

PUBLIC NOTICE

Guideline Development Group meeting on WHO consolidated guidelines on the treatment of drug-susceptible tuberculosis, 2021

WHO headquarters, Geneva, Switzerland
27-30 April 2021

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WHO consolidated guidelines on tuberculosis. Module 4: Drug-susceptible tuberculosis treatment. (2021 update)

Background

Tuberculosis affects an estimated ten million people per year in 2019 (range 8.9–11.0 million) and is the world's leading infectious disease killer, responsible for an estimated 1.2 million TB deaths among HIV-negative people (range, 1.1–1.3 million), and an additional 208 000 deaths among HIV-positive people (range, 177 000–242 000). Of the estimated ten million people affected by TB, approximately 70% are diagnosed and treated, resulting in 7.1 million notifications. The majority of these patients have drug susceptible TB and will have a positive treatment outcome when treated with the right combination of first line medicines, for the right duration.

The current World Health Organization (WHO) recommendation for treating persons with drug susceptible TB is included in the WHO *Guidelines for treatment of drug-susceptible tuberculosis and patient care, 2017 update*. Here, a six-month regimen composed of four first line TB medicines, namely isoniazid, rifampicin, ethambutol and pyrazinamide, is recommended. In the first two months of treatment all four medicines are used and in the final four months of treatment two medicines are used, until treatment completion. This is a strong recommendation based on moderate certainty of the evidence. This regimen has been widely adopted worldwide, and using it, approximately 85% of patients will have a successful treatment outcome. The current four drug treatment regimen has been in use for approximately thirty years and is based on seminal TB treatment studies conducted by the British Medical Research Council in the 1980s.

In recent years, there has been strong research interest in shortening the duration of TB treatment. This has resulted in a number of trials and other studies designed to assess whether treatment can be shortened, while remaining highly effective. While these studies have more commonly addressed drug resistant TB (as the typical duration of treatment was 18–24 months up until a few years ago), a recent trial (TBTC¹ study 31/ACTG² A5349, or S31/A5349) assessed the safety and effectiveness of two four month regimens for the treatment of drug susceptible TB. One of these regimens, which contained a fluoroquinolone and high dose rifapentine, met non-inferiority criteria. This trial is the proposed body of evidence for review for the upcoming Guideline Development Group (GDG).

To support countries in responding to the challenges of TB, over the years WHO's Global TB programme (GTB) has produced guidelines for the treatment and care of TB, including for drug susceptible TB. The latest evidence-based guidelines for the treatment of drug susceptible TB were published by WHO in 2017 in accordance with the requirements of the WHO Guidelines Review Committee, using the *Grading of Recommendations Assessment, Development and Evaluation approach (GRADE)*. These guidelines include the current recommendation for the treatment of drug susceptible TB as well as related recommendations.

The revised guidelines will update the recommendation on the treatment of drug susceptible TB, incorporating related guidance from other WHO guideline documents to aid clinicians, nurses, users and member countries in implementing a comprehensive package of patient treatment and support.

To advise WHO on the guideline update, a GDG composed of external experts is being convened to review the evidence and formulate evidence-based recommendations (see list and bios in Annex of this document). The GDG members are involved in the finalization of the guideline questions, the

¹ TBTC stands for Tuberculosis Clinical Trials Consortium. Information on TBTC is available at: <https://www.cdc.gov/tb/topic/research/tbtc/default.htm>

² ACTG stands for the AIDS Clinical Trials Research Group. Information on ACTG is available at: <https://actgnetwork.org/>

scoring of outcomes, commenting on the evidence to be reviewed, completion of the GRADE tables, formulation of any new or updated recommendations and approval of the final guidelines document. The GDG meeting is being held virtually in a series of webinar sessions in late April 2021. Before finalization the guidelines will be reviewed by other experts serving in an External Review Group.

Key questions

The guidelines update will be framed by the following PICO question.

1. In patients aged ≥ 12 years with drug-susceptible pulmonary TB is a 4-month regimen composed of rifapentine, isoniazid, pyrazinamide and moxifloxacin as effective and safe as the standard drug-susceptible TB regimen composed according to WHO guidelines?

