



Rio de Janeiro, December 16, 2016

Prof Marcelo Marcos Morales

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Dear Prof. Marcelo Morales

I am submitting a proposal for the National Tuberculosis Research Plan for the period 2017-2021 and the creation of the National Commission for Tuberculosis Research, to be coordinated by NTP/SVS, Decit/SCTIE-MoH, CNPq-MSTI in partnership with the Parliamentary Fight Front Against TB, CAPES-MEC, State Foundation of Support - FAPs, and Rede TB.

The National Plan for Tuberculosis Research will greatly assist the National Strategic Plan for the End of Tuberculosis coordinated by the National Program for Tuberculosis Control of the Ministry of Health.

I inserted the summary related to the activities of Pillar 3 (Research) carried out in Brazil in the period 2015-2016 that include: Mapping Research Groups, Identifying Gaps, and also the development of the National TB Research Agenda in 2015 and its refinement in 2016, and budget forecast for the Implementation of the National TB Research Plan for the period 2017-2021.

Best regards

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NATIONAL RESEARCH PLAN FOR TUBERCULOSIS

DECEMBER 16, 2016 - ELABORATED BY THE REDE TB AND NTP-MoH

Executive summary

The World Health Assembly's "End-of-TB Strategy" approved by the World Health Assembly in May 2014 aims to reduce the incidence of tuberculosis in all countries at levels now observed in high-income countries, reducing mortality, improving diagnosis. In order to achieve these goals in the countries most affected by TB - whose citizens suffer from high morbidity and mortality from TB - A substantial expansion of TB-related research within these countries, the so-called Pillar 3 of the TB End Strategy, will be required.

In November 2014, the WHO indicated Brazil as one of the few "model" countries that already have substantial capacity for TB research and could quickly achieve these goals, and highlighted the importance of the Brazilian Tuberculosis Research Network (TB Network), Already in existence, working closely with the National Tuberculosis Control Program (PNCT) in the last 10 years. Rede-TB is a non-profit, non-governmental organization (www.redetb.org) that aims to control TB with a focus on integrated research activities through collaborative actions involving researchers, students, health professionals, industry representatives, Civil society and government,. Currently, 320 members working in 65 institutions in 16 of the 27 Provinces are affiliated to Rede-TB. TB research activities carried out by members of the TB Network have received support from State, National (CNPq / MSTI, CAPES / MEC and DECIT / NTP-MoH) and international (NIH, CDC, CIHR, European Union, BMGF) by means of public notices.

According to the document "Global Plan of Action for TB Research - the third pillar of the WHO End-TB strategy and following discussions coordinated by the TB-MoH Network (NTP, Decit, Fiocruz) and other initiatives (Such as the BRICS Plan and Brazil / Proposal for Collaboration between Brazil and China).

On April 28, 2015, a Workshop was conducted by Rede TB to evaluate the results of a survey that Mapped the Research Groups activities in the country and analyzed the Gaps and Priorities of TB Research, from February to April of 2015. A consensus was achieved on the need to elaborate the National TB Research Agenda through different research platforms that included different disciplines for later insertion in the National Tuberculosis Research Plan.

A list of key Brazilian TB research activities carried out (see below) was consolidated on June 12, 2015,

Key TB Research Activities:

1. Nine National TB events were coordinated by the TB / NTP-Decit / MoH, Rede TB; CNPq / MSTI, for the period 2003-2014.
2. Development of new drugs / molecules (PUC-RS) with promising results for the preclinical phase are currently being evaluated in non-rodent animals the recent interaction with domestic and Indian industries; Besides the prospection of new molecules using Brazilian biodiversity for the development of drugs (UFG / INI-Fiocruz / FURGS)
3. Formulation of drugs with fixed combination for the first line regimen coordinated by Farmanguinhos - Fiocruz through a technology transfer agreement with the Indian industry.
4. Development of new diagnostic methods: new tuberculin or recombinant PPD (Fiocruz-PR / Tecpar-UFPR); Real-time PCR with Q3 device similar to the Xpert technique (Fiocruz-PR / CDCT-FEPPS-RS); Phenotypic methods for MDR-TB (Plastlabor Industry and UFMG / UFES)
5. Drug Clinical Trials (Phase II-III) using new regimens for TB and MDR-TB (CRPHF / INI-Fiocruz; NDI-UFES; Global TB Alliance / Decit-MoH) and Phase IV clinical trials using New treatment schemes for latent TB (TB / UFRJ Rede TB)
6. Clinical Impact and Economic Analysis (cost effectiveness and budgetary impact) carried out in the MTB Xpert / Rif incorporation for TB diagnosis (NTP-MoH / SMS-RJ / FMT-AM / BMGF) and for MDR- UNION/ USAID), in the National Molecular Detect TB test developed by Brazilian industry - Labtest for the TB diagnosis (Rede TB / Decit-MoH).
7. Pragmatic Trials to analyze the impact of the implementation of public health actions to improve the identification of contacts and treatment of latent TB (TB / UFRJ Rede TB, FMT-AM)
8. Multicenter studies of the Health System Operational Research (GEOTB-RP-USP / TB Network) carried out in the last 6 years in 12 cities in 5 regions focused on the development and validation of health service performance indicators in different scenarios Epidemiological and health system organization, taking into account managers, health professionals and users.
9. Social determinants and analysis of the effect of income transfer and other mechanisms of social protection by the Brazilian government on TB incidence / mortality / treatment outcomes (NPT-MoH - UFBA / UFES / UFRJ / UnB / Fiocruz), in collaboration with Yale University-USA, London School of Hygiene and Tropical Medicine-England, Karolinska Institute-Sweden and WHO
10. Training of Human Resources Research for TB Research carried out in the last 12 years (RedeTB and FIC-NIH). More than 2,500 health professionals were trained and contributed to the publication of more than 300 scientific articles. The training helped in the reformulation of public policies for the control of TB, consolidated the formation of research groups between Universities and TB Control Programs at the national level and in the International Consortia, consortiums formed by Brazilian universities and research institutes and universities in the USA

11. Cohorts of TB cases and their contacts focused on the formation of biorepository with data and clinical samples collected in 5 sites in 3 Provinces of the country through the project Report Brazil (Network TB / Fiocruz-NIAID / NIH).

It has become a consensus in literature how important it has been to focus on the ability of researchers and organizations to promote internal innovations in parallel to the incorporation of externally produced scientific and technological knowledge.

([Http://www.sciencedirect.com/science/article/pii/S0040162515003881](http://www.sciencedirect.com/science/article/pii/S0040162515003881)),

In this scenario, it is crucial to strengthen an organizational model of Research Networks made up of researchers, managers, health professionals from different institutions and representatives of Civil Society, who prioritize the exchange of knowledge, common funding, protagonism in science technology and innovation through An organic relationship structure, as the Rede TB has proposed since 2001, and is described at

[http://www.redetb.org/attachments/article/234/Rede%20Brasileira%20de%20Pesquisa%20em%20Tuberculose%20-%20REDE % 20TB% 20% 20Port.pdf](http://www.redetb.org/attachments/article/234/Rede%20Brasileira%20de%20Pesquisa%20em%20Tuberculose%20-%20REDE%20TB%20Port.pdf).

