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Retrospect of tuberculosis control in Brazil

ABSTRACT

The aim of the study was to look back on the course of action involving measures of tuberculosis control in Brazil since the end of the 19th century, covering the history of social struggles and pointing out institutions and people that have dedicated themselves to looking for solutions to these issues. The Brazilian response to tuberculosis started in society with the *Ligas Contra a Tuberculose* (Leagues Against Tuberculosis), promoting scientific advances, such as the BCG vaccination, which begun in 1927. From the public power, the *Inspetoria de Profilaxia da TB* (TB Prophylaxis Inspection Service – 1920), the *Serviço Nacional de Tuberculose* (National Service of Tuberculosis – 1940), and the *Campanha Nacional Contra a Tuberculose* (National Campaign Against Tuberculosis – 1946), coordinated national policies such as chemotherapy, beginning with the discovery of streptomycin in 1944. The emergence of bacterial resistance led to the development of several therapeutic schemes. The Scheme 1 (rifampycin, hydrazide and pyrazinamid), which was the main one in 1979 and is still used nowadays, had a great epidemiological effect. The WHO declared TB a public health emergency in 1993. In response, Brazil developed some strategies; the first one was the *Plano Emergencial para Controle da Tuberculose* (Emergency Plan for Tuberculosis Control – 1994), prioritizing 230 municipalities. The current prospects are an effective municipalization of actions and their greater integration with the *Programas de Agentes Comunitários e Saúde da Família* (Humanitarian Agents and Family Health Programs).

KEY WORDS: Tuberculosis, history. Tuberculosis, prevention & control. National health programs. Health programs and plans. Brazil.

INTRODUCTION

Tuberculosis (TB) in Brazil, as well as in the world, comes from a long and transcendent impact, mainly in the end of the 19th and beginning of the 20th centuries, when half of the people stricken by the disease died. Its causality could only be settled by Koch's discovery of the *Mycobacterium tuberculosis*, in 1882. However, the advent of the effective treatment – chemotherapy – had to wait for half a century more. For a long time it has been known the relations of TB with poor living conditions and poverty. Many countries achieved its control, even before chemotherapy, simply by improving the quality of life of those who were ill. The technology available nowadays can cure almost the totality of cases. Nevertheless, Brazil remains with high rates of infected people (around 80,000 new cases per year) and annual mortality of almost 6,000 deaths. Poverty-stricken areas, high-risk groups (prisoners, Indians, people living in shelters, among others) and the non-execution of control actions with quality and assurance of access contribute to this scenario.

TB is part of the history of Brazilian society, a problem that added up to a complex group of factors which delayed Brazil's social development, ever since

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the beginning of the country's colonization. The goal of this study was to present a retrospect of the action of measures for TB control in Brazil, since the end of 19th century. This requires rethinking the history of social struggles and bringing out institutions and people that are dedicated to the mission of easing the human suffering caused by TB.

Hopefully, this study will contribute to the country's public health memory, honoring the work of all those involved in the fight against TB. At the same time, it shows the paths, difficulties and their causes, thus expecting to help those who will eventually be involved in this fight.

AT FIRST, IT WAS FORCE OF SOLIDARITY

In the beginning, following what was happening in Europe, the first nucleus of organized action against TB arose in the medical field and in civil society. With the absence of the public sector's participation, these groups were driven by principles of solidarity and pioneering. The first institutions specifically created in order to deal with the problem were the *Liga Brasileira Contra a Tuberculose* (Brazilian League Against Tuberculosis) – currently called *Fundação Ataulpho de Paiva* (Ataulpho de Paiva Foundation) – and the *Liga Paulista Contra a Tuberculose* (São Paulo's League Against Tuberculosis), both founded in 1899. The former was headquartered in Rio de Janeiro, then the Capital of the Republic, led by names such as Hilário de Gouveia, Azevedo Lima, Cypriano de Freitas, and many others. The *Liga Paulista* was led by Clemente Ferreira, Emílio Ribas, Victor Godinho and Guilherme Álvaro, with other states following the model immediately.¹⁵

The *Ligas Brasileiras Contra a Tuberculose* (Brazilian Leagues Against Tuberculosis) spread throughout Brazil and intended to introduce in the country scientific methods of treatment and prophylaxis that were in vogue in the European social-medical milieu. These methods were the following: to promote sanitary education campaigns; to establish sanatoriums, dispensaries and preventoriums; to focus on assisting the poor; to spread these actions to other states of the Republic; to recognize, as success factors, the importance of private initiative, philanthropy and the participation of the public power; and, with the practice of these procedures, to qualify professionals.

