.)
DMS	DIRECTOR OF MEDICAL SERVICES
DTLC	DISTRICT TB/LEPROSY COORDINATOR
E	ETHAMBUTOL
EPTB	EXTRA-PULMONARY TUBERCULOSIS
GOK	GOVERNMENT OF KENYA
GON	GOVERNMENT OF THE NETHERLANDS
H	ISONIAZID
HIV	HUMAN IMMUNO-DEFICIENCY VIRUS
IUATLD	INTERNATIONAL UNION AGAINST TB & LUNG DISEASES
KNCV	ROYAL NETHERLANDS TUBERCULOSIS CONTROL ASSOCIATION
KANCO	KENYA AIDS NGOS CONSORTIUM
MB	MULTI-BACILLARY (LEPROSY)
MDT	MULTI DRUG THERAPY (LEPROSY)
MOH	MINISTRY OF HEALTH
NGO	NON-GOVERNMENTAL ORGANIZATION
DLTLD	NATIONAL LEPROSY AND TUBERCULOSIS PROGRAM
NTLC	NATIONAL TB/LEPROSY COORDINATOR
OOC	OUT OF CONTROL
PB	PAUCI-BACILLARY (LEPROSY)
PTB	PULMONARY TUBERCULOSIS
PTLC	PROVINCIAL TUBERCULOSIS/LEPROSY COORDINATOR
R	RIFAMPICIN
RFT	RELEASED FROM TREATMENT (LEPROSY)
S	STREPTOMYCIN
SCC	SHORT COURSE CHEMOTHERAPY
SM-	SMEAR-NEGATIVE PULMONARY TUBERCULOSIS
SM+	SMEAR-POSITIVE PULMONARY TUBERCULOSIS
ST	SENSITIVITY TESTING
TB	TUBERCULOSIS
TC	TREATMENT COMPLETED
TNC	TREATMENT NOT COMPLETED
TO	TRANSFERRED OUT (OF AN ADMINISTRATIVE AREA)
VMT	VOLUNTARY MUSCLE TESTING
WHO	WORLD HEALTH ORGANIZATION
Z	PYRAZINAMIDE

SUMMARY

The DLTLD, being the government agency with the overall responsibility for tuberculosis and leprosy control in Kenya, continued to carry out relevant activities aimed at controlling the tuberculosis (TB) epidemic and the elimination of leprosy in 2007. In relation to TB control the focus of attention in 2007 remained DOTS expansion, improvement in DOTS quality and expansion of TB/HIV collaborative activities, while leprosy control continued to focus on early case finding, multi-drug therapy and prevention of deformities.

The total number of TB cases (all forms of tuberculosis) reported in 2007 was 116,723. This is an increase of 1.3% compared to the 115,234 cases of TB reported in 2006. The rate of increase in notified cases decreased from 6% in 2006 to 1.3% in 2007. The stagnation in case notification, first noticed in 2004, continued through to 2007 in Nairobi, North Eastern, Eastern South and Rift Valley North, while the other regions showed an increase in the number of TB cases notified. The stagnation in the rate of increase in the number of TB cases notified in the regions is a phenomenon that may be the result of a slackening of TB case finding efforts or may be due to a stabilization of the epidemic as a result of previous TB control efforts. With the increased communication and social mobilization efforts sustained and technical support to implementing units being provided case notification in 2008 may increase significantly.

Tuberculosis treatment results for TB patients started on treatment in 2006 show treatment success rates of 84.8% for new smear-positive pulmonary TB cases (n=39,154), 79% for smear-positive re-treatment cases (n=3,945), 81% for new smear-negative PTB cases (n= 44,589), and 81% for Extra-Pulmonary TB cases (n=16,045). Coupled with an increased case detection rate of 70%, this is a great milestone since it puts Kenya among the few countries in Africa to have achieved the WHO targets.

There were a total of 213 new leprosy cases in 2007, of which 17 (8%) cases were pauci-bacillary (PB) and 196 (92%) multi-bacillary (MB) cases. This is an increase of 11% compared to the 190 new cases registered the previous year. The number of leprosy patients on the register at the end of the year increased from 185 cases in 2006 to 191 cases in 2007. The proportion of disabilities among the newly registered cases still remain high calling for increased support to sensitization of health care workers to diagnose leprosy. About 17% had disability grade 2, and an additional 26% had disability grade 1, indicating that 43% of cases presented themselves in an already advanced stage of the disease, either caused by patients or health provider delay. However, in 19% of new cases the disability grade was not recorded. Compared to the previous year, the overall case holding improved slightly (PB), or decreased (MB). The proportion of cases released from treatment (RFT) decreased from 69% in 2005 to 67% in 2006 for PB cases, and for MB cases it remained the same over the two years 2006-2007.

The DLTLD continued to pursue quality DOTS expansion and enhancement through expansion of the initiatives started in previous years. These initiatives include engaging all providers (PPM), implementation of activities aimed at mitigating the impact of HIV on TB and TB on HIV. Community engagement and involvement (CB-DOTS), intensification of efforts to control TB in large urban centres, strengthening the laboratory network for TB control, communication and social mobilization and the control of TB in congregate settings. To enable the DLTLD to implement these initiatives the DLTLD continued to receive financial and technical support from several organizations including the Government of Kenya through the Ministry of Health; the Government of the United State of America (USG) through the President's Emergency Plan for AIDS Relief (PEPFAR) whose main implementing agencies in Kenya include the Centers for Disease Control and Prevention (CDC) and the United States Agency for International Development (USAID) and subcontracting NGOs like Family Health International (FHI), PATH; the Canadian International Development Agency (CIDA)/Royal Netherlands Tuberculosis Association (KNCV) collaboration; Malteser; a German NGO; the Global Fund to fight AIDS, TB and Malaria (GFATM), African Medical and Research Foundation (AMREF), MERLIN, APHIA II and the World Health Organization (WHO).

The activities carried out by the DLTLD in 2007 are summarized in this report. This report will be widely disseminated. The hope is that those who read this report will provide the DLTLD with constructive comments that will assist in the development of new or improved approaches to TB and Leprosy control activities in Kenya.

INTRODUCTION

1.1 History and organization of DLTLD

The Government of Kenya launched the National Leprosy and Tuberculosis Program (DLTLD) in 1980 combining the then existing tuberculosis control activities, which had been in place since 1956, with several leprosy control projects in Western Kenya, Coast and Eastern Province, which had been initiated since the early seventies, into one program: the National Leprosy/Tuberculosis Program (NLTP).

As at 1st July 2007 the National Leprosy and Tuberculosis program (NLTP) was elevated to Division of Leprosy, Tuberculosis and Lung disease (DLTLD), a division in the ministry of health in the preventive and promotive department. This has given more impetus to the program with new demands and challenges that will include amongst others, critical issues on lung health.

In 2007 TB and Leprosy services were delivered through 1,901 health units managed by the Ministry of Health (and other Ministries), NGO/FBO health units and some private institutions. Smear microscopy services were available at 930 of these health units (see table 1).

Table 1: Provision of TB treatment and AFB diagnostic services in 2007

	GOK	NGO	PR	Total
Hosp.	149	75	62	286
Health C.	504	88	21	613
Disp.	795	129	27	951
Other	3	10	38	51
Total	1351	302	148	1901
Lab.	641	199	119	959
AFB	653	172	105	930

The provision of leprosy and tuberculosis services is integrated into the general health service at the district level. However special staff of the DLTLD is responsible for coordination, supervision and technical advice in relation to management of TB and Leprosy at all levels. In 2007 a total of 138 District Tuberculosis/Leprosy Coordinators (DTLCs) were responsible for coordinating the delivery of TB and Leprosy services. These officers were supported by 12 Provincial Tuberculosis/Leprosy Coordinators (PTLCs). Fourteen technical officers were available at the central unit of the DLTLD to provide technical guidance for the national response to TB and Leprosy control. The technical staff at the central unit was supported by 5 administrative, secretarial and support staff including 7 drivers.

The organogram of the DLTLD is shown in *Annex 2*.

1.2 Technical policies

For a long time the DLTLD relied on passive case finding and chemotherapy through the DOTS strategy, to reduce the transmission of both leprosy and tuberculosis. In 2007 there were efforts to intensify TB case finding through the use of household /community cough

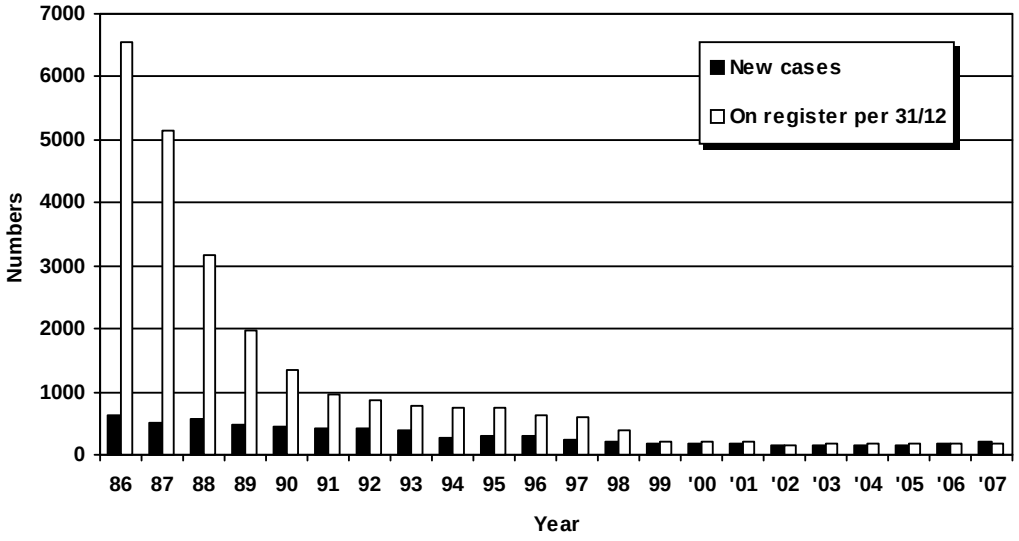
monitors, screening for TB in persons found to be HIV infected at HIV testing sites through intensification of TB screening for contacts of patients with PTB through contact invitation. The GOK continued to provide free TB treatment at all Ministry of Health (MoH) facilities, most Faith Based and NGO health facilities, and some private institutions. All the institutions receiving free anti-TB drugs from the DLTLD and some private hospitals supplied with anti-TB drugs by the Kenya Association for the Prevention of Tuberculosis and Lung Diseases (KAPTLD) used the DLTLD TB case recording and reporting system to report cases on a quarterly basis to the central level through the DTLCs and PTLCs.

2. LEPROSY

2.1 The extent and trend of leprosy in Kenya

Like in most countries, the true prevalence and incidence of leprosy in Kenya is not known. So far, the most reliable indicators to monitor the extent and the trend of the leprosy disease burden is the registered prevalence of cases currently on treatment, and the notification of new cases. Since the introduction of Multi-Drug Therapy (MDT) in 1985, the registered prevalence decreased from 6,558 cases in 1986 to 185 cases by the end of 2006. The number of new leprosy cases detected decreased from 630 in 1986 to 190 in 2006 as shown in *Fig.1 below*

Figure 1: Leprosy New Cases & cases on register by the end of the year: 1986-2007



2.2 Case-finding

2.2.1. Case notification

The number of new leprosy cases reported increased by 11% from 190 in 2006 to 213 in 2007. Leprosy is no longer a public health problem in Kenya. The WHO defines leprosy as a public health problem if there is a registered prevalence of more than one (1) leprosy case per 10,000 population. It is noted that the great majority of new leprosy cases are found in just a few districts in Kenya. However, even in these districts, leprosy is not a public health problem as it has been eliminated, though it is yet to be eradicated. The number of cases on register increased from 185 at the end of 2006 to 191 by the end of 2007. However, supervision visits have indicated that recording and reporting of leprosy cases is inaccurate. Leprosy under reporting may still be a significant weakness of the DLTLD. It is important to note that intensified case finding was done and this saw the number of Leprosy cases increase by 11%. Of great concern is that most patients present themselves with disabilities i.e. grade 1 and 2 (43%) there could be patient or health system delay.

2.2.2 Leprosy: Epidemiological indicators.

Table 2 gives a summary of epidemiological indicators for new leprosy cases put on treatment from 1994 up to 2006.

Table 2: Epidemiological indicators new leprosy cases Kenya: 1994-2007

Indicators/year	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07
New PB cases	63	71	68	43	41	25	37	18	13	9	6	12	18	17
New MB cases	212	236	226	194	174	166	133	157	141	153	137	146	172	196
Total new cases	275	307	294	237	215	191	170	175	154	162	143	158	190	213
Pop. (n x 1,000,000)	24.7	25.5	26.2	27.0	27.7	28.7	29.5	30.4	31.4	32.3	33.3	34.4	35.5	36.6
CDR new cases (n/100,000)	1.1	1.2	1.1	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.6
Registered Prevalence 31/12	740	754	640	589	375	214	209	195	148	176	182	180	185	191
Reg. prev. rate (n/10,000)	0.3	0.3	0.2	0.2	0.08	0.07	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05
M/F ratio	0.9	1	0.9	1.2	1	0.7	1.2	1	1	1.1	1.3	0.9	1.2	1.4
Child < 15 yrs. (%)	4	6	7	8	7	4	5	3	2	5	3	4	4	4
MB proportion (%)	77	77	77	83	81	87	78	90	91	94	96	92	91	92
Reported disability (%)	94	98	98	97	100	100	95	88	93	87	88	69	78	81
Disability grade 0(%)	61	63	59	59	67	55	60	45	36	34	50	61	64	56
Disability grade 1(%)	18	18	20	23	15	20	24	27	42	39	34	25	26	26
Disability grade 2(%)	20	19	20	16	19	25	16	28	22	27	17	15	10	17
MDT coverage(%)	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Child proportion < 15 years. This indicator provides information on the transmission of leprosy in the community (a high transmission level will cause a high proportion of children among newly reported cases of leprosy). In 2007 this proportion was 4%, which indicates a low level of transmission as would be expected.

Male/female ratio. This indicator provides gender differences on the distribution of leprosy. In most countries, the male/female ratio among leprosy patients is unequal with, in general, more males than female cases. However, in Kenya this ratio, on average, has for many years been around 1.

Proportion of new MB cases. This indicator provides information about the success of a leprosy control program. If infectious cases are detected and treated effectively, the number of new cases will gradually decrease and the proportion of infectious cases (MB leprosy) amongst them will increase. In Kenya the proportion of MB cases has increased from about 25%, before 1990, to 92% in 2007, indicating that leprosy control, so far, is effective.

Disability grade 2 proportion. This indicator gives information about the delay between noticing the first symptoms of leprosy (hypo-pigmented patches) by the patient and the start of treatment with anti-leprosy drugs (MDT). The longer the delay, the bigger the chance that

the patient will have developed nerve impairment and subsequent anatomic and or functional damage by the time treatment is initiated. This delay may be caused by patient factors including lack of awareness of the disease by the patient or lack of motivation to report to the health service (patients delay), or by health system factors including health provider knowledge and skill to properly diagnose and or treat leprosy (health provider delay). In 2007 the proportion of grade 2 disabilities among newly registered leprosy cases was 17%, which is increasing from the recommended level of below 10%. The proportion of patients presenting with either grade 1 (26%) or 2 (17%) disability was 43% indicating that still a considerable proportion of patients are diagnosed at an already advanced stage of leprosy. This implies that there is a significant delay in the diagnosis and treatment of leprosy. There was no disability grading for 19% of new cases. This is a reason for concern since it implies that a significant proportion of leprosy patients may not be receiving appropriate evaluation and care. The declining prevalence of leprosy coupled with insufficient training and awareness for the disease and its management amongst health workers most likely is contributing to this observation.

