

City of Cape Town / Metropole Region TB Control Programme

*A Partnership between the Provincial Administration of the Western Cape
Metropole Region and City Health*



Progress Report

1997-2002

FOREWORD – DR I. P. TOMS

During the last two years City Health has made steady progress towards achieving the overall goal of an 85% cure rate for new, infectious cases of TB. This has been achieved by a concerted effort at every level of the health services. Mitchell's Plain has achieved the excellent outcome of a 90% cure rate in the last quarter – making it the best performing sub district in the country. Well done! Our high burden sub districts, Khayelitsha, Nyanga and Oostenberg account for half our TB workload and have contributed significantly to the City's achievements. Improvements in these sub districts will have a big impact on overall City achievements. Senior management will continue to equitably resource, encourage and support these sub districts in the year ahead.

TB is curable and the DOTS strategy is one of the most cost effective health interventions. Nevertheless TB is responsible for a third of all deaths in HIV infected people. By bringing TB under control in the city we will be making an important contribution to the fight against HIV/AIDS and making Cape Town a World Class City. My congratulations and thanks go to all our staff, to the NGO's who have assisted us and to the community members who have contributed their time and effort.

The challenge that lies ahead is to continue to identify the best practices that make the most of our available resources and to integrate the provision of care. We will remain focussed on our goals, strengthen performance management and promote accountability. By empowering communities, the City will step up, through effective partnerships, efforts aimed at turning the tide on HIV/AIDS & TB.

Dr Ivan Toms

Director City Health

FOREWORD – DR K. N. VALLABHJEE

The Western Cape Provincial Department of Health has identified the effective control of Tuberculosis as one of its key priorities. The total registered cases have increased by approximately 50% and the number of new cases by 22% between 1997 and 2002. The HIV/Aids epidemic is a significant factor in the increase of TB within our population.

It is therefore important for the Program Management to stop and reflect upon its progress; its strengths and weaknesses. This is the purpose of this booklet.

Notwithstanding the increased incidence of TB, the Metro TB control program has made significant strides in combating the disease. This is reflected in the impressive improvements in the TB cure rates from 65% in 1997 to 73% in 2002. The main reasons underlying the success of the program include:

- Strong partnership between the Metro region, Unicity, NGOs and communities
- Dedication and commitment of health personnel and community based workers within the region
- A good information system that identifies the problem areas and enables the program to focus its efforts accordingly
- Strengthening the capacity of the program including training, support and appointment of district coordinators
- Structured, regular reviews of the program focussing on the under performing areas

Healthcare 2010 framework of the Department places a big emphasis in strengthening the Primary Health Care services including health promotion, to enable this level of health care service to effectively deal with all the major health care needs of our communities. This will lead to more resources being available to improve the Primary Health Care infrastructure to deal with Tuberculosis control. There is also a greater emphasis on expanding the community-based service including the community DOT programme.

In the light of a dual HIV/TB epidemic, we cannot become complacent and allow our gains to be reversed. The challenge for us all is to maintain the momentum the program has managed to create and redouble our efforts on clearly identifiable objectives and targets. We need to increase our detection rate and cure rate of infectious TB patients. This will require a higher index of suspicion and a lower threshold for doing appropriate TB investigations in all our health services in the Metropole Region.

Thank you and congratulations to all the people that have contributed tirelessly to the successes achieved in the metropole TB control programme. Your dedication and commitment on a daily basis is central to the success of the program and is much appreciated.

Dr K N Vallabhjee

Chief Director, Metropole Region

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1 INTRODUCTION

The incidence of tuberculosis (TB) in the Western Cape, particularly in Cape Town, continues to be amongst the highest in the world, exacerbated by the HIV/AIDS pandemic. The effective management of TB remains one of the key goals of Provincial and Local Government health services. The MEC for Health in the Western Cape declared TB an emergency in 1996 and the City has identified TB as one of its strategic priorities.

This report has been compiled to provide an overview of TB control in the City from 1997 – 2002 so as to inform and influence health policy decisions. It aims to highlight the resources required for the provision of adequate TB services that will in the future need to be clearly accounted for. Most importantly it serves to publicise and acknowledge the contribution made by staff involved in the TB Control Programme.

TB Control Programme activities in the City are the joint responsibility of the Province Administration of the Western Cape (PAWC) and the Local Authority (LA). The Province, through its Metropole Regional Office, funds programme specific activities. The 35 Provincial Community Health Centres provide TB diagnostic services and this is the first point of entry for many TB patients. Other points of entry include hospitals, private practitioners and LA Clinics.

TB patients are registered at 99 reporting units (LA Clinics, two TB hospitals and two prisons) in the City. TB treatment is rendered at 121 treatment points, mostly of which are LA Clinics. District TB/HIV coordinators support TB Control Programme through training and supporting clinic staff and by co-ordinating, monitoring and evaluating services delivered through these facilities. The PAWC Metropole Regional Office has overall responsibility for monitoring and evaluation of the TB Control Programme.

2 PROGRAMME OBJECTIVES

The expanded framework¹ reinforces the five essential elements of World Health Organisation's DOTS Strategy. The elements of this framework apply to HIV-related and drug-resistant forms of TB as well.

- a. **Sustained political commitment to increase human and financial resources to make TB control an integral part of the national health system:** The DOTS programme should be made an integral health system activity that anchors TB activities through all levels of the health system within the community.
- b. **Access to quality-assured TB sputum microscopy** for case detection among persons presenting with, or found through screening to have, symptoms of TB (most importantly prolonged cough). Special attention is necessary for case detection among HIV-infected people and other high-risk groups such as people in institutions.
- c. **Standardized short-course chemotherapy** to all cases of TB under proper case-management conditions including direct observation of treatment. The added components under this element include harnessing community contribution to TB care, involving private and voluntary health care providers and addressing the issue of MDR-TB where appropriate.
- d. **Uninterrupted supply of quality-assured drugs** with reliable drug procurement and distribution systems. Anti-TB drugs should be available free of charge to all TB patients since curing TB patients is beneficial to society at large. The proper utilization of drugs in practice should be strictly monitored. Use of fixed dose combinations should be encouraged.

