

PUBLIC NOTICE

Guideline Development Group meeting on WHO consolidated guidelines on the management of tuberculosis in children and adolescents, 2021

WHO headquarters, Geneva, Switzerland
31 May-17 June, 2021

Background:

Children and young adolescents (aged below 15 years – hereafter referred to as children) represent about 12% of all TB cases globally. This means that close to 1.2 million children become ill with TB every year, almost half of them aged below 5 years. In 2019, 230,000 children were estimated to have died of TB, including 36,000 TB deaths among children who were living with HIV. In addition, it is estimated that a total of 67 million children have TB infection and therefore are at risk of developing TB disease in the future. As well, researchers have estimated that between 25,000 and 32,000 children develop multi-drug resistant TB (MDR-TB) every year. In 2019, just over 5,500 of these were reported to have started second-line treatment for drug-resistant TB.

National TB Programmes (NTPs) notified 522,000 children with TB in 2019, leaving a gap of almost 680,000 children with TB (56%) who were not diagnosed or not reported. This case detection gap is largest in young children (65% for children aged below 5). Reasons for this gap include challenges with specimen collection and with bacteriological confirmation of TB in young children, due to the paucibacillary nature of TB disease in this age group and the lack of highly sensitive point-of-care tests. In addition, children usually access primary health care or child health services, where the capacity to recognize presumptive TB and ensure access to diagnostic services can be limited.

In addition to the case detection gap, only one third of child contacts below 5 years of age eligible for TB preventive treatment actually received it in 2019. Young children are at higher risk of developing TB disease after TB infection, as well as of more severe forms of TB.

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The WHO's End TB Strategy envisions a 90% reduction in TB incidence and 95% reduction in TB deaths by the year 2035. The Resolution adopted by the United Nations General Assembly in September 2018 commits to diagnosing and treating 40 million people with TB, including 3.5 million children, and 1.5 million people with drug-resistant TB including 115,000 children. It also commits to providing at least 30 million people - including 4 million children under 5 years of age, 20 million other household contacts (including children over the age of 5 years) and 6 million people living with HIV (including children) - with TB preventive treatment by 2022.

To support countries in responding to the challenges of TB, over the years WHO's Global Tuberculosis Programme (GTB) has developed recommendations on prevention, diagnosis, treatment and care of TB, including for children and adolescents. Currently, WHO's GTB is in the process of updating its guidelines on the management of TB in children and adolescents based on the latest evidence available. These updated guidelines will incorporate new recommendations on diagnostic approaches, the treatment of drug-susceptible and drug-resistant TB and TB meningitis in children and adolescents, and on models of TB care. The guidelines will be developed in accordance with the requirements of the WHO Guidelines Review Committee, using the *Grading of Recommendations Assessment, Development and Evaluation* (GRADE) approach. The guidelines will consolidate all other TB-related recommendations relevant to children and adolescents (up to 19 years of age), such as recommendations on TB screening, rapid diagnostic tests for TB, TB preventive treatment, and the timing of antiretroviral therapy for patients with TB-associated HIV.

To advise WHO on the guideline update, a Guideline Development Group (GDG) composed of external experts is being convened to review the evidence and formulate evidence-based recommendations (see list and bios in this document). The GDG members are involved in the finalization of the guideline questions, the ranking 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 will be held virtually in a series of webinars over three weeks from 31 May to 17 June 2021. Before finalization, the guidelines will also be reviewed by other experts serving in an External Review Group.

Key questions:

The guidelines update will be framed by the following background and PICO (Population, Intervention, Comparator, Outcomes) questions.

