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KNCV
TB | PLUS

**KNCV
TUBERCULOSIS
FOUNDATION**

ANNUAL REPORT 2022



KNCV TUBERCULOSIS FOUNDATION ANNUAL REPORT 2022



CONTENTS

1. Message from the Executive Director	5
2. KNCV at a glance	6
3. TB Elimination & Health Systems Strengthening	8
3.1 KNCV's innovation pathways and strategic approaches	8
3.2 Strengthening KNCV as a Knowledge Institute	11
3.3 KNCV's work in the Netherlands	13
3.4 KNCV's international projects	14
4. Operations Division	39
5. Monitoring & Evaluation	42
5.1 Innovations in research-epi methods and modeling	43
5.2 Health systems solutions	43
5.3 Stigma	44
5.4 Digital tools and electronic information systems	45
5.5 Vaccine readiness	45
5.6 Prevention	46
5.7 Early diagnosis (active) case finding and access to care	46
5.8 Diagnostics	47
5.9 Treatment and care	
5.10 Progress towards the End TB 2025 targets in selected countries	49
5.11 Additional M&E indicators	51
6. KNCV Network	53
7. Organizational Report	56
7.1 Social Report	56
7.2 Works Council	56
7.3 Integrity systems	58
7.4 Quality systems	58
7.5 Risk Management	59
7.6 Resource Mobilization, Private Fundraising, and Advocacy	59
7.7 Communication with stakeholders and the public	60
7.8 Corporate Social Responsibility and Sustainable Development Goals	61
7.9 Information Security and issues report 2022	61
7.10 Local Legal, Tax, Regulatory and Financial Reporting Requirements	61
7.11 Security	62
8. KNCV Governance	63
8.1 KNCV Supervisory Governance Structure	63
8.2 Supervisory Governance Report Letter from the Chair and the Vice-chair of the Board of Trustees	64
9. Finances	67
9.1 Financial Highlights 2022	67
9.2 Financial statements	69
9.3 Outlook – Budget 2022	74
Annex 1: KNCV Partners	76
Annex 2: Policy Bodies in which KNCV was active	80
Annex 3: Scientific publication list 2021	82
Annex 4: Abbreviations	86

The hard work and resilience of our entire staff and management team have created significant successes in 2022

Mustapha Gidado,
Executive Director
KNCV Tuberculosis Foundation

MESSAGE FROM THE EXECUTIVE DIRECTOR

2022 saw a partial recovery global TB prevention and care activities (as reported by WHO (2022 report)). The impact of COVID-19, conflicts around the globe, increasing numbers of fragile states, and climate change, are, however, are still making it difficult to get the End TB targets back on track.

10.6 million persons currently have active TB infections: a 3.6% increase in the incident rate. 1.6 million persons died due to TB in 2021. This is a burden on the individuals, their families, and society. We are all challenged to step up with a sense of urgency and treat the TB pandemic as a “crisis”. The upcoming second United Nations High-Level Meeting on TB in 2023 provides an opportunity to energize global leaders and convince them that ending TB is feasible, particularly in light of what was achieved with COVID-19.

For KNCV, the last three years (2020, 2021, and 2022), can be characterized as: disruptive, reflective/adaptive, and focused on stability and growth. Through strengthening the KNCV Network organization, our expertise is closer to the field than ever. The hard work and resilience of our entire staff and management team have created significant successes in 2022: acquiring new grants, project implementation, financial management (including good audit results), generating and disseminating evidence to support new drugs and treatment regimens, and lastly closing the year within budget. In collaboration with partners and donors, we have been better at utilizing data for planning, improved in-country capacities for quality TB programming, and worked to scale up and optimize of innovations and tools (diagnostic network optimization, Genome-sequencing, digital X-rays, 3HP, and BPaL/M). KNCV recognizes that the process of strengthening the organization relies on the competencies, experience, and wellbeing of all of our staff. We will continue to pay attention to knowledge transfer within the

KNCV Network: project management and reporting, automation and use of digital solutions for optimal implementation and reporting, and maintaining our staff's work-life balance.

We are also ready for another significant change! From 12 March 2023, KNCV Tuberculosis Foundation also becomes KNCV TB Plus. Why did we feel this change was necessary? Because TB does not exist in isolation. Persons with TB are vulnerable to a range of infectious diseases and are affected by socio-economic determinants of health. Together we can end TB. The goal of KNCV TB Plus is to use all our comprehensive expertise, our best practices, and drive health care innovations to work towards global health for all, in a world free of TB and other related infectious diseases. KNCV will continue to ensure synergy with all global and national TB stakeholders in accelerating the recovery efforts for all TB activities. KNCV will support the uptake and optimization of innovations (including approaches) and new tools and medicines while generating and documenting additional evidence and best practices. I wish to thank all of our donors and partners for their confidence, trust, and financial contribution to the effort of ending TB.

I extend my sincere appreciation to all front-line healthcare workers, community volunteers, and projects staff for the effort and dedication to our collective dream of “ending TB”. We are looking forward to global solidarity and appropriate investment in TB services. Together we can end TB.



Mustapha Gidado,
Executive Director
KNCV Tuberculosis Foundation

KNCV AT A GLANCE

Who we are

KNCV Tuberculosis Foundation (KNCV), is an international non-profit organization dedicated to the fight against tuberculosis (TB), Anti-Microbial Resistance (AMR) and TB related health problems.



Expenditure on mission in 2022

€ 15,200,000



3 Diseases

- Tuberculosis and related health problems
- COVID-19
- Antimicrobial Resistance (AMR)

Mission

Our mission is to end human suffering due to TB through the global elimination of tuberculosis, AMR and TB related health problems.



3 Sources of Inspiration:

- Engagement with affected communities, putting people first
- Global Movement for social justice and collaboration
- Role of technology and the digital environment

Vision

Our vision is to save lives and accelerate the decline of the TB epidemic through the implementation of effective, efficient and sustainable situation specific strategies that combine patient-centeredness with epidemiological impact.



3 Strategic Approaches:

- evidence generation
- policy development and strategic planning
- the development of supportive systems



3 Implementation Approaches:

- Technical assistance
- Project implementation
- Participation in global forums

How

KNCV is guided by its strategic plan, which aligns with global targets; KNCV collaborates and coordinates with both national and international public and private partners, working with NTPs and the MOH strengthening national health care systems.



14 KNCV Network Entities in 12 countries

60 Projects in 20 countries

21 Ongoing research projects

Some project results in 2022:

- 5 countries started implementation of COVID-19 self-tests.
- 6 countries demonstrated implementation of the PCF dashboard.
- Over 11,000 PLHIV and 2,000 persons in contact with people having TB accessed the 3 HP (12 doses) preventive treatment regimen.
- Till the end of 2022 in total 521 TB patients with advanced drug resistance have accessed the life-saving BPpL regimen through operational research.
- Over 10,000 patients benefitted from digital adherence support technologies in support of their TB treatment.
- 48 scientific publications



3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

The KNCV TB Plus (KNCV) Technical Division was transformed into the TB Elimination and Health Systems Innovations (TBE&HSI) division in early 2022. TBE&HSI consists of over 30 passionate professionals, dedicated to the fight against TB and related health problems such as Human Immunodeficiency Virus (HIV), Anti-Microbial Resistance (AMR), and Corona Virus Disease 2019 (COVID-19). TBE&HSI has a broad range of expertise including: quantitative and qualitative research; programmatic prevention and management of tuberculosis (TB) and related health problems; new diagnostics, drugs, and regimens; clinical management, patient support and stigma reduction; laboratory technologies and networks; education; mobile and digital health solutions and surveillance; strategic planning and advocacy; communication; and project management.

While still predominantly based in the Netherlands, an increasing number of TBE&HSI's experts are based in regional hubs and project countries in Africa, Central Asia, Eastern Europe, and in the Western Pacific.

TBE&HSI promotes effective, efficient, innovative, and situation specific strategies and solutions to eliminate TB

and related health problems. We undertake projects and carry out initiatives at both the national and international level. TBE&HSI collaborates closely with all stakeholders, importantly the World Health Organization (WHO), the Stop TB Partnership, National TB Programs (NTPs), donors, universities and other knowledge institutes, national and international Non-Governmental Organizations (NGOs), partner organizations and other civil society organizations.

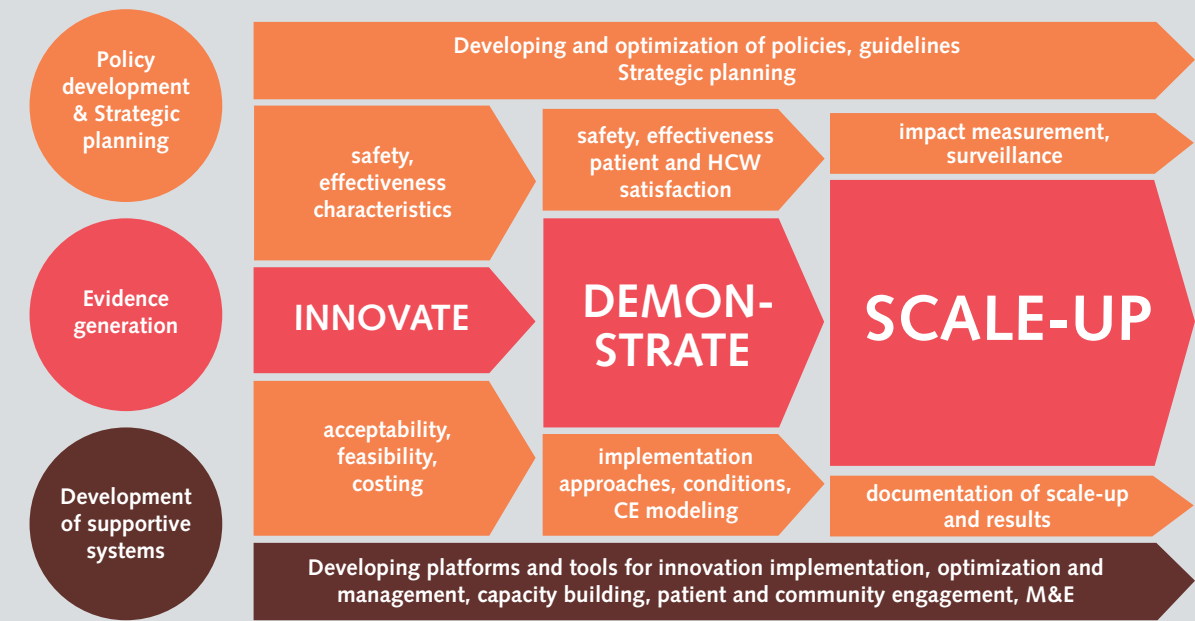
3.1 KNCV's innovation pathways and strategic approaches

KNCV defined nine innovation pathways in 2020. Through these innovation pathways, KNCV pursues the development, demonstration and scale-up of existing strategies and innovations that can accelerate the elimination of TB and related health problems around the world. This innovation is at the heart of KNCV's approach to ending TB.