¹ An Expanded DOTS Framework for Effective Tuberculosis Control, WHO/CDS/TB/2002.297

- e. **Recording and reporting system** enabling an outcome assessment of each patient and assessment of the overall programme performance. Local capacity to analyze and use routinely collected data should be strengthened.

The DOTS strategy focuses primarily on improving the cure rate in new infectious patients. The experience in the City is that in doing so, the standard of the whole programme is lifted and cure rates for other categories of TB patients also improve. While there are many criticisms of the DOTS strategy, it remains the only effective strategy we have available for controlling the TB epidemic.

Programme objectives were developed by the National TB Control Programme and have been adopted by the province, regions and districts.

Overall Objectives:

- Reduce TB mortality and morbidity
- Prevent the development of drug resistance
- Accurately measure TB programme performance

Short-term Objectives:

- Smear conversion rates of 85% for new smear positive cases and 80% for retreatment smear positive cases measured on completion of the 2-3 month intensive phase
- Cure rates of 85% for new smear positive case, measured after 6 months of treatment

3 MONITORING OF TB CONTROL PROGRAMME ACTIVITIES

The programme is monitored according to World Health Organization and International Union Against Tuberculosis and Lung Disease accepted standard definitions. The TB control programme is one of the few health programmes where progress can accurately be monitored and evaluated, because there are defined indicators, clear end points and a well worked out monitoring system that can be applied at facility and district level. The essential programme indicators are outlined below.

Case Finding

- *Incidence/ Case Detection [total & new smear positive cases]*
The number of total and newly registered smear positive pulmonary TB cases per 100 000 population

Case Holding

- *Smear conversion rate [new & retreatment]*
The proportion of smear positive pulmonary TB cases who convert from smear positive to smear negative after 2 and/or 3 months of the intensive phase of treatment out of total smear positive patients registered during the quarter

Treatment Outcomes

- *Cure rates [new & retreatment]*
The percentage of smear positive patients who were cured out of the total smear positive patients registered during the quarter
- *Treatment completion rates [new & retreatment]*
The percentage of smear positive pulmonary TB patients who completed their treatment and were cured out of the total smear positive patients registered during the quarter
- *Interrupter rates [new & retreatment]*
The percentage of smear positive patients who interrupted their treatment out of the total smear positive patients registered during the quarter
- *Death rates [new & retreatment]*
Percentage of patients dying for any reason during the course of treatment
- *Failure rates [new & retreatment]*
Percentage of patients who are sputum positive at 5 months or later during treatment

3.1 Quality and Timeliness of Reporting

Originally the individual districts relayed data via the PAWC Metropole Office to the Provincial TB office, where monitoring was undertaken. Delays in submission, missing data and inconsistencies were a problem. Feedback was received too late to be of any relevance. Changes were introduced with City Health taking a more active role in monitoring and evaluating TB control in the City.

Over the last 3 years, quarterly reports have been completed and collated for the eleven districts within three weeks of the end of the quarter. District TB/HIV coordinators present this information to the Metropole TB Information Meeting, which offers an opportunity for scrutiny, discussion and feedback. This forum has generated a better understanding of the data amongst staff who also understand the need for accuracy. As a consequence the reporting rate is now 100%, the quality of data has improved and coordinators have developed the capacity to interpret and use the information for action.

4 CASE FINDING INDICATORS

As indicated in Table 1 the number of TB patients reported has risen by about 50% in the last six years. This reflects the growing population, improved reporting and an increased burden of disease.

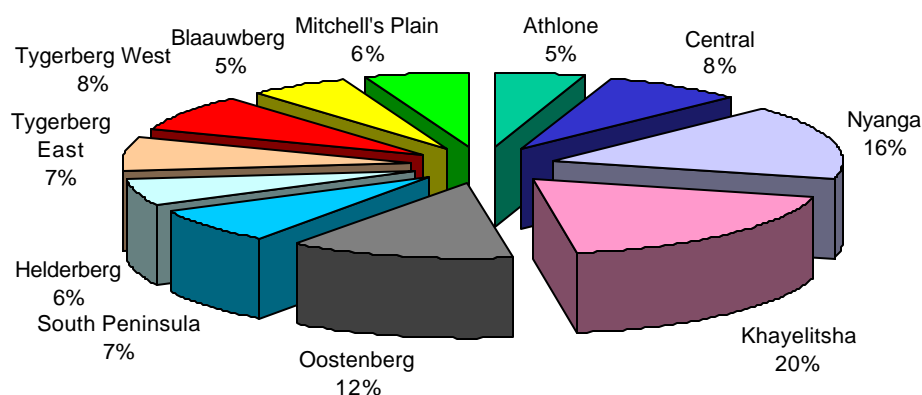
Table 1: Total Number Of TB Cases Registered 1997 - 2002

YEAR	TOTAL TB REGISTERED	% INCREASE PER YEAR	TB "NOT TRANSFERRED IN"	% INCREASE PER YEAR	CURE RATES
1997	16,112	-	13,870	-	65%
1998	17,472	8%	14,970	8%	66%
1999	18,340	5%	15,769	5%	64%
2000	20,830	14%	17,244	9%	70%
2001	21,394	3%	18,361	6%	73%
2002	24,075	13%	20,950	14%	N/A*

* Cure rates for 2002 will only be available at the end of 2003

Approximately 87% of all TB cases diagnosed are at public primary health care facilities. Hospitals and to a lesser extent private practitioners, diagnose the remainder. Despite the increased patient numbers, cure rates have steadily improved.

Figure 1: Case Load Per District - 2002



The burden of disease is not shared equally between the different health districts as shown in Figure 1. Of the 24,075 cases identified in the City in 2002, 3 districts - Khayelitsha (20%), Nyanga (16%) and Oostenberg (12 %) carry almost half the burden. On average, this translates to Khayelitsha treating 2100, Nyanga 1800 and Oostenberg 1400 TB patients on a **daily** basis. To make an impact on TB outcomes in the City, these districts have to receive an equitable share of resources and be prioritised for technical and other support.

