

Tuberculosis Services in Partnership

The Case of Egypt



World Health Organization
Eastern Mediterranean Region



National Tuberculosis
Control Programme
Egypt



Royal Tropical Institute
Amsterdam

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Contents

Preface	5
Acknowledgements	6
Executive Summary	7
1. Introduction	9
2. Tuberculosis control in Egypt	11
Introduction.....	11
DOTS coverage	11
Treatment outcomes.....	12
Case detection.....	13
Strategies for enhanced case detection in Egypt	13
3. Supporting DOTS — the universities	18
DOTS expansion: institutionalizing collaboration	18
Collaborating in research.....	18
Training and education	19
Lessons learned and the way forward.....	20
4. Working with the Health Insurance Organization	21
The Health Insurance Organization (HIO)	21
Case detection.....	22
Treatment.....	23
Lessons learned and the way forward.....	23
5. Reaching the disadvantaged—nongovernmental organizations	25
Identifying and training nongovernmental organizations.....	25
Health education and case detection	26
Tuberculosis treatment	26
Lessons learned and the way forward.....	27
6. Collaboration with the prisons	28
Case detection.....	28
Treatment of tuberculosis	29
Lessons learned and the way forward.....	30
7. Private for-profit providers	31
Involvement of private for-profit practitioners in tuberculosis care	31
Collaboration with private for-profit providers.....	33
Lessons learned and the way forward.....	36
8. The public—public mix	38
Infectious disease (fever) hospitals	38
Teaching hospitals	38
Ministry of Social Affairs.....	38
Ministry of Information.....	39
Conclusions	40
Lessons learned	42
References	43

Preface

Tuberculosis is still one of the major public health problems in the world. Countries in the Eastern Mediterranean Region have been working hard for several years to promote directly observed treatment, short course (DOTS) and reach the regional target of DOTS ALL OVER. As a result, 18 out of 22 countries in the Region have already achieved DOTS ALL OVER. Somalia and Yemen are in the final stage of achieving this target, whilst Pakistan and Afghanistan, currently at 45% and 35% DOTS coverage respectively, are making progress towards achieving DOTS ALL OVER.

Nevertheless, there is a long way to go to reach the global targets for 2005, 85% treatment success rate and 70% case detection rate. The main challenge facing countries is the low case detection rate. The case detection rate at the regional level is 28%, while the treatment success rate is 82%. The Regional Strategic Plan for 2002 to 2005 outlines the activities needed to achieve the regional and global targets for tuberculosis control set for 2005. The objectives in the strategic plan are to achieve high quality and comprehensive DOTS activities, establish beyond-DOTS strategies and develop partnerships.

From the beginning, National Tuberculosis Programmes (NTPs) in most countries in the Region established a national committee for tuberculosis control composed of the main tuberculosis care providers in addition to other organizations such as nongovernmental organizations dealing with social affairs and advocacy. DOTS expansion took place mainly within Ministry of Health facilities to establish the backbone for tuberculosis control in the country. However, a considerable number of patients seek health services outside Ministry of Health facilities. These patients seek tuberculosis diagnosis and treatment either in the private sector or in the public sector other than the Ministry of Health. Therefore, comprehensive DOTS is considered the main tool to improve the case detection rate, and integration of DOTS services with other health care providers is an essential task for the national tuberculosis programme, to ensure that DOTS is accessible to each and every tuberculosis patient wherever health care is received.

This task is enormous, but the approach taken during the last two years has been sporadic. The need to develop a strategic framework for comprehensiveness is becoming increasingly important. Egypt is one of the forerunners in developing a comprehensive approach to tuberculosis control. This review paper provides a systematic summary of these efforts. This experience, combined with others in the region, will contribute greatly to the formulation of a regional framework to develop a comprehensive approach to DOTS.

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This paper is the result of a collaborative effort on the part of the Ministry of Health and Population, Egypt, the Royal Tropical Institute, The Netherlands and the WHO Regional Office for the Eastern Mediterranean. It was written by Ms A. Vassall, a health economist from the Royal Tropical Institute (KIT), The Netherlands, Dr E. Elmoghazy, deputy director of the Tuberculosis Programme in Egypt, Dr A. Galal, a technical officer from the Tuberculosis Programme in Egypt, and Dr M.V. Cleeff, a tuberculosis expert from the Royal Netherlands TB Association, The Netherlands.

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Executive Summary

Egypt launched its National Tuberculosis Control Programme (NTP) in 1989. By 2001, all Ministry of Health and Population facilities provided directly observed treatment, short course (DOTS), the internationally recommended strategy for tuberculosis control. As a consequence, the average success rate in those facilities rose from around 60% in 1991 to 85% a decade later. However, despite this achievement, the level of cases notified to the NTP remains low. The case detection rate is currently around 57%, far below the WHO target of 70% for a successful tuberculosis programme.

Improving case finding is now the primary objective of the NTP and is essential to achieving tuberculosis control in Egypt. One of the main explanations for low case detection is that, although government services are of high quality, significant portions of the population do not access them. Like many other middle-income countries, Egypt has a significant private health care sector with over 50% of all utilization and expenditure on health care occurring in the private sector. In addition, the public sector is complex and there are a significant number of nongovernment public and parastatal institutions responsible for providing and financing tuberculosis services. Finally, some people may not be accessing any health services, as financial, cultural and geographical barriers to seeking care can be significant.

From the beginning, the NTP recognized that the involvement of different health care institutions would be essential to the success of tuberculosis control in Egypt. Collaboration with partners outside the Ministry of Health and Population began as a means to promote the DOTS strategy within the Ministry. As in many other countries, in its early phase of development the NTP needed to establish credibility for itself and its strategies. The involvement of the universities, identified by the NTP as the opinion leaders in the medical profession in Egypt, in the NTP's scientific and technical committees was the start of collaboration. As the NTP progressed, these committees provided the institutional structure to develop other partnerships with the private sector, nongovernmental organizations and prisons, involving them in tuberculosis control and spreading the message of DOTS.

Aside from being a key factor in DOTS promotion within the Ministry of Health and Population, collaboration has also contributed in a moderate way to case detection. Collaboration with the Health Insurance Organization, the main parastatal financier and provider of health services, has contributed significantly to case notification. In addition, the experience documented in this paper on collaboration with nongovernmental organizations and prisons shows that, although nationally large numbers of cases may not be found, collaboration can encourage access to tuberculosis services for those disadvantaged groups who otherwise fall outside the public health system.

One of the key findings of this paper is that collaboration has the potential to substantially improve case detection in Egypt in the future. However, if case detection is to improve, collaboration will need to be strengthened considerably. In the future, the NTP will need to continue to develop and strengthen collaboration with its partners as follows.

- Build on and continue collaboration with other public providers, such as the university, teaching, prison and fever hospitals, concentrating on the reporting of both cases and treatment outcomes.
- Continue to build capacity in the Health Insurance Organization by supporting a specialized structure within the HIO to facilitate provision of directly observed treatment at peripheral facilities. Work closely with the health sector reform managers to ensure that tuberculosis is included in the essential package for health insurance and that contracts with providers include the notification of tuberculosis and the reporting of treatment outcomes.
- Develop models of collaboration with private providers for rapid scaling up.
- Expand the provision of health education and community involvement activities through nongovernmental organizations, and develop referral systems between nongovernmental organizations and health care providers.

Although the considerable experience of the NTP in Egypt means that it is well placed to initiate these strategies, it will have to adapt itself further in future to ensure continued success. Although many of the core activities of the NTP will continue, in the future the NTP will find itself moving from the role of managing and supporting public providers, to one of strategist, motivator and facilitator of services provided by diverse partners. This revised role will become increasingly relevant in the environment of the current health sector reforms in Egypt. In the process, NTP staff will need to learn new skills and become increasingly informed, not just about the health sector outside the Ministry of Health and Population, but also about other sectors. Adopting this new role will be key to the development of successful partnerships that should eventually ensure that all of Egypt's population has access to high quality and effective tuberculosis treatment.

A key objective of this paper is to analyse the collaboration in tuberculosis control in Egypt and identify the lessons learned from it, in order to develop the best model of partnership in the future. By examining the successes and failures of partnership in the first decade of the NTP in Egypt, this paper identifies several factors that are key to the achievement of successful collaboration between NTPs and partners in general.

- NTPs need to be seen as credible technical institutions in order to be a respected partner.
- Collaboration needs to be institutionalized within the governing structure of NTPs.
- Collaboration should be seen as a two-way process, not only looking at the benefits for tuberculosis control, but also examining how the lessons learned from tuberculosis control can assist others, particularly in the context of health sector reform.
- NTPs need to be flexible and adopt different models of collaboration with different partners.
- The support of medical professional leaders, such as university professors, is useful to convince those outside ministries of health of the benefits of DOTS.
- Initially, collaboration can be informal, providing examples of success. However, in the long run it needs to be institutionalized between the NTP and partners if widespread success is to be achieved.
- Professional links with medical staff can provide an entry point to organizations that do not have health as their primary objective, such as prisons.
- Collaboration needs to be backed with resources to be sustainable, in particular collaboration with the private for-profit sector.
- Collaboration should be localized as far as possible.

1. Introduction

From the launch of the National Tuberculosis (TB) Control Programme (NTP) in 1989, the NTP recognized that the involvement of health institutions outside the Ministry of Health and Population (MOHP) would be a key factor in ensuring the success of tuberculosis control in Egypt. Collaboration with partners outside the MOHP began as a means to promote directly observed treatment, short course (DOTS) — the WHO internationally recommended strategy for tuberculosis control. As in many other countries, in its early stage of development the NTP needed to establish credibility for itself and its strategies. A key factor in establishing this credibility came through the involvement of the universities in the NTP's scientific and technical committees. As the NTP progressed, the scientific and technical committees provided the institutional structure to develop other partnerships, such as with the health insurance organization (HIO), nongovernmental organizations and the prisons.

By 2001, the NTP had achieved nationwide coverage of good quality tuberculosis facilities. DOTS was implemented in all government services nationwide with an average success rate of 85% for those with tuberculosis. In addition, several key partners outside the MOHP were beginning to notify cases to the NTP. However, despite these achievements, the overall level of tuberculosis cases notified to the programme remains low, at around 57%. Improving the number of cases detected is therefore the main focus of the NTP. Table 1 shows the numbers of cases that are currently detected in Egypt by different providers.

Although MOHP services are of high quality, significant sections of the population are thought not to be using them, with many seeking health care from other providers. Like many other middle-income countries, Egypt has a significant private health care sector with over 50% of all utilization and expenditure on health care occurring in the private sector. In addition, the public sector is complex and there are a significant number of non-MOHP funders and providers involved in tuberculosis services. If case detection rates are to improve, collaboration with non-MOHP partners will have to be strengthened considerably. This paper was produced as a starting point to this process. By documenting and reviewing the experience of partnership in the period of DOTS expansion it identifies the key lessons learned in order to develop strategies that will strengthen collaboration in the future. It also aims to provide an example for other countries that are examining the best ways to develop partnerships in tuberculosis control.

Table 1. Number of tuberculosis cases notified (1997–2001). All cases.

	1997	1998	1999	2000	2001
NTP	13 971	12 662	11 529	11 209	11 091
HIO	732	1 076	976	948	942
Prisons	—	—	258	183	193
Refugees	—	—	8	56	67
Private for-profit study	—	—	—	—	30
Total	14 703	13 738	12 771	12 396	12 323

The paper begins with a summary of tuberculosis control in Egypt. This is followed by a series of sections outlining collaboration with each of the NTP's main partners. The first section outlines how collaboration with the universities supported the implementation of DOTS in Egypt. Section 2 looks at how collaboration with the HIO increased the number of cases notified to the NTP. Section 3 looks at the work with nongovernmental organizations, and section 4 at the experience with the prisons, both important to ensuring access to tuberculosis treatment by disadvantaged populations. The last two sections examine the areas of collaboration that need to be substantially developed in the future. This includes collaboration with private for-profit providers and collaboration with other ministries—the public–public mix.