Additionally, and to inform the GDG members on patient perspectives, feasibility and acceptability of the new regimen, results of a qualitative study answering the following question will be presented: What are key informants' (patients, advocacy or community representatives, TB survivors) views and perspectives with regard to the new proposed drug regimen, particularly but not limited to the shorter duration and changed pill burden?

Key documents

- World Health Organization. The End TB Strategy: Global strategy and targets for tuberculosis prevention, care and control after 2015. Geneva, 2014.
- United Nations General Assembly. Political declaration of the high-level meeting of the General Assembly on the fight against tuberculosis. New York: United Nations, 2018.
- World Health Organization. Guidelines for treatment of drug-susceptible tuberculosis and patient care, 2017 update. Geneva, 2017.
- World Health Organization. WHO consolidated guidelines on tuberculosis. Module 4: treatment. Drug-resistant tuberculosis treatment. Geneva, 2020.
- World Health Organization. Guidelines for national tuberculosis programmes on the management of tuberculosis in children. Second edition. Geneva, 2014.

Guideline Development Group members

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Biographies of members of the Guideline Development Group

KREDO, Tamara (Co-chair)

Constituency:	GRADE methodologist
Qualifications:	MBChB, MMed (Clin Pharm), Dip HIV Management, PhD
Current position:	Senior specialist scientist
Institutional affiliation:	South Africa Medical Research Council
Country:	South Africa

Dr Tamara Kredo is a specialist in clinical pharmacology and holds the position of senior specialist scientist at the Cochrane South Africa, South African Medical Research Council. Dr Kredo has a special interest in evidence-based healthcare practice and training, rational therapeutics and clinical practice guidelines. She is involved in work about the quality and content of clinical practice guidelines in southern Africa. She is also currently involved in conducting rapid reviews on various COVID-19 treatments aimed at informing national guidelines for the South African Department of Health. She has fulfilled several leadership roles including being Deputy Director of the Centre; co-directing Cochrane Africa, and as co-lead of SA GRADE Network. She has been on several strategic and advisory committees including acting as organising committee chair of the Global Evidence Summit in 2017. In 2020 she was elected as a Board member to Cochrane's Governing Board.

DALEY, Charles (Co-chair)

Constituency:	Pulmonologist; TB expert
Qualifications:	M.D.
Current position:	Professor of Medicine, Chief of the Division of Mycobacterial and Respiratory Infections and Director of NTM Center of Excellence
Institutional affiliation:	National Jewish Health, University of Colorado
Country:	United States of America

Charles L. Daley, M.D., is Professor of Medicine at National Jewish Health (NJH), the University of Colorado, and Icahn School of Medicine at Mount Sinai. He is Chief of the Division of Mycobacterial and Respiratory Infections. Dr Daley has served on and chaired expert panels for the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), Infectious Diseases Society of America and American Thoracic Society. He has participated on multiple guideline panels for these organizations including guidelines that address diagnosis, treatment (drug-susceptible and drug resistant) and prevention of tuberculosis. He recently Chaired the revision of the multi-society sponsored NTM Treatment Guideline. He was previously Associate Editor of the American Journal of Respiratory and Critical Care Medicine and currently Associate Editor of The European Respiratory

Journal. His academic interests include TB global health policy and clinical and translational research in TB and NTM infections.

ABDEL-RAHMAN, Susan

Constituency:	Pharmacology, Pharmacodynamics, Pharmacokinetics
Qualifications:	BScPharm, DPharm
Current position:	Marion Merrell Dow/Missouri Chair in Paediatric Clinical Pharmacology, Professor of Paediatrics at the UMKC-School of Medicine, Director of Health Care Innovation for the Children's Mercy Research Institute, Chief of the Section of Therapeutic Innovation at Children's Mercy Hospital
Institutional affiliation:	Children's Mercy Kansas City
Country:	United States of America

Dr Susan Abdel-Rahman is the Marion Merrell Dow/Missouri Chair in Paediatric Clinical Pharmacology, Professor of Paediatrics at the UMKC-School of Medicine, Director of Health Care Innovation for the Children's Mercy Research Institute, Chief of the Section of Therapeutic Innovation at Children's Mercy Hospital, and Program Director for an NIH funded T32 fellowship in Paediatric Clinical Pharmacology. She completed undergraduate and graduate training at Rutgers University followed by a post-doctoral fellowship at the Ohio State University. Dr Rahman has been involved in translational and clinical research for 25 years directing both a laboratory-based research program and a clinical/translational research program.