At first, the *Liga Brasileira* (Brazilian League) invested in two lines of action: one was preventive and the other focused on treatment. It promoted the creation of sanatoriums and hospitals, building partnership with private institutions and their rest homes and sanatoriums. These institutions were located in cities considered ideal for treatment due to their suitable climate, according to the

thought in vogue at that time. In 1902, the first dispensary was founded and, in 1927, the first preventorium, both of which contributed as encouragement factors to the Leagues' medical-social credit.

The dispensary was a health unit that developed preventive actions, diagnoses and TB treatment, enabling the use and propagation of new therapeutic techniques, such as the curative collapsotherapy. This method was created in 1894, by Carlos Forlanini, in Italy,^{2,14} and used around 1912, by Oliveira Botelho, in Rio de Janeiro. In 1927, when this technique became popular in Brazil, doctors from the *Dispensário Clemente Ferreira de São Paulo* (Clemente Ferreira Dispensary in São Paulo) presented their 15 years of experience in collapsotherapy at an international congress.

PUBLIC POWER COMES ABOUT

The first attempt to involve public power in the fight against TB was proposed by Oswaldo Cruz, back then the General Director of Public Health⁵, in 1907. Even though it did not come into practice, the proposal suggested the implementation of extensive prophylactic measures in the *Regulamento Sanitário* (Sanitary Regulation) and establishment of sanatoriums and hospitals.

In 1920, with the creation of the *Departamento Nacional de Saúde Pública* (Brazilian Department of Public Health) during the *Reforma Carlos Chagas* (Carlos Chagas Reform), the first governmental institution to fight TB¹⁶ came into being. The *Inspetoria de Profilaxia da TB* (TB's Prophylaxis Inspection Service) was held in Rio de Janeiro and led by Plácido Barbosa.

In 1927, Arlindo de Assis began the anti-TB vaccination in Brazil with the BCG vaccine developed by himself in the *Liga Brasileira Contra a Tuberculose* (Brazilian League Against Tuberculosis), derived from the Moreau strain.

In 1930, Tysiology were included in the curriculum of the *Faculdade Nacional de Medicina* (Brazilian Faculty of Medicine) as part of the Medical Practice discipline given by Clementino Fraga, developing the study and human resources qualification to fight TB¹⁰. This course is taught to this day under the responsibility of the *Ministério da Saúde* (Ministry of Health), through the *Centro de Referência Prof Hélio Fraga* (Professor Hélio Fraga Reference Center – CRPHF) and the *Escola de Saúde Pública Sérgio Arouca* (Sérgio Arouca Public Health School) at the *Fundação Oswaldo Cruz* (Oswaldo Cruz Foundation), and it is named *Curso de Especialização em Pneumologia Sanitária* (Course on Specialization in Sanitary Pneumology)

In the beginning of the 1930s, many healthcare activities were separate from the *Departamento Nacional*

de Saúde Pública (National Department of Public Health) and were scattered among other organs of the federal administration. At that moment, paradoxically, with the political-administrative reform by president Vargas' administration, the *Ministério de Educação e Saúde* (Ministry of Health and Education) came into being.¹⁶

In 1936, Manoel Abreu finished his research, initiated 17 years before in Paris, on a new diagnostic method: the miniature radiography examination of the chest. The new exam was called photofluorography, radiophotography or roentgenphotography and was later called abreugraphy.¹⁷ Abreu's discovery, which had immediate world repercussion, revolutionized the methodology to fight TB at that time, beginning the search for sick people among those who looked apparently healthy.

In that same decade, an effort to expand the network of dispensaries was witnessed, with the beginning of the execution of the plan for the implementation of at least one sanatorium in each state of Brazil. There was also the inclusion of actions for TB control in the assisting services of institutions and in retirement and pension funds.