KNCV's project portfolio covers the full breadth of the 9 KNCV innovation pathways. These innovation pathways and KNCV's development portfolio are set out in Table 1. Pathways 1 to 4 focus on peoplecentered health systems

Figure 1: Innovation at the heart of the KNCV approach to ending TB.

Innovation at the heart of KNCV action for elimination



Tabel 1

Innovate	Demonstrate	Scale-up
Conceptualization / proof of principle	Implementation in pilot areas	Implementation beyond pilot areas, other countries
1. Scientific methods		
	Improved methodology for TB prevalence surveys	
		Subnational disease burden estimates
Development of novel, user friendly modeling approaches		
2. Stronger health systems, data driven planning		
		PCF framework approach
	PCF dashboard	
	COVID-19 self-testing, and links to care and therapeutics	
	AMR stewardship - evidencegeneration	
3. Stigma reduction		
Stigma section WHO guideline on social protection		
	Allies approach	
TB Photo Voices method		
Inside out method		
4. Digital tools fitting each person's needs		
	DAT's	
	Home use ECG recording	
	Mobile and e-health diagnosis, monitoring, referrals, and care	
5. TB Vaccine preparedness		
Assessment tool for countries' TB vaccine preparedness		
Understanding role of the BCG vaccine in the prevention of TB infection and/or active TB disease		
6. Short TB preventive treatment		
		3HP treatment for TB prevention
	1HP treatment for TB prevention	
		Infection prevention and control
7. Active TB case finding and links to care		
		Engaging women in family TB care
	Involvement of urban communities in TB service delivery and care	
		Involvement of HIV support groups in TB service delivery and care
		TB- Diabetes bi-directional screening
	TB COVID bi-directional screening	
	Engaging adolescents in HIV care	
8. Improved diagnostics through optimized diagnostic networks		
		SOS stool processing methods to diagnose (Drug-Resistant) TB in children and PLHIV
Point of care TB triage test		
Decentralized use of sequencing for TB, AMR, and other infectious diseases		
		Roll-out of rapid molecular XDR testing
	Quality assurance for nonbacteriological laboratories	
9. Short and safe treatment for TB and DR-TB		
		Treatment of pre-XDR TB by BPaL
		Treatment of MDR-TB by BPaL based fully oral treatment regimens

3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

Apart from the innovation pathways, which provide strategic focus for KNCV resource mobilization and communication, KNCV pays attention to crosscutting topics that are relevant for all innovation pathways: children and adolescents, capacity building, AMR stewardship, COVID-19, HIV and Diabetes. More detailed information on

KNCV's progress delivering on the innovation pathways is provided in the Monitoring and Evaluation section of this Annual Report.

Figure 2 shows that crosscutting topics of interest are all paid attention to in a significant proportion of the projects.

Figure 2: Proportion of projects focusing on crosscutting topics of interest.

PROJECTS AND KNCV CROSS-CUTTING THEMES (N=46)

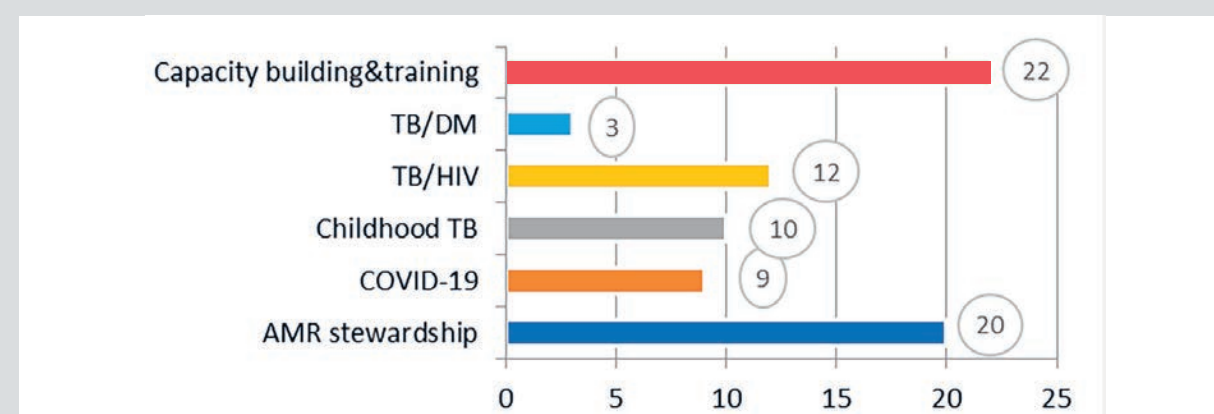
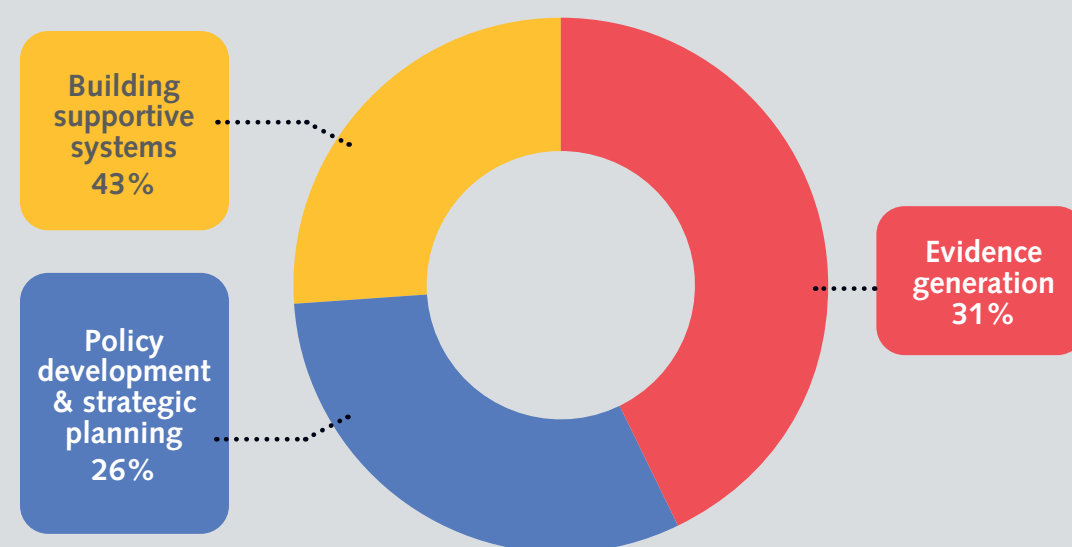


Figure 3: Distribution of approaches applied to KNCV's projects.



KNCV has defined three approaches that reflect the scope of KNCV's work. One or more of these approaches are applied in every project that KNCV undertakes:

- Evidence generation.
- Policy development and strategic planning.

- Building supportive systems.

The distribution of KNCV's work between these approaches is shown in Figure 3: illustrating that KNCV approaches are well applied across the project portfolio.

3.2 Strengthening KNCV as a Knowledge Institute

Research is increasingly at the heart of the KNCV work. With important support from a Dutch endowment fund, the Dr. C. de Langen Stichting Mondiale Tuberculosebestrijding, KNCV started strengthening its position as a knowledge institute in 2022.

Interventions and investments in 2022

KNCV: established an Internal Research and ethical review Board including external members (senior scientist and patient representative); recruited a qualitative researcher to strengthen overall qualitative research within the organization and junior research staff; assigned a technical team to track all research activities along the KNCV innovation pathway; and finally established a platform for discussion and dissemination of research activities. Over 2022, KNCV continued strategic dissemination of results, through 48 scientific publications, technical briefs, social media, its updated website, and videos for some technical areas for multiple use.

Collaboration with the academia

KNCV's contributed to TB knowledge exchange among the academic institution in the Netherlands and globally with three aims: capacity building on TB, engaging and generating interest of young professionals in TB work, and promoting KNCV work globally.

KNCV works with the Amsterdam Institute for Global Health & Development (AIGHD) and the University of Amsterdam on a collaborative project with one KNCV staff member conducting a PhD on TB vaccines. With Lund University, KNCV builds capacity on research generating evidence on adolescent HIV care in Ethiopia.

KNCV staff members are guest lecturers for:

- Royal Tropical Institute ("KIT") for both Master in Public Health and Tropical doctor participants (Masters): TB prevention and care with an emphasis on the End TB strategy.
- Leiden university Bachelor of Science (BSc) in global health: Application of global strategy using TB as a case study.
- Christelijke Hogeschool Ede: Global TB Control Strategy.
- Netherlands School for Public & Occupational Health

("NSPOH"): TB prevention and care for high-burden countries.

- VU Amsterdam University: TB containment (TB prevention and care) with emphasis on public health response.
- Obafemi Awolowo University Teaching Hospital Complex (OAUTH), Ile-Ife, Nigeria with support from the International Organization of Migration, strengthening training on TB through a series of webinars and exchange visits. An immediate spin-off is that OAUTH and KNCV have signed a Memorandum of Understanding on research.

Overall, over 250 students directly benefited from KNCV engagement with the academic institutions including providing opportunities for fieldwork for different levels of academic education. KNCV also worked with three Master of Science (Msc) students from Dutch universities as interns, as part of the evaluation of the PhArmacoVigilance Africa (PAVIA) project, in 2022.

One Msc intern collaborated on the Interferon Gamma Release Assay ("IGRAs") cohort study in the Netherlands and one doctor (an "Arts in Opleiding") undertook research as part of a Doctor of Philosophy (PhD) program in Community and Health (Maatschappij en Gezondheid) looking into the prevalence of TB and TB Infections (TBI) among foreign born contacts in the Netherlands.

KNCV continued supporting one PhD candidate from Vietnam, Dr. Nguyen Viet Hai, with a focus on analysis and publications and eventually the preparation of his defense, which he successfully concluded on the topic of "Tuberculosis in Vietnam – New and renewed insights", based on analysis of prevalence and tuberculin survey results from 2027 and 2018.

Global knowledge exchange platform

KNCV technical staff participated in global and regional platforms like the International Union Against Tuberculosis and Lung Disease (the Union) World Conference on TB and lung diseases with scientific presentation, coordination, chairing and presenting in different symposia and a workshop. And different WHO technical working groups and guideline development. At the 2022 Global Conference on Lung Health, three out of the top 10 highest scoring abstracts were authored by KNCV.



3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

Figure 4: Top 10 highest scoring abstracts at the 2022 Global Conference on Lung Health.