Each section contains a review of past experience, a section on lessons learned and a discussion of the way forward. The review was compiled by examining routine data, progress reports, study reports and published literature. The lessons learned were identified through a series of interviews with key people involved in collaboration. In addition, a workshop was held, attended by all key partners, where initial findings were presented and the way forward was discussed. Finally, the paper was reviewed by technical staff from the World Health Organization (WHO) and the Royal Tropical Institute, Amsterdam (KIT).

2. Tuberculosis control in Egypt

Introduction

Tuberculosis is a major public health problem in Egypt. It is estimated that approximately 19 000 new cases of tuberculosis develop in Egypt annually, of which an estimated 9 500 are suffering from the infectious smear-positive pulmonary form. Since 1989, tuberculosis control has been coordinated by the NTP, under the direction of the MOHP of Egypt. The WHO's Eastern Mediterranean Regional Office (WHO/EMRO) has also identified tuberculosis control as a priority programme and is a key international partner supporting the NTP. Since 1989, the NTP has also received support from The Netherlands Government through the Tuberculosis Control Project, supported by KIT.

DOTS coverage

The primary strategy to expand the coverage of DOTS was to integrate tuberculosis treatment in primary health care (PHC) centres. By complementing the existing infrastructure of chest clinics, the NTP realized that the extensive network of PHC centres in Egypt could provide the infrastructure to achieve universal access to directly observed treatment (DOT), the key element of DOTS as a strategy. The involvement of PHC centres in the management of tuberculosis is also in line with the government policy of integration of health service delivery and the current health sector reforms in Egypt. In practice, DOT at the PHC level involves directly observed treatment with anti-tuberculosis drugs by a health worker, daily in the intensive phase (usually 2 months) and then weekly thereafter. Tuberculosis patients can go to any PHC centre near to their home for treatment and will only be required to visit the chest facility once a month for follow-up until their treatment is completed.

The involvement of PHC centres was successful in expanding the coverage of DOTS. By 2000, the NTP declared DOTS ALL OVER, meaning that all communities with access to government services now had access to effective tuberculosis treatment (see Figure 1). This expansion of DOTS has shown itself to be effective and cost-effective. The treatment success rate has risen, resulting in an average success rate of over 85%, thus reaching and surpassing the global WHO target. In addition, in 2000 a study was undertaken by the NTP to evaluate the cost-effectiveness of DOTS expansion in Egypt [1]. It found that DOTS integrated into the PHC system was more cost-effective than the previous approach. Although DOTS requires an increased number of visits, the cost per visit was substantially reduced by delivering treatment at the PHC level. Therefore the overall costs remained the same. This, combined with increased effectiveness, ensured that cost-effectiveness improved. The study also found that patient costs did not increase, despite the increased number of visits required by DOTS, as bringing services closer to the patient also reduced the patient cost per visit.

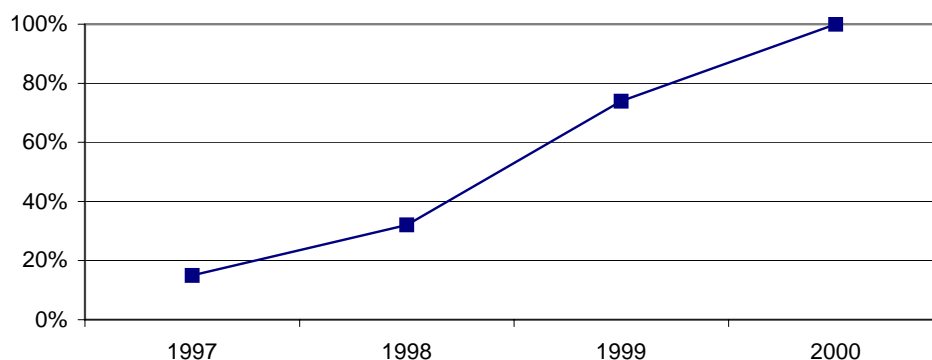


Figure 1. DOTS coverage MOHP Facilities 1997-2000

Treatment outcomes

The initial strategy of the NTP was to focus on improving the quality and effectiveness of tuberculosis treatment. One of the first actions taken by the NTP was to recommend the use of short-course therapy for tuberculosis treatment in Egypt. This was quickly followed in the early 1990s by the development of a technically sound tuberculosis programme. This included the development of microscopy services, a tuberculosis manual and a training programme for all categories of staff. During this period two committees were established to strengthen the technical basis for the programme: a technical and a scientific committee. However, despite the widespread adoption of short-course therapy, by the mid-1990s adherence to tuberculosis treatment remained low. Some 25% to 30% of new pulmonary tuberculosis patients did not complete treatment and were registered as defaulters (see Figure 2). In 1996, the NTP took action and initiated the implementation of DOTS in five pilot areas. Realizing that the credibility of both NTP and DOTS needed to be established, the NTP strengthened the committees and the board advising the NTP so that they included professors of chest diseases and academics from Egypt's universities.

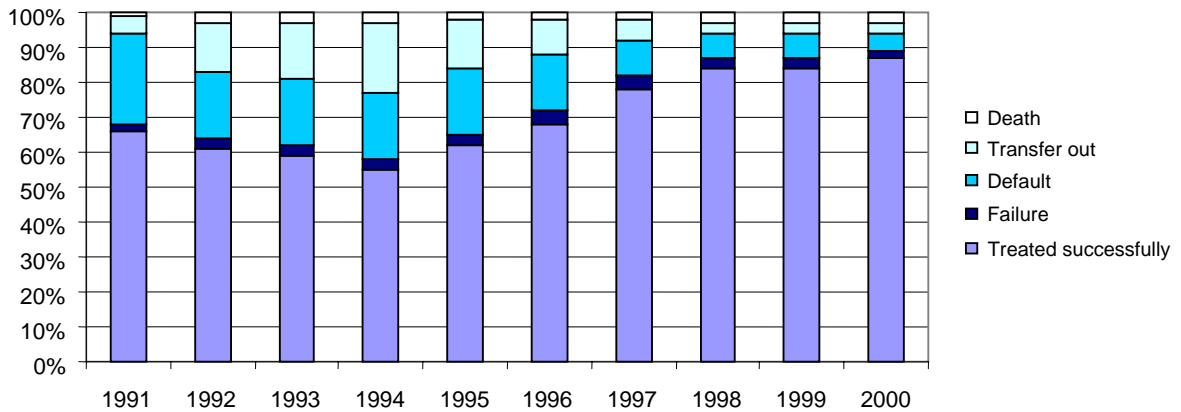


Figure 2. Treatment outcomes — new smear-positive cases

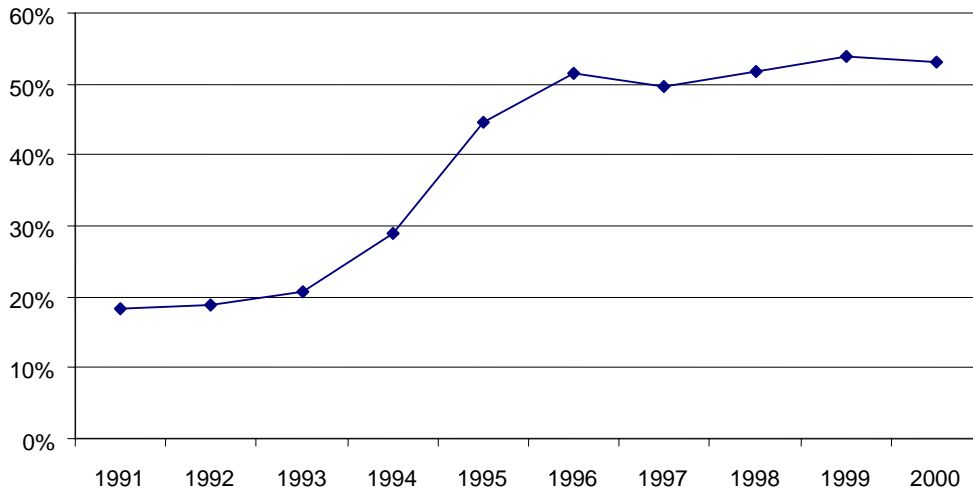


Figure 3. Case detection rate of new smear positives

Case detection

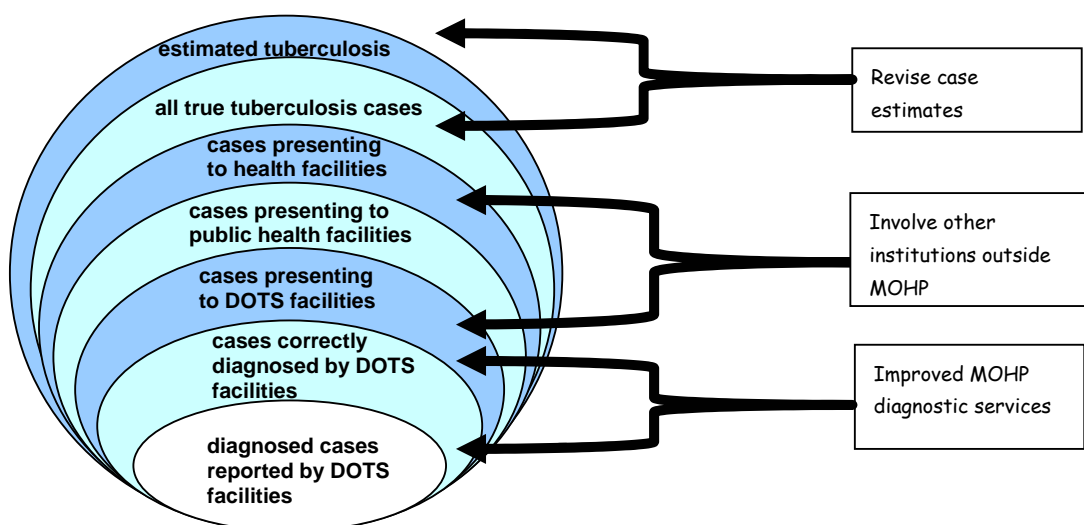
Out of the 19 000 new cases of tuberculosis that are expected to develop in Egypt annually, an average of 12 500 new cases are detected each year. Of these, around 5500 are smear-positive pulmonary cases, 3000 are smear-negative pulmonary cases and 3000 are extra-pulmonary cases. In addition, 1000 relapse cases are notified annually. It is estimated that the NTP detects approximately 53% of the new smear-positive pulmonary tuberculosis cases (case detection rate, CDR), compared to the global WHO target of 70%.

Figure 3 shows that the rate of case detection of new smear-positive cases rose slowly from 1991 to 1993 to just above 20%. Between 1993 and 1996 the rise accelerated, reflecting the improved coverage of case notification systems associated with DOTS expansion. From an initial level of 60%, by 1996, 100% of government facilities were reporting tuberculosis cases to the NTP. The further increase from 1996 to 1998 is explained by the inclusion of notification from the HIO. Since 1998, case detection rates have remained constant.

Strategies for enhanced case detection in Egypt

The main challenge for the tuberculosis programme today is how to achieve a sharp increase in the case detection rate. As Figure 4 shows, the difference between the estimated level of tuberculosis cases and the number of cases notified can be explained by a number of factors.

- First, the number of estimated cases may be larger than the true number of tuberculosis cases. This gap can be addressed by improving case estimates.
- Second, those facilities included in DOTS (in Egypt 100% of MOHP facilities) may not correctly diagnose and notify cases. Improving the level of case notification within the MOHP facilities can be addressed by improving laboratory and diagnostic capacities.
- Finally, those with tuberculosis may self-administer treatment or may be treated outside the MOHP and hence are never reported. A few cases will never be treated. Improving case notification for these cases can be addressed by collaborating with those outside the MOHP, such as non-profit nongovernmental organizations, private for-profit providers and health providers governed by other ministries.