2.3 Case-holding

Case holding includes all activities directed at reaching the highest possible proportion of patients successfully completing their treatment. This can be observed in the proportion of cases "released from treatment (RFT)". The proportion "out of control (OOC)" is of importance because it is an indicator of the activities of the health services to timely detect possible defaulters, find and motivate them to complete their treatment. The following tables show the results of treatment of PB and MB cases from 1987. although the WHO - MDT regimen was introduced in 1985, it was not until 1991 that it was fully implemented.

Tables 3 and 4 show the outcome of treatment for the new PB and MB cases from 1987 to 2006.

Table 3: Treatment Results of PB cohorts 1987-2006

PB	**RFT**		**TNC**		**Died**		**TO**		**OOC**		**Total**
Cohort	n	*%*	n	*%*	n	*%*	n	*%*	n	*%*	n
'87	147	*55*	59	*22*	1	*0.4*	10	*4*	52	*19*	269
'88	514	*66*	71	*9*	4	*1*	62	*8*	126	*16*	777
'89	452	*79*	73	*13*	3	*1*	5	*1*	40	*7*	573
'90	260	*74*	43	*12*	4	*1*	5	*1*	39	*11*	351
'91	158	*70*	23	*10*	2	*1*	4	*2*	39	*17*	226
'92	131	*78*	11	*7*	0	*0*	6	*4*	19	*11*	167
'93	132	*83*	2	*1*	0	*0*	10	*6*	15	*9*	159
'94	53	*79*	1	*1*	2	*3*	3	*4*	8	*12*	67
'95	62	*94*	0	*0*	1	*2*	3	*5*	0	*0*	66
'96	60	*90*	1	*1*	0	*0*	3	*4*	3	*4*	67
'97	32	*100*	0	*0*	0	*0*	0	*0*	0	*0*	32
'98	31	*91*	0	*0*	0	*0*	1	*3*	2	*6*	34
'99	32	*94*	0	*0*	0	*0*	1	*3*	1	*3*	34
'00	26	*74*	1	*3*	0	*0*	4	*11*	4	*11*	35
'01	20	*77*	1	*4*	2	*8*	2	*8*	1	*4*	26
'02	23	*70*	8	*24*	0	*0*	2	*6*	0	*0*	33
'03	31	*74*	0	*0*	0	*0*	7	*17*	4	*10*	42
'04	28	*80*	2	*6*	2	*6*	2	*6*	1	*3*	35
'05	27	*69*	7	*18*	2	*5*	2	*5*	1	*3*	39
'06	33	*67*	6	*12*	2	*4*	3	*6*	5	*10*	49

The proportion of PB cases RFT for the 2006 cohort was 65% while 7% of patients went out of control. These results indicate that the DLTLD has yet to achieve the recommended treatment results for PB cases of RFT of 90% of higher. With the small numbers of patients these results are unacceptable and probably suggest the eclipsing of leprosy control activities by the bigger TB problem. However the treatment results of MB cases with a RFT proportion of 80% and a defaulter rate of 6% are good and within the recommended range of RFT of 75-80% or higher. The shortening of the treatment duration from two to one year may have contributed to these good results.

Table 4: Treatment Results MB cohorts 1987-2005

MB	**RFT**		**TNC**		**Died**		**TO**		**OOC**		**Total**
Cohort	n	*%*	n	*%*	n	*%*	n	*%*	n	*%*	n
'87	87	*67*	5	*4*	1	*1*	4	*3*	32	*25*	129
'88	778	*72*	67	*6*	18	*2*	7	*1*	217	*20*	1087
'89	131	*69*	10	*5*	5	*3*	11	*6*	33	*17*	190
'90	94	*59*	9	*6*	9	*6*	7	*4*	41	*26*	160
'91	104	*62*	6	*4*	3	*2*	10	*6*	44	*26*	167
'92	170	*60*	18	*6*	7	*2*	33	*12*	53	*19*	281
'93	186	*67*	6	*2*	4	*1*	25	*9*	56	*20*	277
'94	156	*62*	17	*7*	15	*6*	22	*9*	41	*16*	251
'95	121	*66*	6	*3*	7	*4*	25	*14*	24	*13*	183
'97	166	*85*	2	*1*	1	*1*	15	*8*	11	*6*	195
'98	162	*84*	0	*0*	3	*2*	12	*6*	15	*8*	192
'99	115	*80*	3	*2*	1	*1*	9	*6*	15	*10*	143
'00	117	*80*	4	*3*	2	*1*	11	*8*	12	*8*	146
'01	125	*80*	10	*6*	2	*1*	8	*5*	10	*11*	156
'02	130	*83*	7	*4*	4	*3*	7	*4*	9	*6*	157
'03	172	*78*	20	*9*	1	*<,1*	14	*6*	13	*6*	220
'04	150	*80*	12	*6*	3	*2*	12	*6*	10	*5*	150
'05	141	*80*	14	*8*	0	*0*	12	*7*	10	*6*	177

2.4 Prevention of disabilities

So far, no reliable data is available concerning prevention of disabilities. The DLTLD leprosy guidelines recommend routine VMT/ST examinations on quarterly basis for each newly registered leprosy patient on treatment and for all patients who present with symptoms suggesting a reaction. Technical support missions (supervision) have suggested that either VMT/ST examinations are routinely not done or the results of these examinations are not filled in the patient cards. No records/registers are kept on the incidence of reactions or the prevalence of disabilities (no leprosy ward admission register for leprosy patients or a care/disability register). It is recommended that reactions are treated with prednisolone. It is questionable whether reactions are recognized in time and if so whether appropriate action is taken. Patient record cards, on which this information is supposed to be entered, are often incompletely filled.

There are about 6 orthopedic workshops in the country, which produce footwear and prostheses for leprosy patients. However, the DLTLD did not follow up reports on their outputs, again probably the result of the eclipsing of leprosy by TB.

It is clear, that more emphasis should be placed on leprosy control and in particular, on prevention of disabilities.

Constraints to improved performance

The declining cases detected annually are making leprosy a low priority disease which translates into hardly any resources being allocated to its control. This translates to very little training and support of peripheral health staff on leprosy control activities. There is inadequate funding for leprosy control. Virtually all the funds available to the DLTLD are earmarked for TB and especially TB/HIV related activities. It is gratifying to note that some funding from AIFO an Italian NGO with an interest in global leprosy became available in 2005. If leprosy control activities continue to receive little attention, there is a real danger that leprosy may rebound to become a public health threat.

- The massive burden of TB continues to eclipse the insignificant leprosy problem. Program staff remains overloaded with the management of high numbers of TB cases and devote less time to the pursuance of leprosy control activities.
- There continues to be a high turnover of both peripheral health care workers and program staff at the district level.
- Lack of resources set aside for leprosy control

3. TUBERCULOSIS

3.1 Magnitude of the tuberculosis problem

The number of reported TB cases has increased ten fold from 11,625 in 1990 to 116,723 cases in 2006 *(Figure 2).* The average annual increase over the past 10 years is 10% for all forms of TB. However, in the last 5 years the annual increase of notified TB cases slowed down to an average of 4%. Case Notification Rates (CNR) increased from 53/100,000 population for all forms of TB and 32/100,000 population for sputum smear-positive PTB cases in 1990 to 338/100,000 population and 111/100,000 population respectively in 2006 *(see Figure7).*
In the year 2007 the DLTLD surveillance system reported the contribution of the private sector notifying a total of 1,804 TB patients put on treatment (see figure 13 and 14).

The major reason for the increasing burden of TB in Kenya is the concurrent HIV epidemic. In the last half of 2005 the DLTLD introduced TB/HIV integrated data collection system that enabled the collection of HIV related information. Data for the year 2007 indicate that the national average HIV prevalence in TB patients was 48%.

3.2 Case-finding

3.2.1 Case-finding reporting

The central unit receives case finding reports on a quarterly basis from all districts. These reports are submitted by DTLCs, through their respective PTLCs.