Top 10 (Highest Scoring) Abstracts	12:30 – 13:50 CET Digital adherence monitoring of tuberculosis treatment in Ukraine: analysis of adherence levels and patient-provider communication before and during the war in Ukraine.	11:00 – 12:20 CET Facilitating and inhibiting factors for the introduction of digital adherence tools for TB care: analysis of pilot data from a multi-country, cluster randomized trial.	12:30 – 13:50 CET The simple one step stool processing method to diagnose tuberculosis in children: data from a pilot study in general hospitals in Southern Ethiopia.	15:00 – 16:20 CET Assessing the use of a Vietnamese stigma scale among people with drug-susceptible – tuberculosis in Vietnam.
	16:30 – 17:50 CET Baseline and Acquired Resistance to Bedaquiline, Linezolid and Pretomanid, and Impact on Treatment Outcomes in Four Pretomanid-Containing Clinical Trials.	16:30 – 17:50 CET Household Costs Incurred Under Two Service-Delivery Models of Tuberculosis Preventive Therapy for Children: A Survey in Cameroon in Uganda.	15:00 – 16:20 CET Baseline and Acquired Resistance to Bedaquiline, Linezolid and Pretomanid, and Impact on Treatment Outcomes in Four Pretomanid-Containing Clinical Trials.	16:30 – 17:50 CET Facility-based TB Mentors Improve Childhood TB Diagnosis: Experience from Eradicate TB Project, Zambia.
WORLD CONFERENCE ON LUNG HEALTH 8-11 NOVEMBER 2022 WWW.WORLDSLUNGHEALTH.ORG				
			16:30 – 17:50 CET Client-centered interventions to reach persons at high risk of TB: lessons from Kampala, Uganda.	16:30 – 17:50 CET The impact of COVID-19 on TB testing and diagnosis in children and adolescents in the Western Cape Province, South Africa.
				16:30 – 17:50 CET Integrating tuberculosis screening into the national immunization program to improve childhood tuberculosis: result from a study in Anambra state, south-east Nigeria.

Looking forward to 2023

- We plan on taking the following steps in 2023:
- Establishment of a task force on knowledge management for effective coordination and monitoring.
 - Review and updating of all KNCV publications including technical guidelines and brief in the website for ease of access globally.
 - Investment in learning and management software for e-learning program.

3.3 KNCV's work in the Netherlands

KNCV has striven for high quality TB care for all TB patients in the Netherlands since its foundation in 1903. KNCV continues to provide technical advice on TB control in the Netherlands. KNCV participates in the quarterly meetings and working groups of the Netherlands Tuberculosis Control Policy Committee (CPT), and in various national and regional meetings with stakeholders in Dutch TB control. In 2022 KNCV led the CPT working group that developed a blueprint for the implementation of screening for TBI among asylum seekers younger than 12 years old.

KNCV is also the secretariat of the Dutch TB control visitation committee. In 2022 this committee conducted a quality review of the Netherlands' municipal health services (GGD), organized by the Regional Expertise Center. KNCV, acting on behalf of the control visitation committee, is in the process of developing a quality standard to ensure uniform and evidence-based nursing care for TB and TBI patients in the Netherlands. This project is funded by ZonMw and is being undertaken in collaboration with TB nurses, doctors, and patients. A substantial part of KNCV's work in the Netherlands is

made possible by the 's-Gravenhaagse Foundation, who generously funded activities that directly support patients and contribute to awareness about TB. In 2022, using the Fund Serving Special Needs, KNCV provided financial support to 121 patients. This financial support covers costs such as food and travel, enabling and motivating patients to complete their treatment. Working through the Steering Group Lampion, KNCV undertook initiatives to improve access to health care for undocumented persons. We provided information and created awareness about TB among the general public through radio interviews, media activities, and the tuberculose.nl website. KNCV also hosted a platform for Dutch TB health care professionals to share experiences, knowledge, and research.

Being a knowledge institute, capacity building is an important focus area for KNCV: Especially in the Netherlands. In 2022, we organized a basic course on TB control for new TB nurses. A module on contact tracing is part of this training and was also attended by doctors. KNCV contributed to the refresher course for TB doctors and nurses. We also organized the yearly refresher course for public health medical technical staff together with their professional organization. 2022 was the first time since the start of the COVID-19 pandemic that most of the courses were held in person. KNCV also conducted interactive lectures on TB in several Dutch schools and universities: To support the development of new TB experts, to engage and generate interest for working in the TB field among young professionals, and to promote KNCV's international work.

The Netherlands' KNCV team also contributed to the master class for doctors in infection control and the European Advanced Course on Clinical TB held in Helsinki.

3.4 KNCV's international projects

3.4.1 Introduction

Most of KNCV's work is focused on strengthening health systems and increasing access to effective, people centered prevention, diagnosis, treatment, and care for TB and related health problems in high TB burden countries. This is illustrated by the following stories highlighting results achieved through the different projects.

Connecting Diaspora for Development (CD4D2) project

Funded by: International Office of Migration Netherlands

Project period: 2022 (8 months)

Institutional capacity building: Quality TB care: OAUTH, Ile-Ife, Nigeria.

CD4D2 engages diaspora to support the development of their countries of origin through the transfer of knowledge and expertise. CD4D2 focuses its' work on Iraq, Nigeria and Somalia. KNCV was engaged to develop a staff training program for TB care and to improve OAUTH's laboratory operation.

KNCV and a team of experts from OAUTH developed and implemented a 'quality TB care' training program for OAUTH staff. This training program included two components:

- An online training course consisting of 15 modules on different TB thematic areas. Each module was around 1 – 2 hours and a new module was rolled out every two weeks. 32 participants from a broad cross section of departments participated in the training sessions.
- A 10-day exchange program through which 5 OAUTH staff travelled in the Netherlands for training. This training included: advanced training on laboratory sequencing and the stool test for TB, a visit to Drug resistance TB facilities, and a discussion on WHO e-learning platforms.

KNCV conducted a laboratory assessment performed on site by two of KNCV's senior laboratory consultants. A TB generalist and a digital health consultant also conducted a site visit to facilitate knowledge exchange on the quality of TB care and laboratory practice, and developed a framework for the inclusion of TB indicators into the digitalization strategy and process of the institution. The OAUTH laboratory subsequently received laboratory equipment, including a 4-module Ge-

neXpert machine, Biosafety cabinet (Class II), and Loop-Mediated Isothermal Amplification for the Diagnosis of Pulmonary Tuberculosis (TB-LAMP) machine, provided through the Ministry of Health / NTP with support of The Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund), Institute of Human Virology, Nigeria ("IHVN"), and KNCV.

Following on from our work on this project, KNCV and OAUTH have signed a Memorandum of Understanding for future collaboration in the quality of TB care, knowledge/expertise exchange, and research.

During the project period OAUTH's testing capacity increased by 86%, there was an 84% reduction in error rates, and a threefold increase in the number of persons diagnosed with TB and enrolled in TB treatment.



Zambian NTP

Funded by: The Global Fund

Project period: 2022

KNCV is contacted to provide technical assistance to Zambia's NTP.

Despite the ongoing COVID-19 pandemic and its consequences on the health system, the Zambia NTP demonstrated better performance across most of the reportable TB indicators in 2021 through the implementation of resilient interventions. There was a significant increase in the number of presumptive TB patients identified and tested (increasing by 40% and 39% respectively compared to 2020). This translated to increased TB treatment coverage of 84%, and increased TB Preventive Treatment (TPT) uptake among People Living with HIV (PLHIV) (90%), and children (35%: a 7% increase compared to 2020), and treatment success rates of 91% and 75% for drug-susceptible and drug-resistance TB respectively.

These achievements were based on the implementation of various complementary interventions including active case finding (both facility-based and targeted community interventions using mobile trucks), engagement of pediatricians, laboratory network strengthening and specimen transportation, and establishing the weekly TB Situation Room.

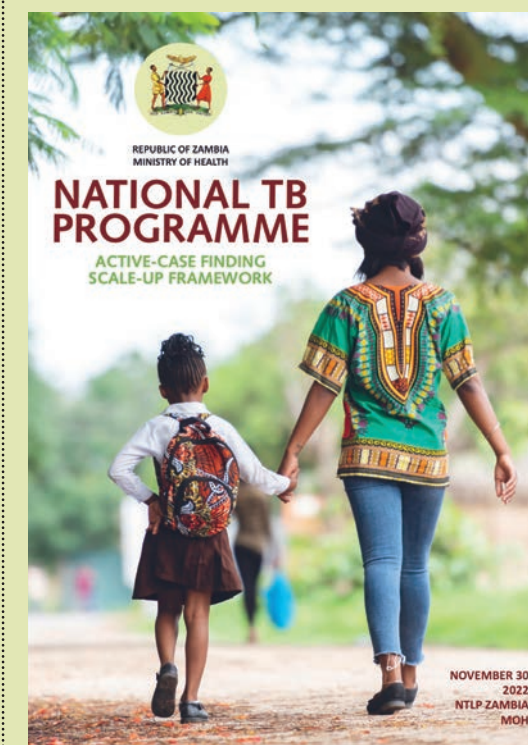
With The Global fund support, KNCV consultants, the NTP, and in-country TB stakeholders, achieved all the deliverables based on the terms of reference. The technical assistance provided an opportunity for: 1) capacity building and knowledge exchange for differential TB planning, using micro-planning at district and the provincial level; and 2) competency on the design, planning, and conduct of quality training guided by the principles of adult / experiential learning principles.

- a. Aligned national documents with WHO policies:
 - i. National guidelines based.
 - ii. National Standard Operating Procedures (SOPs) Algorithm for ACF CI, and TPT.
- b. ACF scale-up framework developed based on the analysis of the best practices with a differential approach to planning and micro-planning for the districts (District plan).
- c. Reviewed/Developed power points slide deck for training in collaboration with the NTP team and

partners including:

- i. General healthcare workers.
- ii. Provincial/district TB coordinators.
- iii. Civil Society and community-based volunteers.
- iv. Checklist/SOP on training planning and implementation.
- d. Supported two national training of trainer courses and training for the provincial/district NTP staff on leadership & management.

In the words of the NTP manager this technical assistance "brought about a paradigm shift in TB case finding and will endeavor to implement all the approaches to full scale."



3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

Development of the Begize digital application

Funded by: SAS-P foundation
Project period: 2010-2022

Supporting the development of digital application to facilitate TB care among children in hard-to-reach areas in Ethiopia.

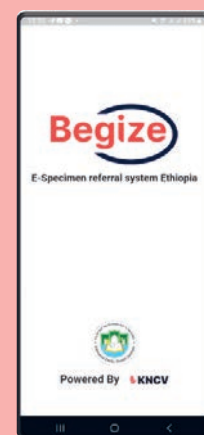
Building on the experience gained under the Painless Optimized Diagnostics of Tuberculosis in Ethiopian Children (PODTEC) project, the KNCV team, in collaboration with the Ethiopian Public Health Institute (EPHI), developed a mobile application system for facilitating specimen transport.