Source: WHO headquarters

Figure 4. A picture of case detection

a) Revised case estimates

The estimated number of cases may be slightly higher than the true number of tuberculosis cases in Egypt. The estimated annual rate of infection (and therefore the CDR) is calculated on the basis of an estimated incidence from a tuberculin survey conducted in 1995. This estimated that there are 32 tuberculosis cases per 100 000 population. During the time of writing this paper these estimates have been revised using mortality data from the vital registration system. This indicates that incidence has fallen (or was incorrectly estimated in 1995) to 29 tuberculosis cases per 100 000 and 14 smear-positive cases per 100 000. This means that the CDR (for new smear positives) may be now as high as 60%.

Table 2. Laboratory distribution and case detection rates by governorate

Governorate	Ideal number of laboratories (1/200 000)	Actual number of laboratories	Actual/Ideal number of laboratories (%)	Case detection rate 2001 (%)
Cairo	35	13	37	41
Qaliubia	17	8	46	43
Fayoum	10	5	50	53
Gharbia	17	9	52	37
Giza	26	7	26	38
Menoufia	14	10	73	25
Sharqia	21	12	56	39
Alexandria	18	9	50	55
Beheira	20	13	64	52
Daqahlia	21	11	52	40
Minia	16	9	55	38
Assyut	14	11	80	52
Sohag	15	8	54	78
Qena	13	8	60	50
Port Said	3	2	72	54
Wadi Algedid and Red Sea	1	1	77	39
Beni Sweif	9	6	67	46
Damietta	5	2	44	53
Ismailia	4	1	26	56
Kafr Sheikh	11	8	70	56
Matrouh	1	1	91	97
North Sinai	1	2	182	57
Suez	3	1	40	65
Aswan	5	4	79	54
Luxor	1	1	126	193
South Sinai	1	0	0	0
Egypt	303	162	53	47

b) Continued improvement in MOHP tuberculosis services

In principle, it is possible to improve case detection by expanding the coverage of laboratories. Table 2 shows that on average Egypt has about half the number of laboratory facilities recommended by WHO (one laboratory for every 200 000 people). However, these figures do not include private laboratories, as at present there is no clear picture of private laboratory capacity in Egypt. Comparing case detection rates to laboratory coverage by governorate shows no clear link between the two. This is partly because the governorate estimates of case detection are based on the national rate adjusted for population size. In addition, factors such as the quality of laboratory services, the size of the private sector and socioeconomic status will also affect the level of case detection. It is therefore difficult to come to clear conclusions about the relative contribution that improved MOHP laboratory services can make towards improved case detection.

c) Involving all sectors: strengthening partnerships

A third way to improve case detection is to improve partnership with non-MOHP institutions that diagnose and treat tuberculosis. Health care in Egypt is financed and provided by a complex mix of public, parastatal and private institutions. Patients with tuberculosis are equally likely to seek care for their symptoms from a private practitioner as they are from a public provider. Although tuberculosis treatment is mainly provided by the public sector, those receiving treatment may also be treated at facilities operated by other government departments or go to a provider managed by the HIO. The following briefly describes the main providers involved in tuberculosis in Egypt. The rest of this paper discusses the history of partnership with each of these providers, the lessons learned and the way forward for the future.

There are several government ministries, other than the MOHP, that receive funding from the Ministry of Finance to provide tuberculosis treatment. **The Ministry of Higher Education** is a major health care provider receiving funds for the university hospitals. Egypt has 13 medical schools and 36 university hospitals. These hospitals account for around 9% of total health spending and 14% of all hospital beds. In addition, the universities have a significant role in influencing the practices of providers of tuberculosis care, both through their provision of initial training and in their role as scientific and professional leaders. There are also several other smaller public providers of health care including the **Ministry of the Interior** and the **Ministry of Defence**. The Ministry of the Interior is responsible for providing tuberculosis treatment in prisons.

The **HIO** is the largest parastatal financier and provider of health care in Egypt. It provides health services for around 40% of the population and therefore is a major provider of tuberculosis treatment. It was created in 1964 with the mission of covering the entire population of Egypt. Although the HIO is in practice run by the state, from an operational and financial perspective it is governed by its own set of rules and regulations, has a separate budget and exercises significant autonomy in its daily operations. The HIO covers about 28.9 million people in Egypt. About 17 million of these are students, 4 million are infants, and about 8 million are employed and retired citizens. The HIO is both a payer and provider of health care. Raising revenues from employee salaries, pensioner's allowances and school registration fees, together with a government subsidy, it provides a comprehensive package of services through either its own or contracted providers. Services are provided through HIO hospitals, polyclinics, school clinics and specialized centres.

The Curative Care Organization (CCO) is a non-profit provider established following the nationalization of several private hospitals in Cairo in 1964. It is a loose association of hospitals, officially governed by the MOHP, but run independently on a non-profit basis. It operates mainly in the urban areas of lower (northern) Egypt and its hospitals are reputedly of a relative high quality.

Private providers and pharmacies are likely to be the first point of access to health services for those with tuberculosis. A provider survey carried out in 1999 [2], estimates that there are somewhere between 60 000 and 80 000 health care providers in Egypt. Around 90% of these are thought to be in the private sector, and more than half of all outpatient visits for health care in Egypt are made to private providers. This proportion is higher for higher income groups (see Figure 5).

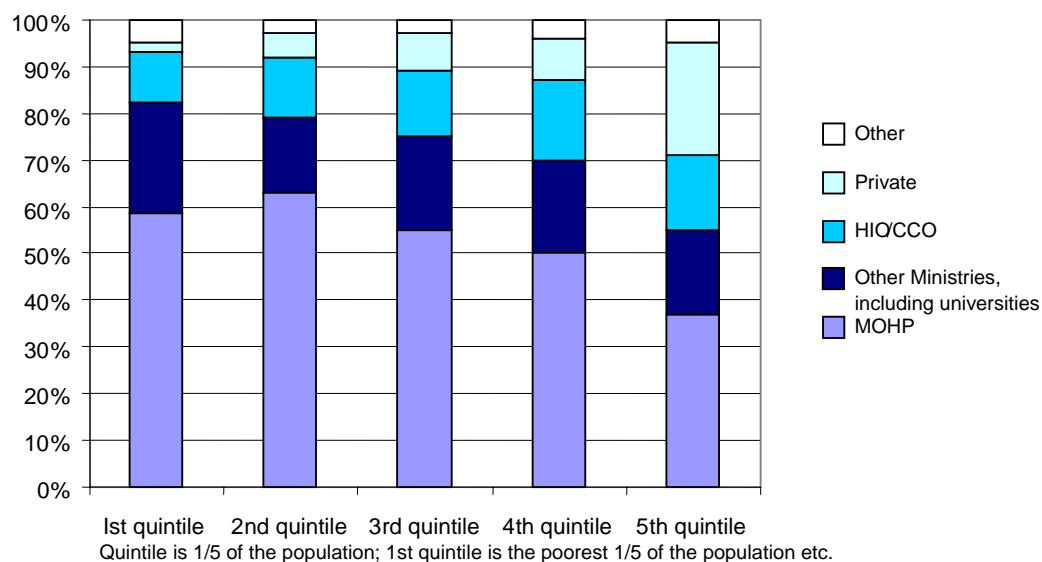


Figure 5. Inpatient admissions by income quintile by provider

The private for-profit health care sector in Egypt is also the largest sector in financial terms. An analysis of health expenditure conducted in 1997 shows that 59% of overall health expenditure in Egypt is spent on private providers, with 36% on private pharmacies (see Figure 6) [3]. Correspondingly, Egypt has one of the highest rates of out-of-pocket expenditure in the Eastern Mediterranean Region. The MOHP only accounts for around 19% of overall health expenditure. Unfortunately, there are no breakdowns available for tuberculosis expenditure by provider in Egypt.

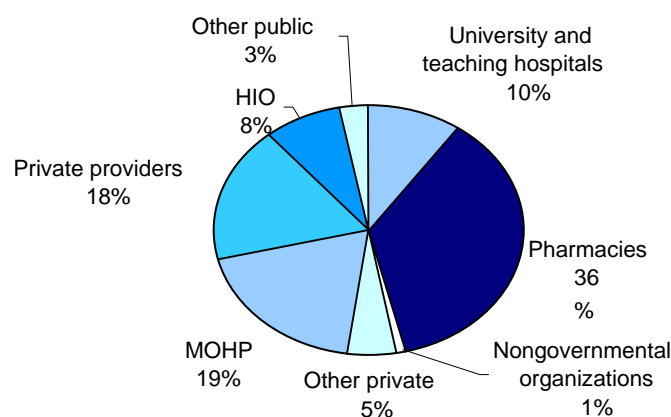


Figure 6. Health expenditure by provider

The private sector focuses more on providing urban outpatient services rather than inpatient or rural services, although there are several private hospitals. The provider survey carried out in 1999 also provides detailed information about the practices and location of private providers [2]. Out of the 802 private providers surveyed most operate in urban areas (84%). Of the those interviewed, 12% describe themselves as general practitioners, while 88% are specialists, including 4% who are specialists in chest medicine.

Most (89%) private physicians have multiple jobs and are also employed by the MOHP. An examination of the hours worked by those interviewed, reveals that private practice is often a secondary activity that takes place after their work for MOHP facilities. Little is known about the quality of private services. However, on average the time spent on private patients is considerably longer than for MOHP patients. For example, chest physicians see an average 24 patients a week in private practice compared to 101 patients in their MOHP work.

Although their main role appears to be in the diagnosis of tuberculosis, some private providers may treat tuberculosis patients. In particular, aside from the network of private hospitals and clinics, private pharmacies are also important health care institutions in Egypt. Private pharmacies are believed to distribute significant amounts of tuberculosis drugs. It is estimated that 50% of rifampicin supplied by the drugs companies in Egypt is being sold through private pharmacies

Although not hugely significant on the national scale, **nongovernmental organizations** have a significant role in identifying tuberculosis cases among the poor. There are a number of religiously associated clinics and other charitable organizations in Egypt. Out of the various nongovernmental organizations, the mosque clinics operated by Muslim social agencies are perceived to be popular and successful, providing relatively high quality outpatient services at low cost that are accessible to the poor [2]. However, the provider survey shows that nongovernmental organization services are also increasingly localized in urban areas, as they are hard to sustain in rural areas.

3. Supporting DOTS – the universities

DOTS expansion: institutionalizing collaboration

Partnership has been key to the achievement of DOTS in Egypt. However, this partnership would not have been possible without the strong foundation built between 1990 and 1995. As section 2 describes, in the early days the NTP focused on the development of the basis for a technically sound tuberculosis programme, including microscopy services, a tuberculosis manual (technical guidelines) and a training programme for all categories of staff. However, despite these early successes, by 1995 the NTP was still very much a project and had little credibility outside the MOHP, particularly among the academic world.

The direct involvement of the universities in the NTP was critical for the process of expanding and integrating DOTS in general health services. By 1995 the NTP had established two committees as part of the process for defining technical guidelines: the technical committee and the scientific committee. In 1996 the role of these committees was expanded and several of the key professors of chest diseases in Egypt were invited to take part. From then on, the committees made a considerable contribution to the framework on important issues such as multidrug-resistant tuberculosis, BCG vaccination and tuberculosis in children. They also had a key role in the formulation of the NTP guidelines for the tuberculosis doctors, and the development of training modules and health education materials.