BABAWALE, Adekunle Victor

Constituency:	National TB Program, end user
Qualifications:	M.B.B.S., MBA, MPH
Current position:	Senior Medical Officer
Institutional affiliation:	National TB and Leprosy Control Programme, Nigeria Ministry of Health
Country:	Nigeria

Dr Babawale is a Senior Medical Officer with the National Tuberculosis and Leprosy Control Programme with 12 years' experience in TB programming. He provides technical support to the programme as the TB specialist with special focus on Drug-resistant Tuberculosis (DR-TB) and all other TB case finding interventions. He coordinated the first National DR-TB survey in Nigeria and played vital role in the development of the first National DR-TB guideline for the clinical and Programmatic Management of Drug-resistant Tuberculosis. He was a member of the Global guideline development group for the DR-TB in 2011.

Dr Babawale was pivotal to the decentralization of DR-TB care and services in 2013 in Nigeria - an intervention which improved access to care and services for DR-TB patients all over the country. He currently coordinates interventions in TB case finding from the National level and anchors the operational research on the Modified all-oral shorter treatment regimen supported by WHO/TDR including the BPaL operational research supported by KNCV in line with the WHO recommendation for the global implementation.

BRIGDEN, Grania

Constituency:	Technical agency, TB expert
Qualifications:	MBChB, MRCP, FRCP
Current position:	Director TB Department and Head of Geneva Office, The International Union Against TB and Lung Disease (The Union)
Institutional affiliation:	The International Union Against TB and Lung Disease
Country:	France

Grania Brigden is The Director of the Department of TB at the International Union Against TB and Lung disease (The Union). In this role, she is involved in developing and expanding The Union's global work programmes for TB, HIV and other co-morbidities. She oversees projects working on all areas of TB from drug resistant TB to child and adolescent TB. She was involved in the development and launch of TB Science, is a member of a number of scientific committees and was made a fellow of the Royal College of Physicians (Edin) in 2019.

CAIHONG, Xu

Constituency:	Clinician
Qualifications:	MD, MMed
Current position:	Tuberculosis Advisor
Institutional affiliation:	National Center for TB Control and Prevention, China CDC
Country:	China

Dr Caihong Xu, associate researcher, graduated from Peking University Health Science Center, and is currently the director of the General Technical Department of the NCTB, China CDC. Dr Caihong has been engaged in tuberculosis prevention and control work for 15 years, with rich experience in tuberculosis prevention and treatment and project application implementation. The main research areas are tuberculosis policy research, guideline development, multi-drug-resistant tuberculosis prevention and treatment, interventions on latent tuberculosis infection, and investigation of tuberculosis economic burden. Dr Caihong has published more than 20 articles as

the first and communication author, including 5 in SCI. He participated in the compilation of more than 10 books on tuberculosis, including 3 as an editor.

CHAKAYA, Jeremiah Muhwa

Constituency:	Clinician
Qualifications:	MBChB, MMed, DThM
Current position:	Professor, Global Respiratory Health
Institutional affiliation:	NTP Kenya, Ministry of Health
Country:	Kenya