4.1 Incidence Rate (Case Detection Rate)

In spite of almost 50% increase in the total TB case load over the past 6 years, when population growth is accounted for, the TB incidence rate has only increased by 22% over this period, with a high of 638/100,000 population in 2002 (Table 2).

Table 2: Case Detection Rate 1997 - 2002

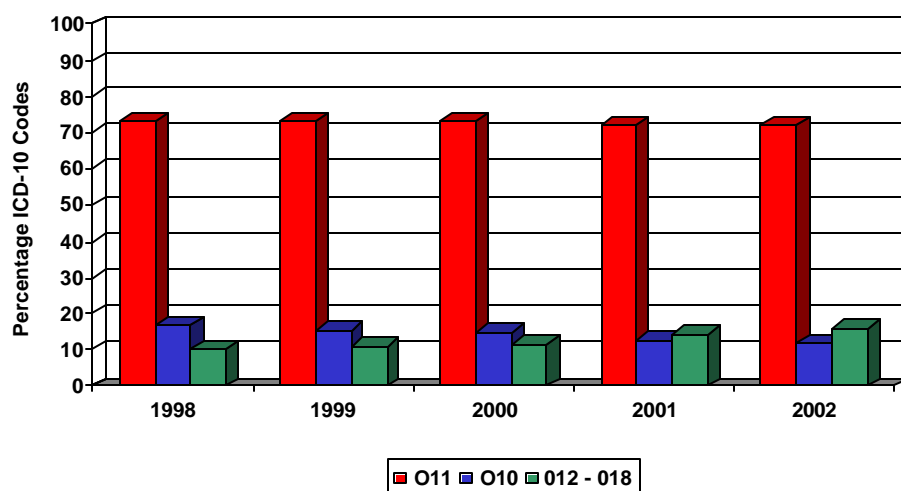
Year	All TB*	New Smear + Cases	Case-detection Rate /100 000 Population <i>All TB</i>	Case-detection Rate /100 000 Population <i>New Smear+ TB</i>
1997	13870	-	521	-
1998	14970	6089	520	212
1999	15769	6639	530	223
2000	17244	7262	562	237
2001	18361	7761	581	247
2002	20950	8769	638	266

The highest increase in incidence in real terms is in the districts of Khayelitsha, Oostenberg, Mitchell's Plain and Blaauwberg. This is probably due to a combination of migration into the area and reflects the impact of the HIV epidemic.

4.2 Types of TB

The proportion of pulmonary TB [011] cases has remained fairly constant at 72%, with a decrease in the proportions primary TB [010] from 15 to 11% and an increase in Extra-pulmonary TB [012 – 018] from 10 – 16% over the last 3 years.

Figure 2: Patterns of TB 1998– 2002 (ICD 10 Codes)



4.2.1 Primary tuberculosis

Primary tuberculosis in children is still a real concern with over 2000 children treated every year in the Western Cape. The source of TB infection in children is usually an adult (often a family member) with sputum positive pulmonary TB. The best way to prevent TB in children is to cure the infectious adult cases. Prophylaxis is provided to contacts under-5 years of age in such cases.

Table 3: Primary Tuberculosis 2000 - 2002

Districts	2000	2001	2002	% Increase / Decrease in the last 3 years
Athlone	100	120	138	38%
Central	138	99	122	12%
Nyanga	271	279	293	8%
Mitchell's Plain	70	74	77	10%
Oostenberg	587	490	479	23%
South Peninsula	145	139	164	13%
Helderberg	170	141	92	84%
Blaauwberg	103	78	119	16%
Tygerberg East	249	219	222	12%
Tygerberg West	274	214	200	37%
Khayelitsha	469	535	508	8%
Hospitals	23	45	23	0%
Region	2599	2435	2437	6%
% of Total TB	15%	13%	12%	

There are large variances in the percentage of children registered for treatment in the different districts. The diagnosis of TB in children is more difficult due to the less specific clinical presentation and for a number of technical reasons. Therefore it is difficult to determine whether the variances in the number of TB cases reported are due to an over-or under-diagnosis of TB in children

4.2.1 Extra -pulmonary Tuberculosis

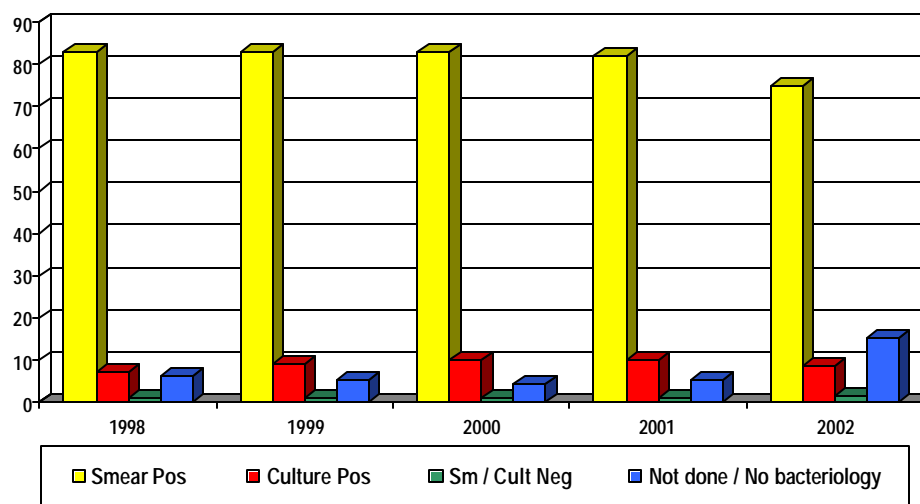
Table 4: Extra-pulmonary Tuberculosis 2000 - 2002