As a consequence of these foundations, by 1996 the academic world in Egypt began to recognize the importance of the NTP. This provided the basis for DOTS to be accepted throughout Egypt. From 1996 onwards, NTP staff began to be invited to spread the message about DOTS at key scientific meetings and conferences. The specialists in chest diseases also became actively involved in spreading the DOTS message through training and research. Without such academic support, DOTS, particularly at the primary health care level, would not have been acceptable to those doctors providing tuberculosis treatment.

The successful collaboration with the universities can also be seen as the starting point for other forms of collaboration. Encouraged by the involvement of the universities, the NTP, strongly supported by WHO Regional Office for the Eastern Mediterranean, used the committees to develop partnerships with nongovernmental organizations, private providers, HIO and the prisons. Today, both the governance and technical leadership of the NTP has become a partnership. The board of the NTP is now an association of all the institutions that have a part to play in tuberculosis control in Egypt (see Figure 7).

Collaborating in research

As part of the development of the scientific committee, the NTP established a protocol for research collaboration with the universities in 1996. The scientific committee began by establishing and publishing a research agenda for tuberculosis control in Egypt. The NTP made available finance, facilities and data for research and the universities committed themselves to providing financing and technical support for research. The WHO also supported research by providing technical and financial support to the NTP. The WHO also explicitly acknowledged the role of the NTP as an intermediary for research activities related to tuberculosis in Egypt.

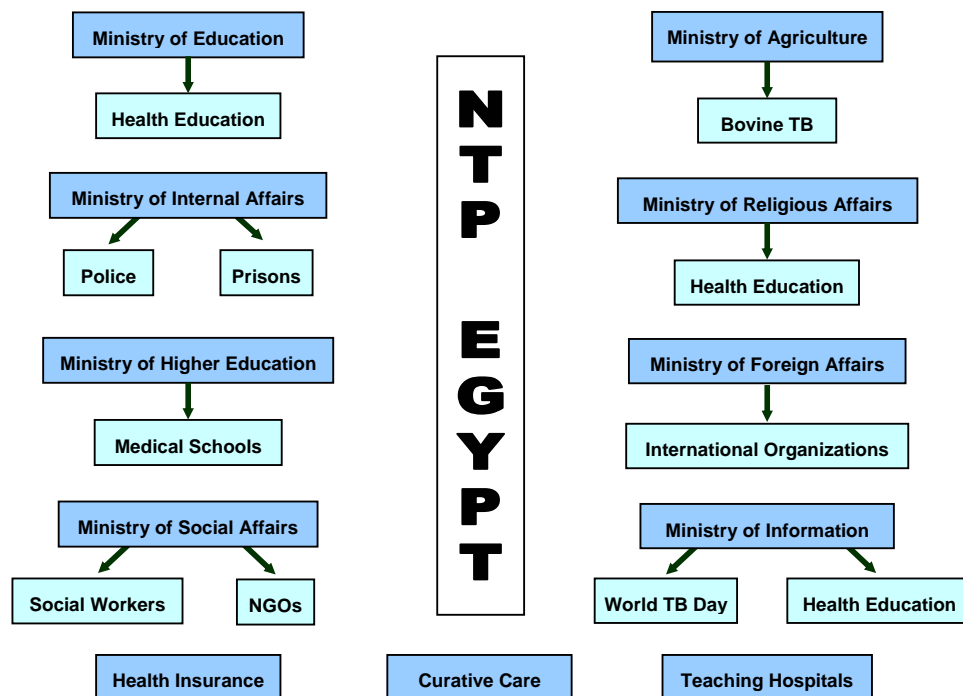


Figure 7. NTP board members and their activities

This collaboration has been successful and to date research on the following areas has been conducted in collaboration with the universities:

- evaluation of 1997 health education campaign
- cost analysis and cost-effectiveness of DOTS
- evaluation of the effectiveness of different anti-tuberculosis treatment regimens
- prevalence of tuberculosis among contacts of smear-positive tuberculosis patients
- gender differences in tuberculosis prevalence
- drug resistance surveillance (DRS) for tuberculosis
- private sector in Cairo
- pre and post-evaluation campaign
- delays in diagnosis and treatment

Training and education

The main role of the medical schools is to provide the essential knowledge, skills and attitudes needed by future doctors. In total, 4000 new physicians graduate in Egypt per year (0.07/1000). As a result of this, the number of physicians has increased from 27 000 in 1986 to 93 000 in 2001. All new medical school graduates are employed by the public sector. Through its collaboration with the universities, the NTP was able to influence the knowledge of tuberculosis that is required for qualification as a doctor, although the NTP guidelines are not yet fully reflected in the curricula of trainee doctors. The main success has been to influence the practical training provided by the public health departments. The universities have also been active in developing and providing on-the-job training on tuberculosis for chest physicians. The NTP remains responsible for providing and

organizing the training course, but the universities were asked to put together the modules, teach on the courses and inform medical students about the post-graduate training programme.

Lessons learned and the way forward

In Egypt, collaboration with the universities has been as important to expanding DOTS as any of the more tangible inputs. As with many other middle-income countries, the opinion leaders for medical professionals are those who teach them and lead them scientifically — the universities. Implementing DOTS in Egypt meant that substantial changes had to be made in medical practices. This challenged the approach that the Egyptians had developed over many decades and was the basis of the education of those in medical practice. It would have been impossible to do this without the support of those who confer scientific and technical credibility.

Reviewing this experience, it can be seen that there were several factors that were responsible for the success of this collaboration:

- the initial project level success of the NTP, which established it as a credible technical institution;
- the support of the NTP by international organizations such as WHO and KIT, again improving its credibility and providing an incentive for partners to develop international partnership and gain international recognition;
- institutionalizing collaboration in the form of scientific and technical committees;
- the NTP's acceptance that the universities have a key role to play in setting the tuberculosis-related research and training agenda.

The universities are not only key opinion leaders for publicly employed doctors, but also professional leaders for those in private practice. Therefore, in the future, the NTP envisages that the universities could also be involved in public—private partnerships. This could include partnership in activities such as: research into private practice and tuberculosis control, providing educational material and influencing the medical professional associations, orientation meetings for private providers and influencing policy-makers to ensure that public—private partnership is supported.

4. Working with the Health Insurance Organization

The Health Insurance Organization (HIO)

Like many other middle-income countries, Egypt has formal health insurance providing health care for around half of the population. The HIO was created in 1964 with the mission of covering the entire population of Egypt. Although the HIO falls under the governance of the MOHP, it is an autonomous organization and therefore not directly under the auspices of the NTP. The HIO is organized into 12 regional branches, which are supervised by the central headquarters in Cairo. The HIO covers about 28.9 million people in Egypt. About 17 million of these are students, 4 million infants and 8 million (mainly government) employed and retired citizens.

The HIO is both a payer and provider of health care. It finances health care services through a combination of premiums, payroll and cigarette taxes, and contributions from school fees and pensioners allowances. In 1995, 68% of revenue came from premiums, 22% from the tax on cigarettes, 5.7% from other operational revenues, less than 3% from co-payments and 1% from the sale of services to non-HIO beneficiaries. Compulsory premiums are collected by the Social Insurance Organization from employees and employers. The Pensions and Insurance Organization collects premiums from pensioners. Students are financed by premiums paid by enrolled students, a government contribution and cigarette taxes. In addition, the HIO receives additional transfers from the Ministry of Finance to cover operational losses.

The HIO benefit packages are broad and generous. Employees covered are entitled to receive all services including transplants, plastic surgery and treatment abroad. In principle, the benefit package has no limits on the quantity or cost of services. In 1995, the HIO-owned network comprised 27 hospitals with 4829 beds. In addition, the HIO contracts with a large number of doctors to provide services to its insured population.

Despite the provision of a comprehensive service, utilization and occupancy of HIO can be considered low. The average number of annual per capita visits to a general practitioner is 1.3, with significant variation across programmes and regions. Visits to a specialist average 0.73 per capita annually. The occupancy rate for inpatient services owned by the HIO is around 65% and general practitioner physicians employed by the HIO see an average of 8 patients a day.

The NTP began collaboration with the HIO in 1996. By 1997, training started and the HIO was reporting tuberculosis cases to the NTP. By 1998, the HIO had adopted the NTP's treatment guidelines (see Box 1).

The NTP runs several types of training for the workers in the HIO centres, such as:

- training for the HIO doctors on NTP guidelines, diagnosis and treatment, and reporting; this is conducted by university professors and NTP doctors;
- nurse training on registration, defaulter tracing and health education; this training is provided by university professors and NTP doctors;
- laboratory training provided with the help of the central laboratories; this covers sputum examination and other investigations relating to tuberculosis and registration;
- health education training for social workers and health educators; this is conducted by the NTP doctors and doctors from the health education directorate of the HIO.

Box 1. Protocol for collaboration between NTP and HIO (signed 2002)

As part of the ongoing cooperation between the Health Insurance Organization (HIO) and the National Tuberculosis Programme (NTP), officials from both sides have agreed to create specialized centres to diagnose, register, treat and follow up on tuberculosis patients in the HIO, with the areas of cooperation being:

1. Diagnosis of tuberculosis cases: all suspicious cases will be referred from all the clinics according to the methods of diagnosis followed by the NTP.
2. Drug treatment will be prescribed according to the protocol agreed-upon between the HIO and the NTP.
3. All the tuberculosis cases will be registered in the tuberculosis register.
4. Quarterly reports will be made to the NTP.
5. The patient will be given a letter addressed to the chest polyclinic.
6. Workplace contacts will be examined by the HIO clinics.
7. Patients defaulting from treatment will be monitored by the health education workers at the centres.
8. Drugs used to treat tuberculosis will not be used in treating any non-tuberculosis diseases, especially rifampicin and streptomycin.
9. Treatment for adult patients will be dispensed monthly from these centres.
10. The NTP will inform all chest clinics and hospitals nationwide of the addresses of all the specialized tuberculosis centres in the HIO in all the governorates.
11. The NTP will provide all of its printed material to all the specialized tuberculosis centres in the HIO for one year, after which the HIO will print them.
12. All human resources employed (tuberculosis officials, chest physicians, nurses, laboratory technicians) will be trained by the NTP.
13. The NTP will supervise the centres, and discuss their problems and solve them immediately.
14. Representatives from the HIO will attend the quarterly NTP meetings.
15. The health education departments in both the HIO and NTP will cooperate in spreading health awareness about tuberculosis.

Enclosed with the protocol are the specifications of the specialized tuberculosis centres, the protocol for management of the tuberculosis patients, the names of tuberculosis officials in the HIO, as well as the locations of the centres and the names of their staff teams.

Case detection

The HIO has been notifying tuberculosis cases since 1997. The HIO registers all tuberculosis cases in the tuberculosis register. Quarterly reports on cases detected are sent to the NTP with the knowledge of the patient's doctor and under the supervision of the branch HIO tuberculosis coordinator, in accordance with the NTP's code of conduct. On average, around 950 cases are notified by the HIO annually, accounting for a significant proportion of tuberculosis cases reported in Egypt (just under 10%) (see Figure 8). As patients often move from HIO to government services there may be some duplication in this figure. Although the NTP makes every effort to avoid duplication by checking HIO identification numbers, some cannot be avoided; only electronic nominal reporting would avoid all duplication.