General recommendations were consolidated as key steps in the development and implementation of a National TB Research Plan, and subsequent dissemination to Key Institutions and Organizations at national and international levels.

GENERAL RECOMMENDATIONS

Taking into account that the "End of TB" Strategy is not simply based on a problem of public health or biomedical areas, but also a development challenge, actions should go beyond the National TB Control Programs, a mechanism (Pillar 3) and at the same time promote the full spectrum of research (epidemiological and fundamental, translational, clinical, operational and health system), and using national and Internationally recommended:

1. Promote the creation of a National Tuberculosis Research Commission that promotes the inclusion of Pillar 3 in the National Plan for TB Elimination to assist in its implementation and monitoring of its implementation, with the following activities: [Detailed below]

- To bring together other organizations interested in participating in the process, such as MSTI, MEC, MDIC, MJ, MDS, MRE, universities, research institutions, industries, NGOs, Biomedical Associations, Brazilian Partnerships and Parliamentarians to promote the allocation of greater investments in research Of tuberculosis.
- Prepare a Budget Plan for the different research priorities included in the National TB Research Agenda.
- Promote the interaction of TB research with other countries, belonging to BRICS, Latin America / Central, and the Community of Portuguese Language Countries (CPLP).
- Propose process indicators to analyze the performance of the implementation of new diagnostic technologies / drugs / health policies and management that should be used to monitor the progress of the research.
- Promote strategies that support the participation of key actors in TB Research in conjunction with Tuberculosis Program managers in the inclusion of Pillar 3 (Research) and their effective interaction with those actors working on Pillar 1 (In the patient) and Pillar 2 (Inclusive Policies and Support Systems).
- Coordinate monitoring, as the National TB Program, the implementation of the National TB Research Plan, Pillar 3 (R & D) actions linked to the WHO End of TB strategy.

NATIONAL TUBERCULOSIS RESEARCH COMMISSION

Members / Commission Participants

National Congress - Antonio Brito - Coordinator of the Parliamentary Front Against Tuberculosis - Social Security Commission - Chamber of Deputies

Government : MoH, MSTI, MEC - Marcelo Morales and Raquel Coelho (CNPq-MSTI), Abilio Baeta Neves (CAPES / MEC), Patricia Bartolomay / Fernanda Dockhorn / Daniele Pelissari / Ruy Souza Junior / Patricia Werlang / Denise Arakaki (NTP-MoH), Adele Benzaken (DST Department - AIDS - SVS-MoH), Camile Giareta Sachetti (SCTIE-MS), Clarice Petramale (DEGITS-SCTIE-MS), Betina Gabardo (SES-SP), Ana Alice Pereira (SES-RJ), Carla Jarczewski (SES-RS), and representatives from State Research Foundations

Research Association- (NGO research) REDE TB - Afranio Kritski / Julio Croda and professionals / researchers included also in other institutions below*

National Academy of Medicine / Brazilian Academy of Sciences: Walter Zin / Patricia Rocco,

Fiocruz: Wim de Grave, Andre Daher, Marco Krieger, Alexandre Costa, Margaret Dalbourne *, Valeria Rolla *, Maria Cristina Lourenço, Solange Cavalcante, Martha Maria Oliveira *, Philip Suffys *, Theolis Barbosa *, Sergio Arruda *, Bruno Bezerril de Andrade *, Monica Kramer *, Jose Ueleres Braga *, Paulo Basta *, Roseli Monteiro Silva *, Carlos Morel, Milton Moraes (Brazil),

Universities: José Roberto Lapa e Silva * / Clemax Sant Anna * / Fernanda Mello / Afranio Kritski * (FM-UFRJ), Joao Baptista de Oliveira and Souza Filho * / Jose Manoel de Seixas * Elena Lassoukaya (UENF), Anete Trajman * (IMS-UERJ), Marcelo Cordeiro Santos * (UEA). Maria Luiza Basso * (UFSC), Antonio Ruffino Netto * (FMRP-USP), Terezinha Scatena Villa * / Rubia Andrade * (EERP-USP), Terezinha Leitao * (FM-UFC), Susan Martins (ISC- UFBA), Silvana (NDI-UFES), Mauro Sanchez * (UNB), Martha Campos * / Pablo Machado * / Anne Vilela * / Diogenes Santos * / Isabela Neves Almeida * (FM-UFMG), Reynaldo Dietze * Luiz Basso (PUC-RS), Ana Paula Kipnis * (UFGO), Fatima Scarparo *, Vanete Soccol / Andrea Rossoni * (UFPR), Pedro Almeida * (FURGS), Julio Croda * (UFDourados), Pericles Nogueira / Eliseu Waldman (FSP-USP)

Research Institutes: Maria Lucia Rossetti * / Elis Regina Dalla Costa * (CDTS-FEPPS-RS), Luci Ferrazoli * / Erica Chimara * (Adolfo Lutz / SES-SP Institute), Marcelo Cordeiro Santos *), Eduardo Netto * (IBIT-FJS), Julio Croda, (Soc Bras Medicina Tropical), Fernanda Mello (Soc Bras Pneumo Tisio), Ethel Maciel * (Abrasco)

Non-Governmental Organization: Ezio Tavora * / Jose Carlos Veloso * / Carla Patricia Almeida * (Social Mobility - TB Network), Carlos Basilia (NGO Forum TB-RJ),

National Industry - Elen Siqueira (Plastlabor), Margella Marconcine (Orangelife), Tecpar-SES-PR

Foreign Industry - Caroline Amoedo (Becton Dickinson), Cleverson Porto (QIAGEN), Luiz Andre Magno (Janssen)

Foreign Organizations - Felipe Carvalho (MSF), Fabio Moherdau / Mirtha Del Granado (PAHO), Christian Lienhardt (WHO), Miguel Viveiros (IHMT-UNL-PT),

Secretariat of the National Research Commission - TB Network www.redetb.org

Mission: To promote tuberculosis research in Brazil in order to respond to the demands of Pillar 3 of the Global TB Elimination Plan approved by the World Health Assembly in May 2014.

Strategic objectives

Strategic Objective 1: To defend and lead the implementation of the National Tuberculosis Research Plan, making it a strategic priority in science, technology and innovation throughout the country

Strategic Objective 2: Support the establishment of collaborative mechanisms among all stakeholders at the national level, such as a National TB Research Network that includes government representatives (Ministry of Health), researchers, health professionals, program managers, Technical Assistance Institutions, Universities, Research Institutes, Biomedical Society, National Public and Private Industry, Foreign Institutions, Advocacy groups, as well as establishing links with international partners.