Districts	2000	2001	2002	% Increase In 3 years
Athlone	65	86	96	48%
Central	219	229	303	38%
Nyanga	468	544	663	42%
Mitchell's Plain	77	87	170	120%
Oostenberg	148	173	271	83%
South Peninsula	155	178	252	63%
Helderberg	96	112	175	82%
Blaauwberg	64	78	83	30%
Tygerberg East	87	122	195	124%
Tygerberg West	104	152	162	56%
Khayelitsha	490	747	926	90%
Hospitals	77	101	107	39%
Prisons	3	3	3	
Region	2053	2612	3406	66%
% of Total TB	12%	14%	16%	

Extra-pulmonary tuberculosis refers to all forms of TB that occurs outside the lungs. The proportion of extra-pulmonary TB cases has increased by 66% over the last 3 years. This reflects the HIV epidemic that renders HIV-infected individuals more susceptible to TB. It is interesting to note however the increase in areas such as Mitchell's Plain and Tygerberg East that have a relatively low HIV Prevalence as reported in the 2001 Antenatal Survey (0.7% and 6.1% respectively). As TB patients are usually registered in the district of residence, this could not be accounted for by "out of district use" of services and probably reflects an improved diagnostic capacity.

4.3 Bacteriological Coverage

Figure 3: PTB Sputum Results prior to the initiation of treatment



Over 90% of pulmonary TB cases are bacteriologically confirmed. Only 1% of TB cases are started on treatment with negative bacteriology and 5% of cases are commenced on treatment with no bacteriology having been done. The very large percentage of smear positive cases suggests that patients present relatively late in the course of their disease and/or that health workers do not pursue the diagnosis of TB when the initial smears are negative. Delayed diagnosis tends to result in greater morbidity and poorer prognosis for the patient and leads to more infectious disease contributing to further spread. Although the DOTS strategy correctly focuses primarily on the smear positive patients spreading the infection, it is generally accepted that only 60 – 70% of new registered PTB cases should be smear positive.

It should be noted that until the recent introduction of the National TB Electronic Register, Primary Tuberculosis had been excluded from the definition of Pulmonary Tuberculosis. The drop in the proportion of smear positive cases and the increase in bacteriology "not done/no bacteriology" category in 2002 is accounted for by the inclusion of Primary Tuberculosis from the 3rd quarter.

National Health Laboratory Service (NHLS): Statistics for Direct TB Smears 2002 ALL Smears (Suspects & Cases)

During 2002, direct microscopy was done on almost 200,000 sputum specimens at the Green Point National Health Laboratory Services for the City of Cape Town. The relatively high smear positivity rates (16,3%) may in part be due to methodology (concentration of specimens, heated fluorochrome stain and fluorescence microscopy), which increases the sensitivity of the smear tests. However, it may also be an indication that not enough smears are being sent off on TB suspects. This contention may be supported by the fact that on average only 4,79 smears were analysed for every smear positive case on the program me. [Ref. MDR survey 2001-2002 Pre-final report November 2002. MRC]

4.4 New And Retreatment TB Cases

About one third of the TB cases were previously treated for TB, a proportion that has remained fairly constant for a number of years. It is not known how many of these cases are reactivation (relapses, retreatments after treatment failure or after treatment interruption) or re-infection. It is suspected that a high percentage is re-infection in an environment with a high caseload and delays in diagnosis due to both patient and health service factors.

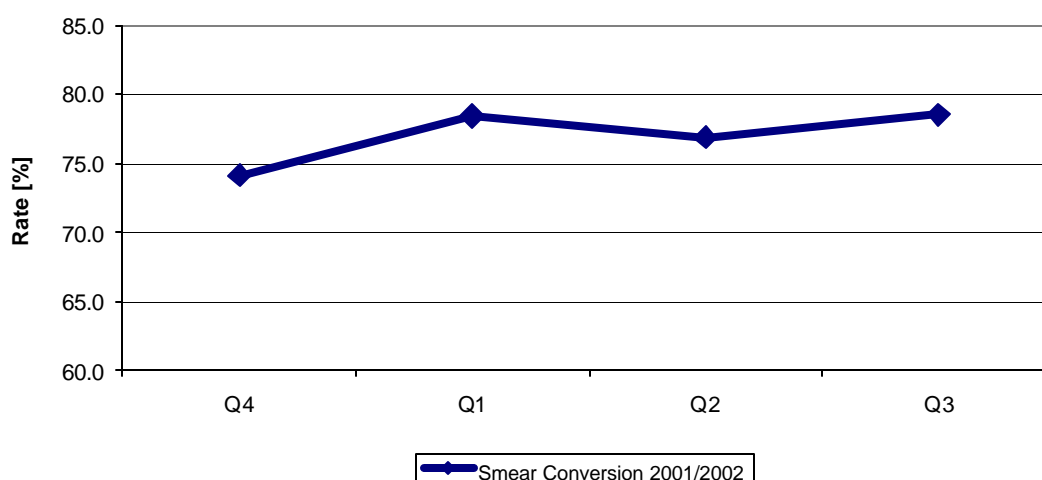
Table 5: PTB New and Retreatment Cases

Year	All PTB	New Cases	Retreatment
1997	10212	67%	33%
1998	10986	65%	35%
1999	11485	67%	33%
2000	12558	67%	33%
2001	13233	67%	33%
2002	16394	68%	32%

4.5 Case Holding Indicators – Smear Conversion Rate

Smear conversion rates are reported at the end of the intensive phase (two or three months of treatment). Smear conversion rates are a fairly accurate predictor of cure rates and provide quicker feedback on programme performance than cure rates. Smear conversion rates are available within 6 months of starting a patient on treatment, whereas cure rates are only available at about 12 months. Poor smear conversion rates may reflect inadequate treatment but more commonly means that a sputum smear has not been taken or reported on at the end of the intensive phase.

Figure 4: Smear Conversion Rate in New Smear Positive Cases Quarter 4, 2001 – Quarter 3, 2002



4.6 Treatment Outcome Indicators

Cure rate is by definition, the proportion of sputum positive patients who complete treatment and are shown to be sputum negative on two different occasions (usually at the end of intensive phase and prior to the end of the course of treatment).