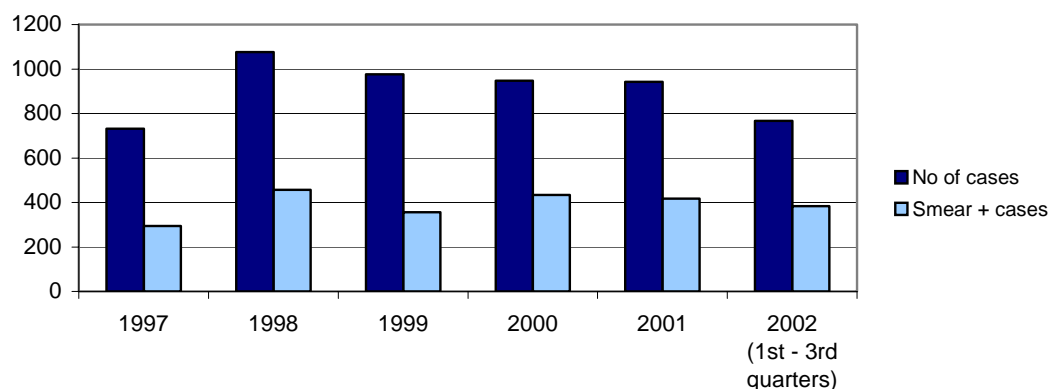


Figure 8. Notification of tuberculosis cases by HIO

Despite this significant contribution, there is probably still a significant under-reporting of the true number of cases seeking treatment from the HIO. The figures vary significantly by governorate, indicating the potential for increased case notification in some governorates. The HIO provides health insurance to around 8 million adults. Assuming this group has the same average rate of infection as those not covered by the HIO, it can be estimated that the HIO should identify around 3000 tuberculosis cases annually. Although the utilization rate of HIO services is low, going to the HIO for diagnosis is a prerequisite to obtain sick leave from government employment and it is likely that most cases will initially pass through the HIO, so the HIO will examine most of its members with tuberculosis. Tuberculosis patients may then move on to other providers to obtain treatment.

Treatment

By the end of 1998, the HIO had adopted the NTP guidelines for the diagnosis and treatment of tuberculosis. The schedule of follow-up sputum examinations is followed, and the test and treatment results are registered for all patients at each HIO facility. The NTP provides training to key HIO frontline staff. However, the reporting of treatment success has not been adequate, and the quality of case management by the HIO is still a cause for concern. One of the key problems is that tuberculosis patients are being seen by so many different types of doctors, some HIO and some contracted by the HIO, that it is difficult to train and supervise all the relevant staff.

Lessons learned and the way forward

Collaboration with the HIO has significantly boosted the cases notified in Egypt. However, reporting is still not consistent and there are concerns about case management. There have been two major lessons learned from this experience.

- Up until 2002 collaboration was not formalized and relied on personal contact between the heads of the NTP and the HIO. This informal level collaboration has not been sufficient to ensure that progress is made in the more difficult areas.
- The HIO is a broad organization which contracts and pays diverse providers. The specification of these contracts does not at present include the notification of tuberculosis or tuberculosis treatment outcomes. It has therefore been difficult for the HIO to ensure high quality tuberculosis treatment for its beneficiaries across the large and disparate number of institutions that it supports.

At present, Egypt is undergoing a health sector reform. This reform addresses issues such as the governance of the HIO, and its funding and contracting system. It is also re-examining the package of care that the HIO funds. In order to ensure that the HIO provides tuberculosis care for its

beneficiaries, the NTP must take an increasingly active role in the reform process. They need to ensure that tuberculosis is in the essential package and that contracts with providers for tuberculosis include the notification of patients and the recording of treatment outcome.

Meanwhile, the NTP plans to continue to build capacity in the HIO. The NTP is now beginning to work with the HIO to develop a referral system within the HIO for tuberculosis patients. In 2001, the HIO agreed that HIO patients would be diagnosed and treated in specialist clinics, rather than by all practitioners within the HIO. The HIO has established 52 specialist clinics in Egypt. Each centre is responsible for the diagnosis, follow-up, and treatment and registration of tuberculosis cases according to the NTP guidelines. Each specialized tuberculosis centre has a trained chest specialist, a bacteriological laboratory with a trained laboratory technician and a pharmacy containing anti-tuberculosis drugs. The NTP came to an agreement with the HIO to restrict the use of anti-tuberculosis drugs, especially streptomycin and rifampicin, to these specialist centres. At the moment the HIO funds all tuberculosis drugs, but financing and supply can sometimes be erratic, and is a key reason why patients forsake the HIO for either the public or private sector following an initial visit. Finally, the NTP wants to ensure that recording of cases is not duplicated with the MOHP, therefore it hopes to implement electronic nominal registration and reporting systems.

The first specialist clinics were piloted in Cairo. The early results are encouraging, with an initial doubling of the case detection rate previously recorded in the same area by the HIO. However, these results may be more difficult to achieve in areas with a lower population density as the patient will have to travel further to the clinic. More work may have to be done to ensure that HIO patients have access to effective treatment nearer their homes. In late 2002, a protocol was signed between the HIO and the NTP formalizing the arrangement, and the HIO and NTP will begin nationwide coverage of the centres in 2003.

5. Reaching the disadvantaged—nongovernmental organizations

Identifying and training nongovernmental organizations

Nongovernmental organizations play a key role in tuberculosis control among those who have poor access to health services in Egypt. Although nongovernmental organizations probably only account for around 1% of health care providers in Egypt, they have a strong community focus which can be used to encourage those with tuberculosis to access services. The communities that they serve are most likely to be the poor, the homeless and the uneducated.

There are several different types of nongovernmental organizations involved in tuberculosis control in Egypt. Most of them are Egyptian, although a few are supported by international nongovernmental organizations. Their activities cover nearly all of the Egyptian governorates. Table 3 shows the number of nongovernmental organizations working with the NTP in each governorate. These nongovernmental organizations were identified by the governorate tuberculosis coordinators in collaboration with the Ministry of Social Affairs. The governorate coordinator begins collaboration by contacting nongovernmental organizations to gather more information about the nature of their work. The governorate coordinator then informs the central level of the NTP about the nongovernmental organization's suitability and willingness to participate with the NTP. The NTP then provides training and orientation on tuberculosis for those nongovernmental organizations considered suitable. Depending on the nongovernmental organization, the NTP runs several types of training, such as:

- health education training for social workers and health educators given by the NTP doctors and the health education directorate of MOHP;
- training for doctors on diagnosis, treatment and reporting; this is provided by university professors and NTP doctors;
- nurse training on registration, defaulter tracing, contact management and health education; this training is provided by university professors and NTP doctors;
- training for trainers within nongovernmental organizations to spread the message to the maximum number of people within the larger nongovernmental organizations; this is done by university professors, NTP doctors and the health education directorate of MOHP.

Table 3. Nongovernmental organizations providing tuberculosis-related services by governorate

Governorate	Number of nongovernmental organizations	Governorate	Number of nongovernmental organizations	Governorate	Number of nongovernmental organizations
Cairo	5	Alexandria	4	Port Said	1
Qaliubua	1	Beheira	1	Wadi Algedid and Red Sea	0
Fayoum	2	Daqahlia	5	Beni Sweif	2
Gharbia	2	Minia	2	Damietta	2
Giza	2	Assyut	1	Ismailia	1
Menoufia	3	Sohag	1	Kafr Sheikh	2
Sharqia	1	Qena	3	Matrouh	1
North Sinai	1	Aswan	2	South Sinai	0
Suez	2	Luxor	1		

Total number of nongovernmental organizations in Egypt = 48

Health education and case detection

Much of the collaboration with nongovernmental organizations has focused on health education and case detection. Several nongovernmental organizations run medical caravans. These provide health education sessions about tuberculosis to those complaining of chest illnesses. They also identify suspect tuberculosis cases for local chest facilities and arrange for visits by social workers. Suspect cases are asked about contacts, and home visits are made to provide health education and to arrange for contacts to come to the chest clinic for examination. Several nongovernmental organizations also assist the NTP in raising awareness about tuberculosis. This includes participation in World TB Day. Examples of some of the nongovernmental organizations collaborating with the NTP are given below.

- **Coptic Evangelical Organization for Social Services (CEOSS)** The NTP began cooperation with the CEOSS in 1998. The starting point was to develop a plan for raising awareness of tuberculosis and improving tuberculosis case detection in slum areas. Supported by the NTP, the CEOSS started health education campaigns in schools in slum areas. They also were one of the first to provide education and detect cases with medical caravans. In addition to health education and treatment, the CEOSS provides other services such as literacy training, family planning, professional training, advocacy for tuberculosis patients and their families, and preventive caravans.
- **Women's Association for Health Promotion** The Women's Association for Health Promotion has worked with the NTP to increase awareness of tuberculosis in the population through producing television spots, posters and orientation booklets for the NTP. It also holds orientation meetings, health education seminars, and assists in financing World TB Day in Egypt. It provides continuing health education for tuberculosis patients together with financial and social support. It also provides them with professional training to increase their earning potential. It has also created a special area and housing specifically for tuberculosis patients and their families to live in, known as the Women's Association for Health Promotion City in Giza Governorate.
- **Anti-Tuberculosis Association** This association has representatives in almost all governorates. Aside from social activities, it helps in training of health educators and social workers. It also disseminates and shares in producing tuberculosis-related research with the NTP and has an important role in World TB Day. It also organizes conferences on tuberculosis within governorates and in some cases provides tuberculosis patients with social and financial aid.

It is difficult to evaluate the impact of collaboration with the nongovernmental organizations on case detection as chest clinics reporting tuberculosis cases to the NTP do not indicate if the case has been referred by a nongovernmental organization. Where records have been kept by nongovernmental organizations, numbers of cases directly identified by nongovernmental organizations have been low, but the proportion is relatively high given the populations the nongovernmental organizations serve. There has also been no evaluation of the impact of the public education campaigns on knowledge, attitudes and practices of the population relating to tuberculosis. However, collaboration between the NTP and nongovernmental organizations involved in health education and case detection has not encountered any significant problems, and collaboration is seen as fruitful from the perspective of both the nongovernmental organizations and the NTP.

Tuberculosis treatment

Little is known about the involvement of nongovernmental organizations in treating tuberculosis in Egypt. The NTP has however developed one successful partnership, with the Joint Relief Ministry of All Saints' Cathedral (JRM), to treat tuberculosis. The JRM provides services for African refugees in Egypt. JRM runs its own health clinics, which diagnose, treat and follow up their tuberculosis patients. It also traces defaulters and conducts contact tracing. Since 1999, the NTP has collaborated with the JRM, by providing laboratory services and inpatient care for the most serious cases identified by the JRM. In return, the JRM has been reporting patients to the NTP. The JRM notifies around 60 cases of tuberculosis to the NTP annually (see Table 4).

Table 4. Number of tuberculosis cases reported by JRM 1999–2001

Cases	1999	2000	2001
New smear-positive	2	15	21
Relapse	0	0	1
Treatment failure	0	0	2
New smear-negative	5	23	32
Extrapulmonary	3	18	12
Total	8	56	67

In 2002, the JRM faced problems providing treatment to patients, as the price of tuberculosis drugs in the private sector in Egypt is high and the supply unreliable. The NTP therefore agreed to supply drugs to the JRM under a contract. This was considered a preferable alternative by both partners to reducing the JRM's role to case detection and education, as many refugees face difficulties in accessing MOHP clinics and would go untreated. The contract included the following:

- The NTP and JRM will jointly train JRM staff on tuberculosis.
- JRM will share data with the NTP, and report cases and outcomes, sending data quarterly to the NTP.
- The NTP and JRM will run joint health education programmes.
- The NTP will provide JRM with drugs, and in some cases doctors to assist in reporting and registration.
- The NTP will support access to free inpatient medical care, such as diagnosis and treatment, for the communities that JRM supports.
- The NTP will provide access to laboratories and X-ray services.

Lessons learned and the way forward

The NTP has achieved a degree of success in its collaboration with nongovernmental organizations albeit on a small scale. Nongovernmental organizations have been encouraged and enabled to provide health education relating to tuberculosis and to identify suspect tuberculosis cases and, in one case, to provide high quality treatment. The following are the main lessons learned from this experience.