PICO questions:

1. Diagnostic approaches:

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- i. In children aged below 10 years with presumptive pulmonary TB attending healthcare facilities, should integrated treatment-decision algorithms be used to diagnose pulmonary TB, compared to a microbiological or composite reference standard?
 - ii. In children aged below 10 years with signs and symptoms of pulmonary TB, seeking care at health care facilities, should Xpert Ultra in gastric aspirate or stool be used to diagnose pulmonary TB and rifampicin resistance, as compared with a microbiological or composite reference standard?
2. In children and adolescents with non-severe TB¹, should a 4-month intervention regimen versus the standard 6-month regimen conforming to WHO guidelines be used?
3. Treatment of drug-resistant TB:
 - i. In MDR/RR-TB patients aged below 6 years, should an all-oral treatment regimen containing bedaquiline versus other regimens conforming to WHO guidelines without bedaquiline be used?
 - ii. In MDR/RR-TB patients aged below 3 years, should an all-oral treatment regimen containing delamanid versus other regimens conforming to WHO guidelines without delamanid be used?
4. In children and adolescents aged 0-19 years with presumed or bacteriologically confirmed drug-susceptible TB meningitis, should a 6-month intensive regimen, compared to the 12-month regimen that conforms to WHO guidelines be used?
5. Models of care:
 - i. In children and adolescents with signs and symptoms of TB, should decentralization² of child and adolescent TB services versus centralized child and adolescent TB services (at referral or tertiary hospital level) be used for TB case detection?
 - ii. In children and adolescents exposed to TB, should decentralization of child and adolescent TB prevention and care services versus centralized prevention and care services (at referral or tertiary hospital level) be used to increase coverage of TB preventive treatment in eligible children and adolescents?
 - iii. In children and adolescents with signs and symptoms of TB, should family-centred, integrated services³ versus standard, non-family-centred, non-integrated services be used for TB case detection?

¹ For the purpose of this PICO question, **non-severe TB** is defined as sputum smear-negative TB, extrathoracic lymph node TB, intrathoracic lymph node TB with no significant airway obstruction, or uncomplicated forms of pulmonary TB, confined to one lobe and with no cavities.

² **Decentralization**: Depending on the standard in the research settings used for the comparator, decentralization includes provision of, access to or capacity for child and adolescent TB services at a lower level of the health system than the lowest level where this is currently routinely provided. In most settings, decentralization would apply to district hospital (first referral level hospital) and/or primary health care level and/or community level. Decentralization interventions can include capacity building of various cadres of healthcare workers, access to diagnostic services, availability of TB medicines for children and adolescents, follow-up of children and adolescents with TB or on TB preventive treatment, among others.

³ **Family-centred, integrated services**: Family-centred models of care refer to interventions selected on the basis of the needs, values and preferences of the child or adolescent and his or her family or caregiver. This can include health education, communication, material or psychological support. Integrated services refer to approaches to strengthen collaboration, coordination, integration and harmonization of child

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- iv. In children and adolescents exposed to TB, should family-centred, integrated services versus standard, non-family-centred, non-integrated services be used to increase coverage of TB preventive treatment in eligible children and adolescents?

Background questions:

1. What is the socio-economic impact of TB on children and adolescents and their families?
2. How can adolescents with TB or eligible for TB preventive treatment be optimally engaged in their care?

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 national tuberculosis programmes on the management of tuberculosis in children. Second edition. Geneva, 2014.
- World Health Organization. Guidelines for treatment of drug-susceptible tuberculosis and patient care, 2017 update. Geneva, 2017.
- WHO consolidated guidelines on tuberculosis: Module 1: tuberculosis preventive treatment. Geneva: World Health Organization; 2020.
- WHO consolidated guidelines on tuberculosis. Module 2: screening – systematic screening for tuberculosis disease. Geneva: World Health Organization; 2021.
- WHO consolidated guidelines on tuberculosis. Module 3: diagnosis – rapid diagnostics for tuberculosis detection. Geneva: World Health Organization; 2020.
- World Health Organization. WHO consolidated guidelines on tuberculosis. Module 4: treatment. Drug-resistant tuberculosis treatment. Geneva, 2020.

and adolescent TB services with other child health related programmes and services. This can include integration of models of care for TB screening, prevention, diagnosis and treatment with other existing service delivery platforms for maternal and child health (for example antenatal care, integrated community case management, integrated management of childhood illnesses) and other related services (for example HIV, nutrition, immunization). Other examples include evaluation of children and adolescents with common co- morbidities (e.g. meningitis, malnutrition, pneumonia, chronic lung disease and HIV infection) for TB as well as community health strategies integrating child and adolescent TB awareness, education, screening, prevention and case finding into training and service delivery activities.