Muhwa Jeremiah Chakaya, is a Professor, Global Respiratory Health, at the department of clinical sciences, Liverpool School of Tropical Medicine. Prof. Chakaya hails from Kenya where he was born and educated and where he practices and teaches respiratory medicine. He graduated from the University of Nairobi with a basic degree in medicine and surgery (MBChB) in 1985 and a master's degree in internal medicine (M.Med) in 1992. He then went on to study lung medicine at the National Lung and Heart Institute, University of London at the Royal Brompton Hospital and at the Kyorin University Hospital in Tokyo, Japan. Prof. Chakaya worked as a TB and Lung disease researcher at the Centre for Respiratory Diseases Research at the Kenya Medical Research Institute and later served as the TB Program Manager at the Ministry of Health between 2003 and 2006. At the international level, Prof. Chakaya has held several positions including, Vice Chair of the Stop TB Partnership Coordinating Board, Chair of the Strategic and Technical Advisory Group for TB (STAG-TB) of the World Health Organization (WHO), Chair of the Global Fund's Technical Review Panel (TRP) and President of the International Union Against Tuberculosis and Lung Disease (The Union). Prof. Chakaya is a founder member of the Respiratory Society of Kenya (ReSoK) and has remained closely engaged with this organization. He is a member of the Pan African Thoracic Society and serves in the executive committee of this organization. He has an honorary teaching position at the school of medicine, Kenyatta University, Nairobi, Kenya.

CIRILLO, Daniela Maria

Constituency:	Technical experts, Microbiologist
Qualifications:	MD, PhD
Current position:	Group leader, Emerging bacterial pathogens Unit
Institutional affiliation:	San Raffaele Scientific Institute, Division of Immunology, Transplantation and Infectious Diseases
Country:	Italy

Daniela Maria Cirillo is a Technical Expert, Microbiologist, Group leader, Emerging bacterial pathogens Unit, San Raffaele Scientific Institute, Division of Immunology, Transplantation and Infectious Diseases. Her recent professional experience includes Director of the WHO Collaborating Centre on TB laboratory strengthening (ITA-98) (2013-now); Head of TB Supranational Reference Laboratory at the IRCCS Ospedale San Raffaele, Milan, Italy (2006-now). The main research focus of Emerging bacterial pathogens Unit includes tuberculosis and other mycobacterial diseases with multiple lines of research: Investigation of the determinants of drug resistance at genomic level and the correlation between specific SNPs in relevant genes and an increase in the phenotypic resistance by quantitative methods; Investigation of the pathogen's associated determinants leading to the progression of the disease with a focus on the role of non-coding genomic regions; Design and evaluation of new diagnostic assays; Investigation of TB transmission dynamics among vulnerable population and the best strategy to be implemented for an early detection; Use of whole genome sequencing (WGS) and in-house bioinformatic pipelines for the surveillance of TB outbreaks and others.

DAVIES, Geraint (Gerry)

Constituency:	Trials expert; Pharmacologist
Qualifications:	MB, DTM&H, MRCP, MSc Epidemiology, PhD Pharmacology, FRCP
Current position:	Professor of Infection Pharmacology, Honorary Consultant in Infectious Diseases and Associate, Liverpool of Tropical Medicine
Institutional affiliation:	University of Liverpool
Country:	United Kingdom

Gerry Davies is Professor of Infection Pharmacology and Honorary Consultant in Infectious Diseases at the University of Liverpool. He is an editor for the Cochrane Infectious Diseases Group, specialising in evidence synthesis in the treatment of tuberculosis and has extensive experience of pharmacokinetic-pharmacodynamic methods, early and late-phase clinical trials in tuberculosis in differing roles. Since 2012 he has participated in several WHO Taskforces on the development of new treatment policies for tuberculosis, most recently co-chairing the 2018 update of the WHO guidelines for treatment of multi-drug resistant TB.

DOCKHORN, Fernanda

Constituency:	National TB Programme, end user
Qualifications:	MD, MTropMed
Current position:	Head of the National TB Programme Brazil
Institutional affiliation:	National TB programme, Brazil Ministry of Health
Country:	Brazil

Dr Dockhorn graduated from medical school in 2004 and completed a residency in internal medicine in 2007. After that, she moved to Mozambique to work with the Columbia University – NY (ICAP), working on the implementation of HIV programs (2007-2011). In 2011, she returned to Brazil and started work in the NTP Brazil, being responsible for activities related to TB/HIV co-infection and DR-TB (2011-2020). She finished her Master's degree in 2013 and in 2016 started working as an assistant doctor in a health unit in Brasília. In 2020 she joined the Global Drug Initiative (GLI) core group, which she still participates in today and she assumed the position of head of the NTP-Brazil in December 2020.