- Specifying the identification and support of nongovernmental organizations as a key task of governorate coordinators has enabled the connection with local nongovernmental organizations. This would have been difficult to achieve at the central level.
- Having a flexible model of cooperation has promoted widespread collaboration with nongovernmental organizations, who are often very different from one another. In some cases, minimizing the nongovernmental organization's role to identifying suspect cases and education, in other cases being willing to supply drugs once reporting is satisfactory.
- Nevertheless, it has been difficult to assess collaboration with the nongovernmental organizations and its impact on case detection. There is also a concern that some of the suspects referred do not access services. Therefore, it is important that referral systems between nongovernmental organizations and tuberculosis services are further developed and supported in the future.

6. Collaboration with the prisons

There are prisons in twenty governorates in Egypt. Each prison has a hospital, which has a doctor who examines prisoners complaining of health problems. The prison medical authority governs and manages all the prison hospitals. In principle, when the prison doctor suspects tuberculosis, the patient is examined by an assigned chest specialist who usually visits the prison twice weekly. The NTP's primary strategy for tuberculosis control in prisons is DOTS, ensuring that every prisoner has unrestricted access to the correct diagnosis and treatment of tuberculosis. Cooperation between the NTP and the prisons began in 1997 (see Box 2). Collaboration was initiated by issuing clear joint policy objectives, that:

- unregulated, erratic treatment of tuberculosis in prisons should cease;
- urgent action is needed to integrate prison and civilian tuberculosis services to ensure treatment completion for prisoners released during treatment;
- measures to reduce overcrowding and to improve living conditions for all prisoners should be implemented to reduce transmission of tuberculosis;
- where multidrug-resistant tuberculosis is present, and a functional DOTS programme is in place and accessible to all prisoners, a DOTS-Plus pilot programme should be considered.

The NTP provides refresher training for physicians, nurses and prison officers in tuberculosis, NTP diagnosis and treatment guidelines, and the monitoring, registration and reporting of tuberculosis cases. The training course for prison doctors is supported by specialists in chest medicine. Training for laboratory technicians is carried out with the help of the central laboratory. The NTP had to modify its training programme to make it suitable for prisoners and the special conditions of prisons. In addition, health education training was provided for prison social workers. This is carried out by NTP doctors together with staff from the health education directorate of MOHP.

Case detection

In 1997, a joint workshop on reporting tuberculosis was held by prison management and the NTP. During this workshop a form for data collection, a plan of action for a pilot exercise and a computer database were designed. This included an index number for each prison in order to prevent double counting of tuberculosis patients as they transferred between prisons. By 2000, most prisons in Egypt were providing the NTP with a detailed quarterly report including numbers and classification of tuberculosis. In the first 6 months, 156 patients were notified. Of these, 85 were new cases and 55% smear-positive. The bulk of cases are in the 25–34 age group (40%). Although the rates have now lowered slightly the prisons still report about 200 tuberculosis cases annually (see Table 5).

Table 5. Notification by prisons (1999–2001)

Cases	1999	2000	2001
New smear-positive	78	58	52
Relapse	16	11	9
Treatment failure	4	2	0
Treatment after default	0	4	2
New smear-negative	123	76	107
Extrapulmonary	37	32	23
Total	258	183	193

Box 2. Protocol with prisons

As part of the ongoing and regular cooperation between the prisons sector and the NTP, and after a comprehensive study from both sides to develop and modernize this cooperation, both sides have agreed that the code of conduct shall be as follows.

1. Investigations will be done in the nearest chest facility for prisons.
2. A chest specialist from the MOHP will visit the prison every week and fulfil the following tasks:
 - examine the new chest cases
 - review the previous investigations and register them
 - follow up the patient under treatment
 - examine the chest cases in the prison hospital.
3. The prison doctor will collaborate with the chest specialist in diagnosis and treatment of the tuberculosis cases, in particular the sputum-negative cases.
4. All the contacts of smear-positive prisoners (inmates and/or guards) will be examined.
5. Suspected cases should be detected during the first 10 days of prison isolation, when prisoners are examined for infectious diseases, chest complaints and routine mass miniature radiograph.
6. Positive diagnosis, classification, treatment regimen and sputum analysis will be registered using the NTP registration forms.
7. Tuberculosis prisoners will be treated in an isolated ward in the prison hospital.
8. Drugs: rifampicin and streptomycin will be used only in treating tuberculosis, and the governorate tuberculosis coordinator (GCT), medical staff of the prison and regional medical supervisor will collaborate to estimate and supply the drugs needed.
9. Prisoners released during treatment will be given sufficient drugs for one week and the local chest facility nearest to their residences will be notified and provided with the relevant medical information.
10. The GCT will visit the prison every month, check the registers and make a report.
11. The NTP will train doctors, nursing staff, social workers (on health education) and laboratory technicians recommended by prison sector officials, as needed.
12. The NTP will supply the prisons with all the printed forms used in registering the tuberculosis cases and forms used in notification and statistics.
13. The medical authority in the prison will notify the NTP through quarterly reports, as is the case with any chest facility.
14. A meeting will be held every 6 months between the NTP and the prison sector staff to evaluate the situation and to solve any problems in implementation.
15. Prison sector officials will attend the quarterly meeting of the NTP.

The fact that the numbers have fallen slightly since the collaboration started reflects several constraints. Information about prisoners is a sensitive issue, and the capacity to collect and manage information in prisons is weak; for example, there were difficulties with the transfer of prisoners for the purpose of follow-up examinations. In addition, there are often delays experienced in the diagnosis and identification of tuberculosis patients, as most prisons do not have a laboratory capable of sputum testing. Diagnosis may also be delayed due to the bureaucratic and security requirements attendant on prisoners obtaining access to certain medical services, such as X-ray services. Finally, estimates of the total prison population are unavailable, so the calculation of case detection rates is difficult.

Treatment of tuberculosis

Each prison is assigned a chest specialist from the MOHP. They have a key role in collaboration with the prisons. In principle they should:

- examine and register all new chest cases and review previous investigations;
- recommend that tuberculosis suspects are isolated until diagnosis is made;
- recommend that those identified as having tuberculosis are treated in the isolation ward of the prison hospital;
- examine and investigate contacts ensuring a sputum examination and chest X-ray are carried out;
- follow up patients under treatment. Anti-tuberculosis drugs are supplied by the pharmacy department of the nearest directorate to the prison by the government coordinator of tuberculosis. The patient receives the drugs daily under observation by a member of the prison hospital medical team (DOTS);
- ensure that patients being discharged from prison are provided with one week's supply of anti-tuberculosis drugs and are put in contact with their local chest facility.

However, at present there is no data on the treatment outcomes of prisoners and it is therefore difficult to evaluate its success.

Lessons learned and the way forward

Collaboration with the prisons has been fruitful, identifying on average 200 additional tuberculosis cases a year. However, reporting on case management has been difficult to achieve. The following are the main lessons learned from this experience.

- A key factor in case detection has been the commitment of the prison medical staff, who have supported the intervention of the NTP. This has encouraged the prison management to permit the NTP to access prisons.
- Establishing local links between chest specialists and prison doctors is essential to success and helps to ensure that discharged prisoners are followed up.
- The indexing of patients has also been shown to be useful although difficult to maintain owing to weakness in record-keeping in the prison system.
- As with other forms of collaboration, the commitment of the prisons has been informal and therefore the results from different prisons vary. Although this may be an appropriate way to initiate collaboration, it may prove insufficient to maintain success.

In 2002, the NTP decided that the time was right to consolidate and formalize the collaboration. The NTP and the Ministry of the Interior signed a protocol for the detection and treatment of tuberculosis in prisons at the end of 2002. In addition, the NTP is currently discussing a plan to regularly screen the prison population for tuberculosis.

7. Private for-profit providers

The importance of private physicians in the identification and treatment of tuberculosis was recognized by the NTP in 1995. At that time there was almost no reporting of tuberculosis cases by the private sector. However, anecdotal evidence suggested that there was widespread and inappropriate management of tuberculosis cases, both in terms of delayed case detection and the provision of ineffective treatment. The NTP responded by developing an Action Plan for the Private Sector. From the beginning the central approach in Egypt has been one of collaboration. Rather than trying to limit private sector involvement in tuberculosis control, the NTP has sought to understand and work with the private sector [4]. This was chosen as the pragmatic approach in a country with such a large and well-established tradition of private practice. The first stage in the action plan was to try and understand the involvement of the private sector in tuberculosis control. Between 1995 and 2000, the NTP conducted several studies to assess tuberculosis treatment in the private for-profit sector. The following are the key findings of these studies.

Involvement of private for-profit practitioners in tuberculosis care

a) Health-seeking behaviour

The process of seeking health care for tuberculosis in Egypt is often a long and complex one. In 1996, a survey was carried out by the NTP on 120 patients being treated for tuberculosis in hospital to examine their health-seeking behaviour [5]. The mean duration of time between the start of early complaints and seeking help is around 3 weeks. A high proportion of patients with early complaints initially seek care from the private sector, mirroring the health-seeking behaviour of chest symptomatics in Egypt generally. The study found that in the case of persistent cough, 37% of the respondents consulted a private doctor, 39% went to a (private) pharmacist, while 10% went directly to a health worker at the MOHP. A minority of patients were found to self-treat. Reliance on the private sector was higher with less serious complaints, but reduced as the disease and symptoms became more severe.

More females than males were inclined to seek private health care. Information was not collected on the difference in behaviour of different income groups. However, a significant cause of delay was found to be financial (between 40% and 50% of cases), with many people taking into account the cost of private providers when seeking care. Many patients did not go to private chest specialists, but sought care from general practitioners. Of those seeking health care early on in the disease, 51% of patients visited general practitioners, while 41% consulted chest specialists. Those who delayed were more likely to consult chest specialists as the complaints became more severe. According to the private practitioners surveyed, most patients prefer to consult with a generalist private doctor because of the stigma attached to tuberculosis.

b) Diagnosis

The study into the health-seeking behaviour of hospital-based patients was followed by a small-scale study into the diagnostic, referral and treatment practices of 30 private practitioners [6]. The results of this study supported the widespread anecdotal evidence of poor diagnostic and treatment practices in the private sector. Of the private practitioners interviewed, the majority (75%) advised the patient to go for an X-ray; 50% also carried out a sputum analysis. In most cases these tests would be done by a private laboratory. Only 25% of those interviewed said that they would refer to a chest hospital or a private chest specialist for diagnosis. A key issue in where the patient was referred for diagnosis was an assessment of the patient's wealth.

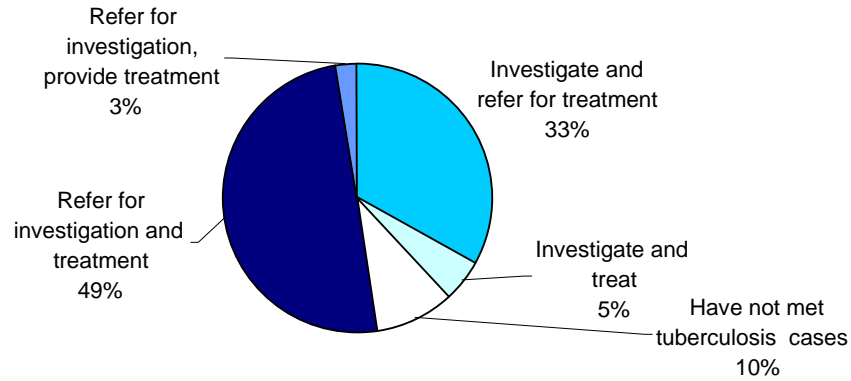


Figure 9. Investigation and treatment practices of private practitioners

In addition, a small-scale study of the behaviour of 40 herbalists and pharmacists also found that most pharmacists would begin to treat patients with chronic cough themselves. Most would initially prescribe a cough syrup. However, if the patient did not improve most would refer the patient to a private practitioner, with the remaining third of patients being referred to a government chest hospital. In most cases herbalists also referred patients with a persistent cough, but as with pharmacists, they may delay. The study found that 80% of herbalists believed that they could cure chronic coughs. However, in the event that patients were not cured within two weeks more than 75% of them would then refer to private physicians; 12.5% claimed that they could cure tuberculosis with herbs.