Figure 2: TB case notification DLTLD Kenya: 1990 – 2007

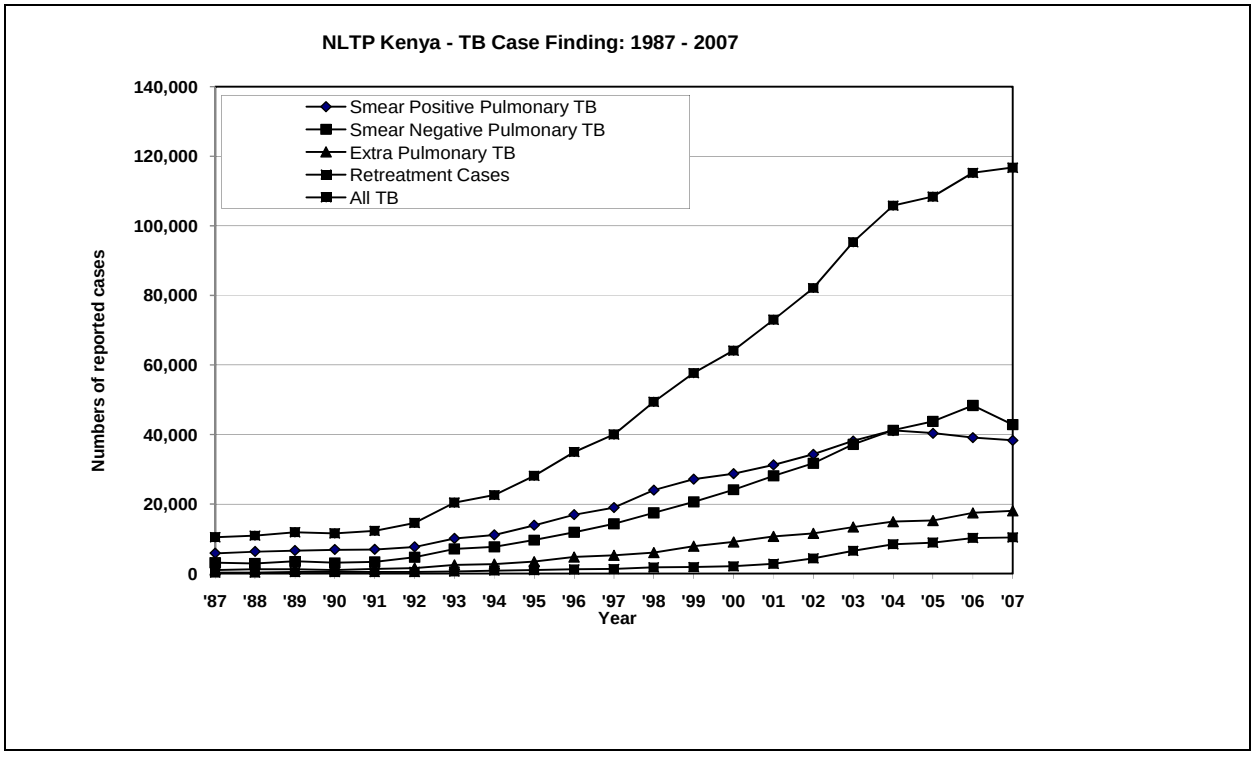


Figure 3: TB case load per province: 2007

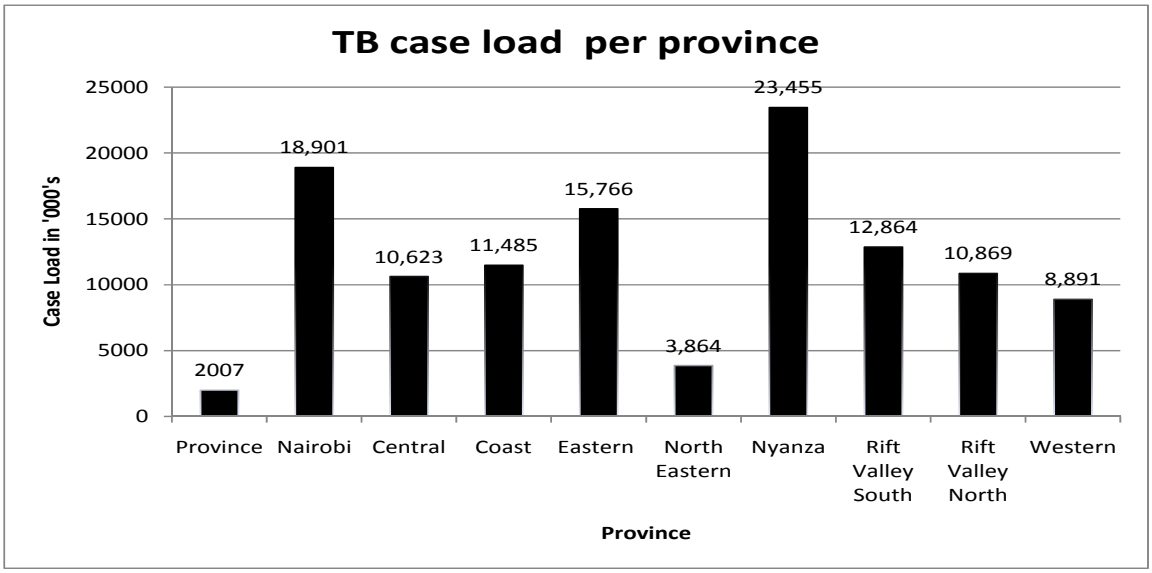


Figure 4: Average 5 year percentage increase in TB cases

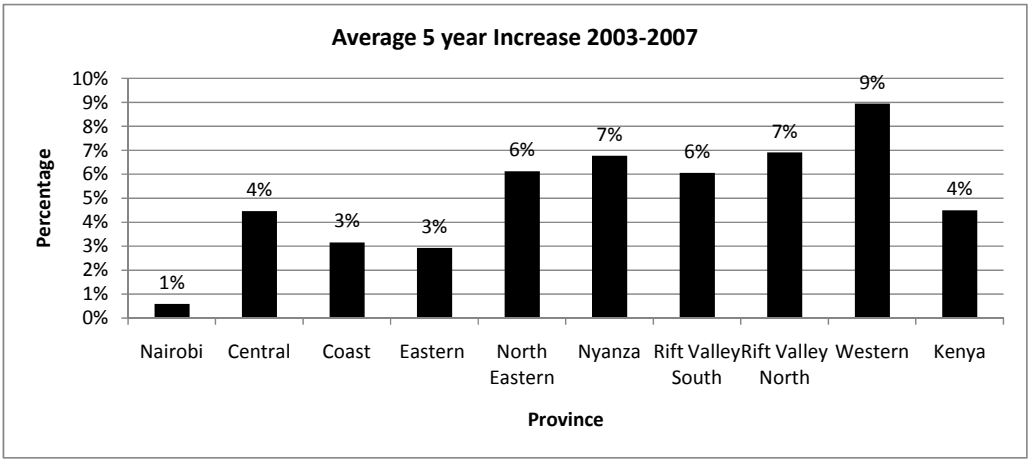


Figure 5: TB annual Increase 1987-2007

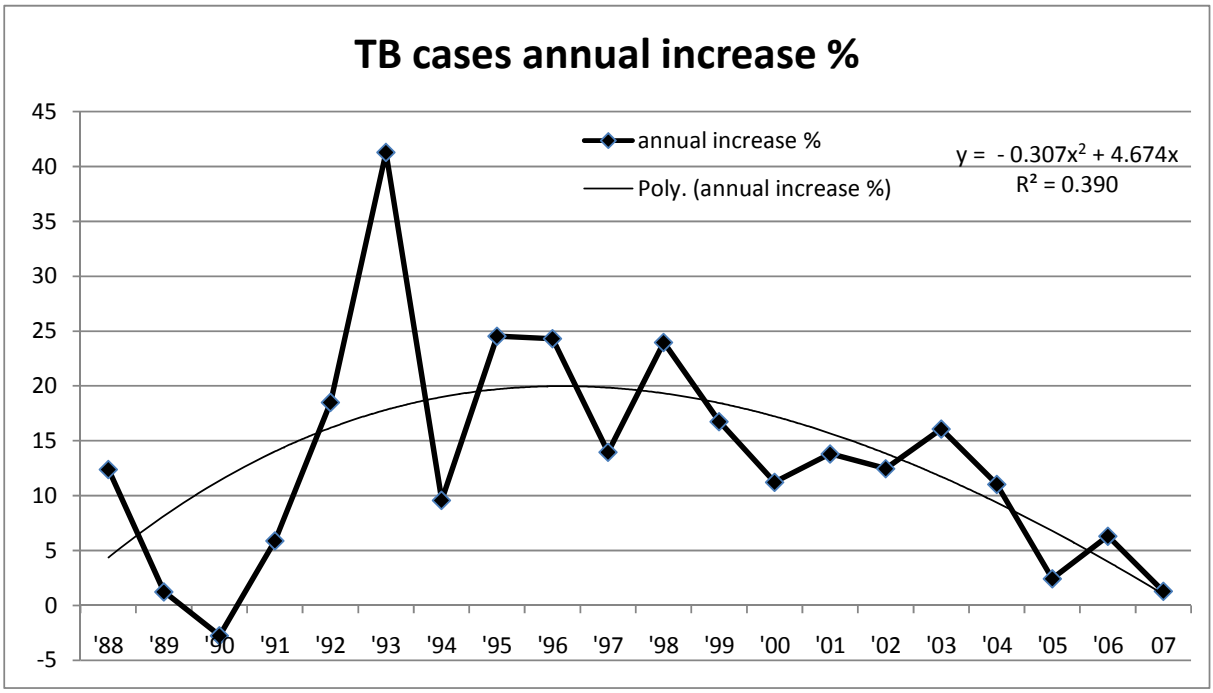
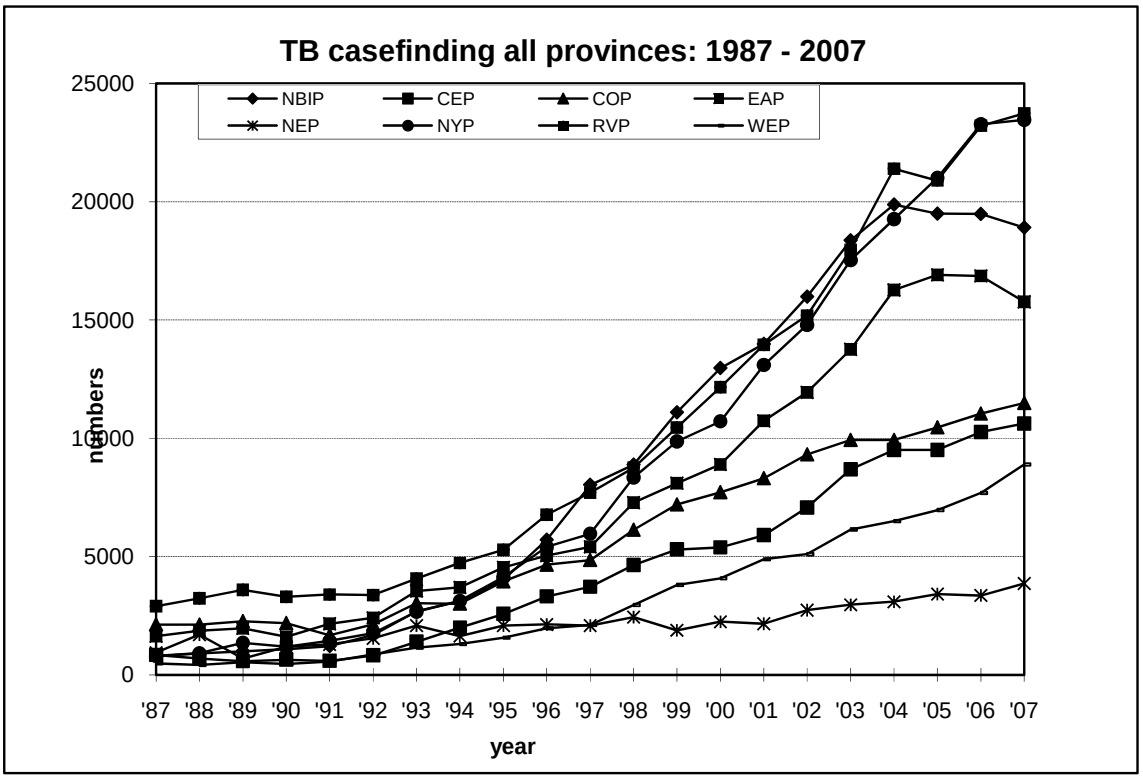


Figure 6: Provincial TB case findings 1987-2007



3.2.2. Case notification rates

Figure 7: Case Notification Rates Smear positive PTB and all Types TB Kenya 1990-2007

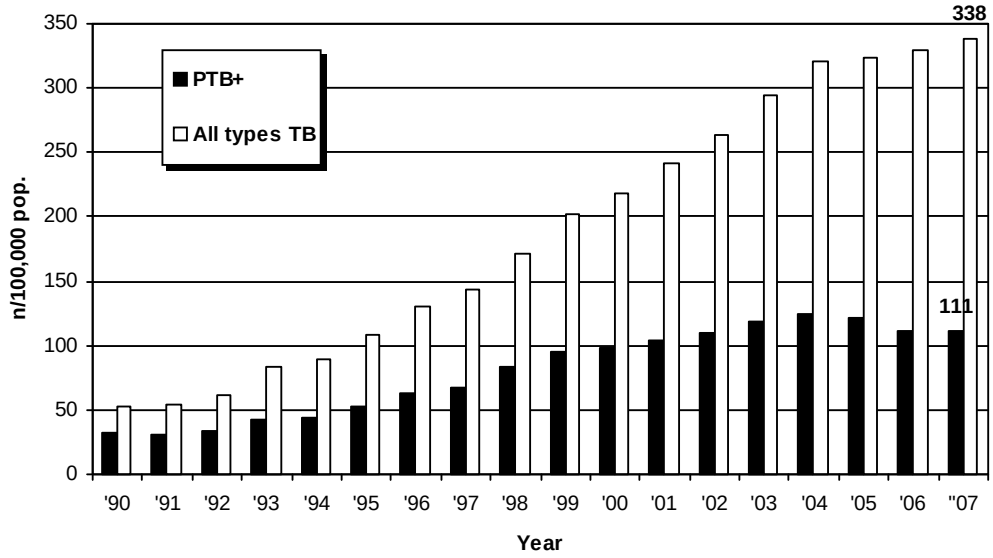
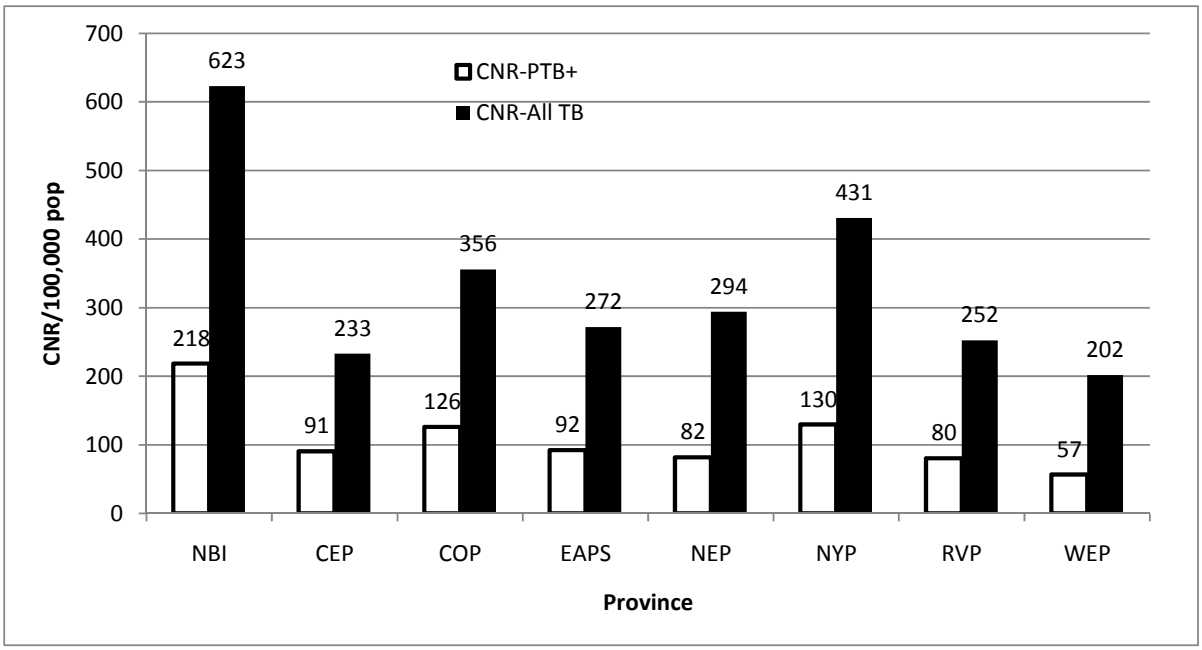


Figure 7 shows the CNR for all forms of TB and smear-positive PTB for the different provinces.

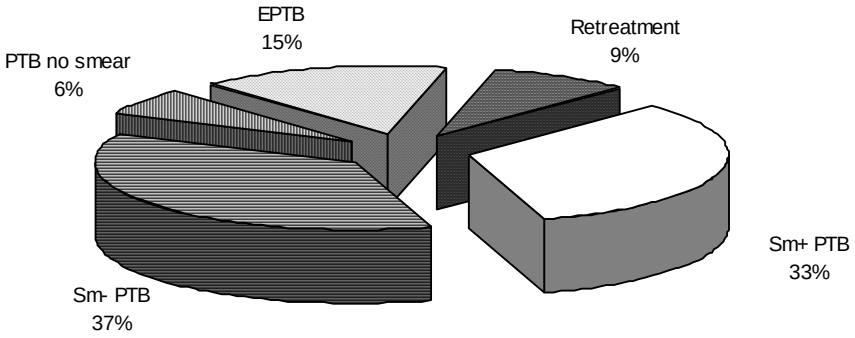
Figure 8: TB Case Notification Rates: All forms of TB and PTB+ per province in 2007



Types of tuberculosis

In 2007 the proportion of sputum smear-positive PTB cases decreased by 2% compared to 2006. There was a 0.3% increase in the proportion of sputum smear-negative PTB cases and adult PTB cases without sputum smear results. *Figure 9* shows the distribution of the different types of TB in 2007. Retreatment cases are subdivided into the following categories: Smear positive PTB relapses (3%), Recurrent smear negative PTB and EPTB cases (4%), Treatment Failures (0.1%) and Return after Default (1.4%). In 2007 nearly half (4.4%) of the retreatment cases were recurrent smear negative PTB/EPTB cases. With the high prevalence of HIV in this population it is possible that some of these cases are not true TB cases but represent undiagnosed HIV related disease.

Figure 9: Distribution of TB cases by type, 2007



3.2.4 Gender-age distribution

The age group with the highest TB notification in 2007 remained 25-34 years in both males and females as has been the trend over the last decade. This is the same age category with a high HIV sero-prevalence. Males continue to dominate after the age of 24 over the females who are more below this age group

See *Figures 10, 11 and 12*.