NATIONAL DIRECT ACTION

The 1940s started with Barros Barreto's bold and broad reform. Multiple aspects of the sanitary administration were focused on, especially the transmissible diseases, the decentralization in sanitary areas and the creation of executive organs of direct action.¹⁶ As a result, the *Serviço Nacional de Tuberculose* (Tuberculosis National Service – SNT) was created. The creation of the *Campanha Nacional Contra a Tuberculose* (National Campaign Against Tuberculosis – CNCT), in 1946, was the great feat of the time. The atmosphere that originated the CNCT was not only influenced by alarming numbers that measured the issue of TB, but also, as Barreira observes,* by the post-war conjuncture, with proposals for greater State intervention in social issues.

The CNCT is established under the orientation, coordination and inspection of the SNT, having as superintendent the figure of its creator, SNT's director Raphael de Paula Sousa. His purpose was to coordinate all governmental and private activities to fight TB that were developed in Brazil, counting on financial and technical autonomy and being able to make cooperation agreements with public and private entities. Among these, the *Fundação de Serviços Especiais de Saúde Pública* (Special Public Health Services Foundation), the institutes and retirement and pension funds, the

state and municipal health departments and the *Legião Brasileira de Assistência* (Brazilian Legion of Assistance) stood out.

CNCT's main goals were the following: to act in 66 municipalities where 80% of the deaths occurred; to isolate 22,000 spots with the operation, in three years, of 14,186 hospital beds; to create a model of standard sanatorium, to install a dispensary per 100 to 120,000 inhabitants; to promote professional qualification; to improve BCG vaccination; and to promote scientific and technological development.

The CNCT was, at that time, a work endowed with mysticism, determination and trust in its principles. In its first years, the adopted strategy intended to increase the number of hospital beds for bacilliferous patients and implement the expansion of the network of dispensaries, aiming at the early diagnosis of TB cases. CNCT's effectiveness led to a remarkable impact due to the awakening of national awareness; and the advances of technical-scientific knowledge and healthcare professional qualification. As a result, the execution of actions according to the rules and doctrines established was assured. At that time, there was public and private participation in the fight against TB, a great number of private hospital beds and the collection of financial resources through the sale of stamps in order to support the program.*

In spite of this, restrictions soon emerged, such as unnecessary hospitalization and low efficiency of hospital beds due to chronic patients, who eliminate resistant bacilli. Consequently, new strategies were implemented, having, as an example, the priority to bacilliferous patients who have never been treated and hospitalization until the bacteriological negativity of these patients with their subsequent return to the dispensary.

Only in the 1960s were remarkable actions witnessed, such as BCG vaccination's becoming mandatory; the decision of including TB among diseases of compulsory notification; and the guarantee of cost-free prevention, diagnosis and treatment.

INTERFERENCE IN TUBERCULOSIS NATURAL HISTORY

Decisions made by Brazilian governmental technical organs about TB treatment have always been based on investigations developed by acknowledged scientific entities, in accordance with the recommendations of the World Health Organization (WHO) and the International Union Against Tuberculosis (IUAT). Furthermore, national experiences were taken into consideration, with critical analysis by Brazilian specialists. This allowed

* Barreira IA. A enfermeira Anna Nery no "País do Futuro": a aventura da luta contra a tuberculose [tese de doutorado]. Rio de Janeiro: Escola de Enfermagem Anna Nery da UFRJ;1993.

Brazil to establish decisive parameters for the success of the treatment since the beginning: standardization of TB treatment management, cost-free medications and, more recently, supervised treatment. In spite of this, other social, administrative and human factors contributed unfavorably to the expected results in TB control.

In 1946, when the CNCT was created, two anti-TB chemotherapeutic agents were used – streptomycin (S), discovered in 1944, and para-aminosalicylic acid (P), in 1946. In the beginning, the practice of chemotherapy, inevitably, involved only the use of streptomycin, which, in the case of Brazil, was imported and distributed by the public power. The promising initial results soon turned out to be a disappointment with the emergence of bacterial resistance, which was present in high rates.

With the advent of para-aminosalicylic acid, its use combined with streptomycin was a rational initiative that led to an extraordinary observation. The streptomycin and para-aminosalicylic acid combination improved the treatment efficacy as it produced an increase in the bacteriological conversion rate and diminished the appearance of resistance. Thus, the first therapeutic scheme was established, acclaimed by the United States and promptly adopted by Brazil.