Strategic Objective 3: Expand scientific technical development and capacity for innovation in tuberculosis in the country

Strategic Objective 4: Monitor and evaluate the development of technological innovations and the clinical and economic impact of new TB control technologies

Strategic objective 5 Ensure full dissemination of the products and results of the projects of the National Plan for Research and Technological Development in Tuberculosis and its contributions to the strengthening of the health system

Priority Activities 2017-2021

1. Coordinate the development of specific Priority Research Platforms in the different regions of the country based on the burden of TB and the installed capacity of research in the different areas of knowledge.
2. Prepare a research training plan coupled with the necessary funding. Insert training programs for basic, translational, clinical, operational, and health care research and analysis of the impact of such programs in different regions of the country.
3. To promote Advocacy with the public authority aiming the financing of TB research in the country. This is an essential activity step that should in fact be continued in all steps of the plan.
4. Promote forums for the dissemination of research results to all stakeholders, focusing on the interface between the different research areas with their impact on the health system.
5. Review research priorities as results from previous research are disseminated and analyzed
6. Assist in coordinating research activities on TB, HIV, MDR-TB, TB, co-morbidities, vulnerable populations, in order to ensure national research priorities in order to avoid duplication of unnecessary and potentially costly research efforts .
7. Build and disseminate the evidence base in the different areas of knowledge in order to speed up the adoption of new and more cost-effective TB control interventions
8. Assist researchers, health professionals and laboratory technicians to adopt Quality Management System in the activities linked to the Research Platforms.
9. Expand qualitative research with vulnerable populations, especially street people and abusers of alcohol and drugs, with the aim of identifying strategies for detection and adherence to treatment, bringing them closer to the Harm Reduction methodology.
10. Promote ethical guidelines and standards for TB research

ACTIVITIES CARRIED OUT IN 2016

Strategic Objective 1: Make the National Tuberculosis Research Plan a strategic government priority across the country,

1.1. In February 2016, the National Tuberculosis Research Agenda developed in 2015 by the TB Network, PNCT-SVS-MS and Fiocruz is published in the Journal of the Brazilian Society of Tropical Medicine

[Http://www.redetb.org/attachments/article/230/Paper%20Agenda%20Nac%20Pesq%20em%20TB%20%20Feb%2019-2016.pdf](http://www.redetb.org/attachments/article/230/Paper%20Agenda%20Nac%20Pesq%20em%20TB%20%20Feb%2019-2016.pdf)

1.2. In April 2016, the TB Network publishes a summary of its activities since its creation in 2001

<http://www.redetb.org/attachments/article/234/Rede%20Brasileira%20de%20Pesquisa%20em%20Tuberculose%20-%20REDE%20TB%20%20Port.pdf>

1.3. On June 23, 2016, Rede TB held a meeting with the PNCT-SVS-S to define the next steps to incorporate Pillar 3 in the National Plan for the Elimination of TB, under preparation of the MS. ([Http://blogdatuberculose.blogspot.com.br/](http://blogdatuberculose.blogspot.com.br/))

1.4. On June 23, 2016, TB Network held a meeting with CONITEC / DEGIT-SCTIE-MS to identify possible interactions in the Pillar 3 Merger area in SCTIE actions and its inclusion in the National TB Elimination Plan, under preparation of the MS .

[Http://www.redetb.org/attachments/article/232/Ata%20de%20Reuni%C3%A3o%20Conitec%20-%20Rede%20TB%20Junho%2023-2016.pdf](http://www.redetb.org/attachments/article/232/Ata%20de%20Reuni%C3%A3o%20Conitec%20-%20Rede%20TB%20Junho%2023-2016.pdf)

1.5. On August 24-26, 2016, in the National Congress of the TB Network, held in Maceio, the TB Network and PNCT conducted an electronic survey in August (<https://enketo.ona.io/x/#Y9zX>) for Refine the National Agenda for Research on Tuberculosis described in item 1.1. 28 lines of research were identified in 7 Research Platforms. Participated 155 subjects in the survey, from August to November 2016.

1.6. On October 13 and 14, 2016, in China, the TB Network presents the Pillar 3 activities under discussion in Brazil and initiates the discussions on the creation of the BRICS TB Network, initiated at the TB Network Congress in Maceio with representatives of the PNCT - SVS-MS and MSF.

1.7. On November 30, 2016, TB Network and PNCT, through the SWOT strategy (FOFA), carried out a prospective analysis in the different Research Platforms and elaborated PICO questions in the 27 research lines identified in the Electronic Survey.

[Http://www.redetb.org/attachments/article/239/Linhas%20Pesquisas%20em%20TB%20Priorizadas%20Dez%202016.pdf](http://www.redetb.org/attachments/article/239/Linhas%20Pesquisas%20em%20TB%20Priorizadas%20Dez%202016.pdf)

1.8. On December 5, 2016, the TB Network held a meeting with the CNPq-MCTI Health Directorate. It was agreed that the CNPq-MCTI, would coordinate the actions linked to the National Plan for TB Research (Pillar 3), included in the National TB Elimination Plan.

1.9. On December 6, 2016, TB Network presents the proposal of National TB Survey at the meeting of the Social Security Commission of the Chamber of Deputies of the National Congress

[Http://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-permanentes/cssf/videoArquivo?codSessao=58562&codReuniao=45821#videoTitulo](http://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-permanentes/cssf/videoArquivo?codSessao=58562&codReuniao=45821#videoTitulo)

[Http://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-permanentes/cssf/videoArquivo?codSessao=58562&codReuniao=45821#videoTitulo](http://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-permanentes/cssf/videoArquivo?codSessao=58562&codReuniao=45821#videoTitulo)

1.10. On December 8 and 9 in Geneva, the TB Network participates in the 1st Pillar 3 Task Force meeting of the World Health Organization. At this meeting, the TB Network participates in the refinement of the BRICS TB Network Representatives from Russia, India, South Africa and WHO.

1.11. On December 16, 2016, in New Dehli, the representatives of the member countries approved the creation of the BRICS TB Research Network

1.12. On December 20, 2016, the National TB Research Plan was presented to the CNPq-MSTI for analysis and, together with the Parliamentary Front, finalize the budget plans and coordinate the implementation actions of the National Tuberculosis Research Program

Strategic Objective 2: Identify key partners and work collaboratively to achieve common goals

2.1. In 2015 and 2016, mapped partners interested in strategic partnerships for the National TB Research Plan, at the different levels, local, regional, and national. Key groups are listed on the first page of the National TB Research Commission.

2.2 In 2016, a plan was drawn up for new strategic alliances between research groups from different Research Platforms (Basic, Translational, Clinical, Operational and Health System), aiming at strengthening the actions contained in the National TB Research Plan , National and global). Among the activities we mention: a) PNCT-SVS allocates focal point for research in its technical group, b) TB Network, creates a new area of Interaction with Government Coordination, where NTP-MoH indicates representative, c) TB Network, creates new Area of Prospecting and Innovation in Health, with representative of Fiocruz.