During the PODTEC project a digital solution, SITRUST (“Sistem Informasi Trekking Untuk transportasi”), was utilized to facilitate specimen transportation. SITRUST lacked an offline messaging function for areas with limited internet connection. The KNCV team proposed a local solution to address this challenge.

In collaboration with local technology developers and EPHI, KNCV developed a new digital application called Begize (meaning “on time” in the

Amharic language). Begize is now ready for implementation in three districts in Ethiopia under the PODTEC follow-on project.

The Begize application is also available in Google-play for wider implementation. The Eliminate TB from Ethiopia (ETBE) project is considering expanding the use of the Begize application to other regions and districts under the TB Elimination pilot study (described below).



ETBE project

Funded by: United States Agency for International Development (USAID)
Project period: 2020 – 2025

Leading a pilot study to help to define the requirements for TB elimination in high TB burden settings.

KNCV is a technical lead on this TB elimination project in Ethiopia. The project is led by Management Sciences for Health. One of the key technical areas KNCV is leading is

the DeMONSTRATE-TB pilot study. The goal of this study is to develop a TB elimination framework in Ethiopia. KNCV played a pivotal role in finalizing the study design, and obtaining research ethics approvals from accredited ethics review boards in Ethiopia and the United States. This was a crucial milestone in the study implementation plan for the launch in 2023. The recruitment of approximately 100 data collectors, procurement of supplies, refinement of data collection tools, and the organization of various study committees (including study advisory boards), is under way.

Study on antiretroviral therapy among adolescents living with HIV in Ethiopia

Funded by: Lund University
Project period: 2019 – 2023

Improving adherence to antiretroviral therapy among adolescents living with HIV.

This project is being undertaken as part of KNCV's collaboration with Lund University (signed in 2019). Together with Arba Minch University and Lund University, KNCV is supervising an implementation research project in Ethiopia aimed at improving adherence to antiretroviral therapy among adolescents living with HIV. A PhD student, recruited from Arba

Minch University, is leading the study at field level.

The study follows the Medical Research Council model of complex interventions to introduce digital solutions. The main trial phase commenced in 2022. 304 eligible adolescents have been recruited. KNCV conducted two monitoring visits to the study sites to ensure the study is implemented as planned. The PhD candidate has already published two papers and successfully defended his half-way study progress in August 2022. The progress of the study was presented during a KNCV lunch seminar in 2022.

Supporting, Mobilizing, and Accelerating Research for Tuberculosis Elimination (SMART4TB) project

Funded by: USAID
Project period: 2022 – 2027

Supporting the implementation of TB research activities to evaluate novel approaches, interventions, and tools to combat TB.

SMART4TB is a five-year initiative targeting USAID's 24 priority countries for TB programming. The goal of the initiative is to identify more effective methods and tools for finding, treating, and preventing TB. The initiative will build research capacity in high TB burden countries by supporting studies that evaluate novel approaches, interventions, and tools to combat TB.

Led by Johns Hopkins University School of Medicine, KNCV is one of the SMART4TB international consortium members along with University of California, San Francisco, Elizabeth Glaser Pediatric AIDS Foundation, and Treatment Action Group. KNCV is involved in supporting the implementation of research activities in all seven technical areas: Diagnostics, Treatment, Operational Research,

Prevention, Vaccines, Capacity Strengthening, and Dissemination and Advocacy.



KNCV and Kyrgyz State Medical Academy representatives in Washington DC planning meeting



3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

Case Studies: Bi-directional screening of TB and COVID-19

Funded by: SAS-P foundation
Project period: 2010-2022

Demonstrating the value of bidirectional TB and COVID-19 screening within the context of broader pandemic preparedness and response.

In partnership with national TB programs, KNCV conducted two case studies, one in Nigeria and the other in the Philippines to demonstrate the value of bidirectional TB and COVID-19 screening. TB care worldwide declined (18% reduction in TB case notification in 2019-2020) due to the COVID-19 pandemic. Bidirectional TB and COVID-19 screening was one of the key strategies implemented to mitigate the impact and ensure post-COVID-19 recovery of TB services. KNCV worked with Wellness on Wheels (“WoW”) in Nigeria. 1,931 people were enrolled in the Nigerian study. Of these 1,927 (99.8%) were screened (using a chest X-ray to scan for TB). The study identified three patients with TB, and 183 were found to be positive for COVID-19. In the Philippines, KNCV, working with multi-stakeholder support, tested patients, hospitalized with COVID-

The two case studies contributed to the global discussion on funding bidirectional TB/COVID-19 screening through resources available for pandemic preparedness and response.



Testing a person at one of the selected communities in Nigeria.

Regional DATs workshops

Funded by: Bill & Melinda Gates Foundation (the Gates Foundation)
Project period: 2022

Supporting the adoption of DATs through shared knowledge and experiences.

As a founding member of the Stop TB Partnership's global DAT Task Force (<https://tbdigitaladherence.org/>), KNCV is at the forefront of patient empowerment through the use of DATs. Through the DAT Task Force, KNCV collaborates with global and in-country partners on the patient-centered

approach for the use of DAT's. We provide guidance to countries on how to plan, budget and implement these technologies within their health-care systems.

As part of this initiative, KNCV organized two international DAT workshops (one for the African region and one for the Eastern Europe and Central Asia Region) attended by representatives from more than 20 countries. The workshop participants shared their experiences with the implementation of DATs and learnt how DATs can help patients in their countries.

Adherence Support Coalition to End TB (ASCENT) project

Funded by: Unitaïd
Project period: 2019-2023

Implementation of Digital Adherence Technologies (DATs) to support patients taking their TB treatment at home.

The ASCENT project, led by KNCV, facilitated country adoption and uptake of DATs, and to evaluate the effectiveness, acceptability, feasibility of the digital tools to generate evidence for their optimal use and future scale up. The project targeted DATs to support TB treatment for patients in five pilot countries: Ethiopia, the Philippines, South Africa, Tanzania, and Ukraine. DATs support adherence, and reduce the burden of TB treatment, for TB patients. Instead of daily visits to the TB clinic for Directly Observed Therapy, utilizing DATs, TB patients can take their treatment at home with virtual on-distance support. These technologies decrease the costs for patients and empower them to continue their daily life, while receiving support from healthcare workers as needed.

One of the most promising DATs is the 'smart pill box'. The TB pills are provided in the box and patients receive a text message and/or an audio-

visual signal (from the box) as a reminder to take their medicine. When the box is opened a signal is sent to the TB clinic so they can monitor adherence. Patients describe the smart pill box as a personification of their health care workers, and the health care workers see the box as an extension of themselves.

In Ukraine, the effect of the smart pill box has been even more striking. Due to the war, the access to health facilities and TB treatment has been a challenge. An increasing number of Ukrainians have, however, been able to use the smart pill box for their TB treatment. Patients see the box as a sign that they are not forgotten and that they are being (remotely) cared for. One Ukrainian nurse even said that the signal sent by the smart pill box when it is opened is used as a sign that the patient is still alive.

More than 15,000 patients in the five pilot countries have already benefitted from the use of the DATs due to the work of the ASCENT project. All five countries are planning to continue to use the DATs as part of their regular program support for TB patients. This is a tremendous achievement on its own, and a huge step forward for the adoption of DATs to support and empower patients around the world!

Xpert Mycobacterium tuberculosis (MTB) / Extensively Drug-Resistant Tuberculosis (XDR) testing project

Funded by: Bakhuis Rozenboom Foundation
Project period: 2019-2022

Verifying the performance of the Xpert MTB/XDR assay for the detection of Mycobacterium tuberculosis (M. tuberculosis) drug resistance.

The goal of this project, led by KNCV, was to verify the performance of the Xpert MTB/XDR assay for the detection of drug resistance of M. tuberculosis complex to fluoroquinolones and isoniazid

in respiratory and liquid culture specimens. The performance of the Xpert MTB/XDR assay was tested against the standard of care tests for drug resistance in Kyrgyzstan. Xpert MTB/XDR equipment was installed at the National TB Reference Laboratory in Bishkek. 362 tests were performed on sputum and cultured isolates: With line probe assay testing and phenotypic drug susceptibility testing performed on each sample. We are currently analyzing the data and a scientific publication on the study results is in preparation.

AIGHD research into the Bacille Calmette-Guérin (BCG) TB vaccine

Funded by: the Gates Foundation
Project period: 2021-2023

Partnering in research on the existing BCG TB vaccine to support new TB vaccine trials and inform policy around BCG revaccination.

For TB only one vaccine with varying protection is available. Until this day it remains unknown if the

currently used TB vaccine protects a person from getting infected or protects against a person getting sick from the infection. This research aims to understand how this protection actually works, by collecting and analyzing large datasets. This could speed up the development of TB vaccines and could also be relevant for knowledge of other diseases such as COVID-19.

No more pandemics project

Funded by: Nationale Postcode Loterij (the Dutch postal code lottery) through the Dream Fund
Project period: 2021-2026

Developing protocols for, and validation of, a new diagnostic standard for nanopore sequencing that can test for all infectious diseases.

The technology nanopore sequencing using MinION devices will initially be implemented and validated at central level in the Netherlands. Subsequently, the MinION will be introduced and validated in Kyrgyzstan, Tanzania and Vietnam. The project goal is to eventually contribute to achieving access for all patients to a new diagnostic standard that can test for all infectious diseases.

KNCV's work in 2022 focused on the operationalization of the nanopore sequencing test for individual patient diagnostics and the development of standard operating procedures, guidelines, and conditions for its' use. KNCV signed a fixed sales agreement with ONT for the flow-cells used in the MinION devices. The overall research study protocol has been finalized and adapted to the country-specific settings. The recruitment of staff in the project countries was completed and stakeholder meetings have been planned. In the Netherlands, nanopore sequencing is implemented in the two collaborating laboratories: Laboratory for Microbiology Twente Achterhoek (Labmicta) and the Netherlands' National Institute for Public Health and the Environment

(Rijksinstituut voor Volksgezondheid en Milieu ("RIVM")).

The main milestones in 2022 included the organization of training courses for project staff. Dutch project staff received training from ONT at a three-day in-person course on nanopore sequencing of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and, subsequently, a one-day online training on nanopore sequencing of M. tuberculosis. National reference laboratory staff from Tanzania, Kyrgyzstan, and Vietnam, participation in two training courses: Firstly, an online training course for nanopore sequencing data analysis, and a subsequent two weeks in person practical training course on nanopore sequencing. A total of eight participants from the three project countries were trained on the theory, laboratory procedures and data analysis of sequencing of SARS-CoV-2 and M. tuberculosis using next generation sequencing technologies.