EAM, Khun Kim

Constituency:	National TB Programme, end user
Qualifications:	MD, MPH
Current position:	Vice Director, CENAT
Institutional affiliation:	National Center for Tuberculosis and Leprosy Control (CENAT), Ministry of Health Cambodia
Country:	Cambodia

Dr Khun Kim Eam, is Vice Director of the National Centre for TB and Leprosy Control (CENAT) of the Ministry of Health. Dr Eam graduated from Faculty of Medicine in Phnom Penh in 1992 and worked at Kampong Cham provincial health Department from 1992 to 1997. From 1997 to present Dr Eam continues to work for CENAT with main focus on technical activities such as TB/HIV collaborative activities, developing TB training curriculum with conduct training and supervision, TB Management Information System (TBMIS) and some operational research activities. Dr Eam did his master course as public health at Institute of Tropical Medicine, ITM, Antwerp, Belgium in 2003.

FABELLA, Ronald Allan

Constituency: National TB Programme, end user
Title: MD, MPH
Current position: Senior TB Advisor
Institutional affiliation: National TB Programme, Philippines Department of Health
Country: Philippines

Dr. Fabella has more than 15 years of experience in Tuberculosis control and public health, from a primary health care physician and city TB program manager, to Global Fund Program Officer of the NTP, and public health specialist of the USAID's TB control project. He is a currently senior TB Advisor at the Department of Health NTP supported by USAID. Among his works are roles as a technical editor and writer of the NTP Manual of Procedures, 5th and 6th edition, writer of the Updated Philippine Strategic TB Elimination Plan 2020-2023 and lead local consultant for the NTP Joint Program Review in 2019.

LUKITOSARI, Endang

Constituency: Sub Coordinator of Drug Resistant TB, NTP Indonesia
Qualifications: MD, MPH
Current position: Sub Coordinator of DR TB, National TB Programme Indonesia
Institutional affiliation: National TB Programme, Ministry of Health, Indonesia
Address: Indonesia

Dr Lukitosari is an MPH graduate from School of Public Health in Saint Louis University in Missouri. He is currently working in the National TB program of Indonesia since 2003 and has been involved in TB Program work in Indonesia in the past. As a sub coordinator of DR-TB, Dr Lukitosari is actively collaborating with government organizations, clinical expert team and technical working group of TB and DR-TB to develop guidelines and provides mentoring and assistance to the Provinces, District and health facilities. He also contributes in the development of national guidelines on TB and the national implementation plan. Recently, he was involved in the development of national TB program management revising the guidelines according to the newest recommendations from the global level.

HEWISON, Cathy

Constituency:	Technical agency, TB expert, humanitarian assistance
Qualifications:	MBBS, FRACGP, Dip Child Health, MPH
Current position:	Tuberculosis advisor
Institutional affiliation:	Medecins sans Frontieres
Country:	France

Medical doctor, working as a tuberculosis advisor in the Medical Department of Médecins Sans Frontières (MSF, Operational Centre Paris) since 2005. Chairman of the endTB Medical Committee, participating in the endTB project and associated research as well as leader of the MSF international TB Working Group.

HESSELING, Anneke

Constituency:	Paediatrics and clinical management of TB, pharmacokinetics/ pharmacodynamics, end-user
Qualifications:	MD, MSc, PhD
Current position:	Professor in Paediatrics and Child Health, Director of the Desmond Tutu TB Centre
Institutional affiliation:	The University of Stellenbosch
Country:	South Africa

Professor Hesselning is a South African clinician scientist dedicated to research in tuberculosis and HIV in children and adolescents and other special populations, including pregnant women and young people. She is a Distinguished Professor in Paediatrics and Child Health, Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, where she is the Director of the Desmond Tutu TB Centre and has 20 years' experience in designing and conducting translational paediatric TB research in South Africa and in other high-burden settings and holds the first South African National Research Foundation SARChi chair in Paediatric Tuberculosis. Professor Hesselning has published more than 260 peer-reviewed papers and her Scopus H index is 50.