EXPECTED ACTIVITIES 2017-2021

Strategic Objective 3: To expand scientific technical development and innovation in tuberculosis

3.1. Members of the TB Network, along with CNPq-MCTI, Ministry of Health, CAPES-MEC, State Research Support Foundations, Parliamentary Front of the Fight against TB, Brazilian Partnership Against TB, Health Managers, Universities, Research Institutes, Biomedical Societies, National Public and Private Industry, Non-Governmental Organizations, Foreign institutions should monitor TB research activities proposed in the National TB Research Plan and financed by national or international development agencies. Period 2017-2021

3.2. Provide information to optimize the participation of researchers and health professionals in the implementation of the National Tuberculosis Research Plan in the different regions of the country. As of 2014

Strategic Objective 4: Monitor and evaluate the clinical, economic and political impact of new TB control technologies

4.1 Representatives of the TB Network, PNCT-SVS / SCTIE-MS and CNPq-MCTI should develop essential indicators for Monitoring and Evaluation of the Development of Technological Innovations, and Impact of the incorporation of new technologies in TB control actions in the Unified Health System and Supplementary Health that may be used by the National TB Control Program of the Ministry of Health. As of 2017

4.2. Members of the National Commission for TB Research publishes annually a report on the current state of the TB Research Platforms carried out in Brazil. Starting in 2017

4.3. Members of the TB Network should engage in related activities and assist, where appropriate, the National TB Program and National Development Bodies in the revision of their Recommendations. From 2017

4.4 Develop a virtual library of relevant evaluation materials. From 2017

Strategic Objective 5: To support the implementation of the National Tuberculosis Research Plan through better dissemination at the national and international levels of the resulting contributions to strengthening health systems

5.1. Elaborated a Human Resources training plan to elaborate and conduct research projects included in the Priorities list of the National Research Plan. Completed in December 2016

5.2. Commission of the National TB Research Plan should provide initial and detailed data on the costs related to the TB Research Platforms as well as those related to Human Resources Training for TB Research and the adoption of the Quality Management System in the different Institutions. From 2017

5.3 Use the additional data obtained in 2016 through the National Survey on National TB Survey to identify gaps in the implementation of the National TB Research Plan. Prepare a list of priority targets for the identified gaps. From 2017

5.4 Develop a Human Resources training plan to include integration of the National TB Research Plan into the undergraduate and postgraduate curricula, strict supervision and evaluation. From 2017

Strategic objective 6. Expand research and debate on the reality of vulnerable populations.

6.1 Promote greater approximation of researchers and technicians with the reality of these populations on all street people and abusers of alcohol and drugs.

6.2 Encourage further discussion of the concept of Harm Reduction and Tuberculosis, especially its influence on adherence and completion of treatment.

6.3 Promote the reporting and publication of successful experiences with these populations.

6.4 Promote qualitative research aimed at, in an effigy way, a greater understanding of the reality of the patient living in the street and abusive user of alcohol and other drugs.

Support activities (SA)

SA-1. Assume that the National TB Research Commission should be able to perform its functions. To do this, the following specific tasks were identified: Promote Advocacy with the Brazilian TB Control Partnership, the different sectors of the Federal Government, Pan American Health Organization, WHO Global TB Program, Stop TB (Executive Council, 2016) and BRICS.

SA-2. Develop a Communication Plan (to include the site, branding and newsletter), starting in 2017, aiming at broadening the dissemination of TB Network actions and the discussion on tuberculosis in various social segments, especially patients and communities where they are inserted.

SA-3. Develop / recruit members to the National Research Commission on representative and influential TB, partners and stakeholders, ie: National Academy of Medicine, Brazilian Academy of Sciences. From 2017

SA-4. Strengthen the actions of the secretariat of the National Tuberculosis Research Commission (TB Network), through the allocation of fine administrative funding

Mapping, Identification of Gaps and Priorities for the National Tuberculosis Research Agenda

Elaborated by the Rede TB, NTP-MoH and Fiocruz

2015

Introduction.

According to the document on "Global Action Framework for TB Research - the Third Pillar of WHO's End TB Strategy" and other discussions that have been deepened by Network-TB and other initiatives (such as BRICS) it is fundamental that a new strategy for Tuberculosis research is defined, where the translational and multifaceted nature necessary for the correct referral of the priority issues of the disease is contemplated. This is a reflection of the urgent need to reduce the burden of tuberculosis in the world and in Brazil by reducing mortality, early diagnosis, more efficient treatment and monitoring of possible mycobacterial resistance.

Basic research is needed to elucidate the key mechanisms in the pathogenesis of tuberculosis as a first step in the discovery of diagnostic tests for first-use use, effective short-course regimens for the treatment of sensitive and drug-resistant tuberculosis and latent TB infection , The development of an effective vaccine or other preventive interventions. Translational and clinical research will assess the safety, efficacy and cost-effectiveness of these new tools for diagnosis, treatment and prevention. Epidemiological research provides a more complete understanding of variables and factors related to TB, and the natural course of infection and disease. Epidemiological surveillance is relatively simple at a low cost and can contribute to understanding the epidemiological situation in each country, as well as facilitating operational research and the incorporation of innovations in TB control. Research on health systems involving social scientists is also necessary to understand the fundamental elements of health and the functioning of social service, its process, financing and distribution of inputs. Finally, the interaction between behavioral, operational research and innovation incorporation is needed to understand the specific barriers to access and adherence, to stimulate the capture of new diagnostic and treatment tools, and to identify new policies and approaches more appropriate for the Prevention and care, locally.

Through the following Research Platforms, gaps and investment priorities were identified.

FUNDAMENTAL RESEARCH PLATFORM

Gaps

- A) Scarce data on new SNPs in genes or regions of the *M. tuberculosis* genome.
- B) Existing experimental models of infection are limited for the assessment of human immunopathogenesis of the disease or efficacy tests for new vaccines.
- C) There are scarce markers for evaluating the phases of TB, from infection to the active phase, especially in endemic areas.
- D) There is little molecular characterization (bases of resistance and genotyping) of strains of *M. tuberculosis* resistant or not to drugs capable of establishing prognosis or assisting in public policy decisions for effective TB control at regional levels.

Priorities:

1. Increase knowledge about the immunopathogenesis of the disease and the biology of *M. tuberculosis* in different stages of TB.