The Dream Fund project and our initial results have been presented at three international meetings.



Pan-Africa network for genomic surveillance of poverty related diseases and emerging pathogens (PANGenS) project

Funded by: European & Developing Countries Clinical Trials Partnership (EDCTP)
Project period: 2023-2026

Using genome sequencing to understand disease aetiology, dynamics of disease transmission, and the evolution of drug-resistant pathogens.

The EDCTP selected the PANGenS project for grant preparation in December 2022. KNCV is one of the 19 partners in the project that will be

led by the Noguchi Memorial Institute for Medical Research at the University of Ghana. The main aim of the PANGenS project is to study the genomic epidemiology of TB, malaria, and emerging and re-emerging pathogens in Africa, to better understand disease aetiology, dynamics of disease transmission, and the evolution of drug-resistant pathogens. The project also aims to increase Africa's capacity in bioinformatics, genomics, genomics data management, biobanking, and promote data sharing.



The nanopore sequencing training organized within the framework of the Dream Fund project at Lab-micta, Hengelo, the Netherlands, 12 - 22 December 2022. During this training course, eight national reference laboratory staff members from Kyrgyzstan, Tanzania, and Vietnam were trained on the theory, laboratory procedures and data analysis of sequencing of SARS-CoV-2 and M. tuberculosis using next generation sequencing technologies.

Evaluation of the SeroSelectTB point-of-care test for TB

Funded by: EDCTP
Project period: 2000-2025

External quality control of the clinical trial of an innovative rapid point-of-care serological triage test for active TB.

A rapid triage test for active TB is the single biggest TB diagnostic priority advocated by the WHO strategy to end TB. KNCV is one of nine partners in the project, led by Professor Carol Holm-Hansen of the Norwegian Institute of Public Health, to evaluate the feasibility, accuracy, and effect of the

SeroSelectTB rapid point-of-care serological triage test for active TB. The test is being evaluated in high burden, HIVendemic African settings through a multi-center, parallel-group, randomized, and controlled trial.

KNCV is responsible for external quality control (EQA) of the clinical trial. Major milestones in 2022 include the in-person consortium meeting, in which KNCV organized a workshop on EQA, and the start of the enrolment of participants in Tanzania and Ethiopia (Participants were enrolled in South Africa in 2021).

Safety monitoring during drug resistant TB treatment

Funded by: GC Labs
Project period: 2021-2023

Improving the quality of non-bacteriological diagnostics and access to active Drug Safety Monitoring and management (aDSM).

The aim of the safety monitoring during drug resistant TB treatment project is to improve the quality of non-bacteriological diagnostics and access to aDSM services for national TB programs. KNCV

developed tools to assess both the procedures at non-bacteriological laboratories and the clinicians' aDSM knowledge.

KNCV used these tools to assess 10 laboratories in Kyrgyzstan and four in Vietnam. The assessment of the laboratories (and their respective clinicians) in Vietnam has been completed. The assessment of clinicians in Kyrgyzstan is ongoing. KNCV will issue recommendations on strengthening the aDSM services in Kyrgyzstan and Vietnam once the assessments and data analysis have been completed.

iDEFEAT TB PROJECT

Funded by: USAID
Project period: 2021-2023

Institutional strengthening to support India's objective to end TB in India..

KNCV is part of a consortium, led by the Union, supporting India's National Tuberculosis Elimination Program, through technical assistance, capacity building, e-learning, bridging gaps with human

resources, and for other critical needs.

KNCV is supporting the development of Centers of Excellence, through the creation of a benchmarking and assessment tool, and improving the clinical referrals process. KNCV is also supporting the development of an e-learning platform that would decentralize clinical support and transform conventional training: To provide easy access for all health care workers.



Increasing Market and Public health outcomes through scaling up Affordable Access models of short Course preventive therapy for TB (IMPAACT4TB) project

Funded by: Unitaid
Project period: 2019-2023

Supporting the introduction of new short term TPT regimens.

IMPAACT4TB, led by The Aurum Institute, is an international project that seeks to introduce new TPT regimens for persons with an inactive (latent) TBI. Unlike active TB disease, TBI is not contagious. Approximately 10% of people with TBI will, however, go on to develop active TB disease in their lifetime. Individuals with TBI are, therefore, a reservoir of potential future active TB disease within the population: this may lead to new TB outbreaks.

The IMPAACT4TB project is focused on the introduction and implementation of the new shorter-term 3HP TPT regimen (weekly doses of isoniazid and rifapentine for 3 months) for high-risk groups: PLHIV, young children, and the elderly, who have been in contact with persons with active TB disease.

KNCV acted as an implementation partner, working with the national TB and HIV programs, and local stakeholders, in Malawi, Ethiopia, Tanzania, and Indonesia to introduce the 3HP regimen.

KNCV is also implementing research to ascertain further evidence to support the expansion of short-course TPT coverage. This includes research on improved TPT service delivery models in child contacts (Ethiopia) and PLHIV (Malawi) and comparing the effectiveness and safety of the 1HP TPT regimen (daily doses of isoniazid and rifapentine for 1 month) vs. the 3HP TPT regimen in HIV-negative household contacts in Indonesia.

Sr. Shewaye, TB focal person and care provider in Bishoftu Hospital in Addis Ababa, notes it can be challenging to convince a family to give drugs

to a healthy child every day: “It was particularly difficult to convince them to give the medication for six months. Now, after the short course regimens have been introduced, it is easier to convince a family to start the treatments.” “Healthcare providers should prescribe the more convenient and shorter regimens whenever possible,” Shewaye adds. “Patients are more likely to complete a shorter treatment regimen.”



Sr. Shewaye, TB focal person and care provider in Bishoftu Hospital in Addis Ababa

IMproving Public health outcomes through enhancing Accelerated Access to Care and Treatment innovation for COVID-19 (IMPAACT4C19) project

Funded by: Unitaid and FIND
Project period: 2021-2023

Leveraging KNCV's expertise and partnerships to accelerate access to effective COVID-19 rapid tests.

The IMPAACT4C19 consortium is led by The Aurum Institute in partnership with KNCV and the Treatment Action Group. The project's goal is to improve access to effective COVID-19 rapid tests (antigen-detection rapid diagnostic tests (Ag-RDTs)) and new treatments, in Ethiopia, Ghana, Mozambique, the Philippines, and South Africa.

The IMPAACT4C19 consortium is seeking to achieve this goal through policy and regulatory support, technical support to ministries of health, supply chain and procurement assistance, and demand generation in communities.

The IMPAACT4C19 implementation partners are also building the evidence base for self-testing, to leverage digital tools for enhanced treatment and linkage to care systems, and to support ministries in implementing new guidelines on treatment and regulatory policies and program strategies informed by pandemic response.

KNCV works with our project partners to guide the project and strategy for research, diagnostics, and digital health for all five countries. KNCV also leads the project implementation in Ethiopia and the Philippines.

Over the past year, KNCV has conducted research in Philippines, Ghana, and Ethiopia, to assess the feasibility and acceptability of rapid-antigen self-tests. We expect to publish the research results mid-2023, however, this work has already had a significant impact. KNCV's initial research findings have, thus far, supported the introduction of COVID-19 self-testing guidelines in Ghana and Ethiopia. KNCV is also supporting training on new therapeutics guidelines and the roll out of updated care pathways, so that, as more COVID-19 treat-

ment drugs become available, the countries are able to move more quickly to introduce the new treatments into patient care.

In the Philippines, KNCV is supporting local government health units to pilot coordinated community roll out of approved self-tests. KNCV is also helping to improve capacity for facility-based rapid tests by providing diagnostics training for health care workers and supplying Ag-RDT tests to facilities to meet demand.

As a direct result of KNCV's collaboration with the ministry, Ethiopia has approved the use of three new COVID-19 therapeutics, and has placed an order for its first COVID-19 antiviral medication, molunupiravir. KNCV is supporting the roll-out of molunupiravir, and will monitor its effectiveness through an enhanced "Test and Treat" evaluation later this year.

KNCV is also leveraging digital tools already used in the five IMPAACT4C19 project countries to improve the COVID-19 response. These initiatives include: developing e-learning courses for case management, improving back end Digital Health Information Systems (DHIS2) systems and dashboards for better capturing of data, streamlining multi-disease response through TB and COVID-19 bi-directional screening apps, and providing telehealth, WhatsApp-based, and free interactive voice recognition (IVR) services for individuals.



Implementation of the KardiaMobile 6L device in Kazakhstan

Funded by: Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding, and the National Scientific Center of Phthisiopulmonology
Project period: 2021-2022

Implementation of an innovative digital home use, self-testing, device for Drug Resistant Tuberculosis (DR-TB) patients.

New and repurposed medicines have opened positive alternatives for DR-TB patients. These medicines for DR-TB may, however, impact the ventricular electrical systole (measured as the QT interval in the electrocardiogram (ECG)) in the patient's heart, which, if not addressed in time, may lead to life threatening arrhythmias.

ECG monitoring is an important part of aDSM for DR-TB patients on 'QT prolonging' medicines. Unfortunately, ECG access is limited to centralized settings in many countries. Such centralized testing can lead to long in-hospital stays and frequent

travel to health care facilities: Resulting in significant additional burden for patients, their families, healthcare workers, and the health system.

Recent advances in digital home use, self-testing, and ECG devices, mean that it is now possible to decentralize ECG monitoring for DR-TB patients. KardiaMobile 6L is a commercial, 6-lead electrocardiogram device that detects Atrial Fibrillation, Bradycardia, Tachycardia, and Normal Sinus Rhythm. This innovative technology allows patients to record their own ECG and transfer the data to the clinician via the internet using a mobile phone or tablet. Within minutes, the clinician is able to interpret the results and manage the patient's treatment regimen.

With KNCV's support, the Republic of Kazakhstan successfully implemented the decentralization of ECG monitoring using the KardiaMobile 6L device. The project demonstrated the feasibility of home use, self-testing, ECG monitoring.



PAVIA project

Funded by: EDCTP

Project period: 2018-2023

Improving systems to detect, assess, understand and prevent adverse drug reactions.

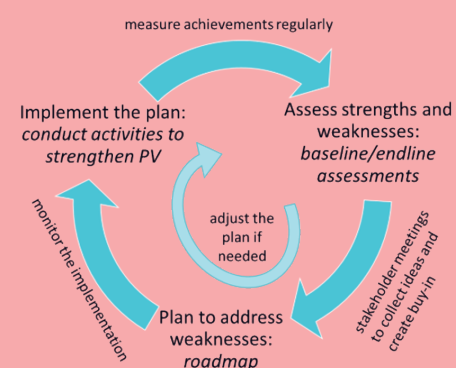
PAVIA was a project funded by the European Union under the EDCTP program. The project aimed to strengthen national pharmacovigilance systems in four sub-Saharan countries: Eswatini, Ethiopia, Nigeria and Tanzania. The PAVIA project's overall goal was to develop systems and approaches to improve the readiness of Sub-Saharan African (SSA) countries health systems to effectively deliver new medical products and to monitor the safety of these products.