In 1952, the action of isoniazid (H) against the TB bacillus was discovered and it turned out to show effectiveness, and low toxicity and cost. This drug was included in the therapeutic regime offered to TB patients and, at first, was considered to be capable of eradicating this disease. Isoniazid, discovered 40 years ago, had not yet been tested against *Mycobacterium tuberculosis*.

International studies on the efficacy of treatment regimes indicated conflicting results. In the United States, the comparative study between the combination isoniazid + para-aminosalicylic acid and the combination isoniazid + streptomycin twice a week showed the slight advantage of the combination isoniazid + streptomycin. Whereas in England, in the comparative study between daily and twice-a-week combinations of isoniazid + streptomycin, the superiority of usage in the daily scheme was reported. In Brazil, the isoniazid + streptomycin scheme was chosen as it was simpler to use, had lower toxicity and presented advantages concerning resistance.⁸

In 1959, Fraga et al⁷ studied the reaction to the three drugs in use – streptomycin, isoniazid and para-aminosalicylic acid – in 1,255 cases treated in Rio de Janeiro. It was found that 68.2% of patients were resistant to at least two of the three main drugs,⁷ results that determined the failure of chemotherapy (the cure was at around 25%) and, as a consequence, an increase in the period of

transmissibility, transmission with resistant germs and immobility of hospital beds by chronic patients.

By then, mortality, which had dropped considerably because of chemotherapy, was already losing its speed of fall. This condition and others that resulted from technological advances led the federal government to launch an offensive, calling on governors, mayors, and other authorities and professionals to support the CNCT program, in 1961. The offensive focused on: dispensary action, aiming at the standardization of methods, their expansion to the countryside and the effective agreement between dispensary and hospital; restart of hospital constructions and proper use of hospital beds in general hospitals; employment of mobile units; rehabilitation of patients with tuberculosis; improvement of thoracic surgery; human resources qualification, encouragement of scientific research; and the acknowledgement of the role of chemotherapy.

The next step was to implement a change in the therapeutic scheme, based on international studies on efficacy. For the bacilliferous cases the 2-year regime of treatment was adopted on an experimental basis, by associating three drugs in the initial phase, two drugs in the first year of the following phase, and just one drug in the second year (3SHP/9HP/12H). In the cases with negative bacilloscopy and positive tuberculin test, a 15 month-long therapeutic regime (3HP/12H) was the option. These schemes presented variations in the second phase, according to the bacteriological and/or radiological-clinic evolution of the case, and in these, isoniazid was used in the dosage of 400 mg, something that continues to be done to this day.¹

In 1966, CNTC's Technical Committee announced a second recommendation to regimes of treatment, based on the *Primeira Experiência Internacional sobre Quimioterapia Standard* (First International Experience about Standard Chemotherapy) held by the IUAT, and where there was Brazilian participation. The proposed schemes were: 3HSP/3HP/6HP or 3HSP/3HS/6H, with a 12-month duration and recommended to patients who had never been treated² before.

These initiatives were taken when the WHO's 1957 recommendation was still in effect. It advised developing countries especially to use the daily treatment scheme with isoniazid and para-aminosalicylic acid.²⁰

At about this time, when the treatment of TB had the sanatorium as part of its foundation, the Madras¹⁹ investigation showed no difference in results of treatment of TB conducted with patients who were hospitalized or in ambulatories. Thus, came the prospect and the possibility to bring chemotherapy benefits to all patients. Health authorities emphasized ambulatory treatment and optimized the use of hospital beds. A classification for TB cases was created according to their clinical his-

tory, radiology and bacilloscopy, aiming at formulating a recovery prognosis and validating a strategy for the hospital-dispensary relationship. Four categories were established: *VT – virgens de tratamento* (those who have never been given treatment); *PS – provavelmente sensíveis* (those who are probably sensitive); *C1 – crônico com possibilidade de recuperação cirúrgica* (chronic ones with the possibility of surgical recovery); and *C2 – sem essa possibilidade* (those who do not have this possibility). The established rule prioritized hospitalization of VTs, followed by PSs, with a limited stay of up to the three months in the first phase of treatment, at the end of which, the patient would continue therapy in the dispensary. The third priority was C1s and, exceptionally, C2s. This conduct determined a significant increase in efficiency of hospitals and treatment results.⁶