Brief biographies of experts invited to serve as GDG members

Tamara Kredo (Co-chair)

Institutional affiliation(s): South African Medical Research Council

Constituency: GRADE methodologist

Academic degrees: MBChB, MMed (Clin Pharm), PhD

City and country of primary residence: Cape Town, South Africa

Biography: Dr Tamara Kredo is a specialist in clinical pharmacology and holds the position of senior specialist scientist at 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 the South African 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.

Elie Akl (Co-chair)

Institutional affiliation(s): American University of Beirut; McMaster University

Constituency: GRADE methodologist

Academic degrees: MD, MSBM, PMH, PhD

City and country of primary residence: Beirut, Lebanon

Biography: Elie Akl is a tenured Professor of Medicine at the American University of Beirut (AUB), where he leads the division of General Internal Medicine and Geriatrics (GIMG), directs the Clinical Research Institute (CRI) and the AUB GRADE Center. He has a part time appointment in the Department of Health Research Methods, Evidence, and Impact at McMaster University, Canada. His research expertise is in systematic reviews, practice guidelines, and conflicts of interest. He has published more than 400 peer-reviewed papers and was listed by Thomson Reuters as one of the 2015 "world's most influential scientific minds" and as one of the "Highly Cited Researchers" yearly since 2015.

Farhana Amanullah (Co-chair)

Institutional affiliation(s): The Indus Hospital, Karachi, Pakistan

Constituency: Paediatrician, end-user, researcher

Academic degrees: MBBS, FAAP, DABP

City and country of primary residence: Karachi, Pakistan

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Biography: Dr Farhana Amanullah is a paediatrician with 13 years of clinical and research experience in child and adolescent tuberculosis. She started the paediatric TB programme at The Indus Hospital which has become the largest private sector program in Pakistan. She has led a private provider engagement program, a TBREACH4 child TB screening programme and the child TB component of zero TB cities Pakistan. Farhana has provided TB technical assistance in Pakistan, Indonesia, Thailand, Sudan and Kenya. She has been the Chair of the Child and Adolescent TB Working Group of the Stop TB Partnership since 2016 and has been a member of the DR-TB GDG, STAG-TB and the Task force on Global TB Research. Farhana has been a Stop TB Partnership Board member since 2019 and a Global Fund's Technical Review Panel member since 2020.

Susan Abdel-Rahman

Institutional affiliation(s): Children's Mercy Research Institute; Children's Mercy Research Institute

Constituency: Pharmacology, pharmacodynamics, pharmacokinetics

Academic degrees: BScPharm, DPharm

City and country of primary residence: Kansas City, USA

Biography: Dr Susan Abdel-Rahman is the Marion Merrell Dow/Missouri Chair in Paediatric Clinical Pharmacology, Professor of Paediatrics at the University of Missouri – Kansas City 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.

Deepak Agarwal

Institutional affiliation(s): Aarogyam Agrawal Hospital

Constituency: Paediatrician, end-user, private sector, paediatric professional association

Academic degrees: MD (paediatrics)

City and country of primary residence: Ahmednagar, India

Biography: Dr Deepak Agarwal is the chief paediatric consultant at Aarogyam Agrawal Hospital (a 50-bed paediatric hospital), in Ahmednagar, India, where he has worked for 17 years. He has a special interest in the field of paediatric infectious diseases and paediatric pulmonology. He is an active member of the Indian Academy of Paediatrics (IAP) and an active member of the infectious diseases section of the IAP. He is a former Honorary Associate Professor of paediatrics of Pravara Rural Medical University and an honorary post-graduate teacher for the Indian College of Physicians and Surgeons in Anand Hospital, Vijapur, India.