Figure 10: Age Specific CNR New Male/Female PTB+ Cases 2007

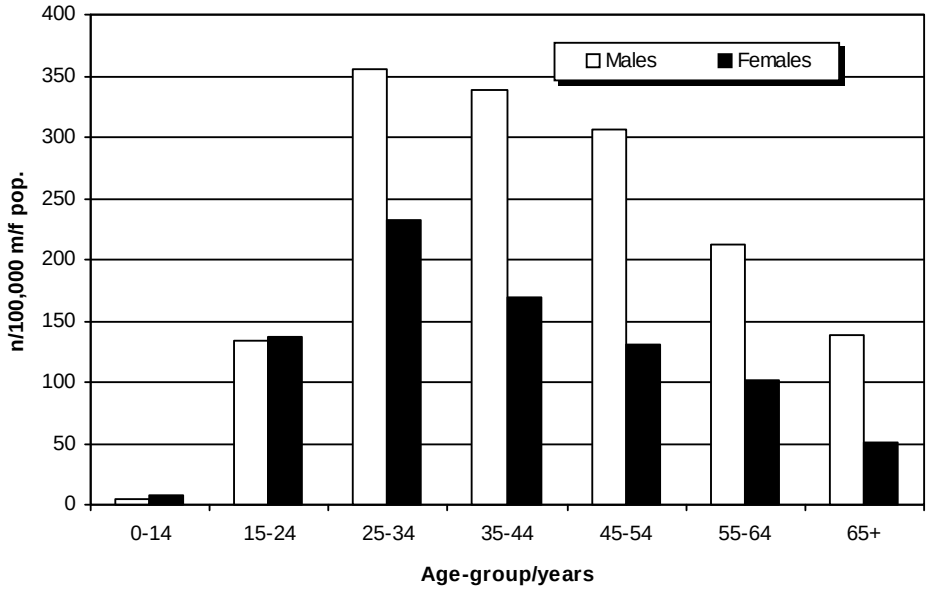


Figure 11: Age-specific CNR new male PTB+ cases: 1993-1998-2007

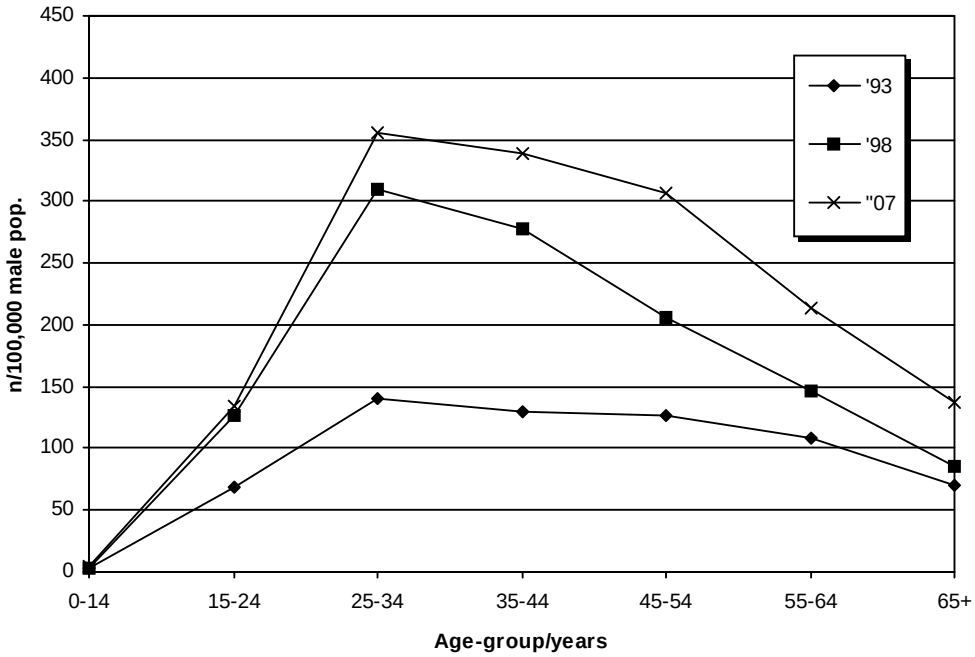
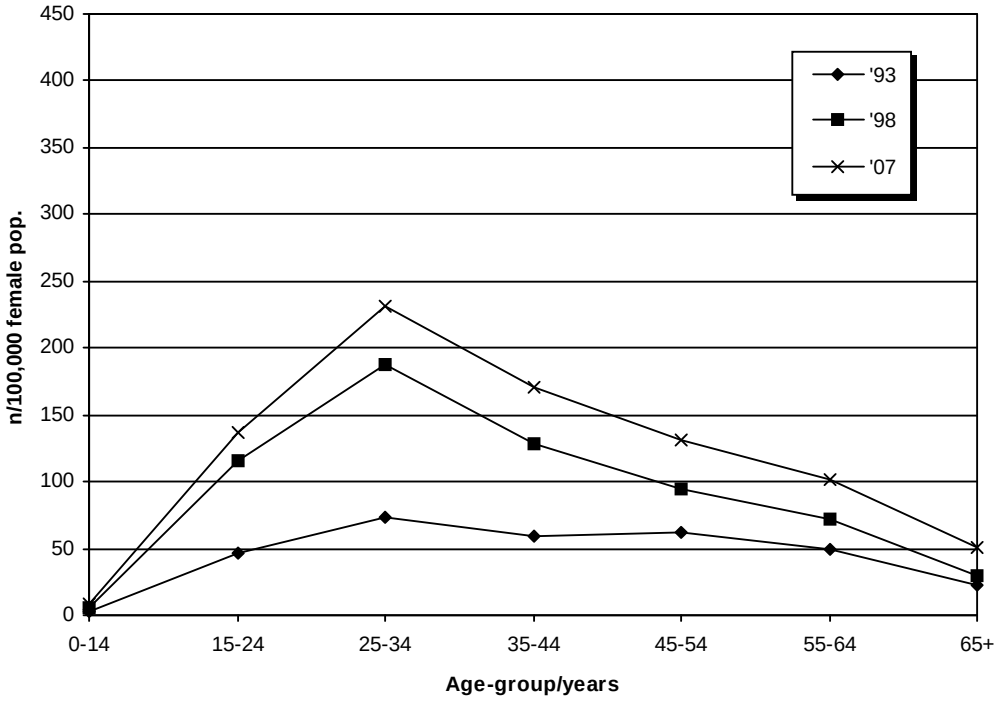


Figure 12: Age-specific CNR new female PTB cases: 1993-1998-2007



PRIVATE SECTOR CONTRIBUTION

The private sector both for profit and not for profit provides a significant care to TB patients. This sector has flourished since an agreement facilitated by the program between KAPTLD and a drug manufacturing company was signed in 1997. Through this agreement, the drug company provides high quality anti TB drugs to be availed to the private sector in Kenya at a highly subsidized price to patients seeking care in this sector. Since the program has overall supervisory activity, the sector is routinely supervised by program staff and all the policy guidelines used belong to the ministry. To further ensure that quality and standards are acceptable, the M and E tools used in this sector are distributed by the program.

It is now accepted that about 10% of TB patients in the urban set up are managed by the private sector if Nairobi figures can be generalized to cover the whole country. Initiation of new initiatives in the private sector has over the years tended to lag behind the public sector as demonstrated in the testing for HIV amongst TB patients (*figures 13 and 14)*.

Figure 13: Case finding in the private sector

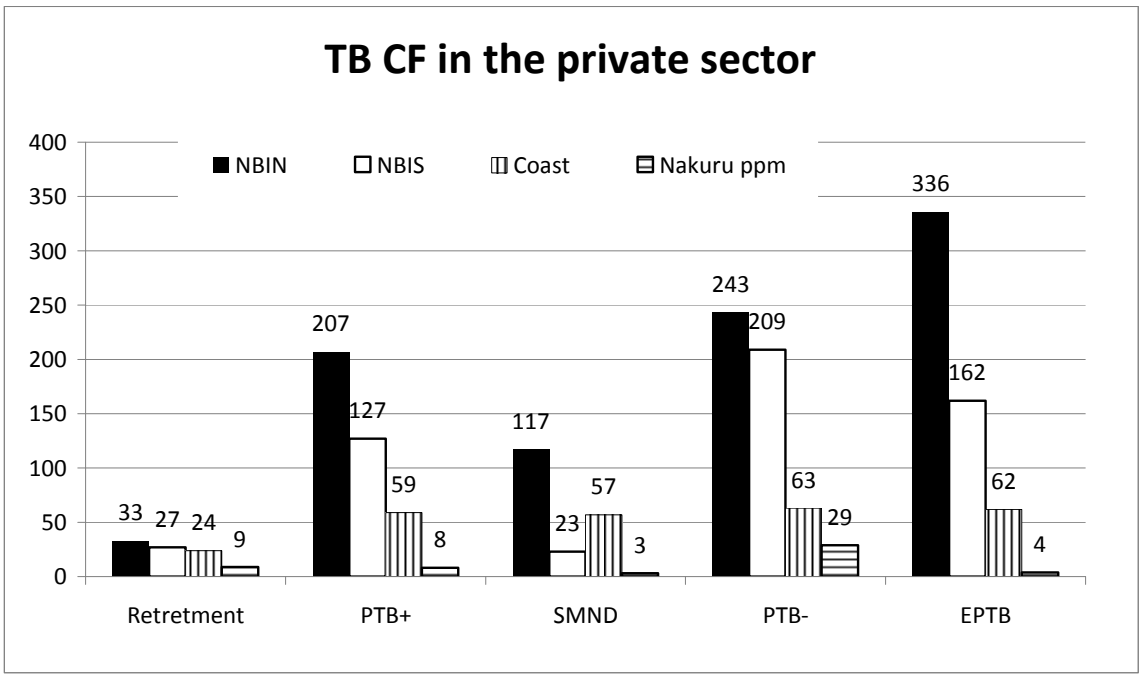
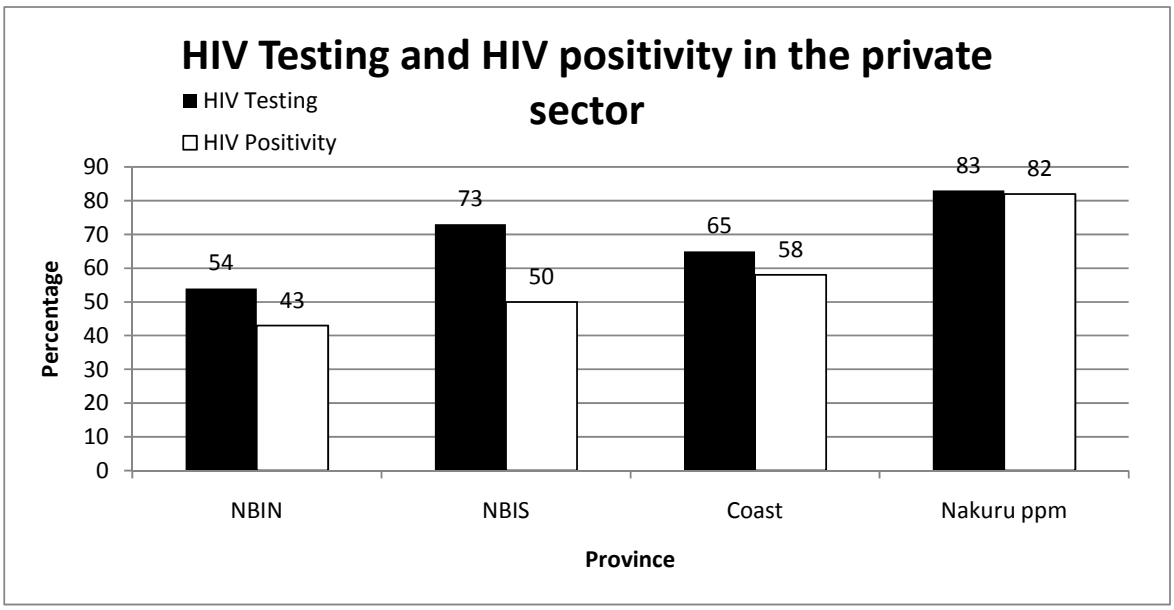


Figure 14: HIV Testing and Positivity in the private sector



3.2.5 The impact of HIV infection on case-finding

The HIV epidemic is the major reason for the TB epidemic. It has significantly led to increased proportion of smear negative pulmonary disease which has surpassed notified cases of smear positive TB disease since 2005. HIV may also have contributed to the increase in cases requiring re-treatment especially those cases classified as other retreatment. Even though smear positive pulmonary disease remains the most important type of TB from a transmission standpoint, in situations where HIV prevalence is high as in Kenya smear negative and extra pulmonary forms of TB assume a great deal of importance because of their contribution to TB morbidity and mortality.

The DLTLD started implementing a countrywide continuous HIV prevalence surveillance system amongst registered TB in the last half of 2005 (3rd quarter of 2005). From the 1st quarter 2006 onwards, the new system had been fully implemented in all 80 districts. In this way the DLTLD is able to monitor HIV prevalence amongst TB cases and to track the proportion of TB patients receiving HIV related interventions including HIV testing and counseling, cotrimoxazole preventive therapy and anti-retroviral treatment.

There was a vigorous pursuit of HIV Diagnostic Testing and Counseling (DTC) for all TB patients in 2007, in part resulting from the publication of the policy document on HIV testing in clinical settings, push by donors including PEPFAR and the Global Fund for visible results in TB/HIV collaborative activities, a clear strategic vision by the leadership of the DLTLD to provide comprehensive care to HIV infected TB patients and intensified technical support to the DLTLD provided by technical partners including KNCV and WHO. The results of all these efforts were the development and piloting of a TB/HIV training curricula, the printing and distribution of the new recording/reporting (R&B) tools incorporating HIV related data in addition to routine TB data and the procurement and distribution of cotrimoxazole for the prevention of opportunistic infections in HIV positive TB patients.

Figure 15 below shows the proportion of TB cases tested for HIV and the HIV positivity rate amongst those patients tested.

It appears that with increased HIV testing, the HIV prevalence amongst TB cases decreases. This probably is caused by a diminishing bias in selecting/offering/availability of HIV testing by the health workers at the different levels of the health care system.