2. To prioritize studies of pathogen-host interaction focusing on targets, genetic, molecular, immunological or metabolic markers, by means of:

- Large-scale studies using omics techniques such as genetic epidemiology (evaluating SNPs in candidate genes or genomic association studies);
- Projects with large populations with the phenotype "disease" or well-characterized endophenotypes;
- Gene expression studies of molecular markers in blood or other clinical samples, resulting in molecular signatures and some gene maps that define a disease progression risk score between contacts;
- Development of a robust database of clinical data and studies of metabolomics and proteomics in serum or urine samples, focusing on the activation (or deactivation) of the immune response or other metabolic changes that may be associated with progression to the active disease, such as Tests based on the test for the release of interferon gamma (IGRA) with new specific mycobacterial antigens;
- Studies on pathogen genetics that may be useful for epidemiological surveillance, focusing on infection control, resistance evolution and / or virulence monitoring of different *M.tuberculosis* strains;
- Large-scale studies covering experimental models of pathogen growth under culture conditions or specific infection in laboratory animals that aid in understanding pathogenicity mechanisms (eg, *esx-1*, which circumvents the protective immune response or reprogram host cells, Or enzymes (Zimp) that controls the tissue physiology of the patient);
- Complementary studies evaluating the different strains of *M.tuberculosis* in the activation of the immune response or studies that jointly evaluate the genetics of the host and the pathogen

PLATFORM - DRUG DEVELOPMENT AND PRODUCTION

Gaps in the pre-clinical development of new anti-TB drugs.

1. Few laboratories carry out fundamental research in drug development.
2. Lack of interaction between research groups that are carrying out screening of natural products and those working in the area of combinatorial chemistry.
3. Few research groups conduct structure-activity relationship (SAR) study for drug development.
4. Several restrictions to effect chemical synthesis.
5. Few research groups and resources to characterize the genome of circulating strains M. tuberculosis, whose information can guide the research directions of drug development.
6. Little experience in in vivo synthesis studies.
7. Few centers certified for toxicological testing in rodents, and in particular non-rodents.
8. Few centers with experience in pharmacokinetic and toxicokinetic studies.
9. No fixed drug combination for children with TB.
10. Few research groups focusing on fundamental and / or translational approaches to the productive sectors.
11. Few training courses for young researchers in the basic and translational area in the area of management and interaction between Universities / Research Institutes and the Industrial Sector.

Priorities

1. Create a research coordination group in the Drug Development Area that promotes the increase of collaborations between the laboratories, to better use the knowledge available among different groups.
2. Provide training courses for researchers of basic and translational area in management and interaction between academia and industry.
3. Create collaborations with research groups with experience in chemical synthesis in order to increase the carrying out of SAR studies.
4. Extension of target compounds in different environments (sea, soil, etc).
5. Conduct studies with microorganisms as a source of new drugs.
6. Identify new approaches through screening (HTS) in natural products and HCS in enzymatic assays. Brazilian research groups that carry out drug screening studies should interact with the National Program coordinated by the National Laboratory of Biosciences - LNBio and

PLATFORM DEVELOPMENT AND PRODUCTION OF DIAGNOSTIC TESTS

Gaps

- A) Little interaction between Universities / Research Institutes and the National Industry
- B) There is no tuberculin production (PPD) at the national level. There is currently a lack of RTDP PPD at the global level because the Statens Serum Institute in Denmark failed to produce the necessary quantities
- C) There is little data on the prevalence and clinical significance of nontuberculous mycobacteria and their interface with TB.

Priorities

- 1) Validate prototypes of diagnostic tests developed by Fiocruz-PR / IBMP-Tecpar-UFPR / CDCT / FEPPS-RS (ie: Q3 + real-time PCR similar to Xpert MTB Rif to detect MDR-TB) in different laboratories (Of research or service providers - LACENS). It was suggested:

The. Use DNA extraction from Qiagen kit and Theron equipment.

- 2) Complete the laboratory validation of susceptibility to the first line drugs of the SIRE Nitratase[®] Kit produced by the national company Plastlabor, whose transference of technology was made by UFMG. The validation will be carried out in the Laboratories of Research and Lacens of Brazil and the Laboratory of Reference of Portugal and Italy. In this item were suggested

The. Review with Anvisa the need for NB3 to carry out these tests, followed by clinical studies and Economic Impact (described in the New Technologies Incorporation Platform) aiming at submitting the results to Conitec-MS

- B. Compare with the proportions method and / or MGIT960.

w. Analyze 25 kits for each site (sensitive TB = 12 TB resistant = 12 and control H37Ra or H37Rv).

- 3) To validate recombinant PPD tuberculin (without cross-reactivity with BCG and MNT), developed by Fiocruz-PR eTecpar-UFPR, in different regions of the country, comparing it with traditional PPD (PPDRt23) and the most recent immunological test (IGRA By Qiagen).

- 4) Produce large-scale recombinant PPD tuberculosis to meet the needs of Brazil and other countries with high TB burden

The. The allocation of resources to adapt the Fiocruz-PRe plant would allow the production of lots of PPD tests in at least one year.

5) Identify diagnostic biomarkers of TB that may be useful in the development of methods that use different sputum samples for first-time use.

6) Identify new markers of cure and develop markers of illness and protection for tuberculosis.

7) Harmonize laboratory criteria for MNT Sensitivity Testing in reference laboratories.

8) To analyze the prevalence of NTM in certified laboratories. It was emphasized that

The. This group of pathogens is increasing.

B. ANVISA recognizes its mandatory notification, but only for isolation of non-tuberculous mycobacteria in post-surgical procedures.

9) Validate the pathogenicity criteria for NTM.

10) Identify opportunities for co-financing with national and international companies in the development and validation of new diagnostic tests / biomarkers

CLINICAL RESEARCH PLATFORM

Gaps

1. There is scarce information on clinical research sites conducting Phase 1 and 2 studies (especially bioequivalence in healthy volunteers and studies of early bactericidal activity - EBA). For EBA studies, there is currently potential in three sites: NDI-UFES, FMT-AM, IPEC-Fiocruz.
2. There is a lack of national coordination on Clinical Research activities in response to the National Research Agenda.
3. There are few data on the clinical characteristics of patients with severe forms of tuberculosis hospitalized in General Hospitals, Intensive Care Units and Emergencies.
4. There are few laboratories with good infrastructure, quality control, proven proficiency in good practices, as well as training of human resources capable of participating in clinical trials

Priorities

1. Support the Creation of a Support Group that assists in training in Clinical Research in different sites.
2. Identify clinical sites qualified to perform Clinical Research and participate in multicenter projects, especially those that perform (or will perform) well-characterized cohort studies of TB cases and their contacts in interface with fundamental and translational research groups.
3. Implement Quality Management System in Clinical Research sites with the purpose of accreditation through INMetro.
4. Prioritize training activities for clinical research (Research on Human Beings and biosafety).
5. Develop and validate clinical and therapeutic protocols for specific populations and for severe TB treated at the tertiary level.
6. Identify international partnerships, focusing on co-financing strategies.
7. Improve investment in infrastructure including adaptation of laboratory spaces and equipment.