Technical-administrative measures adopted by CNCT were in accordance with the policies and strategies recommended by international health organizations: classification of patients according to the recovery prognosis; implementation of a standardized scheme; integration of treatment in health care units, with the *Fundação Serviços Especiais de Saúde Pública* (Public Health Special Services Foundation) as the pioneer; creation of a technical committee to elaborate rules; development of research on chemotherapy studies and infection prevalence; introduction of intradermic BCG vaccination; creation of the *Rede Nacional de Laboratórios de Tuberculose* (National Network of Tuberculosis Laboratories); adoption, in 1974, of a new *Standard* scheme – streptomycin, isoniazid and thiacetazone (T); expansion of actions by means of agreements made with the *Instituto Nacional de Assistência Médica e Previdência Social* (National Institute of Medical Assistance and Welfare); and, in 1980, standardization and implementation of the short-term scheme – isoniazid, rifampicin e pyrazinamid (Z).*

Thiacetazone, whose action against *M. tuberculosis* had been discovered in the 1940's, had its use suspended due to severe adverse reactions presented. Nonetheless, in some later international studies, if smaller dosages were used, the drug showed an acceptable level of tolerance and efficacy when combined with isoniazid.²¹ In 1964, the WHO and the IUAT recommended the 3SHT/9HT regime as a high-quality treatment regime,¹⁸ though it was not adopted in Brazil at first. However, from 1972 on, this regime started to be used as a second option for especial programs or for economic reasons (1SHT/11HT)⁴, and two years later, it was proposed to Brazil in a publication by the *Ministério da Saúde* (Health Ministry) and the *Ministério da Previdência e Assistência Social* (Welfare and Social Assistance

Ministry).** In spite of this, the usage of this scheme of drugs did not last long because of the high frequency of side effects, as occurred in the state of Rio Grande do Sul (40.1%), according to the observation of Charkin et al.³

In the 1960's the problem of resistance was still alarming, making CNCT's technical committee standardize a spare scheme for cases already treated and resistant. Etambutol (E), ethionamide (Et) and pyrazinamide were part of this scheme during the first four months, followed by etambutol and ethionamide or pyrazinamide during the following eight months, with daily ingestion.

The 1970's were characterized by the development and introduction of short-term chemotherapy. As rifampicin showed to have a potent bactericidal activity, especially when combined with isoniazid, studies with short-term schemes were taken up again, aiming at the reduction of time of treatment without compromising its efficacy. In Brazil, Poppe de Figueiredo et al¹³ followed this line of work by conducting a study on rifampicin, isoniazid and ethambutol with daily ingestion during six months, obtaining favorable results in 96% of the treated cases. Shortly afterwards, Fraga & Gerhardt⁹ investigated schemes 6RHZ and 2RHZ/4RH in a controlled clinical trial, reaching high negativity rate (95% a 100%) and low rates of side effects (1.8%).

Brazil had merit for being the first country to standardize six-month schemes, used in the public health service network, with all drugs by oral route. This decision was based on international studies on short-term chemotherapy and on those that had already been mentioned and developed in the country, beginning in 1970. Such initiative was presented with great impact at the *III Seminário Regional sobre Tuberculose* (3rd Regional Seminar on Tuberculosis), held in Washington in 1979, by the *Organização Pan-Americana de Saúde* (Pan-American Health Organization – OPAS)/WHO. Two regimes that had shown high efficacy, tolerance and viability were selected: one for cases that were positive to bacteriological prove 2RHZ/4RH; and another for cases that were negative to 2RHZ/2RH/2H, both with daily, self-medication use. These schemes were soon standardized for usage in the public health services network.¹¹

The implementation of these new schemes which replaced the ones with 12 months of duration in Brazil took place with the free delivery of drugs on all levels of the health system and was preceded by intense professional training of those involved in activities of TB control, aiming at the relevant operational and technical aspects. In a study¹² conducted in 1982 to evaluate results of

* Hijjar MA. Aspectos do controle da tuberculose numa população favelada: favela do Escondidinho, Rio de Janeiro [dissertação de mestrado]. Rio de Janeiro: UFRJ; 1985.