Figure 15: Trend of HIV testing and HIV positivity rate

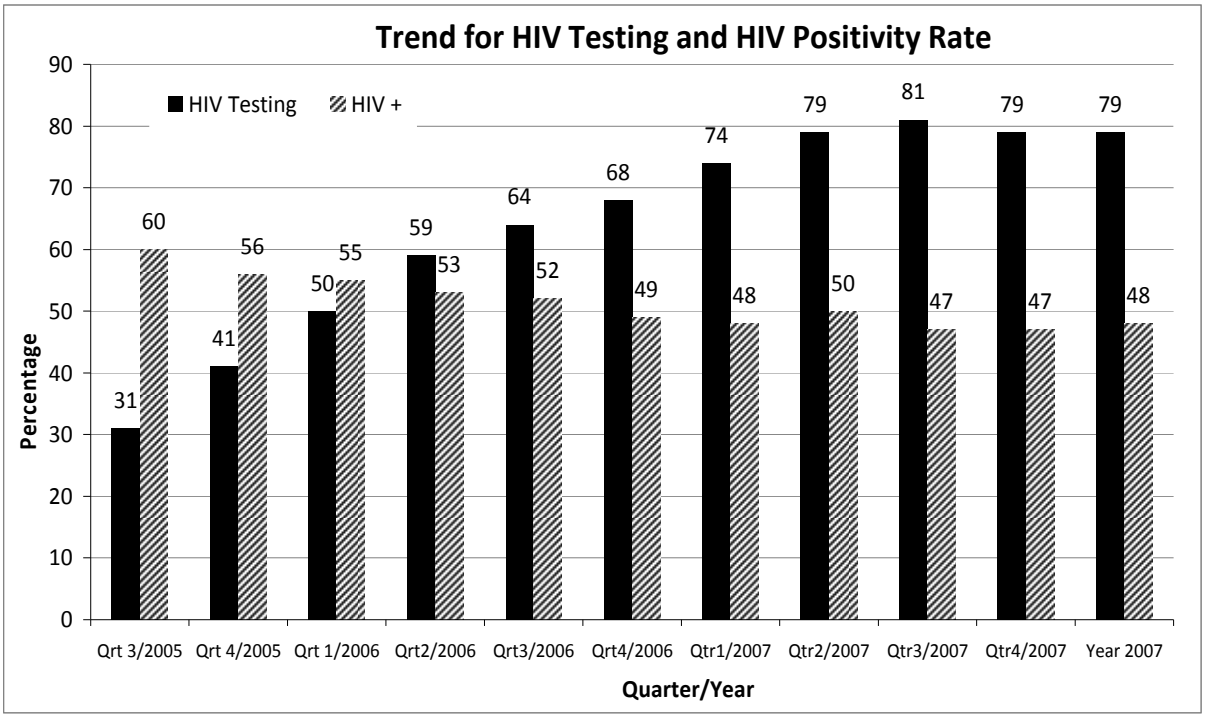


Figure 16: HIV prevalence for different types of TB: 2007

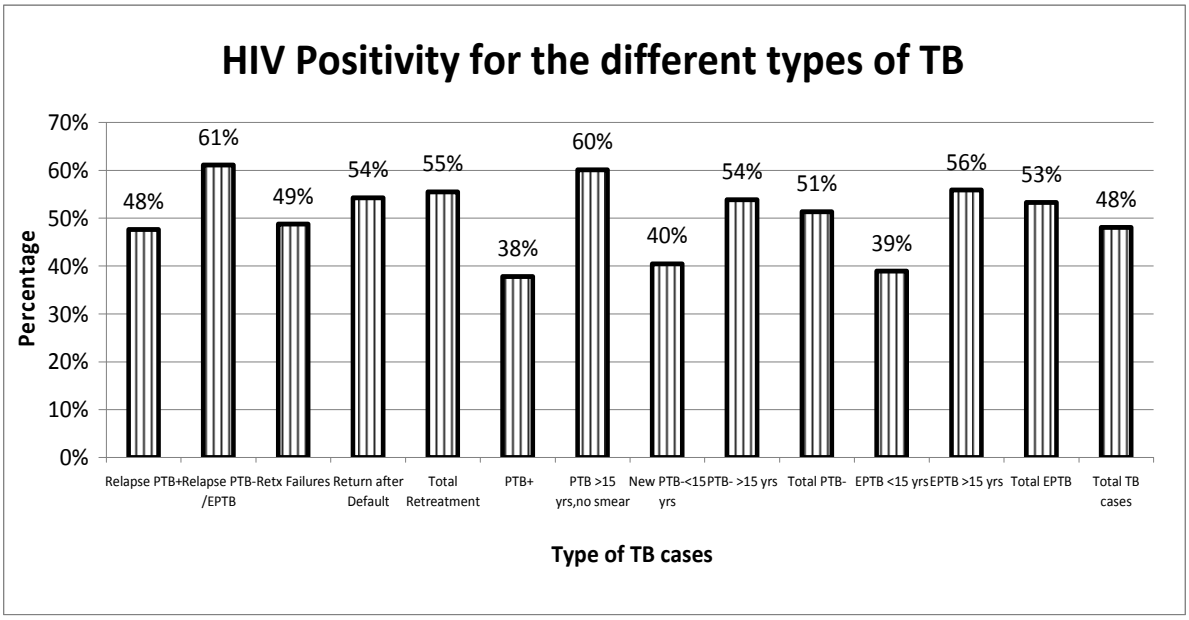
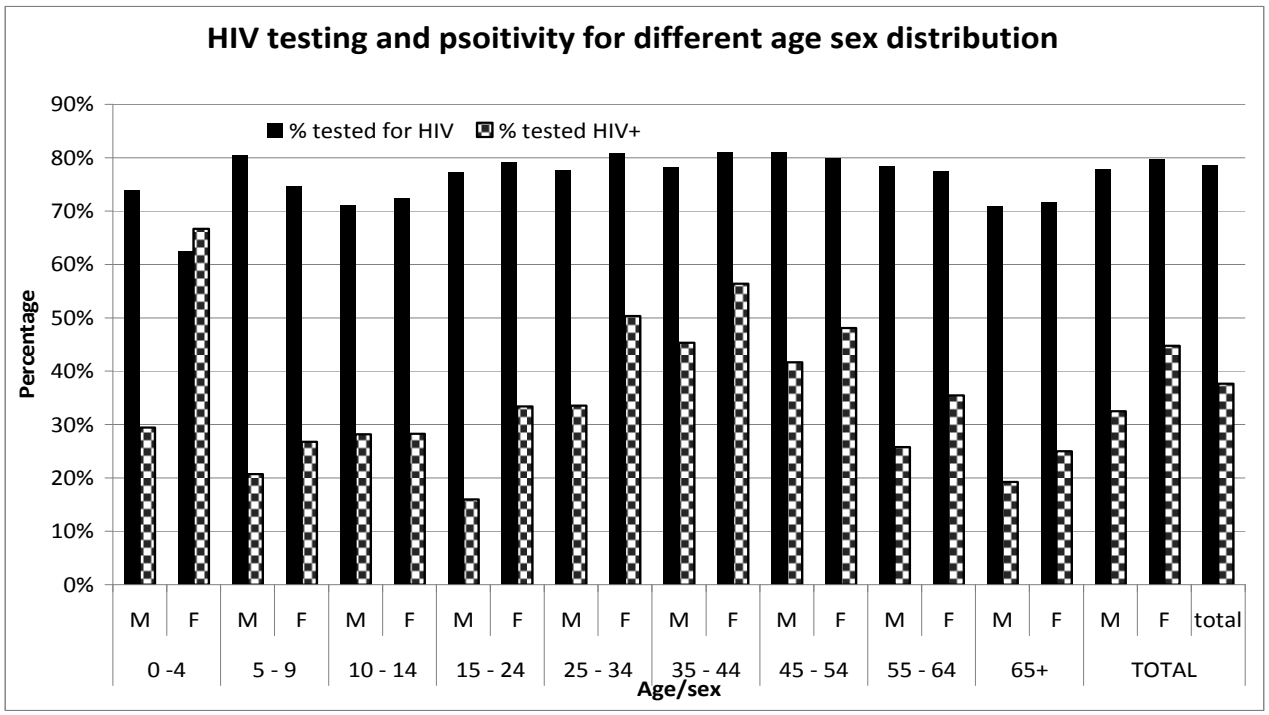


Figure 17: HIV testing and prevalence for PTB+ cases according to age/sex group: 2007



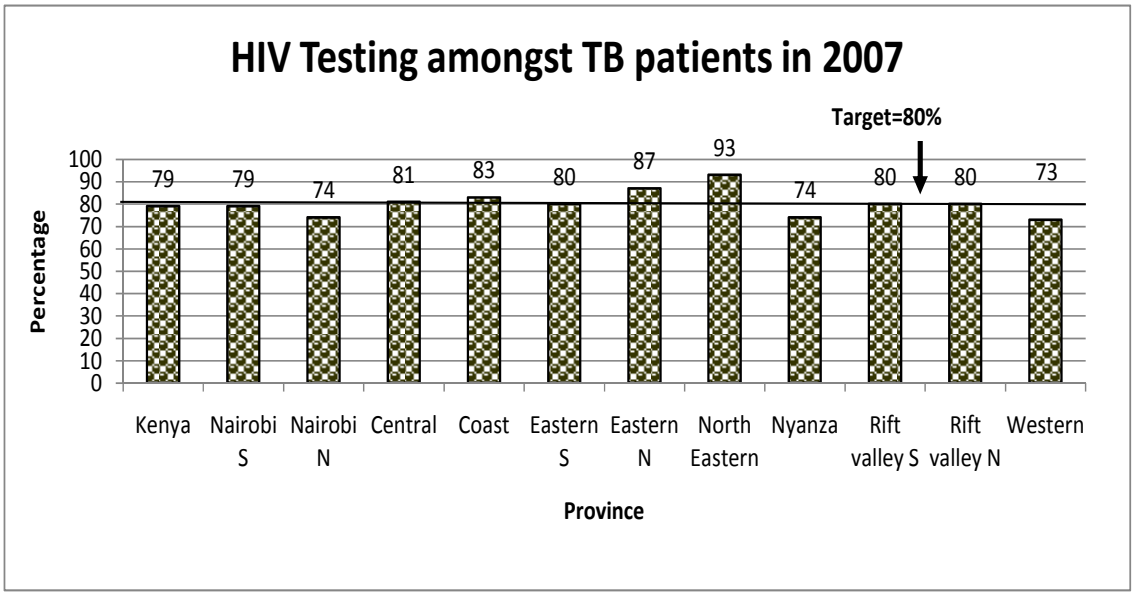


Figure 18: HIV testing and prevalence for PTB+ cases according to age/sex group: 2007

3.2.6 Case-finding in refugee camps

The refugee camps in Kenya, under the UNHCR, participate in TB control activities under the guidance of the DLTLD. There are four camps: Hagadera, Ifo and Dagahaley (Dadaab) in Garissa District and Kakuma, located in the North of Turkana District. In 2007 a total of 671 cases were reported by the Dadaab camps. All cases were tested for HIV and only 15 (2%) tested HIV positive. These cases were included in the national figures.

3.3 Case-holding

3.3.1 Case-holding reporting and terminology

The case-holding results show the outcome of treatment for the different types of TB cases in non-nomadic and nomadic areas. Results of the refugee camps are reported separately. Since 1999 the DLTLD started analyzing the outcome of treatment of smear-negative PTB and EPTB cases.

The terminology used in assessing the results of treatment (treatment outcome) includes the following:

Cured	: completed treatment and smear-negative at the end of treatment
TC	: completed treatment, but no smear taken at the end of treatment
Died	: died of any cause during treatment
Failure	: smear-positive at 3, 5 or end of treatment
OOC	: out of control/absconded from treatment
TO	: transferred out to another administrative area (province)
Success rate	: Proportion of PTB+ cases cured and completed treatment

3.3.2 Short Course Chemotherapy (SCC) implementation

Short course chemotherapy (SCC) for new smear positive PTB cases was initiated in 1993 and fully implemented in the whole country by the end of 1997. Implementation of SCC for Smear negative PTB and Extra-Pulmonary TB commenced in 1997 and covered the whole country by the second half of 1998. Since then, the whole country is under DOTS giving a 100% geographic DOTS coverage.

3.3.3 Regimen used

Kenya subscribes to the internationally accepted WHO strategy in TB control and treatment has been tailored from WHO recommended regimes. Although treatment for TB in Kenya has been 8 months in total, in 2007 6 months regime using support from GDF was started in Nairobi province and is expected to expand to cover the whole

country by 2009. Additionally, the GDF support also included pediatric formulations that are now being used for the first time in Kenya.

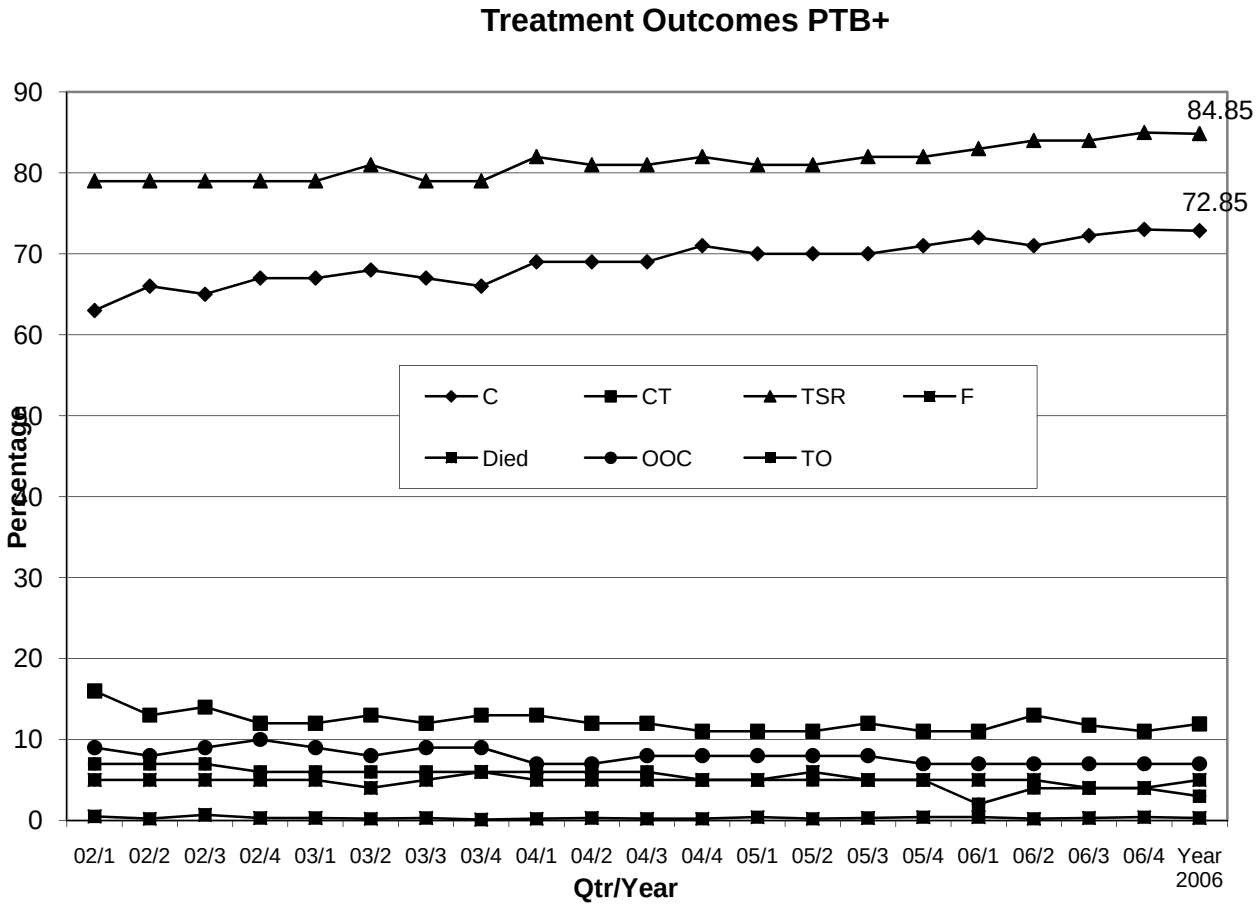
The following regimes continue to be used in Kenya:

1. 2RHZE/6EH for new cases with smear-positive PTB (Category 1), smear negative PTB and extra-pulmonary TB (Category 3)
2. 2SRHZE/1RHZE/5RHE (re-treatment regimen) for smear positive relapse cases, recurrent negative PTB/EPTB cases, failures and defaulters (Category 2).
3. 2RHZ/4RH for new cases of smear positive or negative PTB or EPTB who are younger than 15 years
4. 2RHZE/4RH six month regimen started in Nairobi in April 2007.

3.3.4 SCC treatment results of new sputum smear-positive PTB cases

As is usual the TB treatment outcomes are reported for the year preceding the year in question, in this case the cohort of 39,154 patients put on treatment during 2006. This is the first cohort in which the treatment outcomes of the manyatta districts are included in the "standard" SCC treatment outcomes because since 2005 the same regimens were used country wide. A treatment success rate of 84.8% was achieved. This puts Kenya amongst few countries that have achieved the WHO recommended treatment success rate. Coupled with the improved case detection rate of 70% that Kenya has also achieved, Kenya now stands to improve on TB control beyond what is currently happening. This result is a very reasonable performance when the high rate of HIV in TB patients is taken into account. Tuberculosis cases co-infected with HIV are at risk of dying from non-TB opportunistic infections during treatment for TB. The reported deaths rate of TB patients remained low at about 5%, but an estimated 30% of the out of control cases are most probably cases who died at home and were not reported as such.

Figure19: Results of SCC treatment cohorts of new smear-positive PTB cases: 2002 -2006.

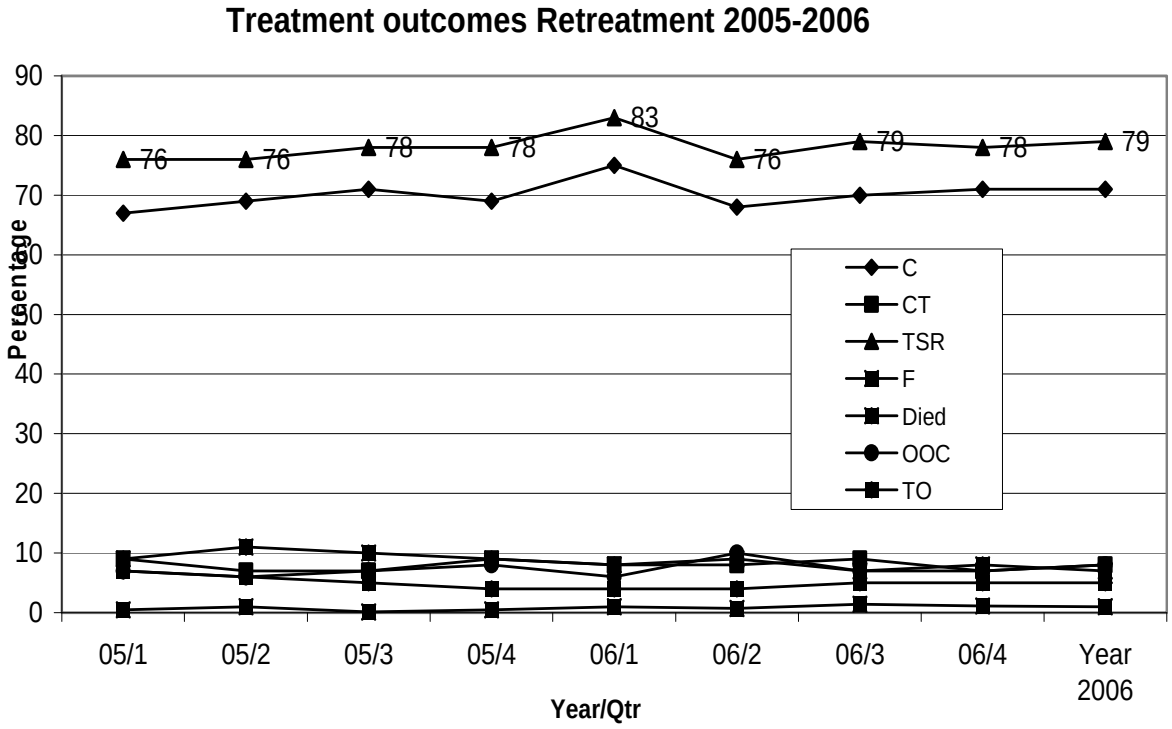


3.3.5 Re-treatment results

Since 2003 the DLTLD has put a lot of emphasis on obtaining sputum smear results during the continuation phase, and especially at the end of treatment as a known form of monitoring treatment. This resulted in a small increase in the proportion of cases cured and an equally small decrease in cases that completed treatment without a smear result.