OPERATIONAL RESEARCH PLATFORM AND HEALTH SYSTEM

Gaps

1. Few intersectoral actions related to TB control, besides the usual ones performed by the MoH, ie: MCTI, MEC, MJ, MDIC and MDS.
2. Low effectiveness of coordinated actions between TB Control Programs.
3. Little interaction and lack of governance of the National TB Control Program with different levels of Health System: Primary, secondary and tertiary Health Units.
4. Little political commitment from the states and municipalities to control TB.
5. Few community activities focusing on TB control and advocacy have been launched in recent years.
6. Low integration between actions and health services related to TB Control Programs and HIV / AIDS

Priorities

1. Analyze health services and systems at different levels of health care (primary, secondary and tertiary) in relation to tuberculosis control actions in the general population and vulnerable populations (HIV / AIDS, diabetes and other chronic comorbidities , Deprived of liberty, people living in international border regions, indigenous peoples, drug users and health professionals) that address the following topics:

- Analysis of more effective adherence strategies for the diagnosis and treatment of TB in vulnerable populations.
- Analysis of the impact of direct and indirect costs of TB treatment for patients and the Unified Health System in different places of the country.
- Impact of treatment of latent TB on the incidence of TB at regional and local levels.
- Impact of different TB diagnosis and treatment strategies.
- Compare the performance of innovative approaches to pulmonary TB screening (using signs and symptoms)
 - . In the general population and in suspected cases of TB.
 - . In vulnerable populations (deprived of their liberty, homelessness, indigenous people, drug users, people living with HIV / AIDS).

- Impact of diabetes, smoking, and drug dependence on TB, TB / HIV, and MDR-TB control actions.
- Analyze the incorporation of the TB infection control recommendations described in the National TB Guidelines (MS, 2010), in Health Units of different levels of care.
- Analyze the clinical impact, cost-effectiveness and economic impact of different TB control strategies in health units at different levels of care.
- Analyze the impact on the maintenance of the TB transmission chain of the different approaches for patients with TB in retreatment, or MDR / XDR-TB.

. To analyze epidemiological and social aspects in the definition of intervention models in TB control.

2. Analyze health services and systems at different levels of health care (primary, secondary and tertiary) and promote user-centered strategies for TB control (self-care, self-monitoring and adherence) in the general population and in vulnerable populations (HIV / AIDS, diabetes and other chronic comorbidities, deprived of their liberty, people living in international border regions, indigenous peoples, drug users and health professionals).

- Analyze the quality of care for individuals with TB in primary care services.
- Impact of directly observed treatment on the organization of TB services and the monitoring of vulnerable TB cases.
- Identify the most effective strategies used by the services that result in a positive impact in adherence to TB treatment and in the favorable outcome of the TB Control Program.
- Analyze the access of patients with TB to secondary and tertiary reference centers.
- To analyze the hospital needs (beds, propaedeutic complexity, Intensive Care Unit) for TB cases with and without social deprivation.
- To analyze the contribution of traditional healers and the role of traditional medicine in strengthening and contextualizing TB control actions in native and culturally differentiated communities.

3. To carry out a spatial analysis of hospitalizations avoidance and tuberculosis mortality and social inequalities in the territories.

4. Analyze the transfer of policies, technologies and practices of care in the health system to control tuberculosis.

- Analyze aspects that contribute to the development and expansion of new technologies for diagnosis and coordination of care during therapeutic follow-up.

Answer questions like: Who is involved in innovation and change? How are they guided? Who supports and who opposes or resists innovations? What is communicated and by whom? Who

transmits information to whom? As? Are there any misunderstandings or misunderstandings about the process

PLATFORM OF THE IMPACT OF THE INCORPORATION OF NEW TECHNOLOGIES

Gaps:

1. The financing of studies for operational research tends to focus on the functioning of the health system and control of TB.
2. There is a need for consensus and agreement between different actors / actors in setting priorities (articulations have been carried out, but consensus has not been fully achieved).
3. Identify the meaning of "new technologies" to be analyzed: a) light (changes in care management, skills training), b) -level hard (information technology based innovations) and c) hard (incorporation of new drugs, Diagnostic tests, vaccines, etc.).
4. It is necessary to map the "new technologies" available and those that can be used or tested in Brazil.
5. Few research groups, health professionals, managers interested in this type of evaluation.
6. Train and institutionalize Clinical and Operational Research centers that analyze the impact of new technologies on the Unified Health System (necessary to include the Tripartite Interagency Committee in the elaboration of the TB Research Agenda for the National Health Plan.
7. There is little evidence on the impact of social policies on TB control.
8. There is little evidence on the characteristics of services in the different regions of the country and the use of operational indicators that analyze the clinical, economic and epidemiological impact of the innovations.

Priorities actions / projects / programs:

1. Analyze the clinical impact and economic analysis (cost effectiveness and budget impact) of:
The. Recombinant PPD tuberculosis in the diagnosis of latent TB in different regions of the country.
B. Xpert®MTB Rif, AlereQ, other molecular tests, developed or not in the country (Q3 with real-time PCR) at different levels of health care (primary, secondary and tertiary).
w. Xpert®MTB Rif in Brazil, taking into account the different populations (mainly the general population, health professionals, people living with HIV and AIDS, children, persons deprived of their liberty and the indigenous population living on the streets).
D. Phenotypic methods (net culture or not) for TB-MDR / XDR detection in Brazil (ie: MGIT960, MGIT960 TB eXiST, SIRE Nitrataase kit, TB Scott / Ogawa-Kudoh).

and. Use of Bedaquilin in preXDR / XDR TB treatment at the national level.

F. Decentralization of TB actions for Primary Care in Brazil.

G. Digital technology approaches to TB control: ie cellulars or skype calls to support tuberculosis screening, diagnosis and treatment.

H. The incentives provided for anti-TB treatment.

I. Quality Management System in the research laboratories (collaborating centers) and services (Lacens).

J. TB-Web / SINAN / SIM / Site-TB Systems and for TB, TB / HIV surveillance and TB resistant.

K. New treatment regimens for latent tuberculosis in different regions of Brazil.

2. Analyze

The. The clinical and economic impact of Directly Observed Treatment of TB on vulnerable populations.

B. The impact of communication, advocacy and social mobilization interventions carried out by forums, networks, commissions and NGOs working in the fight against tuberculosis in Brazil.

w. The impact of the joint actions developed through a coordination between civil society and managers in the states and municipalities.

D. The impact of joint actions developed between managers and advocates / activists in health services at the local, regional and national level.

and. Communication strategies used by civil society organizations working with TB.

F. The compulsory inclusion of TB in Brazil, from the perspective of users, health professionals and managers.

G. The stigma, discrimination and prejudice of TB from the perspective of users, in the regional and national context.

H. The association between the characteristics of the health services and the successful treatment of patients with tuberculosis.