A third larger scale study was conducted into the diagnosis and treatment practices of private practitioners by the NTP in 1997 [7]. This study interviewed 253 private general practitioners and chest specialists. The study found a slightly lower proportion of private practitioners admitting to diagnosing tuberculosis patients than the previous study. Figure 9 illustrates the results and shows that just under half of all private doctors who had come into contact with suspect tuberculosis cases admitted to diagnosing patients themselves. Most said that they would refer the patient for diagnosis at a chest facility.

c) Referral

Most of the private practitioners interviewed (around 80%) referred their suspect tuberculosis patients to chest facilities for diagnosis and treatment. The study found that only 11% of suspect tuberculosis cases are referred to other private clinics for diagnosis and treatment, including chest physicians practising privately. Very few patients were referred to general hospitals (see Figure 10). However,

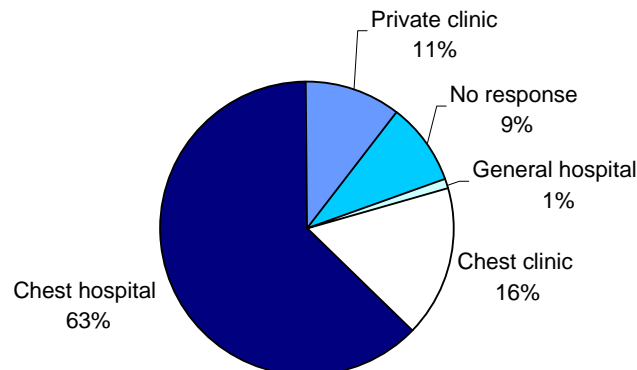


Figure 10. Destination of referral of suspect tuberculosis cases for diagnosis and treatment

although often correctly referred, patients are often not provided with the right information about their disease. Only 20% of patients were properly informed about their diagnosis. This corresponds with the earlier study of those in hospital that found that 43% of those who were admitted to hospital were unaware of the diagnosis of tuberculosis.

Where private practitioners are referring for treatment, the delay before receiving treatment in the public sector can in some cases be significant. In the study of hospitalized tuberculosis patients, it was found that only 35% of patients referred from the private sector were admitted within the first month after referral; 40% waited 1 to 3 months for admission; 20% waited between 3 and 6 months and 5% waited over 6 months. It was unclear from the study how much the delay was caused by the patient or by delay within the public sector itself.

d) Notification

Very few private practitioners notified the NTP of tuberculosis cases. Compiling the data from the various studies, it can be estimated that around 40% to 50% of private physicians attempt to notify suspected tuberculosis cases. However, more often than not they are notified to the wrong place. Very few private practitioners notify tuberculosis cases to the governorate health office. Most of the cases are notified to the local chest hospitals and clinics (around 70%). The reasons for lack of notification given were that many did not think that tuberculosis was a notifiable disease and/or they did not know how to notify.

e) Treatment of tuberculosis

By examining the information provided by the studies described above, it can be estimated that around 10% to 15% of patients identified as having tuberculosis in the private sector will be treated by the private sector. The large-scale study of private practitioners found that 7.5% of private practitioners who had come across tuberculosis cases admitted to treating tuberculosis patients. In addition, of the 50% who referred for treatment, 10% referred to other private practitioners. The small-scale studies of pharmacists and herbalists also found that somewhere between 10% and 15% of patients are treated even if the cough persists.

Surveys of pharmaceutical companies in Egypt show that half the rifampicin sold is sold to the private sector. This does not mean that half of all tuberculosis patients are treated in the private sector (as the drugs may be being wrongly used to treat other diseases), but it does support the finding that there are a significant number of tuberculosis patients receiving treatment in the private sector, including MOHP physicians practising privately and prescribing drugs from pharmacies. The small-scale study showed that very few pharmacists would identify tuberculosis patients themselves; the majority would obtain information about the diagnosis from a prescription sheet, and then continue treatment. Only a small number of cases were found where the pharmacists said they would treat tuberculosis without a prescription. Surprisingly, this was more common when symptoms were more severe.

All the studies found that, where treatment had been provided by the private sector, it was often found to be incorrect. Of the private doctors treating patients interviewed, all were found to be using the wrong drug combination and providing the wrong duration of treatment. In addition, the adherence of patients did not appear to be an issue of substantial concern to private practitioners. Only 20% of those interviewed knew that treatment outcome could be confirmed by sputum diagnosis.

Collaboration with private for-profit providers

Following the studies, the NTP decided that the primary approach to improving tuberculosis treatment in the private sector had to be one of collaboration. This was mainly because of the extent of private practice in Egypt. The NTP and the MOHP has therefore not attempted to exclude private practitioners from tuberculosis diagnosis or treatment, by using measures such as banning the sale of tuberculosis drugs in the private sector or implementing the mandatory referral of tuberculosis patients. Instead, the interventions considered have focused on encouraging the provision of quality tuberculosis services within the private sector.

This collaborative approach is outlined in the guidelines developed by the NTP in 1997 to promote quality tuberculosis services in the private for-profit sector, which were officially adopted by the MOHP in 1998. These guidelines state that:

- The tuberculosis patient should have the chance to decide if he/she wants to be treated either in private clinics or in government chest facilities.
- Public funding should be available for provision of tuberculosis care by private providers.
- Quality improvement is essential and can be achieved through the sharing of information (including notification) and joint training on tuberculosis with the private sector.

Box 3. Barriers to collaboration

Barriers to private sector collaboration (practitioners)

Inadequate training and lack of information
 Technical doubts about NTP guidelines
 Low priority to public health function, not remunerative
 Competition for patients, particularly among chest specialists
 Infrastructure limitations
 Doubts about quality of care within NTP
 Largely unorganized, liaison and interaction challenging

Barriers to private sector collaboration (NTP)

Ideological opposition
 Lack of information on the private sector
 Preoccupation with strengthening and expansion of the NTP
 Prejudice about the profit motive of private practitioners
 Limited resources for coordination and supervision
 Weak and anachronistic regulatory mechanisms
 Absence of precedents, little evidence on replicability

After the guidelines were approved by the MOHP, the NTP began to analyse the barriers to collaboration, both within the NTP and for private practitioners (see Box 3). The NTP held a workshop in 1998 where their own staff and private practitioners were asked to be frank about their reluctance to collaborate. Information was felt to be a key barrier by both parties and confirmed the NTP's prioritization of training and information exchange. It was felt this would go some way to addressing the belief held by both partners that the other partner provided a poorer quality service. Finally, resource constraints were highlighted from both sides, in particular the lack of infrastructure in the private sector to treat tuberculosis, and the lack of time and resources for coordination activities by the NTP.

a) Smear-positive notification from private labs

The first clear collaborative activity was initiated as a direct response to the immediate situation in the areas surveyed in 1996 and 1997. In 1997, the NTP began a pilot scheme in which private laboratories notified tuberculosis cases, as a simple way of identifying tuberculosis cases detected in the private sector. There were no incentives provided for notification, and the NTP relied on the good relationship developed during the survey between the private laboratories and the NTP. As a result of this collaboration, in 1997, double the number of new cases were notified from the pilot area than in previous years. However, it is possible that a substantial number of these extra cases were cases that would have been later notified by the MOHP.

The pilot scheme ended the following year and the number of cases notified returned again to the pre-1997 levels. This drop in cases following the pilot period illustrated the extent to which this intervention relied on the personal relationships between the NTP and key staff in the laboratories. When the NTP stopped its intensive communication with the laboratories, the notification stopped. This early effort therefore highlights the importance of institutionalizing any collaboration developed during a pilot phase.

b) Supporting case notification and improved management of patients

In 2000, the NTP initiated its first major project for collaboration with the private sector. A pilot project was established in Cairo to encourage case detection, notification and treatment of tuberculosis in the private sector. The pilot project, was developed as a joint intervention by the NTP, the private sector department of the MOHP, the Cairo Medical Syndicate and several pharmaceutical companies. Following the guidelines developed in 1997, the strategy used for cooperation was one of information

sharing and training. This was acceptable to all the partners. The key objectives of the project were to:

- establish a notification system for the tuberculosis patients discovered in the private sector
- establish effective management of tuberculosis patients discovered in the private sector
- monitor the treatment of tuberculosis patients treated by private physicians
- establish a quality control system for tuberculosis in the private laboratories

The project began by identifying all private clinics in the project area. A list was provided by the pharmaceutical companies; 3000 private clinics were identified in the project area. All the clinics identified were contacted to see if they were willing to be involved in collaboration. The number of clinics that responded to an invitation to take part in the project was significant, although low proportionally (around 10%). The project was initiated with a first meeting to orient providers; 272 representatives from 246 different facilities attended the first meeting. This orientation included presentations by private physicians already well known to the NTP for their interest in tuberculosis, university professors and representatives from the MOHP. During the meeting participants were informed about the project and provided with copies of the notification form.

As the orientation meeting was too large to provide detailed educational material, the practitioners were linked to chest facilities, and the participants introduced on a personal basis to the local chest managers. Educational material and training was then provided at a later date in smaller follow-up area meetings. These meetings were followed up on a regular basis for one year to support and continue to educate private clinicians and to collect additional case information. Financial incentives were provided to attend these meetings.

Table 6 shows the results of the project in terms of number of notified cases. In total, 30 additional tuberculosis cases were notified by the project. This is a small number, but it does confirm the potential for private sector collaboration. The total population size of the area covered was around 2 million people. Using the annual rate of infection of 0.32, around 580 tuberculosis patients can be estimated to occur in this population annually. During the first year of the pilot, 221 tuberculosis patients were identified through the public and parastatal sector, meaning that 360 were slipping through the net. As only 10% of private practitioners participated in the area, around 38 extra cases would be expected to be identified by them. The clinics participating in the project in fact identified a further 103 suspect patients, with 73 being referred for diagnosis and 30 being diagnosed by the clinics themselves, and seen to be additional cases.

Table 6. Patients notified by private practitioners from Cairo (2001)

Cases	Number of cases
New smear-positive	9
Relapse	0
Treatment failure	0
Treatment after default	0
New smear-negative	16
Extrapulmonary	5
Total	30

The project finished in 2001. As with the collaboration in the pilot project, case notification stopped. This is primarily because the project was designed to be continued on a voluntary basis, but when the financial incentives were stopped for meetings, there was a substantial drop in the number of private physicians attending. In addition, the project relied on the local chest clinics to supervise and provide tuberculosis drugs to the private physicians, as a more efficient model than using central level staff. However, this placed a considerable burden on chest clinics, which, without additional resourcing, proved difficult to maintain. Finally, there were problems with the transfer of tuberculosis drugs to the private sector as many of the government chest physicians were reluctant to provide their tuberculosis drugs to private practitioners, as it was not common practice within the MOHP.

At the end of the first year several key recommendations were made:

- Payment or other incentives to private practitioners should be considered.
- Notifications should be followed up on, particularly to organize the distribution of drugs from private clinics.
- Although partners in such projects are important, the NTP should not rely on their support on a voluntary basis.
- For non-chest physicians referral should be the standard practice.
- Monitoring and supervision should be further worked on and supported within the NTP.