Figure 20: Treatment results for smear-positive re-treatment cases at 8 months: 2005-2006.

Results at 8 months (end of treatment)



3.3.6 Results of SCC treatment for smear-negative and extra-pulmonary TB cases

An 8 months SCC regimen replaced the 12-month standard regimen for sputum smear-negative PTB cases and Extra Pulmonary TB cases in 1998 *(see section 3.3.3 - Regimens used*).

The treatment success rates for new sputum smear negative and extra pulmonary PTB cases are 80% and 78% respectively, death rates (7-8%) and the out of control rates (9%). This can be explained by the higher HIV prevalence in both categories of patients.

Figure 21: Treatment results for new smear negative PTB cases: cohorts 2002-2006

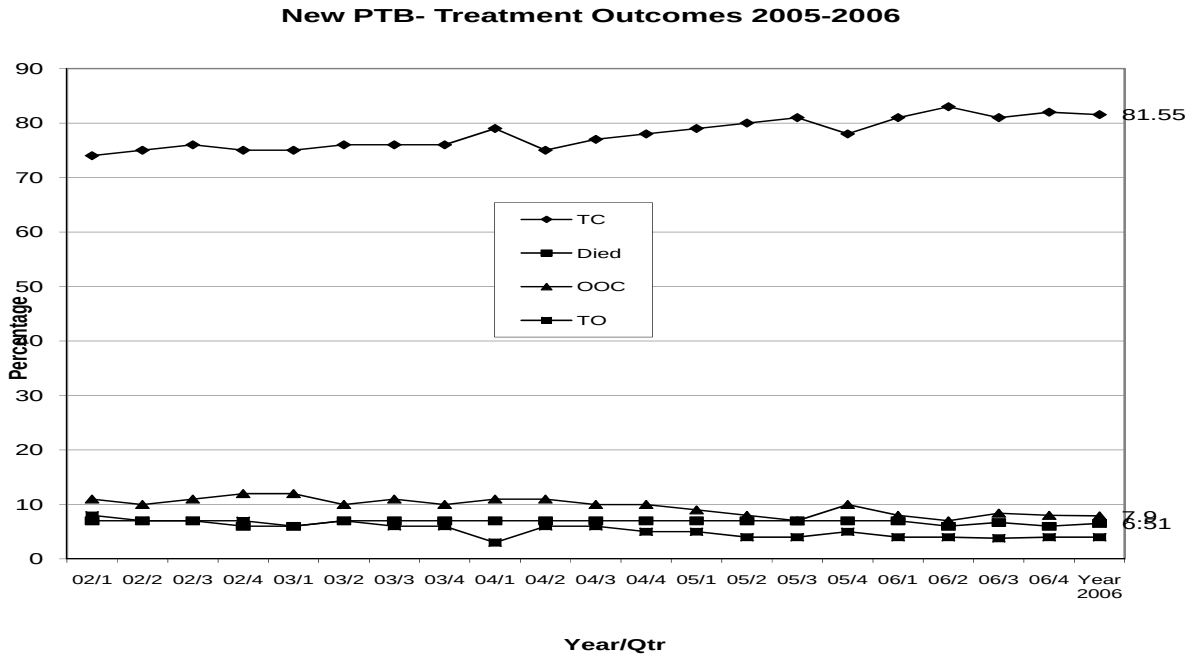
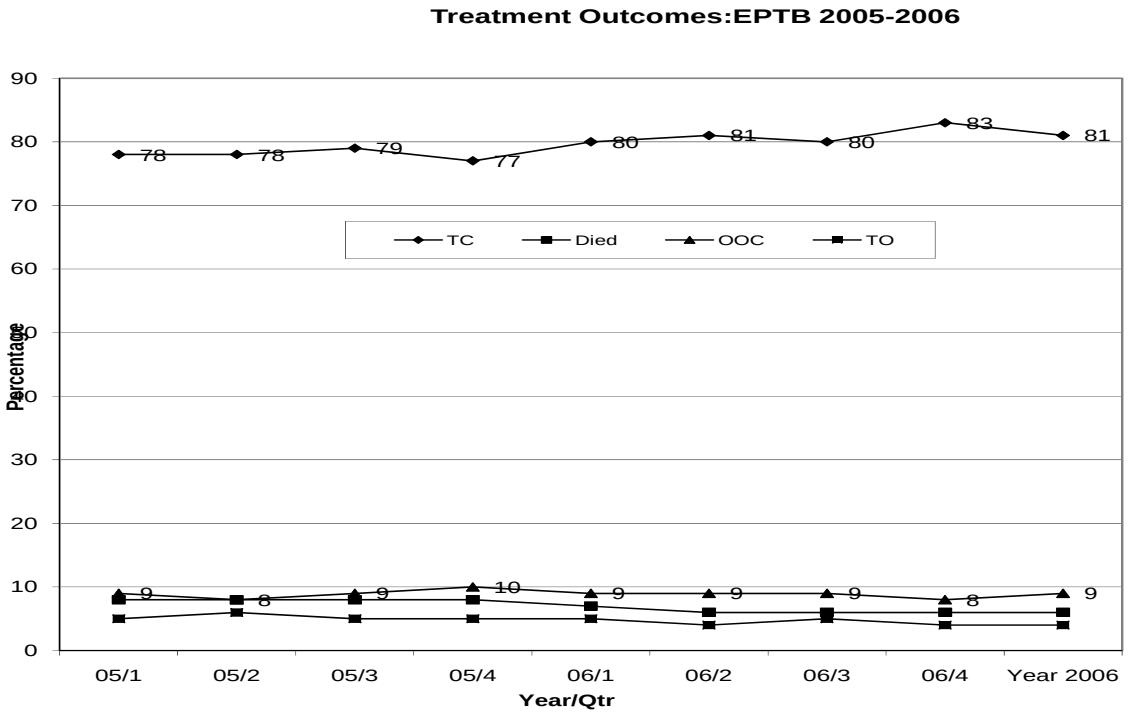


Figure 22: Treatment results new extra-pulmonary TB cases: cohorts 2005-2006

Results at 8 months (end of treatment)



4.0 Sectional Activities

4.1 Leprosy control

In the year 2007 the following Leprosy activities took place:

- 100 pairs of protective footwear were produced for ex-leprosy patients at Msambweni orthopedic rehabilitation centre.
- Technical support supervision was carried out for leprosy activities in coast province
- 1,600 Leprosy monitoring and evaluation tools printed and distributed to high burden provinces and districts

4.1.1 Capacity building

25 health care workers were trained in coast province to undertake intensified Leprosy case finding.

4.1.2 Funding

Leprosy control activities in 2007 were funded by WHO and AIFO

4.1.3 Challenges and constrains

1. Late submission of Leprosy reports to the central level
2. Minimal support towards Leprosy activities from all levels
3. Specific resource allocation for leprosy control by the ministry

4.2 Community Based TB Care (CB-DOTS)

Community TB care has not taken much root in Kenya and currently there are a total of 40 districts which have been trained and have started to incorporate community TB as part of TB control effort. In 2007, community TB care assessment was carried out in 24 districts through support from WHO. This assessment was geared towards quantifying the contribution of the community in TB care to inform further expansion of these activities in the country. What was evident in the assessment was that there are several activities that community health care workers participate in but are not being recorded.

4.2.1 Capacity building

10 districts were trained to implement community TB care adding the number of districts implementing community TB care to 40. A total of 250 health care workers were trained. All DHMT members, health facility committee and community opinion leaders in all the 10 districts were sensitized on community involvement in TB care.

4.2.2 Technical Support

Support supervision was provided to all the 40 districts implementing CB-DOTS in the year 2007. To motivate and enable the community health care workers, each of the implementing districts was provided with 8 bicycles procured through GFATM funds.

4.2.3 Challenges

There is need to harmonise the understanding of CB DOTS at all levels.
CB-DOTS curriculum revision has not been finalized yet.

4.3 Monitoring and Evaluation

Throughout the year 2007 M & E section continued spearheading the routine surveillance of program activities, ensuring that support supervision to the provinces is done as planned.

M & E section in the year 2007 provided support to other sections of the division developing protocols for DST survey due in the year 2008.

4.3.1 Capacity building

Dr. Argata Guracha and Dr Victor Ombeka attended an M & E workshop in Botswana with Paul Malusi and Dr Paulo Muthama attended a global fund M & E meeting in Geneva.

4.3.2 Technical Support

Support supervision was provided to all the 12 TB control provinces in the year 2007.

4.4 TB HIV collaborative activities

Tuberculosis cases notified in Kenya continue to rise and pose a big public health threat because of its mode of transmission. In 2007 116,723 cases were reported, up from 115,234 in 2006 an increase of 1.3%. The increase is attributed in our set up primarily to HIV which has fuelled the epidemic. Human Immunodeficiency Virus has been documented to destroy the body's immunity with the inevitable consequence that dormant TB becomes active and start multiplying leading to disease. It is also known that the largest killer of HIV infected patients is TB. Other major reasons why there has been an increase in TB cases include poverty with its manifestations in unplanned upcoming structures like slums, malnutrition and poor sanitation.

The TB HIV collaborative activities focuses on three main objectives as stipulated in the WHO interim policy and from where the Division of TB, Leprosy and Lung Disease division borrows heavily. These objectives are:

- Setting up mechanisms of collaboration between the HIV and TB program
- Reducing the burden of HIV amongst TB patients
- Reducing the burden of TB amongst People living with HIV/AIDS

In total, there are 12 activities that build up the TB HIV collaborative activities which were initiated in the third quarter of 2005 in pilot districts and quickly expanding the initiative progressively to cover the whole country. The country had to prepare to roll out the activities through revision of the data collection tools to capture both TB and HIV variables, development and adoption of policy guidelines including training materials and ensuring that there are teams to roll out training in quality assured standard manner throughout the whole country. By Quarter 1 of 2006, all the districts were using the revised tools which enabled monitoring and evaluation including analysis of the implementation of the activities. At the end of 2007, 650 Health care workers had been trained on TB HIV collaborative activities and the numbers are still on the upswing.

Entry to TB HIV collaborative activities in Kenya was through testing for HIV in the TB clinical settings under the banner of Diagnostic Testing and Counseling (DTC) after the ministry released policy guidelines *'HIV testing in clinical settings'* in October 2005. Testing for HIV is offered in the context of the three C's (counseling, Consent and Confidentiality). To guide implementation and to monitor progress, the division set up targets to be met at all levels that include:

- HIV testing of TB patients to 80%
- Ensuring 80% HIV+/TB patients on cotrim
- Ensuring 80% of HIV+ TB patients on ARV's
- Ensuring at least 20% of PLHWA are screened for TB with the **Ultimate goal of universal routine testing for all TB patients and suspects**

Isoniazid Preventive Therapy (IPT), one of the twelve TB HIV collaborative activities is not widely practiced in Kenya because of clinical needs and logistics involved. There are fears of widespread use without ensuring proper adherence that could lead to development of resistance. In May 2007, a national Stakeholders meeting was called upon to deliberate, review existing knowledge and recommend policy guidelines on TB preventive strategies towards achievement of the Millennium Development Goals (MDGs) and specifically on policy change on:

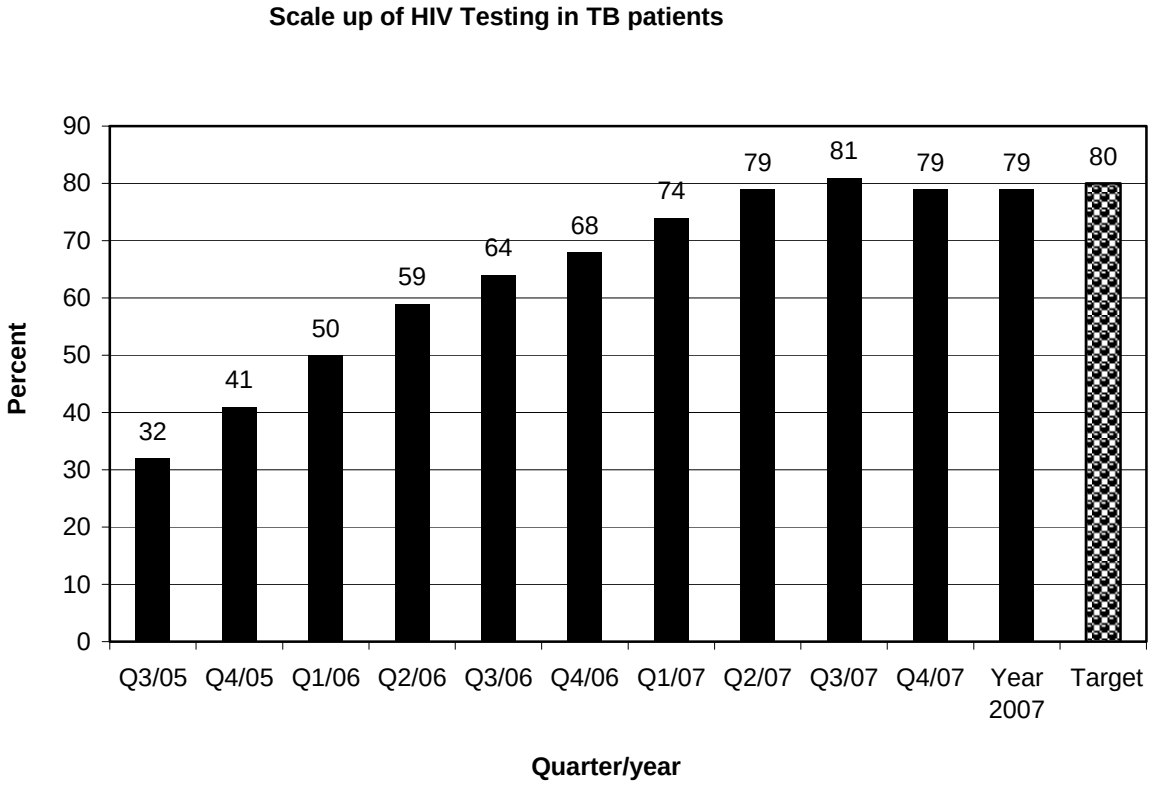
- Use of Isoniazid Preventive Therapy (IPT)
- Mechanisms of intensifying TB case finding for TB Control in Kenya
- Infection prevention/control in health care/congregate settings

The meeting made the following recommendations pertaining to use of IPT:

1. IPT should not be implemented nationwide at the moment
2. Implementation should be limited to selected settings that include:
    - Congregate settings; prisons, military, children homes
    - Target groups; HCW, children exposed to open TB
    - Selected Health programs which have adequate systems and structures; e.g. EDARP, AMPATH, MSF
    - Controlled research programs

The trends of HIV testing amongst the TB patients rapidly picked up towards the target of 80% and by the end of 2007, 79% of the TB patients were offered DTC.

Figure 23: DTC Uptake in Kenya



The TBHIV collaborative activities have shown weakness especially in relation to linkages to comprehensive care and treatment, and specifically linkages to ART. This weakness is basically because a TB HIV patient that has been identified in the clinic is referred to the ART clinics. In 2007, only 27% (16,324) of these patients were put on ARV's as compared to 86% (51,731) being put on cotrim which is offered at the TB clinic.