Treatment outcomes are reported a year after treatment commenced since a course of treatment takes a minimum of six months for new cases and eight months for re-treated cases.

4.6.1 New Smear Positive Cases

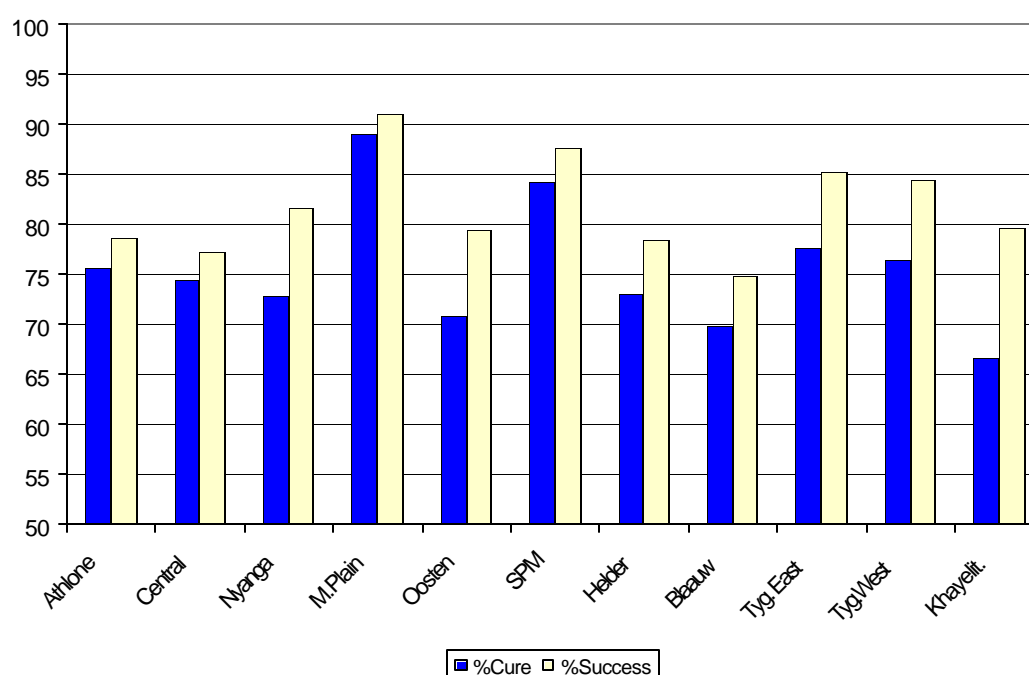
During the period 1997 – 1999, despite efforts made, little change was noted in treatment outcomes with average cure rates of 65% and interrupter rates of 20%. In 2000 an entirely different approach to managing TB control was adopted and cure rates over the last two years have improved to 70 and 73% and interrupter rates have decreased to 16 and 14% respectively.

The changes introduced included:

- Implementing a TB district health information system that saved time on data collation and produced rapid and flexible standardised reports (DHIS - TB Tool).
- Using minimum key indicators to monitor progress, which allowed more time to be spent in analysis of the data down to facility level.
- A focus on achieving the target of a 4% improvement in cure rates annually
- Regular and prompt feedback to clinic staff in each district with a system of incentives to recognise achievements.
- Peer review and problem-solving efforts to address under-performance with an emphasis on “quick-gains”.

An example of this is the focus on the gap between treatment completion rate and the cure rate (see Figure 5). In the past, the focus had been on reducing interrupter rates, over which clinic staff feel they can effect little change. Reducing the gap is relatively easy to achieve as the patient is attending the clinic, has completed treatment and simply requires bacteriological confirmation of cure through the collection of sputum samples. This change in focus enables staff to make a significant improvement to clinic outcomes with minimal effort.

Figure 5: Treatment Outcomes 2001 - New Smear Positive Cure and Success Rates



The most recent results show a gap of 7.7% overall between treatment completion and cure. This means that an 81% cure rate is well within reach for the City.

Table 6: Treatment Outcome - New Smear Positive Cases

	Cure Rate	Success Rate	Interruption Rate	Failure Rate	Death Rate (All Causes)
1997 N=4689	65	74	21	2.1	3.3
1998 N=5739	66	74	21	1.7	4.1
1999 N=6717	64	76	19	1.3	3.9
2000 N=7297	70	79	16	1.4	3.3
2001 N=7720	73	81	14	1.2	4.4

Reported death rates are surprisingly low given the HIV epidemic. However, it is quite likely that a significant number of deaths have been categorised as “treatment interrupters” as patients have been lost to follow-up and deaths not reported to clinics.

In order to bring the City into line with international and national reporting requirements, TB patients who were transferred out will in future be included in the denominator of the reporting district where they were originally registered. This makes follow-up the direct responsibility of the TB District Coordinator from that district. This may initially impact negatively on the cure rates but should eventually contribute to better control of the epidemic.

In view of the increased patient volumes and staff shortages, these results are an impressive improvement. With urbanisation, high levels of poverty and the HIV epidemic, caseloads are likely to present a continuing challenge. The emigration of skilled health professionals will place added pressure on the health services in the City to maintain these results.

4.6.2 Retreatment Smear Positive Cases

The cure rates for retreatment smear positive cases have also improved over the last five years, shadowing the trend for new TB cases. This indicates that although the current focus is to improve the results of *new* smear positive cases, this has resulted in better outcomes for all smear positive cases. The death rates in retreatment cases are almost double that of new smear positive cases. This could be due to the higher proportion of chronic lung damage, poor environmental circumstances, poor nutrition and higher rates of substance abuse.