Pharmacovigilance is the science and activities relating to the detection, assessment, understanding, and prevention of Adverse Drug Reactions (ADRs) or other drug-related problems. The ultimate purpose of pharmacovigilance is to prevent unnecessary suffering and improve the safety of patients receiving medication.

The PAVIA project started with the national TB programs, to catalyze the processes for aDSM of new medicines and other products.

KNCV led the monitoring and evaluation work stream within the project. This included a baseline assessment, followed by development of a road-map to address gaps and weaknesses identified at baseline, and an end-line assessment. The findings of each assessment were shared with the national medicine regulatory authorities. The national pharmacovigilance (PV) roadmaps included Specific, Measurable, Achievable, Relevant and Time-bound ("SMART") objectives. National stakeholders found this evaluation cycle very useful (see 'The role of the PV roadmap in PV strengthening: First-hand accounts' below).

Figure 5. Monitoring and evaluation cycle.



From left to right: PAVIA endline assessment team, including L. Härmak from the Netherlands PV center Lareb, E. Tiemersma and L. de Groot from KNCV, with staff from the Tanzanian Medicine and Devices Authority and the Kilimanjaro Clinical Research Institute; The Eswatini National PV policy was developed with support from PAVIA.



From left to right: A pharmacist explaining the risk of possible side effects to a patient when providing medication, Muhimbili hospital, Tanzania; Signs in the national infectious diseases hospital Kibong'oto, Tanzania; Clinician at DR-TB clinic in Matsapha, Eswatini.



1: A staff member of the Ethiopian National Pharmacovigilance Center at the Ethiopian Food and Drug Authority entering ADR reports in the national PV database;
2: Pharmacist filling a yellow form for the spontaneous reporting of an adverse event at Baylor Hospital, Mbabane, Eswatini.
3: PAVIA endline assessment team with pharmacovigilance focal person from the National Tuberculosis, Leprosy and Buruli Ulcer Control Programme in Nigeria and members of Abuja's DR-TB consilium.

The role of the PV roadmap in PV strengthening: First-hand accounts:



Eswatini

“We had a meeting where they brought the pharmacovigilance unit and the TB program together and we came up with a work plan, which actually helped us to facilitate activities, it was a big facilitator.”
– National TB Program DR-TB expert

“The roadmap was prepared for all types of programs which was found to be encouraging”
S. Getnet



Nigeria

“An entire roadmap! The first thing that happened was that we were able to look at the gaps. The next thing that happened was that we also looked at the strategic things that we needed to do to improve pharmacovigilance. The roadmap served as the basis for all meetings. So during the meetings, we would sometimes pick a particular activity, and look at the progress and focus on how we could address it, and who had assigned responsibility.”
– Staff of Medical Research Institute

Tanzania

“This roadmap assisted in defining and clarifying roles of key stakeholders taking part in the pharmacovigilance system. But also identify where the areas for evaluating resources are, and the areas in which skills need developing.” – Staff of National Pharmacovigilance Centre

“Whenever you prepare a strategy, it should clearly indicate detailed activities and assign a responsible body for each activity with a detailed time plan”
K. Sintayehu

“Now after ending the PAVIA, we will have to have monitoring and evaluation to evaluate ourselves to see if things are staying on track”
– Pharmacist of a tertiary care hospital

Ethiopia – Accounts from staff of the national pharmacovigilance center

“The roadmap is something which guides you to reach there. That is a major thing. The plans were prepared and executed based on the roadmap.”
“First, a situation analysis was conducted and gaps were identified and based on these, interventions were developed. These interventions have been implemented. This is the major reason for the changes.”
“Regarding the facilitators, there are many and most are related to the preparation of the roadmap. The roadmap enabled us to accurately indicate the activities that were successfully implemented and those that were not. This in itself is encouraging”

Directory of vaccine clinical trial sites

Funded by: EDCTP through Tuberculosis Vaccine Initiative
Project period: 2020-2022

Laying the groundwork for future TB vaccine trials

KNCV has created a directory providing a comprehensive overview of TB trial sites and potential im-

provements to support TB vaccine testing. Vaccine candidate testing (particularly vaccines in latestage development) relies on clinical trial center capacity around the globe. KNCV's directory of clinical trial sites provides information on the clinical trial centers' capacity, readiness and potential for expansion to other countries and continents as part of future clinical research for TB vaccine development.

Triage Test for All Oral DR TB Regimen (TriAD) operational study

Funded by: EDCTP
Project period: 2021-2026

Research into new diagnostic approaches for DR-TB

The TriAD study aims to assess the effectiveness, feasibility, acceptability, and cost effectiveness of the GeneXpert MTB/XDR assay for rapid triage-and-treatment of DR-TB. The TriAD study is operating in Ethiopia, Nigeria and South Africa.

KNCV is part of the study consortium, led by the Centre for the AIDS Program of Research in South Africa (“CAPRISA”), and supports the study in Ethiopia. Thus far KNCV has enrolled 28 patients from 5 hospitals in the study.

KNCV also developed a study protocol to assess the feasibility and acceptability (amongst health-care staff) of the TriAD approach. This protocol will undergo ethical review in early 2023.

Scale up of KNCV's Simple One Step (SOS) stool processing method for the diagnosis of childhood TB

Funded by: USAID
Vaccine Initiative
Project period: 2022-2023

Laying the groundwork for future TB vaccine trials

WHO has, since 2021, recommended the use of stool as a specimen type alongside sputum for both Xpert MTB/RIF and Xpert Ultra as the initial diagnostic test for TB and the detection of rifampicin resistance in children with signs and symptoms of pulmonary TB. KNCV led the development of the SOS stool processing method for Xpert testing, and, in 2022, WHO published KNCV's “Practical manual of processing stool samples for diagnosis of childhood TB”.

KNCV has also published a protocol to further investigate the robustness of, and further optimize, the SOS stool processing method. Studies are ongoing to verify and optimize the testing process. In addition, a model-based cost-effectiveness analysis was performed for the use of Xpert Ultra stool testing to diagnose TB in children in Ethiopia and Indonesia.

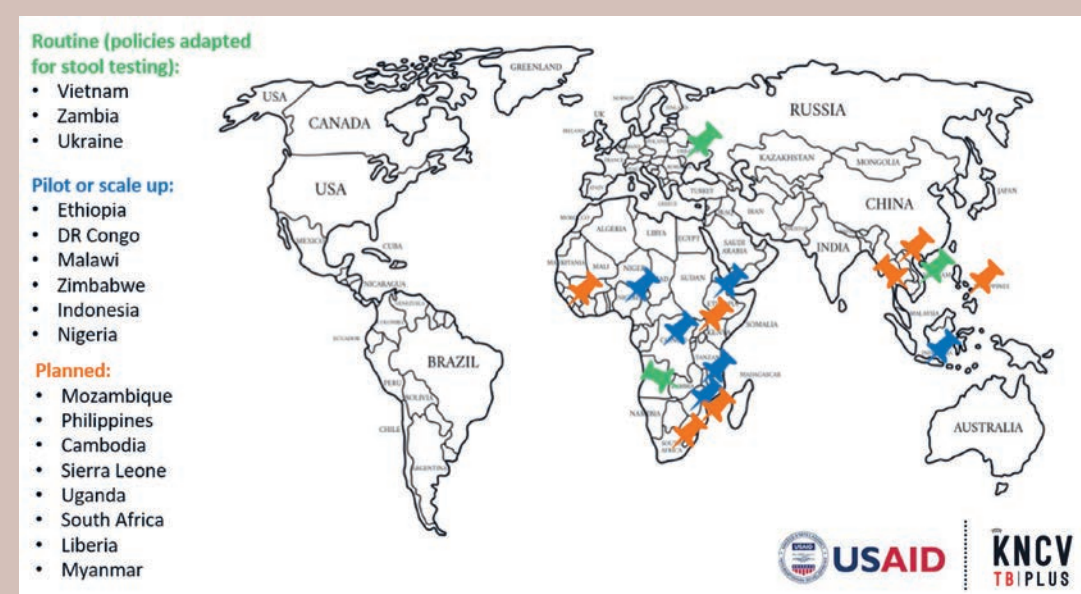
Three countries, supported by KNCV, have implemented the routine use of the SOS stool test into their policies. Six countries are currently piloting or scaling up SOS stool testing and further countries are planning pilots (see Figure 6). KNCV is providing training to support the implementation and scale-up of stool testing for the diagnosis of

3. TB ELIMINATION & HEALTH SYSTEMS STRENGTHENING

KNCV is providing training to support the implementation and scale-up of stool testing for the diagnosis of TB. In-country training sessions on the SOS stool processing method were held in Malawi and Zimbabwe. KNCV also provided 'training of trainers' courses for staff from the supranational reference laboratory in Uganda. It is the intention that these "master" trainers will train new trainers and, thus, accelerate the scale up of stool testing in Uganda.

KNCV also provided online training courses for Uganda and other countries and an introduction training session for Suriname. KNCV gave a presentation on the 'Perspectives on stool processing methods & KNCV's practical experience with implementation of stool testing' at the WHO regional consultation on the management of TB in children and adolescents for high burden and priority countries in the African region.

Figure 6. KNCV support for the implementation and scale up testing of stool for the detection of TB and drug resistance using the SOS stool processing method.



People-Centered Framework for TB Programming (PCF) initiative

Funded by: BMGF
Project period: 2019-2024

Refining the PCF tools and approaches for country implementation.

PCF aims to facilitate a systematic approach to country-led, data-driven planning, prioritization, and decision-making, for people-centered TB programming. KNCV has worked together with our global partners, including BMGF and WHO, since 2019 to develop, pilot, refine, and implement the PCF approach.

KNCV is supporting Ethiopia, Vietnam, Malawi, Nigeria, and Rwanda to use the PCF approach to develop optimized national strategic plans to support planning, programming, and resource mobilization. This work includes writing evidence based applications for The Global Fund for the period 2023 - 2025.