Shakil Ahmed

Institutional affiliation(s): Dhaka Medical College

Constituency: Paediatrician, end-user

Academic degrees: MD (paediatrics)

City and country of primary residence: Dhaka, Bangladesh

Biography: Dr Shakil Ahmed is a Professor of Paediatrics at Dhaka Medical College, in Dhaka, Bangladesh. He is a Medical Doctor in Paediatrics and has extensive experience in childhood TB, including serving as a member of the National Technical Committee on TB, the Child TB Working Group of the National TB Programme in Bangladesh and as Secretary General of the Bangladesh Paediatric Pulmonology Forum. Dr Ahmed is the editor of the National Guideline on the Management of Child TB for Bangladesh and Nepal. He has authored training manuals and guidelines on the management of Child TB, and is a co-author of the WHO Roadmap towards ending TB in Children and Adolescent TB, 2nd Edition, 2018.

Valentina Aksenova

Institutional affiliation(s): National Medical Research Center of Phthisiopulmonology and Infectious Diseases of the Ministry of Health, Russian Federation

Constituency: Paediatrician, end-user, national TB programme, researcher

Academic degrees: MD (paediatrics), PhD

City and country of primary residence: Moscow, Russian Federation

Biography: Dr Aksenova is a Doctor of Medical Sciences, Professor, Head of the Department of Tuberculosis in Children and Adolescents and chief paediatric specialist in TB at the National Medical Research Centre of Phthisiopulmonology and Infectious Diseases, Ministry of Health, Russian Federation. In 1980 she graduated from the second Moscow Medical Institute, specializing in paediatrics, after which she started her work in the children's and adolescent department of the Moscow Research Institute of Tuberculosis, where she has been working to the present time. She started her professional career as a junior researcher and progressed to the position of deputy director of the Institute for scientific work in 1991. In the same year, she was assigned as the chief paediatric specialist in TB in the Ministry of Health, Russian Federation. She worked as a deputy director from 1991-1998 and she continues to work as chief paediatric specialist in TB. In 1987 she defended her thesis for the degree of candidate of medical sciences on the topic: "Complicated forms of tuberculosis in children." In 1993 she defended her doctoral dissertation on the topic: "Specific prevention of

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tuberculosis in children and adolescents." In 1995 she was awarded the title of Professor. Currently, she gives lectures at the Department of Phthisiology and Thoracic Surgery named in First Moscow State Medical University. Dr Aksenova has developed and substantiated new scientific directions in paediatric phthisiology. For the first time in the Russian Federation, together with the Institute's staff, she developed a test system for determining TB infection in children and adolescents by the induction of interferon gamma in the presence of specific recombinant antigens ESAT-6 and CFP-10, improving the system of early detection of TB using a combination of modern and reliable immunobiological methods and systems. Dr Aksenova is an award winner of the Prix Galien Russia 2014 prize for the Diaskintest® biotechnological product, which serves to identify TB infection in adults and children. Dr Aksenova is an author of over 500 scientific papers. As well, 50 candidate and doctoral dissertations have been prepared and defended under her supervision. She was awarded the medal of the Ministry of Health of the Russian Federation "For merit to the national healthcare of the Russian Federation". She has the honorary title "Honoured Worker of Science and Education", "Founder of the Scientific School", member of the Internet encyclopaedia "Scientists of Russia".

Grace Bolie Elolo

Institutional affiliation(s): National TB Programme, Democratic Republic of Congo

Constituency: Paediatrician, end-user, national TB programme

Academic degrees: MD

City and country of primary residence: Kinshasa, Democratic Republic of Congo

Biography: Born in Kinshasa, Democratic Republic of Congo, in 1983, Grace Bolie started her career in Latin – philosophy, before obtaining her degree as a medical doctor in 2008, followed by a specialization in paediatrics in 2017. Holding a diploma in TB/HIV and other comorbidities, she is the focal point for paediatric tuberculosis in the National TB Programme, *Democratic Republic of Congo*. She is currently finalizing her Masters' Degree in Sciences of Public Health – Health systems and disease control at the Institute for Tropical Medicine in Antwerp, Belgium.