Professor Hesselning chairs the NIH IMPAACT TB Scientific Committee and leads or co-leads several IMPAACT protocols including IMPAACT P1108, PHOENIX (A5300/I20013), IMPAACT 2020 and IMPAACT 2024. She is the PI for the Stellenbosch DAIDS-funded Clinical Trials Unit (SUN-CTU) network renewal application and the IMPAACT CRS leader for the Desmond Tutu TB Centre (DTTC, CRS 31790). She is also the PI for the CDC-funded TB Trial Consortium (TBTC) Stellenbosch site (CDC Site 33) 10-year grant and protocol chair for TBTC Study 35 (rifapentine pharmacokinetics and safety for TB prevention in HIV-infected and uninfected children) and a core member of the WHO Stop TB Paediatric and Adolescent Core Group. She has been the PI and co-investigator on several paediatric diagnostic and biomarker studies, paediatric phase I/II trials of delamanid and bedaquiline in children, and is the PI

of the TB-CHAMP phase 3 TB prevention trial of MDR-TB in children, and the South African PI on the SHINE treatment shortening trial in children with drug-susceptible TB. Her group's research has a strong focus on novel strategies to prevent TB in children with and without HIV co-infection, the evaluation of novel therapeutic strategies, and a special interest in diagnostic and biomarker research in young and HIV-affected children. Her group also conducts rigorous epidemiological and implementation science research, socio-behavioural research coupled with strong collaboration with programmes and community stakeholders to advance the health of children affected by TB or HIV.

HUSSAIN, Hadi Syed

Constituency:	National TB programme, end user
Qualifications:	MBBS, MPH
Current position:	Advisor, National TB Programme
Institutional affiliation:	Pakistan National TB Control Program
Country:	Pakistan

Dr Hussain is a public health professional with a Master's in Public Health and is an Advisor to the National TB Control program Pakistan. He has experience in working with government and the private sector for the last 30 years. He has led the process of developing national TB management guidelines 2019, revised MDR guidelines 2020, and preventive treatment guidelines 2020 and has supervised and provided technical support in the development of an "online training course for TB management." His key areas of work are policy reforms, development work and strategic planning. All of his accomplishments are by virtue of teamwork and coordination with stakeholders in the context of devolution of the health sector in Pakistan.

MAUG, Aung Kya Jai

Constituency:	Clinician
Qualifications:	MBBS, MPH
Current position:	TB programme planning, implementation, supervision and monitoring; Member of the SEA rGLC
Institutional affiliation:	The Damien Foundation
Country:	Bangladesh

Dr Aung has over 25 years of experience in TB programme planning, implementation, supervision and monitoring in Bangladesh (Damien Foundation projects). He has been involved in the operational research projects in study design, follow up, monitoring, data collection, management and publication. Important research includes treatment and treatment monitoring of DS- and DR-TB patients. He contributed in TB programme monitoring, evaluation, guideline development and has been serving as

a member of the SEA rGLC since 2019. He has taken part in joint TB and MDR-TB monitoring missions in Bangladesh, Indonesia, Myanmar and Cambodia and in training of physicians on MDR-TB in Pakistan.

MEINTJES, Graeme

Constituency:	Medicine, clinical trials, TB-HIV, treatment of TB
Qualifications:	MBChB, MRCP, FCP, PhD, MPH
Current position:	Professor and Deputy Head of the Department of Medicine
Institutional affiliation:	University of Cape Town
Country:	South Africa

Graeme Meintjes is a Professor and Deputy Head of the Department of Medicine at the University of Cape Town, the DSI/NRF SARChI Chair of Poverty-Related Infections, and an adult Infectious Diseases Physician who works at Groote Schuur and Khayelitsha Hospitals. He leads a research group that focuses on the diagnosis, prevention, treatment and immunopathogenesis of conditions that affect patients with advanced HIV disease in Africa, in particular: the immune reconstitution inflammatory syndrome (IRIS), HIV-associated tuberculosis, HIV-associated cryptococcal meningitis, complications of antiretroviral therapy and drug-resistant TB.