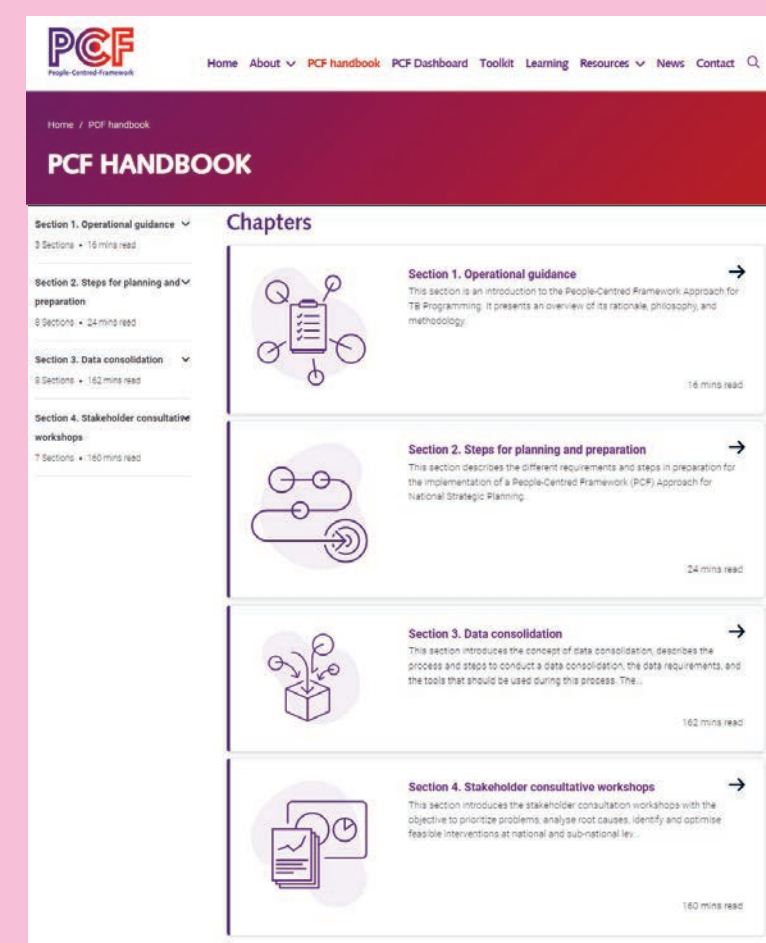
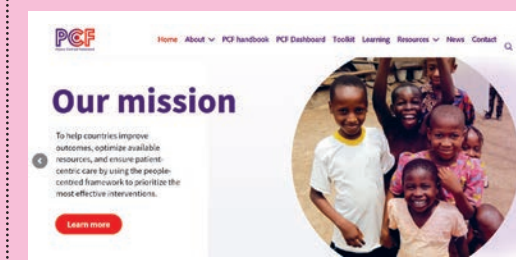
KNCV's support also includes data consolidation along the TB care continuum, a critical component of the framework. Local evidence is collated and examined with a deep dive into problem areas. The findings from this assessment are then pre-

sented to, and discussed with, key stakeholders to agree on the major issues, underlying causes, and proposed solutions. This work will continue into 2023 when most countries have scheduled their national strategic plan development and updates.

In addition to our work supporting implementing countries, KNCV concentrated on refining unique PCF tools and methodologies in 2022. This work included building the PCF knowledge hub to allow free information exchange with nations looking to accelerate their TB prevention and care efforts.

The PCF knowledge hub website acts as a one-stop shop for the PCF community of practice, giving access to all PCF information, tools, learning opportunities, and exchange of experience. The

PCF knowledge hub also contains links to other websites with information and resources that policymakers and partners might find useful when using the PCF approach for TB programming. KNCV maintains and continuously improves the PCF information in response to country experiences and user feedback, to ensure that the design, toolkit, processes, and resources are still relevant and continue to get better with use.



KNCV also released a PCF Handbook in 2022 to support national TB programs, and their partners, implementing the PCF approach. Using feedback and experiences from early adopter nations, the handbook is a holistic manual with step-by-step instructions, templates, tools, and "tips and tricks" to support the creation of optimal, evidence-based, and people-centered National Strategic Plans for TB programs. The guide supplements WHO Guidance for national strategic planning for TB.



KNCV also released a PCF Handbook in 2022 to support national TB programs, and their partners, implementing the PCF approach. Using feedback and experiences from early adopter nations, the handbook is a holistic manual with step-by-step instructions, templates, tools, and “tips and tricks” to support the creation of optimal, evidence-based, and people-centered National Strategic Plans for TB programs. The guide supplements WHO Guidance for national strategic planning for TB.

The deep impact of TB Stigma

TB Stigma is a set of negative, and often incorrect, beliefs around TB that places blame on people for having TB and causes shame. Frequently stigma is based on lack of information. People with TB face deep-rooted and persistent stigma. It is felt in different social environments including at home, in the community, and in the workplace, and can deeply affect TB patient's physical and mental health. TB related stigma is one of the main reasons why people delay seeking health care and why they interrupt their treatment. Health care workers can sometimes believe in TB Stigmas creating a negative impact on people with TB. It is, therefore, essential that health care workers have the right information about TB and a set of tools so that they can address and reduce TB Stigma.

Stigma intervention in Malawi

Funded by: USAID and Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding
Project period: 2022-2023

Reducing the stigma of TB.

KNCV provided stigma training in Malawi, using KNCV's Allies Approach, as part of the USAID funded TB Local Organizations Network-2 (“LON-2”) Malawi project. KNCV worked in partnership with Development Aid from

People to People (“DAPP”) and Facilitators of Community Transformation (“FACT”). Working with its' partners, KNCV will support the roll out of the Allies Approach and activities Approach in 21 facilities in 3 districts. Following the initial baseline assessment, KNCV provided a Training of Trainers course for 17 persons using the Allies Approach.

An endline assessment of the Malawi stigma intervention is planned for 2023.

Stigma intervention in Kazakhstan

Funded by: Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding
Project period: 2022-2023

Reducing the stigma of TB.

Following the initial baseline assessment, KNCV

trained 30 key opinion leaders, representing 16 primary health care facilities, on KNCV's ‘Allies Approach’ intervention package. These 30 key opinion leaders have started to roll out the Allies Approach to patients and health care workers in Astana city, Kazakhstan. An endline assessment of the Kazakhstan stigma intervention is planned for 2023.

KNCV's Stigma Tool Box

KNCV's philosophy on reducing stigma is built on developing empathy and mutual respect among communities, health care workers, and people with TB.

Our approach aims to reduce the tendency to label, blame, shame, and control others by strengthening the awareness of our own judgments. To do this, KNCV developed intervention tools to address stigma in a comprehensive way. KNCV rolls out these tools using a Training of Trainers approach.

The Allies Approach is an intervention package for addressing stigma in healthcare facilities and among health care workers. The tools (including the self-learning module) used in the Allies Approach were updated in 2022.

We also converted the Allies Approach into a package that can be used in the medical training program for doctors and nurses. This interactive learning module is structured around small groups of peers who meet on a regular basis to discuss exercises and/

or work through the exercises together. KNCV plans are to roll this out in Nigeria, in partnership with a Nigerian university. In addition to the Allied Approach, KNCV uses:

- TB Photovoices, a tool that helps people to tell their stories through pictures and to empower them.
- From the Inside Out, is a tool designed to help individuals identify, understand, and address self-stigma and anticipated stigma.

“...I was experiencing a huge stress. It seemed all was over. I stopped talking with family and friends. I became reserved and even asked doctors to provide me with a separate ward, because I did not want to see anyone. I dropped my hands, and I did not believe that I could recover. I started to feel depression: I wanted to take my own life. My family did not support me, and I realized that it was my fault.”

(Alexander, 45 years old, diagnosed with Multidrug-Resistant TB (MDR-TB))

“...When I finally got to the doctor she began to panic - that I had a contagious case of tuberculosis infecting others...” ... one year later I was diagnosed with tuberculosis again... At that time, I was pregnant. Nobody told me that during pregnancy it is possible to treat tuberculosis. I was sent for an abortion! In the gynecology ward I was put in the corridor and the whole department knew that I had tuberculosis. People just shied away from me. The gynecologist told me – “why such women like you are allowed to give birth?”

(Venera, 39 years old, diagnosed with MDR-TB, Kazakhstan)

DAT project in Nigeria

Funded by: Stop TB Partnership and USAID (via the Introducing New Tools Project (“iNTP”))
Project period: 2021-2022

Supporting the implementation of innovative DATs

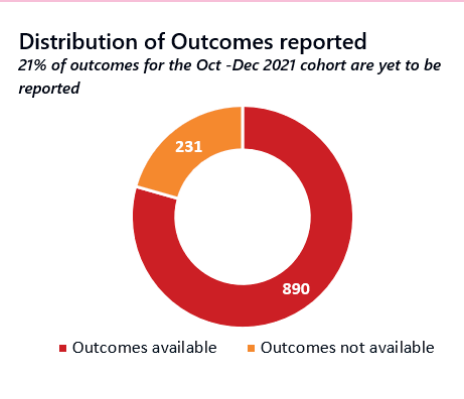
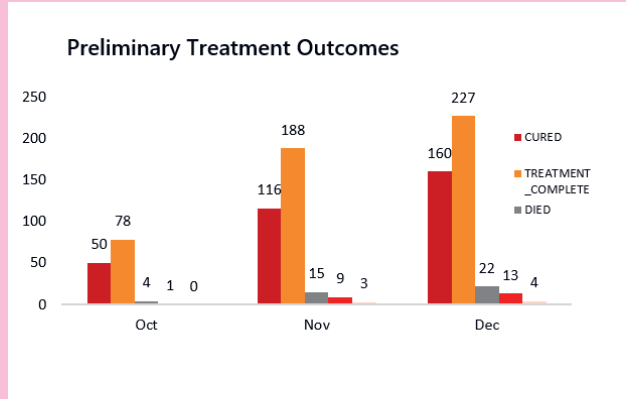
The DATs Project in Nigeria, led by KNCV Nigeria, piloted “99DOTS lite” TB treatment adherence tool. 99DOTS lite is a modification of 99DOTS using medication labels and Video Observed

Therapy. The 99DOTS lite pilot leveraged KNCV’s experience on the ASCENT project.

Implemented in eight states in Nigeria, 99DOTS lite gives the patient daily reminders to take her or his TB medication. In addition to these automated messages, TB patients are also supported by a NTP call center. A 92% treatment success rate was reported for the patients enrolled in the program between October and December 2021, based on the patient outcomes as at the end of the project.



Left: A Directly Observed Treatment, Short-course (“DOTS”) officer counseling a TB patient using the adherence calendar. Center: National Coordinator of the Nigerian National Tuberculosis and Leprosy Control Program, Dr. Anyaie, and Executive Director of KNCV Nigeria, Dr. Odume, supervising DATs implementation in Anambra State. Right: NTP call center agent supporting DATs patients and DOTS officers via 3340.