Table 7: Treatment Outcomes - Retreatment Smear Positive Cases

	Cure Rate	Success Rate	Interruption Rate	Failure Rate	Death Rate (All Causes)
1997 N=2095	50	57	32	4.9	6.5
1998 N=2780	50	56	32	4.0	7.8
1999 N=2185	47	57	33	3.5	6.1
2000 N=3107	55	62	29	2.5	6.3
2001 N=3187	59	66	24	2.7	6.8

5 DISTRICT TB REVIEWS

Over the last four years TB Programme reviews were conducted in districts where cure rates were the lowest: Oostenberg in 1999; Blaauwberg and Helderberg in 2000; Khayelitsha and Nyanga 2001 and Oostenberg, Khayelitsha and Nyanga in 2002

The purpose of these reviews has been to:

- Identify barriers to the implementation of effective TB Control in the districts
- Work with staff to propose solutions to the problems encountered
- Develop a shared vision and joint plan amongst all role-players in the district to improve TB control

The review consisted of:

- A paper review of statistical information from all clinics in the district for a one-year period
- A site audit to review record keeping, patient management, laboratory services, drug management, HIV/AIDS & TB integration, chemoprophylaxis, staff training and community-based treatment options using a specifically designed audit tool
- An interview with the district management team to evaluate district strategy, operational planning, commitment to the TB control programme, staff support and mentorship, information management and advocacy role in the co-ordination of community support.

These reviews have been extremely helpful in identifying weaknesses, developing plans to address these and in identifying best practices for use elsewhere. The process proved an extremely valuable learning experience for all the TB/HIV coordinators involved in the reviews. Record keeping was identified as a systemic problem and is being addressed at present through the use of simple, standard records.

6 COMMUNITY-BASED DOT PROGRAMMES

An important element of the WHO DOTS Strategy is the support and encouragement offered to TB clients for the entire 6 – 8 month duration of treatment, where clients are directly observed taking their medication. At community level, this is undertaken by non-governmental organisations (NGO's) using volunteers as "treatment supporters". TB NGO's recruit, train and supervise members of communities to function as treatment supporters for TB clients.

The main functions of treatment supporters are to:

- Observe therapy and record compliance
- Support and encourage patients to continue treatment
- Follow up on absent patients
- Remind patients of clinic appointments
- Create awareness about TB in the community
- Refer TB suspect cases to health services for investigation

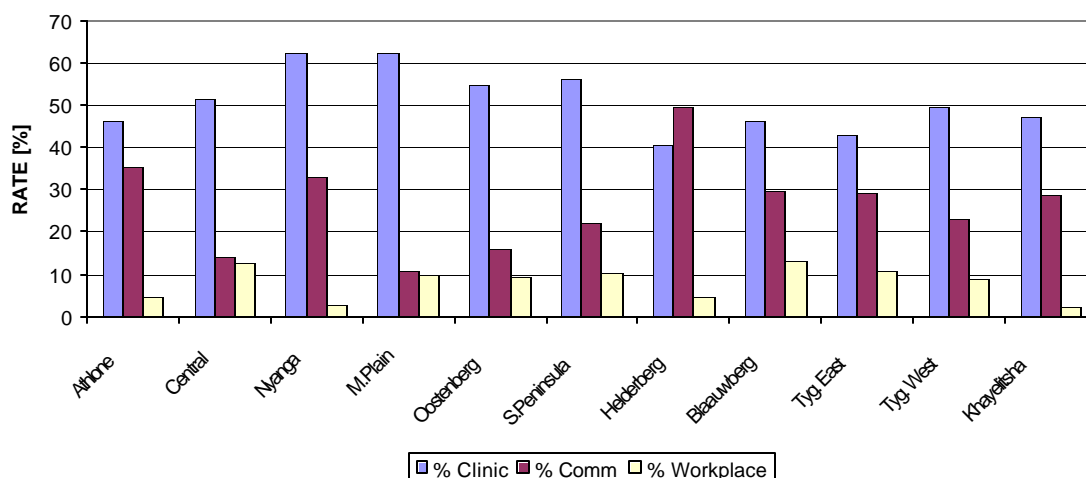
Three TB NGO's, TB Care, Santa Cape Town and Santa Western Cape, deliver community-based treatment to TB patients in the City. The Metropole TB Control Programme and the City of Cape Town provided financial assistance and support to these NGOs. Community DOT coverage for the City in 2002 was 26% (see Figure 6 for district coverage). A target of 40% for community DOT has been set for 2003-04.

During past years significant investment has been made to develop a close working relationship between the NGO's and the health sector. Regular meetings are held between the clinics, district management teams and NGO's plan, review progress and address problems. The quality of the relationships at a local level and the clarity with which roles and responsibilities are articulated are key to the success of community DOT initiatives.

By harnessing community participation in addressing TB, communities take ownership of the problem, and become partners in addressing the epidemic and finding solutions. As staff and TB patients become more trusting of the community DOT option and the levels of community DOT increase, this will play an important role in reducing clinic workloads and allow for a greater focus on quality. Providing treatment to clients at more accessible points in communities also has the potential to improve adherence to TB treatment.

Workplaces have also been identified as places where access to treatment can be improved. Workplace DOT allows TB patients to remain economically active whilst completing treatment, removes barriers to treatment, reduces absenteeism and reduces the abuse of sick leave benefits. Supporting the cure of the patient reduces the risk of transmitting infection in the workplace. TB Care currently meets with employers, provides health education about TB and acts as a link with the workplace treatment supporter. This proactive approach also reduces the likelihood of TB patients being dismissed from work, a not infrequent past practice.

Figure 6: DOT Coverage 2002



7 THE COST OF TB TREATMENT

TB diagnosis and treatment is free of charge to the public, leading to the misconception that the TB service is not costly to provide. However TB is a very expensive programme to run with laboratory and drug costs alone requiring a budget of almost R19 million annually.

7.1 Laboratory Costs

The cost of case-finding is dependent on the extent to which case-finding is undertaken. Current expenditure for case finding amounts to about R2,92 million. The current level of case -finding is well below WHO recommendations of screening 10 suspects for each case diagnosed. If the infectious pool of people was adequately screened this would require a significantly larger budget as indicated in Table 8.