I. The association between the characteristics of health services and the detection of TB cases

J. The incorporation of fixed drug combination called 4: 1 (RHZE) in Brazil.

Type of financial assistance required:

1. States and municipalities that adopt the impact analysis of new technologies should receive additional funding from the Union (identify mechanisms for the transfer)

2. Financial support through funding agencies

PLATFORM OF COMMUNITY ENGAGEMENT

Gaps

- Insufficient perception by community advocates (activists, patient representatives) of the actual results of studies, research;
- Little awareness that patients and communities need to be prioritized in health policies and services (eg, lack of strategies to deal with stigma, prejudice and discrimination generated by tuberculosis, access to services by marginalized populations, issues of compulsory , Treatment directly observed, lack of training of health professionals for these issues in the health system);
- Low interaction with the academic milieu, reduced community advocacy (patient representatives) in research projects or in their development: research literacy and restricted access to research information;
- Low perception of community activities against TB.

Priorities

1. Promote national discussion among TB / HIV-HIV activists in order to promote their engagement in research and the generation of a research agenda;
2. Create a Community Participation platform in order to promote its inclusion in research based on
 - A) permanent education (diagnosis, treatment and initiation of research);
 - B) funding to establish community support councils (CABs) and ethics committees;
3. Create and maintain a searchable database that is user friendly and accessible to ordinary users;
4. Promote regular consultations among the sectors - community, universities, health services, government and congressmen (TB Parliamentary Front in the National Congress) in research and development of agenda.

Priorities

- Encourage interaction between community advocates, researchers and health professionals about access to services, quality of service delivery, and patient support for adherence issues.
- Encourage activists to identify research questions, involving themselves directly in research projects and in their development;
- Analyze the communication, Advocacy and social mobilization interventions carried out by forums, networks, commissions and NGOs working in the fight against TB;

- To analyze the political relations between community organizations and TB programs in the three levels of health care;
- Analyze the relationships between users of health services and health care providers;
- Promote the discussion about compulsory hospitalization for TB in Brazil, involving the patients' perspective;
- Propose actions against stigma, against discrimination of people with TB, from the perspective of affected people.

PLATFORM - QUALITY MANAGEMENT SYSTEM

Introduction

The structure of the National Network of Public Laboratories was created by FUNASA Portaria no. 15, reissued by the SVS, on September 23, 2004. According to ordinance No. 2,031, the National System of Public Health Laboratories (SISLAB) According to the following characteristics:

- according to health programs or aggravations;
- in a hierarchical way by degree of complexity of the activities;
- In 4 large networks, namely: epidemiological surveillance, environmental surveillance, health surveillance and medical care.

Criteria for enabling Reference Laboratories:

- Have implemented a Quality Management System (LRN and LRR).
- Have implemented a Biosafety Management System (LRN and LRR).
- Have procedures that enable efficient and agile communication, as well as flow of results within the established deadlines

Using the criteria established by the MS, a survey was carried out in public laboratories (Collaborating Centers of the Universities or Research Institutes were not included) on the activities related to the diagnosis of TB, through the following questions:

1. How the network is structured: 3330 laboratories perform bacilloscopy, 330 perform culture for mycobacteria, 40 perform the first-line drug sensitivity test (STD); 02 performed STDs for second-line drugs: IAL-SP and CRPHF-Fiocruz.
2. Laboratories with biosafety level (NB3): IAL-SP, CRPHF-RJ, LACEN-Ceará Funed-MG, LACEN / Fiocruz-BA.
3. Has the Quality Management System been implemented and implemented? Lacen-Ceará and CRPHF-Fiocruz are in the process of accreditation by the National Organization for Accreditation (ONA).
4. What was the impact of SISLAB on the quality of the Lacens? It would contribute 2031/04 defined the roles of the laboratories in each level, but did not give guarantees of financing of laboratory activities, except through FINLACEN, which was extinguished.

Gaps:

- A) Proficiency coordinated by a laboratory accredited by Inmetro, at national level.
- B) Absence of external quality control.
- C) Public laboratories (Lacens) without accreditation or certification. No laboratory is accredited by INMETRO, which brings international recognition, by ISO 15189 to laboratories that provide service or ISO 15025 for laboratories conducting research.
- D) Collaborating Centers (linked to Universities and Research Institutes) do not participate in SISLAB.
- E) Lack of interface between Lacens' Service Provision (Pillar 1) and analysis of new biotechnologies (Pillar 3) that could be carried out by the Collaborating Centers.
- F) The lack of funding linked to the Quality Management System

Priorities:

1. Inventory the installed capacity and the existing Quality Management Activities.
2. Review Policy of Public Health Laboratories and Collaborating Centers (linked to Universities and Research Institutes) seeking allocation of financial and human resources necessary to implement the Quality Management System.
3. Provide courses and continuing education in Quality Management.
4. Obtain accreditation by INMETRO (via ISO 15189 or ISO 15025) at least Reference Laboratories and Collaborating Centers that agree to participate effectively in the National TB Research Agenda.

Human Resources Training Platform for TB Research

Gaps in 2000

1. Tuberculosis Research Training Deficiency for health professionals involved with care and the generation of knowledge in their areas of interest:
2. Little interaction between Universities, Research Institutions, Biomedical Associations and Health Services on Tuberculosis Research
3. Little interaction between Brazilian and international organizations / institutions focused on Human Resources Training in Tuberculosis Research.

Intervention since 2003

The Human Resources Capacity Building Platform for the TB Research Working Group uses the 12-year experience of the ICOHRTA AIDS / TB project, funded by the Fogarty International Center / National Institute of Health with the participation of Brazilian and North American institutions.

The. The project had excellent results:

1. Trained more than 1,500 health professionals involved in tuberculosis and AIDS, resulting in various situations, the attribution of academic degrees;
2. Contribution to the publication of more than 300 scientific articles;
3. Helped in the formulation of public policies for the control of these diseases;
4. Promoted a multiplier effect and consolidated the formation of TB research groups in all regions of Brazil;
5. Collaborated to increase funding for these groups through announcements of national and international competitive funding opportunities;
6. assisted in the establishment and consolidation of partnerships with research groups in developed countries as well as in developing countries;
7. Obtained recognition not only from donors, but also from multilateral agencies, such as WHO, resulting in invitations to attend meetings to establish the new FIM strategy for TB.

B. Innovative contributions from the ICOHRTA AIDS / TB project

The project established new paradigms for the training of health professionals involved with care and the generation of knowledge in their areas of research interest:

1. Healthcare professionals working at the forefront of TB care were the target audience, in order to enable them to understand the stages of scientific research and to participate in clinical and operational studies conducted locally or through a Consortium.