Chishala Chabala

Institutional affiliation(s): University of Zambia; London School of Hygiene and Tropical Medicine

Constituency: Paediatrician, researcher

Academic degrees: BSc, MBChB, MMed (paediatrics), MSc (clinical trials)

City and country of primary residence: Lusaka, Zambia

Biography: Dr Chishala Chabala is a paediatrician and lecturer at the University of Zambia, School of Medicine and a part-time tutor at the London School of Hygiene and Tropical Medicine's distance learning programme in clinical trials. He is an investigator on multinational collaborative paediatric clinical trials on TB, HIV treatment and pneumonia. As a member of the WHO Child and Adolescent TB Working Group he has previously participated in paediatric national TB programme reviews in several

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African countries. He has provided technical input in the development of the national TB strategic plan, treatment guidelines and training materials for adults and children in Zambia.

Gunta Dravniece

Institutional affiliation(s): PATH Ukraine

Constituency: Clinician, paediatric drug resistant TB management

Academic degrees: MD

City and country of primary residence: Kiev, Ukraine

Biography: Dr Gunta Dravniece is a senior TB expert combining extensive clinical experience with programme management skills. For more than 10 years she has served as a facilitator at the WHO Collaborating Centre on MDR-TB management in Latvia. She is a member of the Green Light Committee for the WHO European region. Following a successful career in clinical care of TB and MDR-TB in Riga, Latvia, she worked at the KNCV Tuberculosis Foundation providing expertise in MDR-TB programmatic and clinical management. In February 2020 she joined the PATH Ukraine team and is now leading the Support TB Control Efforts in Ukraine project.

Connie Erkens

Institutional affiliation(s): KNCV Tuberculosis Foundation

Constituency: Paediatrician, technical partner

Academic degrees: MD, DTMH, MPH, PhD

City and country of primary residence: The Hague, Netherlands

Biography: Dr Connie Erkens worked 10 years as a general doctor and paediatrician in rural hospitals in Zambia and Malawi, during the onset of the TB-HIV epidemic in these countries. After this, she specialized as public health physician and epidemiologist in TB control and joined the KNCV Tuberculosis Foundation as a technical consultant in 2003 to support TB efforts. She has broad practical and technical experience with TB contact investigation and TB preventive treatment (TPT), both as a TB physician and as a researcher. She has published several studies on the programmatic management of TPT, active case finding and contact investigation and the management of childhood and adolescent TB in low burden countries.

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Steve Graham

Institutional affiliation(s): University of Melbourne, Burnet Institute, Monash Children's Hospital

Constituency: Paediatrician, researcher

Academic degrees: MBBS, FRACP, DTCH, PhD

City and country of primary residence: Victoria, Australia

Biography: Professor Steve Graham has over 25 years of experience in clinical care, research and training in child and adolescent TB in African and Asia-Pacific regions, with broad perspective of the challenges from working in both high and low TB endemic countries within those regions. He has worked closely with WHO in roles that relate to policy, implementation guidelines, product development (child-friendly fixed dose combination (FDC) medicines) and advocacy for child and adolescent TB. These roles have included being a core member since 2003 and Chair (2011-16) of the WHO Child and Adolescent TB Working Group; a member of WHO STAG-TB (2012-17); author on WHO Guidance for NTPs on Child TB (2006 and 2014) and the International Roadmap for Child and Adolescent TB (2013 and 2018); and a contributor to WHO Guidelines on TB Preventive therapy (2018 and 2020).

Patrik Hummel

Institutional affiliation(s): Friedrich-Alexander-Universität Erlangen-Nürnberg

Constituency: Ethics, researcher

Academic degrees: BA (philosophy and economics), MLitt, PhD (philosophy)

City and country of primary residence: Erlangen, Germany

Biography: Patrik Hummel holds a PhD in Philosophy from the University of St Andrews, Scotland, UK. He is a post-doctoral researcher at the Chair of Systematic Theology II (Ethics) at Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany. His research focuses on philosophical accounts of agency and identity, and normative issues in biomedical research, public health, and clinical care.