** Ministério da Saúde. Ministério da Previdência e Assistência Social. Ação anti-tuberculose a nível periférico. Brasília; 1974.

the new regime, in a cohort of 3,064 cases of positive pulmonary TB, the operational results were: negative 82.1%; dropouts 9.6%; deaths 1.3%; changes in treatment 2.9%; transferences 3.3%; and failures 1.8%.

On this occasion, a coordination of the actions of the *Previdência Social* (Social Welfare) and the *Ministério da Saúde* (Ministry of Health) was established under single administration. Standardized technical rules were reviewed, the information system was unified and the activities of the *Programa Nacional de Controle de TB* (National Program Against TB – PNCT) were decentralized to the states and some municipalities. As a consequence, notifications of cases became even more consistent and the results of treatment could be evaluated in four cohorts per year, representing one month per trimester, that is to say, 25% of all cases under treatment.

A remarkable characteristic was the usage of isoniazid and rifampicin in one single capsule, with the intention of preventing acquired bacterial resistance. Another relevant fact is that, in Brazil, the forms of TB without bacteriological confirmation have always been treated with the objective of reducing the transmission of the disease.

CURRENT POLICIES OF CONTROL

The policies adopted by the *Ministério da Saúde* (Ministry of Health) in the area of TB control – unification of the national central level, decentralization of actions, reduction of hospital beds, and standardization of therapeutic regimes, among others – produced an epidemiological effect verified in the incidence and, mainly, in the mortality. The next steps, such as the creation of the CRPHF, the *Coordenadorias Macro-Regionais* (Macro-Regional Coordination Offices) and the *Sistema Nacional de Vigilância Epidemiológica* (National System of Epidemiological Inspection), provided the means for TB control to be cleverly and safely incorporated to the municipalization process that followed the creation of the *Sistema Único de Saúde* (Unified Healthcare System – SUS).

The essence of a safe project would involve: the maintenance of a national think tank with continuous, permanent contact; professional qualification enabling problem management; incentives to undergraduate courses for qualification of skilled professionals; strategic planning of essential resources, specially vaccines and medications; continuing supervising and assessment; and the creation of specialized ambulatory service networks, hospital beds and laboratories so that it would be possible to tackle the problem on any level.

Ever since WHO declared TB was as a global emergency in 1993, Brazil has stood out as regards new

perspectives on the problem, with positive measures, such as the *Plano Emergencial para Controle da Tuberculose* (Emergency Plan for Tuberculosis Control), launched in 1994 by the *Ministério da Saúde* (Ministry of Health).

A total of 230 priority municipalities that concentrated most cases in Brazil were elected according to epidemiological criteria (incidence, mortality and connection with HIV) in combination with the program operational data, such as the dropout rate. Each municipality prepared a *Plano de Ação* (Action Plan), resulting in agreements made with the *Fundação Nacional de Saúde* (National Health Foundation – Funasa), which established goals and systemic dynamics to transfer financial resources for the development of activities. These included, among other things, search of cases, treatment, information, education, and communication, all of them with specific goals. The Action Plan goals sought to diagnose at least 90% of the cases and cure at least 85% of the diagnosed cases.

With the incorporation of the *Coordenação Nacional de Pneumologia Sanitária* (National Coordination Office of Sanitary Pneumology) by the *Secretaria de Políticas de Saúde* (Health Policies Department), there was the deterioration of the process and the dichotomization in the definition of guidelines and decision processes. The extra-limit financing stopped being provided by health insurance companies and a money grant system was created, where cases that ended with supervised treatment were privileged in relation to self-administered treatment ones.

In 1998, the CRPHF, in a partnership with the *Núcleo de Centros de Excelência da COPPE da Universidade Federal do Rio de Janeiro* (COPPE's Nucleus of Excellence Centers at the Federal University of Rio de Janeiro), prepared the strategic planning for TB control in Brazil, which was soon incorporated by the *Coordenação Nacional de Pneumologia Sanitária* (National Coordination Office of Sanitary Pneumology), at that time located at the *Centro Nacional de Epidemiologia da Funasa* (Funasa's National Epidemiology Center).