MINGOTE, Laia Ruiz

Constituency:	Advocacy
Qualifications:	Bachelor of Communication Studies, Masters of Anthropology
Current position:	Journalist and Anthropologist
Institutional affiliation:	Independent consultant
Country:	Spain

Ms Mingote is a communication, social research, advocacy, gender and strategist consultant. She has strong management skills, qualitative research, and analysis expertise, as well as training in capacity building, science communication, fundraising, and advocacy know-how. Additionally, she has great experience as a project coordinator, in community strengthening, community engagement and ethics in clinical trials. Ms Mingote's educational background is in journalism with a science communication major, and anthropology. She speaks Spanish, English and Catalan.

OWUOR, Andrew

Constituency:	Clinician
Qualifications:	MBBS, MMed, Dip Adult Respiratory Medicine
Current position:	Medical Specialist, Respiratory and Infectious Diseases Unit
Institutional affiliation:	The Kenyatta National Teaching and Referral Hospital
Country:	Kenya

Dr Owuor is a pulmonologist working at the Kenyatta National Hospital since 2015. He is head and lead Clinician of Tuberculosis Management Centre, including the MDR-TB super isolation facility and is directly involved in the day-to-day care and management of TB patients. Dr Qwuor is also an advisor to the National TB Control program and a member of the National TB, TB Preventive Therapy, DR-TB Technical Working Group of the National Tuberculosis Program (NTP) since 2015. He is a member of the Kenya TB, TB Preventive Therapy, DR-TB Guidelines and Practical Approach to Lung Health Guidelines development working groups, member of the review group of national HIV guidelines for Anti-Retroviral Therapy (ART) 3rd edition, member of the TB Health Sector Working Group and a facilitator in several TB and DR-TB courses in Kenya.

He was formerly a TB/HIV Co-ordinator (2013-2015) for Nairobi County in a Centre for Disease Control (CDC) funded project where he was instrumental in the development of an integrated electronic TB-HIV register/data collection tool and initiation and roll-out of GeneXpert test(universal DST) in the country.

Dr Owuor is a member of the Respiratory Society of Kenya (ReSOK) and advisor on TB Public-Private partnerships, an honorary Lecturer, University of Nairobi, involved in the clinical training of residents in Internal Medicine and a honorary Lecturer, Kenya Medical Training College (KMTC), where he is involved in the training of physician assistants (clinical officers) undertaking Higher National Diploma/specializing in Respiratory Diseases and Tuberculosis.

KHAN, Amir

Constituency:	Civil society representative
Qualifications:	MBBS, DHA MPH, PhD, FFPH (UK)
Current position:	Chief Coordinating Professional Association for Social Development Pakistan
Institutional affiliation:	Association for Social Development
Country:	Pakistan

In last three decades, Dr Khan has worked (as a partner) with TB and other Disease Control Programs to supplement the development (integrated care protocols and materials), research (trials and mixed-method process evaluation studies) and implementation-scaling (through public and donor funding) of contextualized healthcare interventions. He has served on multiple: a) (inter)national committees

e.g., GFATM Country Co-ordinating Mechanism; IUATLD Board, DAT Task Force; b) community forums e.g., WHO Civil Society Task Force, Stop TB Partnership Pakistan; and c) WHO guideline development groups e.g., MDR-TB, TB screening, childhood TB etc. International recognition includes the Princess Chichibu TB Award (individual) and the Karel Styblo Prize (organization).