Other challenges that continue to impede implementation include how to strengthen health care delivery systems to sufficiently respond to increasing resource demands, financial, human resource, logistics and infrastructure. In particular, there is shortage of funds to train all health care workers in all health facilities (both public and private), creation of space in the TB clinics to respond to demands for testing for HIV and for offering counseling.

So far funds for training have been through partner support and in particular CDC, WHO (OGAC) and WHO (Italian grant). Other players in the field have also played a key role in supporting training of health care workers. Funds from CDC were used to expand and improve space in 20 high volume facilities during the year.

4.5 Multidrug Resistant Tuberculosis-MDRTB

The year 2007 has been instrumental in initiation of MDRTB management in Kenya. The key activities included mobilization of program personnel to submit sputum specimens to the CRL for DST. This improved from 2,511 specimens in 2006 to 4,004 specimens in 2007 representing a 60 percentage improvement. The CRL identified a total of 82 isolates that were resistant to both R and H during the year.

The country's MDRTB regime was decided by the MDRTB committee with five drugs used in the intensive phase (Capreomycin, Ofloxacin, prothionamide, cycloserine and pyrazinamide) for a minimum of 6 months while the continuation phase will last for a minimum of 18 months using three drugs (Ofloxacin, prothionamide, and cycloserine). During the year MDRTB drugs sufficient to treat 40 MDRTB was procured using GFATM round 5. The first consignment of these drugs was received in country from International Dispensary Association (IDA) the local agent of Green Light Committee (GLC) in December and the first patients are expected to be enrolled early in 2008.

To enable skilful management of MDRTB a team of 5 medical staffs from KNH were trained at Latvia and 35 program officers were trained in Eldoret. Sensitization of staffs was also done at the Kenyatta national hospital

There was a delay in construction of the isolation facilities due to technical difficulties but we are optimistic this will be sorted out in the coming year. Tenders for protective gear and ancillary drugs are at an advanced stage. The design of treatment guidelines, treatment record cards, patient appointment card and the category IV register were designed though a wide consultation with stakeholders. Support for MDRTB activities was received from REDSO (through RCQHC) , the global fund round 5 grants and WHO. Validation of results of DST has started though rather sluggishly but is expected to be kept to date in the future.

4.6 Global fund

The global fund remains a substantial source of funding to TB control in Kenya. So far the country has signed 3 grants- round 2, 5 and 6 grants providing a potential financing of USD: 47,726,841 out of which USD: 7,343,914 (15% of the approved funds) has been received and USD: 4,593,502 (66% of the funds received) spent over the last four years. The funds from round 2 were instrumental in introduction of TB/HIV activities and community TB, assisting the division to train 2,541 health care workers and 1,182 community health care workers. This has enabled the program to be able to test for HIV up to 79% of all TB patients registered annually and hence providing an entry point to accessing HIV care which includes cortrimoxazole prophylaxis and ARVs.

Round 5 support aimed at strengthening surveillance for MDRTB and initiating treatment of MDRTB. Using this support 13 new AFB diagnostic centers have been set up, 567 laboratory staffs trained on external quality assurance and plans are underway to set up an isolation facility for MDRTB treatment in Kenya as well as provide second line treatment. This grant also has an advocacy, communication and social mobilization

component that is expected to raise the awareness level on TB among the population, through but not limited to, mass media.

Round 6, was signed on 30th October 2007 and funds disbursement is awaited. This support is expected to build on the support to diagnostic capacity with the setting up of 50 new sputum diagnostic centers annually leading to 250 centers by the end of 5 years.

The global fund grants have also strengthened the program infrastructure especially in the transport (additional 9 vehicles, 15 motor bikes and 780 bicycles), diagnostic capacity (100 microscopes and procurement of lab reagents) and in provision of first line and second line anti-TB drugs. A lot of information, education and counseling materials including guidelines and posters have been developed, printed and distributed using this support.

Part of the global fund support has been channeled through 29 Non governmental organizations with one NGO in round 2, 13 NGO's in round 5 and 15 in round 6

The biggest challenge and constrain for global fund implementation remains timely submission of reporting of activities implemented. GFATM is a performance grant and continued flow of funds is based on outputs and outcomes of the planned activities with timely submission of reports. Information on implementation of the activities has not been flowing as smoothly as anticipated but has recently improved and the division expects to perform better in 2008 and subsequent years.

4.7 Pharmaceutical Unit

The unit had one pharmacist and two record officers for the whole year who successively managed the unit. There were many projects done by the unit during the year including the following:

4.7.1 Key activities of the 2007

Quarter One:

- ✓ Six months first line anti-TB drugs were delivered into the country by Global drug facility (GDF)
- ✓ The division presented its commodity requirements at the annual ministry of health procurement meeting

Quarter two:

- ✓ The country started the six months adult TB treatment with Nairobi leading the way, the rest of the country to be introduced a structured way
- ✓ GDF approved application for paediatric TB drugs to run for three years. The drugs are now available as dispersible tablets for RH (60/30mg) and RHZ (60/30/150)
- ✓ The GDF technical review team visited the country on monitoring mission.

Quarter three:

- ✓ Revision of logistics guidelines and inclusion into the national guidelines was carried out during the year.

- ✓ Process for procurement of MDR –TB drugs through global fund round five support was started. Delivery is expected within 16-24 weeks
- ✓ WHO procured Leprosy drugs

Quarter four:

- ✓ Quantification of commodities for next two years commenced using softwares like quantimed and pipeline
- ✓ Some of the MDR –TB drugs arrived in the country

4.7.2 Flow of commodities

The flow of commodities from KEMSA to the peripheral units was irregular throughout the year

- ✓ Eastern south commodities were delivered to the 9 districts by KEMSA
- ✓ In the rest of the regions of the country, the TB/leprosy commodities were delivered to respective regional stores
- ✓ Quarterly drugs reports were received from the 11 regions although the reporting rate is 30%, resupply orders were based on this reports
- ✓ Lab commodities and paediatric drugs were in short supply due to challenges of procurement and supply chain management.

4.7.3 Capacity Building

- ✓ MDR-TB training for all key personnel in the program was done in quarter three
- ✓ Pharmaceutical unit were trained on quantification and pipeline software's

4.7.4 Funding Issues and sources

- ✓ The TB drugs are procured mostly by the government and around KES 80 million was utilized in last year's ministry of health TB allocation to purchase 1st line anti-TB drugs and lab commodities.
- ✓ 2nd line anti-TB medicines and MGit reagents for the CRL were pROCURED using Global fund round five

4.7.4 Challenges and Constraints

- ✓ Delay in distribution of TB/leprosy commodities and servicing orders by Kemsa (order fill rate is 15%).
- ✓ Late and low reporting rates of less than 30%, therefore quantification and forecasting of the same commodities becomes difficult.
- ✓ Lack of drug supply or supply chain management training.
- ✓ Shortage of l pharmaceutical staff

4.7.5 Lessons learnt in 2007

- ✓ Accurate forecasting and quantification of TB/Leprosy commodities is very critical in TB control
- ✓ Need to understand the procurement cycles of different organizations in consultation with ministry of health avoids overstocking or under stocking.

4.8 Advocacy, Communication and Social Mobilization (ACSM)

Most of the funds from the Global Funds for Tuberculosis on ACSM activities are with NGOs. The ACSM central unit roles remain coordination of implementation of activities and to ensure quality of services.

4.8.1 Key Activities Areas

1. Supportive supervision
2. Training on ACSM
3. Development, production and distribution of IEC materials
4. Preparation and conducting World TB Day 2007 commemoration
5. Development and airing of Radio and TV spots
6. Participating in Nairobi International Show
7. Participating in Civil Servants celebration week
8. Review and development of TB/HIV Advocacy strategy

4.8.2 Supportive supervision

Supportive supervision was carried out in the districts and provinces on ACSM in quarter 2 and 3. During the supervision it was evident that some districts were keeping IEC materials in the stores instead of distributing to targeted population. It has been noted that there is lack of tools that captures ACSM activities

4.8.3 Training for ACSM

The DLTLD Central unit in conjunction with the Provincial Medical Officers trained Deputy District Public Health Officers in the country in May 15th and 16th and 29th and 30th 2007 in Kisumu and Mombasa respectively. A total of 62 participants were invited but 54 of them turned up, that translate to 87% turn out in the two trainings. The trained officers are supposed to be the focal persons for the ACSM activities at the district level.

4.8.4 Development, production and distribution of IEC materials

The following IEC materials were developed, printed and distributed to the (11) eleven TB zones as shown in the table 6 below

Table 5: IEC materials distributed in 2007

No	Item
1	Brochures
2	Posters
3	Stickers
4	Sun visors
5	Banners
6	T-shirt
7	Caps
8	Leaflets

4.8.5 Preparation for the WTB Day 2007 commemoration

World TB Day 2007 is traditionally commemorated on 24th March of every year in the world. This activity coincided with the Easter holiday and was celebrated nationally on 27th march through media campaign that was graced by the PS. The provinces and districts held the activity on different dates due to other local competing events. There were build up activities before the main event that culminated in the media breakfast briefing. During the WTBD, WHO donated LED microscopes to the program to improve on intensive TB case finding activities. In addition, the MDR TB guidelines were launched.

4.8.6 Development and airing of Radio and TV spots

This activity was done by PATH and PSI in conjunction with the Division of leprosy, Tuberculosis and lung Disease. The campaign went on air from 27th July 2007.

The table below shows the achievement on the spots and talks in the TV, Radio and print media:

Table 6: Mass Media Campaign materials in 2007

MASS MEDIA CAMPAIGN		
Media	**Type**	**Quantity**
Print	Supplement and Advert	20
Radio	Spots	430
Radio	Talk	108
TV	Spots	26

4.8.7 CAPACITY BUILDING

Two members of ACSM section of the division attended the following capacity building workshops and conferences

- Facilitative supervision course from 11th to 15th June 2007 held in Nairobi,
- Environmental Health Congress on 27th to 30th Aug. 2007 at KICC Nairobi and presented a paper.
- Stop TB Partnership Country-Level ACSM meeting on 5th to 6th October 2007
- The 38th Union World Conference on Lung Health, 8th -13th October 2007 in Cape Town, South Africa
- National workshop on Isoniazid Preventive Therapy (IPT) on 14th to 15th May 2007 held in Nairobi
- A short course on supervision and improvement of performance from 12th to 16th December 2007, at Embu,
- Regional Conference on HIV and AIDS Advocacy in Eastern Africa from 25th to 27th May 2007 at Mombasa.

One staff in the section commenced his PhD program in Epidemiology, in June 2007, with Jomo Kenyatta University of Agriculture and Technology.

4.8.8 Funding issues/ sources

- Training for ACSM - WHO
- Printing IEC material – MOH (Global funds), WHO, CDC, Sanofi Aventis and Maltser International
- Development and airing of Radio, TV spots and print media - MOH (GFATM)
- WTBD 2007 commemoration – MOH (Global funds), WHO, CDC, Sanofi Aventis and Malteser International
- Capacity building - WHO and CDC
- Nairobi International Show - CDC
- Civil Servants celebration week - GOK

4.8.9 CHALLENGES AND CONSTRAINS

1. Lack of clear collaboration guidelines between District TB coordinators and PHOs making it difficult to effectively distribute IEC materials and conduct proper and efficient defaulter tracing activities.
2. Community awareness and involvement in TB control (TB detection and treatment) present a significant challenge in most of our TB zones.
3. Health seeking behavior that leads to delay in seeking appropriate care
4. Fear, Stigma and discrimination
5. Adequate funding for ACSM activities

4.9 TB in Prisons

This unit within the clinical care section is charged with the coordination of TB and TB/HIV activities in the prisons.

4.9.1 Activities

In the year 2007 the following key activities were carried out:

- Printing of prison TB/HIV screening tool for prisons
- Piloting TB HIV screening tool in 10 selected prisons. The screening tool developed in partnership with prison authorities enables screening of all new inmates for TB with the aim of taking appropriate action on suspects ultimately leading to reduced TB transmission in these congregate settings
- Renovation of 3 labs in prisons to strengthen TB diagnosis
- Support deployment of radiographers at Kamiti and Kodiaga prisons

4.9.2 Capacity Buildings

More than 200 HCW working within prisons were trained on TB/HIV collaborative activities (DTC) including sensitization of prison in charges on TBHIV issues in 10 prisons. In addition, documentation clerks were trained on use of screening tool in 10 prisons.

4.9.3 Funds

TB control activities in prisons were mainly by funded through CDC support.

4.9.4 Challenges and constrains.

- Implementation of planned activities moving very slowly due to bureaucracy in accessing funds from CDC Kisumu.
- Congestion and overcrowding in prisons remain a major hindrance in control of TB in prisons

4.9.5 Achievements

- Prisons are now accessible
- Diagnosis and management of TB in Prisons is done well in prisons with health facilities

4.10 Laboratory services

In laboratory services, sputum smear microscopy continued to occupy a central position amongst the activities in DLTLD in the year. The division recognizes the role played by the lab services in TB diagnosis, monitoring of treatment and verification of cure. It is on the basis of this that the division continues to ensure that lab commodities in all the diagnostic centers are never in short supply.

The pace of decentralization of TB diagnostic services continued to increase in 2007. The diagnostic centers in the country now stand at 930 from the previous 770 in 2006 primarily as a result of support from Global fund and other partners. Funds from these partners were used for renovation of labs and employment of lab staff.

Two fluorescent microscopes were distributed to Port Reitz in Mombasa and Moi Teaching and Referral hospital, six other laboratories are also using Fluorescent microscopes donated by different partners (KNH, Kericho dist hospital, St Vincent, Mbagathi Hospital and Rhodes clinic) bringing to a total of 8 laboratories using fluorescent microscopes in the country. The division intends to introduce additional 14 fluorescent microscopes to cover all provincial laboratories and some busy district hospital labs where sputum smear workload is usually high. The division of Leprosy through GFATM also acquired 100 microscopes among other lab commodities which have since been distributed to all the provinces.

There were deliberate efforts made to scale up sputum smear microscopy quality assurance through Internal Quality Control (IQC) and External Quality Control CEQA). During the year under review all 11 provincial laboratories had their slides sampled using blinded rechecking method for EQA by Central TB reference laboratory staff. Additionally, 570 lab staffs in total were trained in AFB microscopy in 2007 through support from GFATM and other partners. To leverage on gains made and further strengthen TB laboratory activities including EQA, a provincial medical lab technologist consultative meeting was done. So far a total of 46 out of the 80 (old) districts have been carrying out EQA regularly with encouraging results that are reported quarterly. By the end of the year the quality assurance system was functioning reasonably well in all provinces.

There was shortage of some TB diagnostic commodities like sputum mugs and slides during the year due to unexpected delay in procurement of these vital items and a delay in arrival of KNCV –CIDA (Netherlands Tuberculosis relief association) support. Quantity and quality of human resources especially lab staff remained a big problem due non employment of new staff. The other major challenge is the delay in submission of financial and technical reports from the facilities. Table 7 and figure 24 below shows the sputum examination workload per province in the year. Figure 25 below shows suspect positivity rates for the different provinces, on average the suspect positivity rate in Kenya is about 15% for the new suspects.