In the following year, based on strategies defined during the planning process, the *Ministério da Saúde* (Ministry of Health) created the *Plano Nacional de Combate à Tuberculose* (National Plan to Fight Tuberculosis), observing the technical guidelines from the *Plano Emergencial* (Emergency Plan), linked to the construction methodology of the *Centros de Excelência* (Excellence Centers) – a concept of work in a multiple component network for the same well-formulated goal.

Funasa, by means of the CRPHF, had the following responsibilities: to host the *Laboratório Nacional de Referência* (National Laboratory of Reference), coordinating the public network of laboratories for TB

diagnosis; to perform the epidemiological inspection of multi-resistant TB; to carry out training programs, and epidemiological and operational research; to evaluate and give technical support to the *Sistema de Informação de Agravos de Notificação* (Information System of Notification Aggravations – SINAN).

With the transference of the *Coordenação Nacional de Pneumologia Sanitária* (National Coordination Office of Sanitary Pneumology) to the *Secretaria de Políticas de Saúde* (Health Policies Department), located in the central structure of the *Ministério da Saúde* (Ministry of Health), this Department took up the responsibility of managing PNC's actions. Thus, actions of epidemiological inspection, impact assessment, research and training were placed under one authority, while the ones of management of activities were placed under another one. The results were: a double administration, the loss of uniqueness of purposes and the fragmentation of processes that guaranteed the integrity of actions for TB control.

The indicator of the gravity of this situation was the fact that important federal units could not maintain an efficient information system, rendering them incapable of exercising the epidemiological inspection or following the use of resources under a bonus-based form.

In 2000, the *Ministério da Saúde* (Ministry of Health) presented the “*Plano Nacional de Mobilização para eliminação da Hanseníase e Controle da Tuberculose em Municípios Prioritários por meio da Atenção Básica*” (“National Plan of Mobilization to Eliminate Leprosy and Control TB in Priority Municipalities by Means of Basic Attention”), and in 2001, the “*Plano Estratégico para Implementação do Plano de Controle da Tuberculose no Brasil, no período de 2001-2005*” (Strategic Plan for Implementation of Tuberculosis Control Plan in Brazil, from 2001 to 2005”). These plans had as their goal to implement actions to control TB and leprosy in 100% of the priority municipalities, while reassuring the emergency plan goals: to diagnose at least 90% of expected cases and successfully treat at least 85% of them.

In this scenario, priority issues are boxed in by the excessively program-based universe, not enabling true decentralized dynamics. This harms intelligent confrontation with issues, such as the TB/Aids association, the increase in multi-resistance, and treatment dropout, among other things.

In 2003, the *Decreto 4726* (4726 Decree) reformed the *Ministério da Saúde* (Ministry of Health), creating at that opportunity, the *Secretaria de Vigilância em Saúde* (Sanitary Inspection Department – SVS), from some of Funasa's structures, such as the *Centro Nacional de Epidemiologia* (Epidemiology National Center), the decentralized units (*Instituto Evandro Chagas*

– Evandro Chagas Institute, *Centro Nacional de Primatas* – Primates National Center) and the CRPHF. Other programs of control and sanitary inspection of health aggravations, such as the Aids one, until then located in other structures of the Ministry of Health, were linked to the SVS.

The SVS started to coordinate many activities and establish a strategic plan that was common to public health, leading institutions and authorities in accordance to the SUS. This represented the moment of greatest integration among technical areas as well as on the federal, state and municipal government levels, involved in inspection and control of health aggravations. This planning enabled the existence of a situation more aligned to the country's reality, and strengthened national responsibilities and investment forecasts for the technological development of this area. In the current context, the SVS structures the fight against TB once it gathers surveillance with control actions, permitting better management and giving opportunities for decentralization, intensification and consolidation strategies for the SUS on all three levels of government.

In order to give a solid foundation to planning, programming and following actions by the PNCT, it is necessary to strengthen health information systems. Regardless of their having a national, state or municipal foundation, these systems should be supplied regularly, with quality data that allow the monitoring of the situation so that decisions can be made. There is still the need to consolidate the actions of states and municipalities towards fighting TB, under national guidelines. The coordination activities are taken up again, reinforced with planning, supervision and assessment, on its respective levels, for the immediate correction of deviations that may be detected.

The network of public health laboratories in Brazil deserves special attention, for the bacilloscopic diagnosis of TB presents limitations of access to patients and problems about the quality control of examinations.