KUMAR, Ravinder

Constituency:	National TB Programme, end user
Qualifications:	MBBS, DTCD (Resp Dis and TB)
Current position:	TB Specialist, Central TB Division,
Institutional affiliation:	Ministry of Health and Family Welfare, Government of India
Country:	India

After completing his medical degree (MBBS) from prestigious Maulana Azad Medical College New Delhi, Dr Kumar later completed diploma in tuberculosis and chest disease (DTCD) from the VP Chest Institute, New Delhi. Dr Kumar has been part of department of pulmonary medicine and critical care at Safdarjung hospital and medical college and trained there in the management of patients with respiratory disease including tuberculosis. He was trained in intensive care and is well versed with the procedures of bronchoscopy, non-invasive ventilatory/invasive ventilatory procedures. Dr Kumar has also worked as Specialist Unit In-charge (Respiratory Medicine) from 2012-2018 in ESI Hospital Gurgaon, Haryana, Under Ministry of Labour and Employment dealing with patients of respiratory disease and also responsible for implementation of NTEP activities in our hospital. Since 2018 onwards, he is working for NTEP India, as TB specialist and looking after DS-TB, latent TB, human resources, finance components of NTEP. He was actively involved in the development of the National Guidelines for Management of TB Preventive Treatment in India. He is trained respiratory disease specialist working with NTEP as programme manager for wider public health impact.

SAMOILOVA, Anastasia

Constituency:	National TB programme, end user
Qualifications:	MD, PhD, DrMedSci
Current position:	Deputy Director, National Medical Research Center of Phthisiopulmonology and Infectious Disease
Institutional affiliation:	National Medical Research Center of Phthisiopulmonology and Infectious Diseases, Ministry of Health
Country:	Russian Federation

Since 2016, Dr Samoilova has been the deputy director of the National Medical Research Center of Phthisiopulmonology and Infectious Diseases, the lead institution of the Russian Federation engaged in research and clinical activities in the field of tuberculosis and concomitant diseases. The areas of her research include drug management in phthisiology, design of chemotherapy regimens for TB treatment, and mechanisms of TB drug resistance development. Dr Samoilova is a co-author of a number of clinical recommendations for TB diagnosis and treatment. She has more than 100 scientific publications, including 3 monographs, and about 10 registered results of intellectual activity.

TUDOR, Carrie

Constituency:	Nurse, patient centred care, end user
Title:	MPH, BSN, PhD
Current position:	TB Project Director
Institutional affiliation:	International Council of Nurses
Country:	South Africa

Dr Carrie Tudor has worked in global health for over 20 years on various global health projects throughout Asia and Africa. She earned a BSN and PhD from the Johns Hopkins University School of Nursing and a MPH from Emory University. is the TB Project Director for the International Council of Nurses working to build the capacity of nurses related to TB/MDR-TB and patient-centred care in China, the Russian Federation, and seven sub-Saharan African countries. Her research interests are focused on the occupational risk factors for TB among healthcare workers, airborne infection prevention and control, and patient-centred care.

WARES, Fraser

Constituency:	Technical agency, end user
Title:	MBChB, Diploma in Tropical Medicine and Hygiene, MPH
Current position:	Senior PMDT Consultant
Institutional affiliation:	KNCV Tuberculosis Foundation
Country:	United Kingdom

Dr Fraser Wares is a British trained public health physician. After working for various international Non-Governmental Organisations in different countries (1988 to 2001), he joined the World Health Organization (WHO) first as the Medical Officer (TB) in India (2002-2010) and then as a Medical Officer in the Stop TB Department, WHO Geneva (2010- 2016). Much of his work in the latter years in India and in Geneva was providing technical assistance (TA) on drug-resistant TB (DR-TB) to the member states. During this time, he also participated in the development of a number of WHO's DS-TB and DR-TB related policy and implementation documents, in addition to being part of the Secretariat for the global Green Light Committee and then subsequently for the Global Drug-resistant TB Initiative (GDI). He was selected to be a member of the GDI's Core Group and Vice-Chair of the GDI in late 2018.

Since early 2016, he has been a Senior PMDT Consultant with the KNCV TB Foundation based in The Hague, The Netherlands, providing TA to countries where KNCV is working. Until late 2019, he was co-ordinator of the "Core bedaquiline co-ordination project", under the umbrella of the USAID-supported Challenge TB Project. Currently he now co-ordinates KNCV's BPAL-related activities in 10 countries under various projects. In addition, he provides technical support to a number of other projects that KNCV is involved. He also serves as member and Chair of the South-East Asia Regional Advisory Committee on DR-TB ("SEA rGLC") from 2019 to the current time.