Margaret Kal Nasil

Institutional affiliation(s): National TB Control Programme, Papua New Guinea

Constituency: Clinician, end-user, national TB programme

Academic degrees: MBBS, MPH, MBA

City and country of primary residence: Port Moresby, Papua New Guinea

Biography: Dr Margaret Nasil Kal, (MBBS, MPH, MBA) is a senior medical officer for TB in Papua New Guinea (PNG). Currently, she is also the acting NTP manager for PNG. Dr Kal Nasil joined the NTP in 2007 and has been directly involved in coordination and monitoring of TB activities in PNG. She has been actively responsible for the development of all national TB guidelines, policies, national TB strategic plan development, Global Fund proposal development, TB research, national program reviews and all other

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key strategies, plans and policies for TB prevention and care in PNG. She serves as the focal person for TB monitoring and evaluation and research and training in PNG. She actively collaborates with partners implementing TB activities and has been actively participating in WHO organized meetings representing the PNG NTP including in the Global Consultation for TB high burden and priority countries in the WHO Eastern Mediterranean, South-East Asia and Western Pacific regions on ending TB in children and adolescents, in November 2019 in Vietnam.

Muhammad Amir Khan

Institutional affiliation(s): Professional Association for Social Development Pakistan

Constituency: Clinician, end-user, civil society

Academic degrees: MBBS, DHA, PhD

City and country of primary residence: Islamabad, Pakistan

Biography: In the last three decades, Dr Khan has worked (as a partner) with TB and other disease 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. the Global Fund Country Co-ordinating Mechanism; IUATLD Board, digital adherence technologies (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 etc. International recognition includes the Princess Chichibu TB Award (individual); and the Karel Styblo Prize (organization).

Susan Maloney

Institutional affiliation(s): Centers for Disease Control and Prevention

Constituency: Paediatrician, technical partner, Federal Government agency

Academic degrees: BS, MHSc, MD (paediatrics)

City and country of primary residence: Atlanta, United States of America

Biography: Dr Susan Maloney is the Chief of the Global Tuberculosis Branch, Division of Global HIV and TB, at the United States (US) Centres for Disease Control and Prevention (CDC), responsible for overseeing CDC's global TB portfolio and strengthening programmatic and research collaborations to increase the impact of global TB control and prevention efforts. Prior to taking on this role, Dr Maloney was the Director of CDC's Southeast Asia Regional Global Disease Detection Centre and International Emerging Infections Program (located in Thailand), where she worked with national and regional partners and WHO to strengthen surveillance, laboratory, research and response capacities for emerging and re-emerging diseases. During her tenure at CDC, Dr Maloney has also served as the Chief of the Immigrant, Refugee and Migrant Health Branch, where she led investigations of infectious disease outbreaks among migrating populations, and implemented a research agenda evaluating the effectiveness of medical screening for US-bound refugees and immigrants, which resulted in a change in US policies for overseas TB diagnosis and treatment, and a substantial increase in the diagnosis and

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treatment of TB among these populations. Dr Maloney holds an MD from the State University of New York at Buffalo, completed a Paediatrics Residency at Johns Hopkins University Hospital, a Paediatric Infectious Diseases Fellowship at the Children's National Medical Centre, Washington, D.C., and is board certified in Paediatrics and Paediatric Infectious Diseases. She is a graduate of the CDC's Epidemic Intelligence Service fellowship, earned an MHSc in Public Health Policy from Johns Hopkins University School of Hygiene and Public Health, and is a retired Captain in the US Public Health Service.