Table 7: Laboratory workload per province in 2007

	Province	New suspects			Follow ups			Smears		
		Total	Pos	%	Total	pos	%	T .smears	Pos	%
1	Western	17,800	2,290	13	4,596	362	7.9	47,547	6,206	13
2	Central	25,317	3,778	15	6,770	213	3.1	69,657	5,139	7
3	Eastern N	6,469	1,009	16	1,006	15	1.5	14,427	1,847	13
4	Nairobi S	24,969	3,517	14	10,674	830	7.8	72,149	9,250	13
5	Nairobi N	19,192	3,288	17	4,154	181	4.4	45,683	8,172	18
6	RVN	25,117	2,985	12	6,873	39	0.6	71,845	7,535	10
7	Coast	30,174	4,929	16	11,974	634	5.3	83,970	10,383	12
8	North E	6,555	856	13	2,214	45	2.0	17,646	1,875	11
9	Nyanza	40,072	5,534	14	13,734	732	5.3	117,080	18,500	16
10	RVS	22,208	3,609	16	8,829	410	4.6	54,397	8,133	15
11	Eastern S	26,120	2,000	15	4381	223	5.1	72,000	4,347	6
	Kenya	231,195	33,795	15	75,205	3684	4.9	666,401	81,387	12

Figure 24: **Lab Workload 2007**

(Suspects, Follow ups and smears)

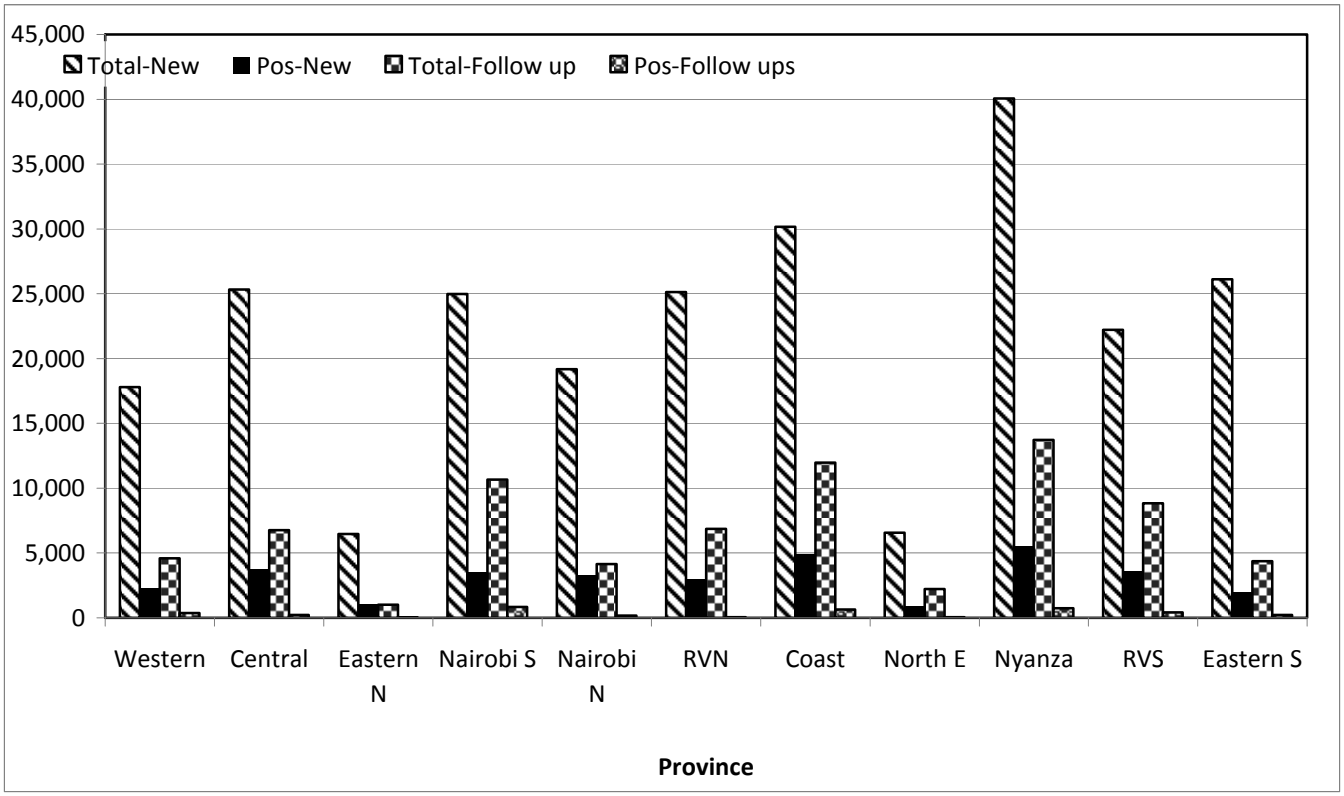
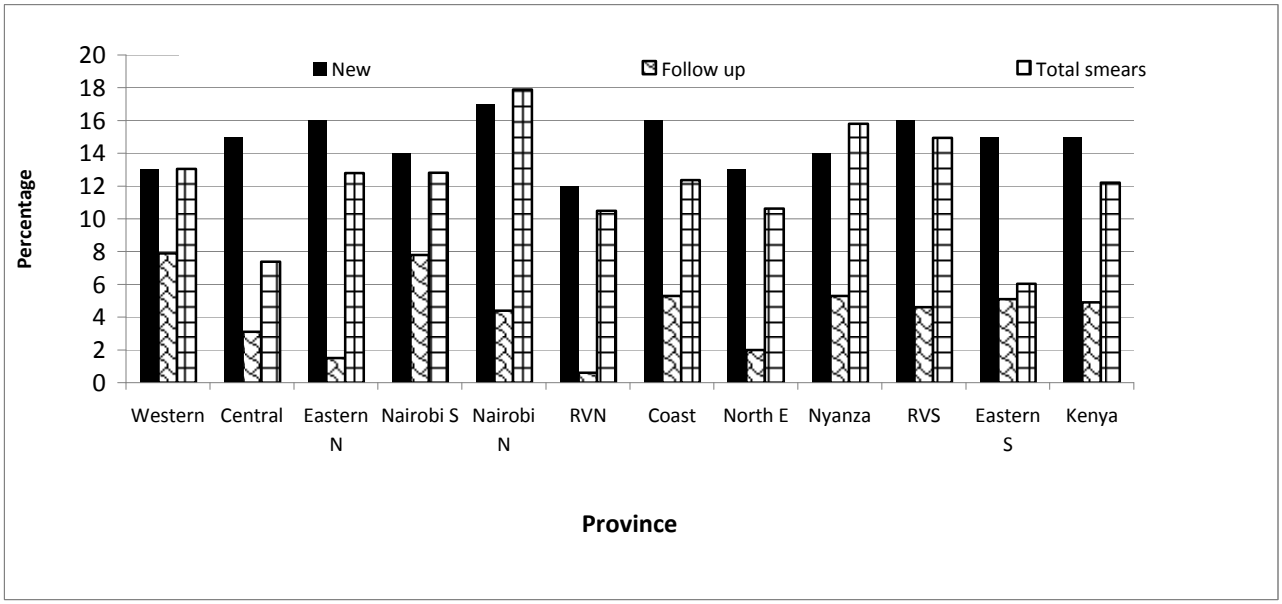


Figure 25: **Suspect positivity rates in 2007**



4.11 Central Reference TB Laboratory (CRL)

4.11.1 Activities

The laboratory plays a critical role in diagnosing TB and monitoring treatment. Laboratories and the laboratory network is often a direct reflection of the success of the TB programs. They form a fundamental component of TB control, providing testing for diagnostic, surveillance and treatment monitoring at every level of the health system.
The role of the Laboratory is to

- Recommend standardized methods for SLD
- Recommend appropriate classes of drugs for DSTS
- Scope of IQC measures that should be undertaken by Lab. Performing SL DSTS
- To provide a frame work for evaluation of new therapeutic compounds
- Provide leadership in EQA of all provincial hospitals
- Inform clinicians and program on emerging resistance to TB drugs including monitoring of MDR TB patients on treatment

Kenya (CRL) has taken advantage of new technologies that provides rapid detection, identification and drug susceptibility testing of *Mycobacterium tuberculosis* by adopting the molecular (hain) method during the year. Since 2005 the retreatment TB cases have continued to increase steadily. The policy of the program is to have sputum from all patients started on re treatment regime submitted to the CRL for culture and DST as this inherently forms part of MDR surveillance in the country apart from providing useful information to clinicians to offer individualized TB treatment. In the year 2007, sputum from 40% of all retreatment cases in the country were submitted to the CRL for culture and DST. The target is to have over 80% of sputum of legible patients to be submitted. The table below shows the trend of increase in submitted sputum to the lab.

Table 8: Central Reference Laboratory workload 2005-2007

Year	Samples submitted	% submitted
2005	1,190	10
2006	2,511	23
2007	4,403	40

The CRL activity operates on the routine surveillance on TB drugs, Monitoring the treatment, evaluation and the management of the patient.

Modern techniques including fluorescence microscopy (FM), use of Liquid cultures for isolation and drug susceptibility testing and amplification for the detection of drug resistance are offered by CRL as routine procedures. In 2007, Foundation for Innovative New Diagnostics (FIND) partnered with CRL to validate new molecular diagnostic methods on use of direct specimen for rifampcin and Isoniazid resistance using nucleic acid amplification tests.

Two staffs were trained in Germany on the new methods of diagnosis during the year. There was a deliberate effort to strengthen quality assurance through technical support from the supra laboratory in Brisbane. In addition there is a new focus on expanding and strengthening QA services for microscopy, culture and drug susceptibility (DST).

Whereas safety is a continuing concern for the Lab. staff at all levels who work with specimens and cultures containing *Mycobacterium Tuberculosis*, quality of microscopy services remain a major challenge to the TB program.

5. INFRASTRUCTURE AND SUPPORTIVE ACTIVITIES

5.1 Manpower

5.1.1 Central level

The division of TB continues to expand with need for more skilled staff to be able to meet evolving and new challenges. Consequently, new staffs were deployed to the central unit. These new staffs include Dr Guracha Argata (M & E), Tomno Wesley (CB DOTS), Peter Onserio (Procurement) and Mary Osano (Administrative officer).

During the year Susan Gacheri procceded to KIT to pursue an MPH course.

5.1.2 Provincial level

Dr Laura Angwenyi joined the division and deployed to Nyanza South as PTLC Nyanza south following the split of the greater Nyanza province to ease and improve on coordination of TB control activities.

5.2 Transport

Supervision forms a key activity in the control activities and this is only possible with availability of an efficient and effective means of transport. The old PTLC vehicles are now gradually being replaced and in the year 2007, two new vehicles were procured to replace North Eastern and Coast provinces (Toyota hard bodies) through KNCV support. In addition, CDC supported procurement of 18 new motor bikes for replacing old motorbikes in the districts. PATH donated 10 more motor bikes to be use at the districts by assistant DTLC's that the organization supported.

DISTRIBUTION LIST

Permanent Secretaries –MOPHS and MOMS

Director of Medical Services

Director Preventive Promotive Health Services

Head National AIDS/STD Control Program

CDC country office

JSI-Deliver project

KANCO

FHI

USAID

Medical Advisor Royal Netherlands Tuberculosis Association (KNCV)

Medical Advisor Netherlands Leprosy Relief Association (NLR)

WHO/Country Office Kenya

WHO/regional Office (AFRO)

WHO/Stop TB Initiative Geneva

Provincial Medical Officers

Provincial TB Leprosy Coordinators

Medical Officers of Health

District TB Leprosy Coordinators

Centre for Respiratory Diseases Research- KEMRI

AMREF

MERLIN

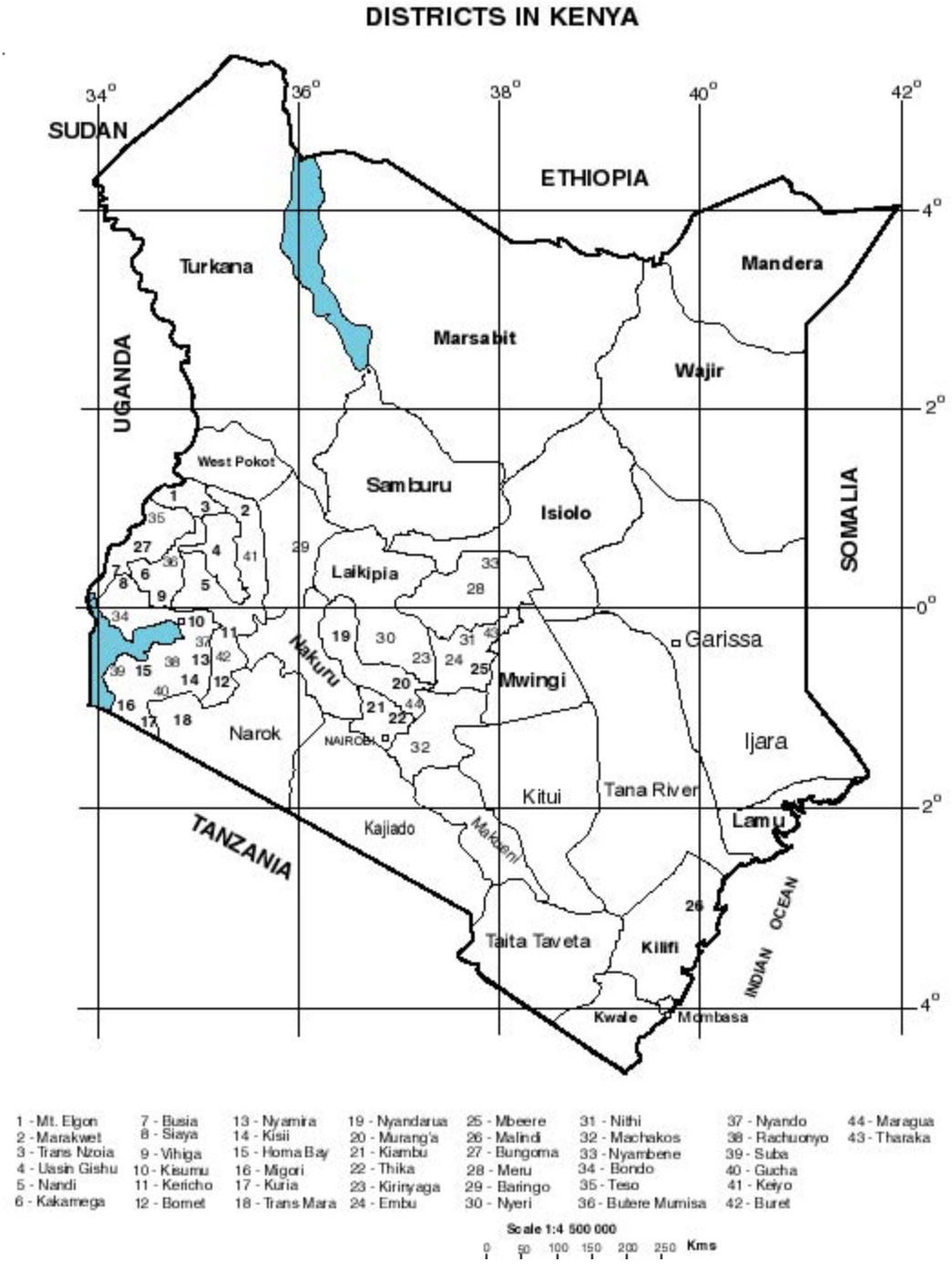
Malteser

PATH- Kenya

Kenya Association for the Prevention of Tuberculosis and Lung Diseases

International Organization for Migration (IOM)

Annex 1: Map of Kenya



Annex 2: Organizational structure of the DLTLD within the Ministry of Health