2. International consortia were formed by Brazilian universities and research institutes and universities in the USA.
3. Participants used the four-level training structure characterized by increasing complexity.
4. Leadership of the TB Network with other national and international networks in the area of training of human resources for research.
5. Emphasis on training in the country, through a horizontal approach, with intensive use of the existing Graduate Programs, accredited by Capes.
7. Active promotion in obtaining funding through competitive bidding and participation of health professionals in academic events (Project Icohrta allowed participation in nine National Congresses TB, in the period of 2003-2014).

w. Gaps in the implementation of the ICOHRTA Project

1. Follow-up of the research projects developed by the trainees by committed mentors;
2. Mentors' assistance in requesting additional funding to give sustainability to projects developed by course participants;
3. Support of mentors in publications and presentation of results in national and international meetings;

Priorities

Using the successful experiences of the ICOHRTA project presented above, we propose the following activities for the Human Resources Training Platform for TB Research:

1. Shared financing between agencies in Brazil and abroad, which will allow new collaborations, including strengthening research capacity
2. Intensive use of the Brazilian Government's Science Without Borders Program, since the main objectives of this Program are to increase the presence of students and scientists in international institutions, encourage young talents and highly qualified researchers to work in Brazil, and induce the internationalization of universities.
3. Maintenance of actions of the Icohrta Project in the development of research capacities in Brazil and extend it to Portuguese-speaking African countries and Latin American countries.

Key participants in the development of TB Research Priorities

Research Platform on Drugs / Development and Interface with Industry: Martha Campos-PUC-RS, Diogenes Santos, Cristina Lourenço, Pedro Almeida Silva, Felipe Carvalho, Wim De Grave-Fiocruz, Andre Daher

Research Platform on Vaccines / Basic Research: Ana Paula Kipnis-UFG, Milton Moraes-Fiocruz, Jose Roberto Lapa e Silva, Bruno Bezerril de Andrade, Theolis Barbosa, Julio Croda

Research Platform on Diagnostic Tests: Development and Interface with National Industry - Maria Lucia Rossetti, Silvana Spindola Miranda-UFMG, Philip Suffys, Marco Krieger-Fiocruz, Vanete Soccol, Erica Chimara-IAL-SP, Luci Ferrazoli, Cristina Lourenço, Pedro Almeida Silva, Julio Croda, Andrea Rossoni, Clemax Sant Anna, Elen Siqueira, Margella Marconcine,

Clinical Research Platform: Carlos Morel-Fiocruz, Margareth Dalcolmo, Valeria Rolla, Anete Trajman-UERJ, Eduardo Netto, Marcelo Cordeiro dos Santos, Jamocyr Marinho, Reynaldo Dietze,

Operational Research Platform / Health System: Teresa Scatena Villa-EERP-USP, Ethel Maciel-UFES, Antonio Ruffino Netto, Vera Galesi, Betina Gabardo, Betina Durovni, Ana Alice Pereira, Fernanda Mello, Susan Martins, Patricia Bartolomay, Maria Socorro -PNCT

Research Platform - Impact of the Incorporation of New Technologies: - Mauro Sanchez-UNB, Fatima Scarparo, Terezinha Jesus, Marcelo Cordeiro Santos, Anete Trajman, Patricia Bartolomay, Karlos Diogo, Fernanda Dockhorn-PNCT, Betina Durovni, Mauro Sanchez, Gisela Iunis, Claudia Dias, Elis Regina Dalla Costa, Juliano Paggiaro, Cleverson Porto, Denise Arakaki, Miguel Viveiros, Afranio Kritski

Research Platform - Interface with Civil Society: Inacio Queiroz-Grupo Pela Vidua, Carlos Basilia, Jair Brandao, Ezio Tavora, Patricia Werlang

Human Resources Training Platform for TB Research -Jose Roberto Lapa e Silva-UFRJ, Antonio Ruffino Netto-FMRP-USP, Ethel Maciel, Tereza Scatena Villa, Afranio Kritski, Cristina Lourenço, Fernanda Mello

Training Platform in Quality Management System - Martha Maria Oliveira-Fiocruz, Ruy Souza-PNCT, Erica Chimara, Bruno Bezerril, Iracema Patricia, Claudio - Funed MG

PRIORITIZED TB RESEARCH ACTIVITIES - 2016

Analysis updated on December 16, 2016. Identified the priorities that received the most votes in the 7 platforms.

(Survey carried out by NPT-MoH and Rede TB)

21 Research Lines in the different Research Platforms

Platform 1 - Development, production and evaluation of new drugs

- Develop pre-clinical studies that screen new drugs against drug sensitive and drug-resistant TB-specific molecular targets
- Evaluation of the use of bedaquiline in the treatment of extensively resistant TB (MDR-TB) and multidrug-resistant tuberculosis (MDR-TB)
- Evaluation of incorporation of Rifapentine and isoniazid in the treatment of ILTB in adults and children

Platform 2 - Development, production and evaluation of new diagnostic tests

- Validate in public laboratories and collaborating laboratories (research laboratories), prototypes of diagnostic tests already developed at national or international level
- Encourage the production and validation of conventional or recombinant PPD by national laboratories, and immunological tests for the diagnosis of bacillus infection
- Identify biomarkers for the diagnosis of active TB and predictive of TB disease that aid in the development of tests not based on sputum

Platform 3 - Basic / Translational / Clinical Research

- Promoting explanatory clinical trials (phase I, II, III) with new regimens for latent tuberculosis
- Promoting explanatory clinical trials (phase I, II, III) assessing the safety and tolerability of antituberculosis drugs and their interaction with new antiretroviral drugs for patients with HIV-TB co-infection
- Investigate pathogen-host interaction through genetic epidemiology studies for surveillance purposes, aiming at infection control, resistance evolution, or monitoring the virulence states of specific strains in the different regions of the country

Platform 4 - Epidemiological, operational and health system research

- Identify treatment adherence strategies based on clinical outcomes and patient profiles
- Analyze access to diagnosis and treatment for tuberculosis at different levels of care
- Analysis of strategies to improve access to diagnosis and treatment in the most vulnerable populations

Platform 5 - Effect / impact assessment of the incorporation of new technologies

- Analyze the impact of rapid molecular testing on the early detection of MDR-TB cases and reduction of time between diagnosis and initiation of treatment
- Analyze the impact of molecular rapid test on the TB incidence reduction
- Analyze the influence of directly observed treatment in patients with tuberculosis with different socioeconomic and clinical profiles (comorbidities, resistance, ...)

Platform 6 - Social mobilization

- Impact of actions developed through articulation between civil society and management at different levels of government
- Impact of mobilization actions promoted in communities by NGOs working with tuberculosis and TB / HIV co-infections
- Impact of communication strategies used by civil society organizations working with tuberculosis

Platform 7 - Planning and management

- Training of human resources of the Health System for research
- Evaluation of effectiveness in the use of resources for tuberculosis control actions in states and municipalities
- Evaluation of the use of planning, monitoring and evaluation tools by tuberculosis control programs

BUDGET FOR NATIONAL TB RESEARCH PLAN, 2017-2021

U\$

Capacity Building Training for Research	6.208.705,882
Quality Management System	2.731.294,118
Drugs	32.040.470,59
Basic Translational / Vaccines	18.522.352,941
Diagnosis / Biomarkers	10.292.705,88
Clinical Trials	21.720.282,35
Technology Incorporation	5.873.882,352
Operational - Epidemiology	13.447.529,411
Social Mobilization	2.191.529,412
Management and Planning	2.608.000,00
Rede TB	927.058,8237
Total	98.041.058,82