Anna Mandalakas

Institutional affiliation(s): Baylor College of Medicine

Constituency: Paediatrician, researcher

Academic degrees: MD (paediatrics), PhD

City and country of primary residence: Houston, United States of America

Biography: Anna Maria Mandalakas, MD, PhD is a Professor of Paediatrics at Baylor College of Medicine where she serves as Chief of the Section on Global and Immigrant Health and directs the Global Tuberculosis Program of Texas Children's Hospital, and is an adjunct Professor in the University of Texas Houston's School of Public Health in the Department of Epidemiology, Human Genetics, and Environmental Science. Her translational research focuses on identification of *Mycobacterium tuberculosis* infection and prevention of TB disease in children living in TB high and low burden settings. Since 2012, Anna has collaborated with colleagues to develop research capacity and enhance the care and treatment of TB and TB/HIV affected children and adolescents living in over a dozen countries home to Baylor initiatives.

Sushant Mane

Institutional affiliation(s): Grant Government Medical College

Constituency: Paediatrician, researcher, end user

Academic degrees: MD (paediatrics)

City and country of primary residence: Mumbai, India

Biography: Dr Sushant Mane is a paediatrician, with a special interest in paediatric pulmonology and paediatric infectious diseases. He is Associate Professor at the Department of Paediatrics at Grant Government Medical College, Sir J.J. Group of Hospitals, Mumbai, India as well as Nodal Officer and officer in-charge of the Paediatric Centre of Excellence for Tuberculosis and the Paediatric Asthma Clinic. Dr Mane is also a Principal Investigator in Phase II/III Multi-centric Clinical Trials related to Paediatric Infectious Diseases. He is a member of the Child and Adolescent Tuberculosis Working Group and he has authored several chapters in books on Paediatric Respiratory Disorders as well as multiple original research articles in national and international journals. He has acted as faculty at various national and international conferences.

Lindsay McKenna

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Institutional affiliation(s): Treatment Action Group

Constituency: Advocacy, scientist

Academic degrees: BA (public health), MPH

City and country of primary residence: New York, United States of America

Biography: Lindsay McKenna co-directs the TB project at Treatment Action Group where she works with community advocates, researchers, policy makers, developers, and donors to expedite the development of and access to novel TB treatment, diagnostic, and prevention technologies. She coordinates the Global TB Community Advisory Board - a group of research-literate activists from around the world, which acts in an advisory capacity to institutions conducting TB clinical trials.

Betina Mendez Alcântara Gabardo

Institutional affiliation(s): Clinical Hospital, Federal University of Paraná

Constituency: Paediatrician, researcher, end-user

Academic degrees: MD, MMed (internal medicine), PhD

City and country of primary residence: Curitiba, Brazil

Biography: Dr Betina Mendez Alcântara Gabardo is a paediatrician working at the outpatient clinic in childhood TB at the Paediatric Unit of Clinical Hospital (Federal University of Paraná) in Curitiba, Brazil. She is also part of a group of paediatricians who train health care professionals on TB in childhood and adolescence in Brazil. During her time as coordinator of the Tuberculosis Programme in Curitiba and Paraná, she was involved in studies in health units showing the importance of investigating respiratory symptoms in children. She has been a core team member of the Child and Adolescent TB Working Group as well as Vice-President of the TB working group on children and adolescents in the Pan-American Health Organization (PAHO). Dr Mendez Alcântara Gabardo is currently a sub-investigator of coronavac vaccine research in partnership with the Butantan Institute.

Imran Pambudi

Institutional affiliation(s): National TB Programme, Indonesia

Constituency: Clinician, end-user, national TB programme

Academic degrees: MD, MPH

City and country of primary residence: Jakarta, Indonesia

Biography: Dr Imran Pambudi, MPH, is the National TB Program Manager, Directorate of Communicable Disease Control, in the Ministry of Health, Republic of Indonesia. He is experienced in managing healthcare programs and implementation at the central and district levels. Dr Pambudi has been involved in many initiatives related to TB elimination efforts since 2016, including the involvement of communities and stakeholders to address the current challenges of improving TB case detection and improving the quality of TB care. Previously he was head of division for Multilateral Health Cooperation, Bureau of International Cooperation, Ministry of Health where he dealt with UN agencies, global health security, and other matters related to multilateral health cooperation. Before that, he worked for 10

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years as a programme manager in maternal, newborn and child health as part of the Safe Motherhood Project for the World Bank.