The need to reach the goal of 85% of cure for discovered TB cases led the WHO to recommend the adoption of the *Tratamento Diretamente Observado* (Directly Observed Treatment Strategy – DOTS). The implementation of the DOTS in Brazil has presented difficulties, which points to the need to review strategies for its expansion.

TB's geographical distribution in Brazil is concentrated in the great urban centers, that is, state capitals and other metropolitan regions. In these municipalities, little coverage of the *Programa de Agentes Comunitários de Saúde* (Health Community Agents Program) and the *Programa de Saúde da Família* (Family Health Program) due to difficulties related to the cost of teams was observed, determining the search for solutions that

could lead to rapid coverage increase with the directly observed treatment.

A new model of attention is necessary, one that focuses on the patients and on the service that serves them. To treat patients as active individuals in their process of cure, giving them conditions for minimum subsistence and facilitating their transportation so they can undergo the treatment under supervision, means to reduce TB treatment dropout and improve the rates of cure in order to attain the expected goal.

Reinforcement of the health services network will cause a reduction of TB indicators and consolidate the government's proposal of social inclusion and sustained social development. Their actions are: to increase the access to services of prevention, promotion, and diagnosis and treatment, including inspection activities; to register and inform essential data to the information management; and to train teams for health attention with solid humanized, scientific and resolute basis.

Ever since the *Plano Emergencial Para o Controle da Tuberculose* (Emergency Plan for Tuberculosis Control) was adopted in 1996, the *Ministério da Saúde* (Ministry of Health) has recommended the implementation of a supervised treatment, which was made official in 1999 by the PNCT. This strategy continues to be one of the priorities so that the PNCT attains its goal of curing 85% of the sick, decreasing the dropout rate, avoiding the appearance of resistant bacilli and making an effective control of TB in Brazil possible.

In addition to the adoption of the DOTS strategy, the PNCT acknowledges the importance of expanding the fight against TB to all the SUS services, aiming at its integration with basic attention, including the *Programa de Agentes Comunitários de Saúde* (Health Community Agents Program) and the *Programa de Saúde da Família* (Family Health Program) in order to assure the effective expansion of access to diagnosis and treatment. Moreover, the PNCT points out the need of involvement of non-governmental organizations and partnerships with entities to fight TB, both national (universities, *Sociedade Brasileira de Pneumologia e Tisiologia* – Brazilian Society of Pneumology and

Tuberculosis Studies) and international ones (*Coalizão Global de TB* – Global Business Coalition, Stop TB, *União Internacional Contra a Tuberculose e Doenças Respiratórias* – International Union Against Tuberculosis and Lung Disease, United States Agency for International Development – USAID, WHO, and OPAS, among others). Through these alliances and partnerships, the PNCT strives for synergism and the multiplication of the impact of its actions of prevention and TB control.

Several measures were taken by the central level, aiming at improving the mobilization of states and municipalities for TB control: the review of incentives to broaden the coverage of actions of inspection, diagnosis, treatment and prevention of TB in municipalities considered priorities; the abrogation of *Portaria 1479* (Edict 1479); the incentives to state coordination, priority municipalities and patients. As for the implementation of the Program's monitoring and assessment, there was the expansion of TB reference centers in the south, center-west, northeast and north regions of Brazil; the creation of the *Força Tarefa* (Task Force) to follow the PNCT and promote technical assistance; the support to the accomplishment of 27 meetings for state and Federal District's assessment and the support to the accomplishment of the *Encontros Nacionais de Avaliação e Programação* (National Meetings on Assessment and Programming). As for the multi-resistant TB control in Brazil, the *Ministério da Saúde* (Ministry of Health) recommended, supported and financed a non-randomized, multi-centric prospective study, from 1995 to 1997, which allowed the standardization of the treatment scheme. Next, the CRPHF, which had always led these processes, formatted the *Sistema de Vigilância Epidemiológica da TB Multirresistente* (Inspection Epidemiological System of Multiresistant TB) with systematic notification of cases; data storage and analysis; supply of medications; and definition of state and municipal reference centers. With the recent support of the Management Sciences for Health Project financed by the United States Agency for International Development, the information system was computerized with online access. This project also aims at qualifying and training the teams at the reference centers.

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