Table 8: TB Case-finding Laboratory Costs (2002)

	Ratio of TB Suspect : TB Positive Sputum	Total Number Smear Positive Detected	Lab Cost
Current case-finding	4,79 : 1 pos	12,260	R 2,8 Million
Improved casefinding	7 : 1 pos	12,260	R 4,1 Million
Ideal case-finding	10 : 1 pos	12,260	R5,8 Million

Based on the NHLS - Green Point Laboratory prices in 2002, the cost of laboratory follow-up for registered TB patients managed as per National TB control Programme Guidelines would be R4,62million (See Table 9)

Table 9: Cost of TB Laboratory Follow-up Monitoring (2002)

	Number of cases	Average cost of sputum tests	Lab Expenditure
New cases	16,000	R142,5	R 2,28 Million
Retreatment cases	8,000	R 292,5	R 2,34 Million
Total cases	24,000	-	R 4,62 Million

7.2 Drug Costs

At 2002 State tender prices the cost of drugs to treat the 24,000 TB patients registered in the City during 2002 is R11,63 Million:

Table 10: Cost of TB Drugs (2002)

	Number of cases	Average cost of regimen	Drug Expenditure
New Cases	16,000	R 391	6,25 Million
Retreatment cases	8,000	R 673	5,38 Million
Total Cases	24,000		11,63 Million

These costs reflect full compliance with the national guidelines. Underperformance of the programme results in less money being spent due to:

- Patients who interrupt treatment
- Poor laboratory monitoring
- Inadequate case-finding activities.

The funding of the TB Control Programme by the Province has been based on historical data. As the TB Programme performance improves, treatment interruption decreases, and more patients are investigated and adequately monitored the costs will increase significantly. In future funding should be guided by estimated expenditure based on available programme data.

This projected expenditure does not take into consideration staff and facility costs. A study done in Guguletu in 1997 showed that the economic costs for a new TB patient treated at the clinic was about R3000 and retreatment R5000². Based on 1997 costs, the total cost of the TB programme at Primary Health Care level in the City is about R88 million annually (R120 million in current terms).

8 MULTI-DRUG RESISTANT TUBERCULOSIS

The emergence of multi-drug resistant (MDR) is potentially the most serious aspect of the TB epidemic. Multi-drug Resistant TB refers to TB, which is resistant to the first line TB drugs, isoniazid and rifampicin. MDR TB is difficult and expensive to treat, with cure rates at best only just over 50%. It is therefore essential to keep the rate of MDR TB to a minimum.

As with other forms of drug resistance, MDR TB is a largely man-made problem, being the consequences of human error in any of the following:

- Prescription of chemotherapy
- Management of drug supply
- Patient management
- Patient adherence

² Cost and Cost-effectiveness of Community-based Care for Tuberculosis in Cape Town, South Africa, International Journal of TB and Lung Disease, *in press* E.Sinanovich et.al.

Since 1990 MDR-TB in Cape Town has largely been managed through a specialist clinic at Brooklyn Chest Hospital. It is gratifying to see that according to a recent survey conducted by the MRC, the Western Cape has the lowest rates of MDR TB in the country, with reported rates at the same level as in 1995: 1% of new cases and 4% of retreatment cases. The Western Cape has recently joined the National DOTS Plus study and Brooklyn Chest Hospital is the specialist unit tasked with the responsibility of managing all MDR patients in the region. A total of 270 new MDR TB cases were identified in the region in 2002. The estimated drug costs for treating these clients (see Table 11) accounts for a significant proportion of the TB Programme budget.

Table 11: Cost of MDR Drugs

	No Cases	Per Patient	Cost
EMB Sensitive	254	R 8,428.00	R 2, 140, 712
EMB Resistant	16	R 30,158.00	R 482, 582
TOTAL	270		R 2, 623, 294

9 TB / HIV INTEGRATION

The City has adopted an integrated TB and HIV/AIDS strategy based on the concept that tackling TB should include tackling HIV as the most powerful force driving the TB epidemic and that tackling HIV should include tackling TB as the leading cause of morbidity and mortality amongst HIV infected individuals. An effective dual strategy needs to extend beyond the current focus of the TB Control Programme in finding and curing infectious TB cases. It should include intensifying case-finding amongst those with HIV, reducing diagnostic and treatment delays, introducing TB preventive therapy and general strategies aimed at reducing HIV infection.

Current initiatives emphasise the ABCD (*abstain, be faithful, condom use, syndromic drug treatment of STI's*) of HIV prevention. Voluntary counselling and testing (VCT) is offered to TB clients with the aim of reducing early mortality and morbidity through cotrimoxazole prophylaxis for dually infected individuals. The City has set a target of reaching 70% of TB cohorts by June 2003. In the last quarter of 2002, almost 50% of adult TB clients accessed VCT services.

A pilot study in the Central District screened 490 clients attending VCT services who were symptomatic for TB using smear and culture. TB was diagnosed in 35% of those screened. Smears were found to be positive in 33% of these whilst 44% were smear negative / culture positive. These findings emphasise the importance of culture as a diagnostic tool for TB in HIV+ people and the need for high index of suspicion of TB amongst those with HIV. The current TB Control Protocols result in long delays between presentation and diagnosis and should be reviewed for those with HIV.

Present challenges include acquiring additional resources to enable intensified case-finding, monitoring treatment commencement times with a view to reducing these and increasing the uptake of VCT amongst TB clients. The current data management system for VCT has shortcomings as client data is not collated on a cohort basis and will be reviewed.

10 LESSONS LEARNT

1. **Regular support meetings** with the TB/HIV coordinators from all districts where collated information is presented and discussed provides an opportunity for reviewing the data, discussion, immediate feedback and support. Through working closely with the collated information coordinators develop a better understanding of the need for accuracy and improve their interpretive and data management skills. Most importantly, they acquire the confidence to work with clinic staff in using the information for action. This develops into a peer support process where coordinators learn from each other and where best practices can be disseminated.