Phan Phuc Huu

Institutional affiliation(s): National Children's Hospital

Constituency: Paediatrician, end-user, researcher

Academic degrees: MD, MPH, MScMed (paediatrics), PhD (clinical epidemiology)

City and country of primary residence: Hanoi, Vietnam

Biography: Dr Phuc Huu Phan is a Paediatric Critical Care Specialist. He received his Degree in Medicine and PhD in Epidemiology in 1996 and 2012, respectively. Dr Phan has also undertaken several training courses in Paediatric Critical Care Medicine in Australia, Israel, and in the USA. Currently, he serves in the position of Deputy Head, Medical Intensive Care Unit at the National Children's Hospital in Hanoi, Vietnam. He concurrently holds the appointment of Director of the Research Institute for Child Health. He also is an affiliated lecturer at Hanoi Medical University. His current duties involve direct patient care, teaching, and research. His previous work has included working on the H5N1 influenza outbreak in 2005, pandemic influenza in 2009, a measles outbreak in 2014 and multiple surges of viral diseases such as dengue, and hand-foot- and-mouth disease. His research interests span clinical and epidemiological aspects, including in the management of sepsis, acute respiratory distress syndrome, and other infectious diseases in children.

Moorine Sekadde

Institutional affiliation(s): National TB and Leprosy Programme, Uganda

Constituency: Paediatrician, end-user, national TB programme

Academic degrees: MBChB, MMed, MPH

City and country of primary residence: Kampala, Uganda

Biography: Dr Moorine Penninah Sekadde is a qualified paediatrician and public health expert with more than 15 years of experience in clinical care, capacity building, research, design and implementation of public health interventions in public and private settings. Her focus area is child and adolescent TB including aspects of integration within reproductive, maternal, newborn, child and adolescent health. She has successfully coordinated the Uganda child and adolescent TB response for the past seven years. She is a core team member on the Child and Adolescent TB Working Group; a WHO STAG TB member; a committee member for the multi-country UNITAID child TB projects; and a published researcher.

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Kathryn Snow

Institutional affiliation(s): Department of Health and Human Services, Australia

Constituency: Epidemiologist, researcher, surveillance

Academic degrees: BBS, MSc (epidemiology), PhD

City and country of primary residence: Victoria, Australia

Biography: Dr Kathryn Snow is an epidemiologist working on infectious disease surveillance, with a focus on TB, hepatitis C and COVID-19. Her PhD was on the epidemiology of TB during adolescence in high burden settings. She has a strong interest in improving the quality and utility of routinely-collected health data.

Sabira Tahseen

Institutional affiliation(s): National TB Control Programme; National TB Reference Laboratory, Pakistan

Constituency: Laboratory, end-user, national TB programme

Academic degrees: MBBS, DCP

City and country of primary residence: Islamabad, Pakistan

Biography: Dr Sabira Tahseen is a TB laboratory expert, and a medical graduate with a specialization in clinical pathology. She started her professional carrier in 1989 and has remained affiliated with TB diagnostic laboratories since 1993. She joined the National TB control Programme Pakistan in 2003 and is heading the National TB Reference Laboratory. Her key contributions include technical guidance for the scale up of quality assurance diagnostic services, establishment of the National TB Reference Laboratory and successful implementation of national TB disease and drug resistance surveys. As Technical Advisor to the NTP, she provides guidance on policy making, planning for roll out of new diagnostics, programmatic management of drug resistant TB and surveillance of drug resistance. As a core group member of the Global Laboratory Initiative (GLI) and regional Green Light Committee (rGLC) for the Eastern Mediterranean region, she also contributes to the development of various handbooks, and tools and international TB review and monitoring missions. She has also served as member of several Guideline Development Groups (GDG) convened by WHO. The NRL Pakistan is currently involved in collaborative research projects with supranational reference laboratories (Milan and Antwerp).

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