Lessons learned and the way forward

One of the key lessons learned from the NTP's research into the private for-profit sector has been to confirm the potential of collaboration in terms of case detection, reducing length of treatment delay and the improvement of treatment practices. The studies reviewed show that the private sector is, in the majority of cases, the first point of contact with health services for patients with tuberculosis. At present, evidence shows that out of the 90% of patients who approach the private sector, somewhere around 40% will continue with the private sector for investigation and diagnosis. This investigation and diagnosis is likely to involve X-rays and may be a source of delay. The majority of these cases will not be notified at this point. Between 10% and 15% of cases will then continue treatment in the private sector. Those who are referred to the public sector may be provided with incomplete information and this may also be a cause of delay. It is therefore clear that improved collaboration with the private sector has the potential not only to decrease delay, but also to boost case detection rates. Given the evidence that current private sector tuberculosis treatment is of low quality, improved case detection and referral to the NTP should improve the chances of cure for a significant number of those with tuberculosis in Egypt.

The pilot projects have demonstrated that real results can be achieved through a combination of information sharing and training. However, both interventions to date have failed to sustain the results achieved in the pilot phase. Therefore, there remains considerable work to be done in the future in order to develop the best model of collaboration. The number of private practitioners in Egypt is huge. Identifying ways that are sustainable both in terms of results, but also in terms of financing, is therefore a significant challenge to the NTP. The following summarizes the key lessons learned from the pilot studies:

- Successful collaboration requires a continuing relationship with the NTP. However, this requires strong systems and sustained resourcing.
- Considerable promotional work is required to attract private providers to collaborate voluntarily, even where payment is provided.
- Information sharing and training can motivate some private providers and achieve results.
- Developing relationships between local private providers and local government tuberculosis care providers is effective and efficient. However, this will place an extra burden on government facilities and needs to be resourced.

- Local government tuberculosis care providers need to have clear authority to provide tuberculosis drugs to the private sector. As this is not normally done, this may require instruction from outside the NTP.
- Private providers respond to incentives. However, more research needs to be done on whether the incentives have to be financial.

The NTP has now decided that a further project is necessary to identify a sustainable model of public/private collaboration, which can be scaled up rapidly throughout Egypt, through operational research. The project will implement different models of collaboration in different districts in Cairo and Alexandria. The feasibility, effectiveness and cost-effectiveness of each model of collaboration will be evaluated, before deciding which to scale up. As a starting point, the NTP has identified several key issues that need to be addressed in the study:

- Should the private sector continue to be supported to diagnose and treat tuberculosis cases? Or should some providers be encouraged to refer? Some countries adopt a mandatory approach to referral of cases. Although the NTP has been reluctant in the past to adopt this approach, the size of the private sector may mean that it would be better first to concentrate on the most important private providers (chest physicians) and, at least initially, to provide guidelines and information to all other providers to refer.
- How best can private providers be attracted to participate? What type of promotional and partnership material will interest practitioners to initiate collaboration? How can “peer pressure” be best used to encourage providers? What type of payment or incentive system is required to ensure the notification, correct diagnosis and treatment of tuberculosis patients? How can financing be sustained or integrated into the health sector reform process?
- What is the burden of collaboration on local government chest physicians? How can this be minimized and supported by the NTP, while ensuring that collaboration is effective?
- If the private sector is supported in treating tuberculosis, what is the best model of drugs supply? Should the NTP supply drugs to the private sector? What systems are required?
- How can private practitioners’ organizations, pharmaceutical companies, private pharmacies and laboratories be involved to best effect?

8. The public—public mix

There are several other departments within the MOHP and other government ministries which do not fall under the control of the NTP. The following briefly summarizes the collaboration with these other partners.

Infectious disease (fever) hospitals

In 2002, the NTP met with the leaders of the prophylactic medicine department in the MOHP and the managers of eight fever hospitals in Cairo and other governorates of lower Egypt to discuss how to collaborate in case detection and notification of tuberculosis. Many tuberculosis patients mistakenly seek care at these hospitals as they experience symptoms of fever. An agreement was reached to design a protocol to put down the rules that guide collaboration. This protocol includes an agreement on case definition, case suspicion, proper case and case diagnosis. A particular focus is the management of extrapulmonary tuberculosis, which is commonly treated in fever hospitals.

The protocol will include the drug regimens used in treatment of different extrapulmonary tuberculosis cases. This protocol will also include the assignment of a key person in every fever hospital to communicate between the NTP and the hospital on the notification of cases and the quarterly reports. It was agreed that the NTP will train a number of doctors and nursing staff in every fever hospital on registering cases and notification using the registry and notification forms used by the NTP. The governorate tuberculosis coordinators are also seen as having an important role in initiating the collection of statistics from the fever hospitals and providing on-the-job training for the nursing staff on tuberculin testing and BCG vaccination, until the protocol is established.

Teaching hospitals

In 2002, a workshop was held to initiate collaboration between the NTP and the teaching hospitals and institutes, attended by the managers of three of the main teaching hospitals in Egypt and the vice general secretary of the authority of the teaching hospitals. The workshop participants discussed the role of the teaching hospitals in detecting and treating pulmonary and extrapulmonary tuberculosis cases and the notification of these cases to the NTP. The teaching hospitals requested that the NTP provide training courses for the laboratory technicians on direct smear examination and for social workers on health education. They would also like their hospitals to be supplied with explanatory booklets and posters. It was agreed that there should be collaboration in tuberculosis research, and that the NTP and the teaching hospitals should continue to exchange experiences.

The NTP will supply the teaching hospitals with the registration forms and, in turn, they will notify the programme with quarterly reports of the cases detected and their treatment outcome. In addition, a key person will be identified in every hospital to regulate communication between the staff of the chest department and the staff of other departments dealing with tuberculosis, in particular extrapulmonary tuberculosis. That person will also be the focal point for communication between the hospital and NTP. It was agreed that a detailed protocol will be developed to outline collaboration between the NTP and the teaching hospitals. The manager of each hospital will be responsible for its implementation.

Ministry of Social Affairs

The NTP has collaborated substantially with the Ministry of Social Affairs. The Ministry of Social Affairs is responsible for providing social support to those with tuberculosis. The NTP has had a key role in the training of social workers posted at chest facilities. In addition, the NTP realized that social workers were also a key resource in developing health education material and training health workers

in the social aspects of tuberculosis. Social workers have therefore also been involved in many of the NTPs workshops and planning meetings, and training programmes.

Ministry of Information

The Ministry of Information has provided important support to the NTP by providing free broadcasting on television and radio for spot messages about tuberculosis. In addition they have had a role in ensuring a tuberculosis focus in different health programmes on radio and television. They have also assisted the NTP in the organization of the health education campaign.

Conclusions

In the future, the NTP needs to strengthen its collaboration with partners in order to improve case detection, as follows:

- Build on and continue collaboration with other public providers, such as the university, teaching, prison and fever hospitals, concentrating on the reporting of both cases and treatment outcomes.
- Continue to build capacity in the HIO by supporting a specialized structure within the HIO to facilitate provision of directly observed treatment (DOT) at peripheral facilities. Work closely with the health sector reform managers to ensure that tuberculosis is included in the essential package for health insurance and that contracts with providers include the notification of tuberculosis and the reporting of treatment outcomes.
- Develop models of collaboration with private providers for rapid scaling up.
- Expand the provision of health education and community involvement activities through nongovernmental organizations, and develop referral systems between nongovernmental organizations and health care providers.

For the **public institutions**, such as the university, teaching, fever and prison hospitals, the key to success will be the continued development and expansion of successful cooperation with the managers of these organizations. The starting point of much of the collaboration in the past has been the identification of a manager who is willing to cooperate with the NTP. However, this review shows that the NTP has often successfully built from a personal base to formalize collaboration, both in terms of institutionalizing systems and establishing protocols. In general, this form of collaboration has also been relatively low cost, requiring no system of formal incentives, just a shared sense of reward and recognition from being part a programme that is acknowledged by the government as being a success in Egypt. This developing recognition of success serves to encourage those managers who are initially less interested in cooperation to see the advantages of it, and hence the NTP is now attracting new partners, such as the fever hospitals.

Collaboration with the numerous providers funded by the **Health Insurance Organization (HIO)** is complex and cannot be seen outside the context of health sector reform. The establishment of specialized clinics to deal with the supervision of a large number of smaller providers may be a way forward. However, success will depend not only on the success of these centres, but also on the referral system to them. In addition, treatment outcomes will need to be carefully monitored, as in the long run it may prove more successful to retain the supervision of treatment at the provider closest to the patient. The HIO is currently undergoing substantial reform and the NTP will have to be at the heart of those reforms in order to ensure that a system of specialized clinics is sustainable. The funding and contracting system will need to be revised in order to support the new referral system. Tuberculosis will have to be included in the essential benefit package to ensure financing. It is unclear at present whether the NTP should supply and finance tuberculosis drugs should the number of tuberculosis cases treated by the HIO dramatically increase.

The private for-profit sector may perhaps yield the most cases, but may also be the most complex sector to collaborate with. The central difficulty lies in the number of providers. Although the NTP has tried to collaborate with the syndicate of private providers, and the main medical organizations and unions, most private practitioners in practice work independently. The NTP centrally cannot work directly with all these providers, so they have relied on the local chest clinics to play a key role. However, this review shows that in the past the NTP has underestimated the burden and change in roles that this places on local chest physicians, and supporting supervision structures will be important in the success of any future model. In addition, as the current level of treatment is thought to be low among non-chest physicians, it may still be possible to achieve success by recommending that non-chest physicians always refer. Continued work with private laboratories may also ensure that

those diagnosed, but not referred, are still identified by the NTP. The issue of incentives to report cases and outcomes remains important, as past experience has shown that collaboration declines when incentives are withdrawn. In future, the NTP intends to explore various non-financial incentives and possibly the supply of free drugs. The NTP also needs to look at how to resource this. The NTP does not have the resources for such incentives at the present time. It is therefore also examining how to integrate tuberculosis into the model of accreditation for private practitioners currently being developed in the health sector reform unit.

Although the NTP has worked closely with several **nongovernmental organizations**, collaboration will need to be expanded. More work will need to be done to explore the impact that nongovernmental organizations can have on encouraging and supporting access by disadvantaged groups in Egypt. In terms of case detection, there needs to be further work done on identifying the best way to find cases and ensuring that they access health services. Although few nongovernmental organizations treat cases, it may also be interesting to look at the role that they could play in ensuring supervision of patients, particularly those who are living in poverty.

Finally, although the past experience of the **NTP** ensures that it is well placed to expand case detection through partnership, in future the NTP will increasingly find itself moving from the role of managing public providers, to one of negotiator and facilitator to many disparate partners. In the process it will need to learn new skills and become increasingly informed, not just about the health sector, but also about other sectors. However, by developing these skills and building successful partnerships, the NTP will ensure that the population of Egypt has access to high quality and effective tuberculosis treatment.

Lessons learned

This paper shows that collaboration can be successful both in terms of improving case finding and the effectiveness of case management. An examination of the lessons learned from each form of collaboration in Egypt, reveals that there are several key factors to successful collaboration between NTPs and partners in general.

- NTPs need to be seen as credible technical institutions in order to be a respected partner.
- Collaboration needs to be institutionalized within the governing structure of NTPs.
- Collaboration should be seen as a two-way process, not only looking at the benefits for tuberculosis control, but also examining how the lessons learned from tuberculosis control can assist others, particularly in the context of health sector reform.
- NTPs need to be flexible and adopt different models of collaboration with different partners.
- The support of medical professional leaders, such as university professors, is useful to convince those outside ministries of health of the benefits of DOTS.
- Initially, collaboration can be informal, providing examples of success. However, in the long run it needs to be institutionalized between the NTP and partners if widespread success is to be achieved.
- Professional links with medical staff can provide an entry point to organizations that do not have health as their primary objective, such as prisons.
- Collaboration needs to be backed with resources to be sustainable, in particular collaboration with the private for-profit sector.
- Collaboration should be localized as far as possible.

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