2. **Quality health information** is vital for good management and requires an investment in health information systems. With good information the “real” problems can be identified and appropriate remedial action taken. TB indicators are also a valuable indication of overall health service performance.
3. **Focussing on the gap** between treatment completion and cure rate creates an easily achievable goal. The focus on outcomes has a positive spin-off with cure rates in some instances exceeding previous completion rates and with defaulter rates being reduced.
4. **Recognition**, the simple applause of peers, certificates of achievement, small incentives, acknowledgement from supervisors - all play an important role in improving performance and instilling pride in one’s work.
5. **Community based treatment** is an important strategy for improving TB management, with benefits to the health system (reduced patient volumes), to the patient (the convenience of more accessible treatment) and the community (an opportunity to take ownership of local problems, financial and other incentives). To be successful, it requires an investment in partnership building. Management of community DOT remains a challenge.
6. **Cooperation** between TB and HIV services, between different tiers of health and between the health sector, NGO’s and communities fosters a team approach to delivering better TB services.

11 CONCLUSION

Staff from the Region and City are committed to reaching the WHO goal of curing 85% of new smear positive TB patients by maintaining the gains made in Mitchell’s Plain, South Peninsula and Tygerberg East Districts. Added support will be provided for improving the cure rates in Khayelitsha, Nyanga and Oostenberg Districts as these districts have the highest caseloads. In addition, attempts will be made to close the gap between cure and successful treatment rates across the City.

To maintain momentum and continue to improve TB services, several focal areas will be addressed in 2003/2004:

- Integration of TB and HIV services and support for dually infected patients through increased VCT for TB patients, cotrimoxazole prophylaxis for the dually infected and intensified case-finding for TB amongst known HIV patients
- Ensuring the continuity of care when patients move from one facility to another, especially if these treatment points are in different districts
- Strengthening community-based and workplace DOTS programmes and improving the monitoring of these programmes
- Acknowledge staff initiatives and embed best practices through mentorship and development of staff
- Improving case finding, especially amongst smear negative pulmonary TB
- Developing a focus on patient-centred care

Although TB rates continue to rise in the region, there have been significant improvements in the programme especially in the last year. Some of the important lessons have been articulated in this document. The importance of being able to make decisions based on good quality information is a central tenet. The achievements in TB Control have been possible due to the creation of a work environment in which problems are confronted, people are held accountable and real improvement is supported and encouraged.

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ANNEXURE A: AGGREGATED CASE FINDINGS 1998 – 2002

		1998	1999	2000	2001	2002
Patient Origin	Not Transferred In	14970	15769	17244	18361	20950
	Other District	1147	1178	1103	1392	812
	Same District	251	349	316	290	296
	Hospital	722	747	672	959	519
	Elsewhere	382	297	374	392	1498
	Total	17472	18340	19709	21394	24075
ICD 9	O11	10970	11529	12568	13233	15133
	O10	2502	2432	2599	2435	2437
	O12-O18	1498	1808	2053	2612	3406
	Total	14970	15769	17220	18280	20976
PTB Bacteriology	All Sm+	9135	9506	10454	10846	12260
	All Sm-/C+	758	981	1203	1281	1412
	All Sm-/C-	140	154	176	179	197
	All Not Done	514	451	417	584	799
	All No Bact	439	393	308	343	1726
	Total	10986	11485	12558	13233	16394
New PTB Bacteriology	New Sm+	6089	6639	7262	7761	8769
	New Sm-/C+	324	427	473	551	608
	New Sm-/C-	79	80	100	117	118
	New Not Done	356	287	304	438	602
	New No Bact	297	262	222	205	1532
	Total	7146	7695	8361	9072	11629
Indicators	Population	2878806	2973747	3064606	3146389	3287538
	Incid. Total TB	520.0	530.3	561.9	581.0	638.0
	Incid. New Sm+ PTB	211.5	223.3	237.0	246.7	266.7
	Total Retreatment	3841	3790	4197	4110	4765
	Ret % of all O11	35.0	32.9	33.4	31.6	31.5
	% Bact Cover	96.0	96.6	97.5	97.6	89.5
	% Sm + (New)	85.2	86.3	86.9	85.8	75.4
	% Sm + (Ret)	79.3	75.6	76.1	74.0	73.3

ANNEXURE B: AGGREGATED TREATMENT OUTCOMES 1997- 2001

		1997	1998	1999	2000	2001
New Smear Positive	Cured	3065	3784	4284	5075	5665
	Completed	397	424	786	694	602
	Failure	98	99	84	100	92
	Interrupted	972	1199	1299	1154	1053
	Died of TB	107	170	191	168	259
	Died Not of TB	50	63	73	73	83
	Transferred Out	770	879	856	953	1337
	Not TB	25	34	22	27	18
	Total	5484	6652	7595	8244	9109
	Denom.	4689	5739	6717	7264	7754
Retreat. Smear Positive	Cured	1050	1387	1314	1717	1873
	Completed	147	175	287	214	252
	Failure	103	112	99	78	86
	Interrupted	659	890	942	893	767
	Died of TB	116	168	136	150	184
	Died Not of TB	20	48	37	45	34
	Transferred Out	527	687	702	814	925
	Not TB	14	22	28	24	17
	Total	2636	3489	3545	3935	4138
	Denom.	2095	2780	2815	3097	3196
New	%Cure	65.4	65.9	63.8	69.9	73.1
	%Success	73.8	73.3	75.5	79.4	80.8
	%Interrupt	20.7	20.9	19.3	15.9	13.6
	%Failure	2.1	1.7	1.3	1.4	1.2
	%Death	3.3	4.1	3.9	3.3	4.4
Retreat.	%Cure	50.1	49.9	46.7	55.4	58.6
	%Success	57.1	56.2	56.9	62.4	66.5
	%Interrupt	31.5	32.0	33.5	28.8	24.0
	%Failure	4.9	4.0	3.5	2.5	2.7
	%Death	6.5	7.8	6.1	6.3	6.8