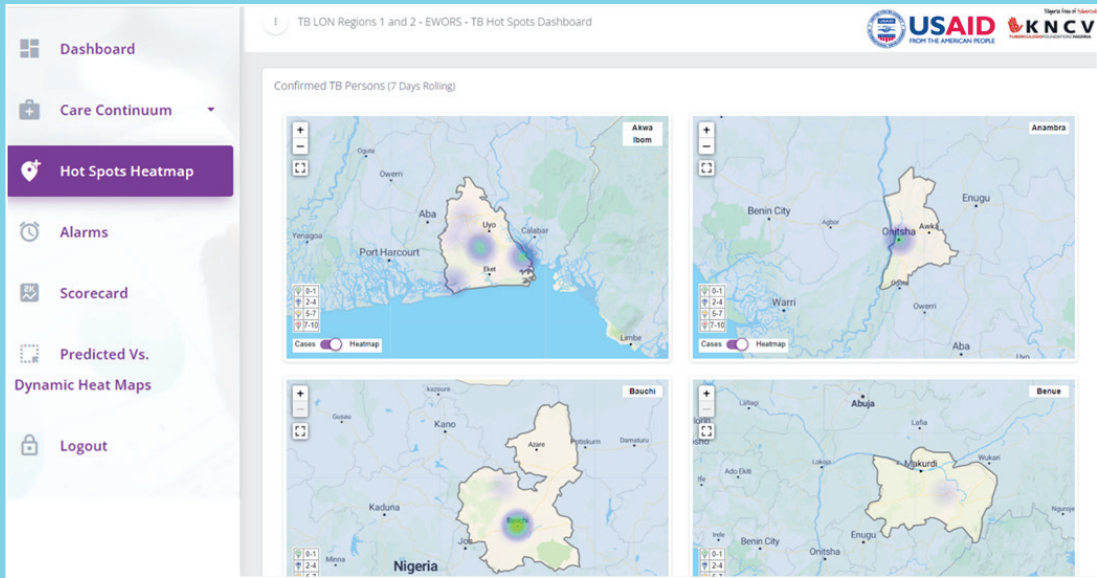


Early Warning Outbreak Recognition System (EWORS) in Nigeria

Funded by: USAID Local Organizations Networks
Project period: 2020-2022

Using EWORS to identify TB Hot Spots in Nigeria

KNCV Nigeria deployed EWORS to 14 states in Nigeria in 2021. The EWORS system detects infectious disease outbreaks and can be used as a case-based geospatial tool for real-time identification of TB hotspots. The system uses TB patients’ residential addresses to identify TB clusters, enabling it to predict areas with elevated disease spread (i.e. hotspots) at the ward level. Community TB screening in EWORS-mapped hot spot areas yielded a higher number of TB cases than the non-hot spot areas. The EWORS system was able to increase the precision of diagnosing TB among presumptive cases from 0.077 to 0.103. The number of presumptive cases needed to diagnose a TB case decreased from 14.047 to 10.255 per 10,000 people.



EWORS Application showing a TB hotspot ‘heatmap’ for 4 states.

Innovative Medicines Initiative 2 Joint Undertaking project

Funded by: Unite4TB
Project period: 2021-2028

Supporting the development of new treatment regimens for TB and a global clinical trials network for TB vaccines.

The Unite4TB consortium, led by the Radboud

University Medical Center, includes several international research institutes, NGO's and industry partners. The goal of the project is to accelerate the development of new treatment regimens for TB, and to deliver an efficient, global clinical trials network equipped to implement Phase 2 trials to the highest regulatory standards. KNCV is co-leading the work stream on DAT interventions.

4. OPERATIONS DIVISION

The Operations Division (Operations) supports the successful execution of KNCV’s external projects and KNCV’s country offices. We are a center of excellence within KNCV for project management, planning and budgeting, implementation, donor relationship management, and project monitoring and evaluation. Our purpose is to support KNCV’s projects and country teams, strengthen our relationships and coordination with KNCV’s donors and partners, and to ensure that KNCV maintains quality standards and delivers our project goals on time and on budget.

Operations was established as a separate division within KNCV in April 2022. The team consists of the Director of Operations and five Grant Managers. Five team members are based in the Netherlands, with one team member based in KNCV’s Kazakhstan office. The Operations team works closely with the country representative officers and the country staff to support and maintain quality standards in:

- Operations
- Logistics
- Legal and regulatory compliance
- Human resources
- Corporate governance
- Security

KNCV currently has branch offices in Ethiopia, Kazakhstan, Kyrgyzstan, Philippines, Tajikistan (in the process of closing), Tanzania, and Vietnam (the Malawi office closed on December 31st 2022). KNCV’s branch office in Kyrgyzstan supports the Kyrgyzstan national KNCV center of excellence.

KNCV has signed partnership agreements with national KNCV centers of excellence in Indonesia, Kenya (currently no active projects), Kyrgyzstan and Nigeria. On the project side, the Operations team works with the TBE&HSI and Finance and Administration (F&A) teams throughout the project lifecycle to maintain quality standards and support KNCV project teams through:

- Donor relationship management:
- Supporting proposal development
- Negotiating the donor contract
- Donor approvals for project work plans and budgets
- Compliance with donor policies and guidelines
- Financial reporting

- Project planning:
 - Project set up & extensions
 - Work plan development
 - Budget preparations
 - Risk identification and management
 - Project implementation support
 - Legal and regulatory compliance
 - Project monitoring and evaluation:
 - Financial oversight and reviews
 - Monitoring and evaluation of the project and progress against the work plan and budget
- In addition to its’ administration and project tasks, Operations is also responsible for supporting and strengthening the KNCV Network.

2022 Actions
The Operations team focused on supporting KNCV projects, country office management, proposal development, donor relations, the KNCV Network, and security issues in 2022:

KNCV projects
The Grant Managers and Technical leads co-lead the project teams. The Grant Managers are the budget holders. Operations holds weekly meetings with F&A and TBE&HSI and bi-weekly meetings with the finance manager and grant administrators to monitor KNCV’s project work, and coordinate and cooperate on our joint activities .

Country office management
Operations carried out a comprehensive review of the governance and country support required in each of KNCV’s branch offices. As part of this review the Operations team made visits to Tanzania, Ethiopia, the Philippines, and Malawi. Action lists have been developed for each country office and are being implemented by the country offices under the supervision of the Operations team.

Project extensions
Operations prepared and submitted additional funding requests in excess of United States Dollar 50,000 in 2022. These included a request for the Unitaïd funded ASCENT project and No Cost Extension requests for the Impaact4TB, and IMPAACT4C19 projects. Unitaïd approved all three requests.

4. OPERATIONS DIVISION

Donor relations

Operations organized stakeholder meetings for the ASCENT and Impaact4TB projects in South Africa. These meetings were attended by KNCV's project partners, donors, and NTP representatives. Operations also organized a stakeholder meeting for the Leveraging Innovation for Faster Treatment of Tuberculosis (LIFT-TB) initiative. This meeting resulted in a proposal to continue the LIFT-TB's Bedaquiline, Pretomanid and Linezolid regimen (BPal) programs into 2023.

KNCV Network

Operations efforts to support and strengthen the KNCV Network are set out in Section 6 "KNCV Network".

Security

The Operations team is responsible for the identification, mitigation and management of in-country security risks and KNCV's response to security incidents. The Operations team continued to work with the Global

Security Officer of Forth Global on security issues. The security plans for the Philippines, Ethiopia and Tanzania were reviewed together with the country teams.

The remaining security plans will be reviewed based on priority basis. Forth Global visited the offices in Ethiopia, Tanzania and Nigeria to advise on the country security plans and providing staff training.

Operations also established a core Crisis Management Team to address risks to KNCV's staff and projects resulting from the Ukraine crises. Regular meetings were held with KNCV staff, as well as implementing partner organizations in the region, until the situation stabilized.

Centraal Bureau Fondsenwerving (CBF)

Keurmerk certification

Operations and F&A worked with CBF Keurmerk (the quality mark for charities in the Netherlands) to confirm the renewal of KNCV's CBF Keurmerk certification.



5. MONITORING AND EVALUATION

Introduction

The KNCV 2020-2025 strategic Monitoring and Evaluation (M&E) framework monitors the progress along KNCV’s innovation pathways that contribute towards the common global goals and milestones to End TB, through evidence generation, strategic planning, evidence-based policy development and the building of supportive systems and human resource capacity. The narrative on achievements along the innovation pathways details the progress that has been made.

For the countries where there are KNCV country offices or local affiliated entities, KNCV monitors the national progress towards the End TB 2025 targets. KNCV contributes to these achievements by providing technical assistance for the development, demonstration and/or scale-up of strategic innovations.

Mid-term evaluation of implementation of the KNCV strategic plan 2020-2022

The Management for Development Foundation (“MDF”) conducted a mid term evaluation of the KNCV strategic plan in the period April-June 2022. This coincided with the introduction of new team structure at the division TBE&HSI as well as the split of the Finance and Operations Division into Operations and F&A.

Main evaluation questions

The evaluation team looked into the following questions:

- What social change do we observe and what effect does this have on the target groups?
- Are the connections in the KNCV Theory of Change still consistent with the reality that is observed?
- Are the change paths that have been chosen still the right ones?
- Are initial assumptions still corresponding with reality? Which new views on these assumptions arise?
- To what extent are the collaboration structures supportive to the long-term goal?

Main findings & recommendations

The evaluation confirmed that KNCV is well on track towards its 2025 goals. The evaluators found that clusters of the innovation pathways contribute to the overall KNCV goals in different ways: progress on the four innovation pathways that are more system oriented is a condition for achieving progress in the innovation pathways that have a more direct focus on service delivery (people centered interventions for vaccine readiness, prevention, access, diagnosis, and treatment). In all pathways, KNCV was found to be leading: internationally seen as an innovator, a partner that sees opportunities and brings substantial results. Strengths include local presence, respect for national/ local ownership, and belief in co-creation and a participatory approach.

KNCV’s strategic response to the COVID-19 pandemic was rapid and rightly developed with actual awareness throughout the organization of both its challenges and opportunities.

The evaluation also observed a need for improved strategic monitoring and communication on progress on the innovation pathways. The recent restructuring (2022) was found to better align the structure and systems to the strategy. The 11 KNCV Network of National Centers of Excellence and Branch Offices were identified as a core strength and important for branding purposes. Participation in global professional forums on TB was found to be essential for sustainability of KNCV work.

Over 2022 KNCV and partners made important progress along the KNCV innovation pathways. The first four innovation pathways are oriented towards the development of strong, effective, people centered systems enabling countries to End TB and related health problems. The next five innovation pathways focus on people centered services, ensuring access to prevention, diagnosis, treatment and care for TB, ensuring inclusion of adults, children and adolescents. For each of the innovation pathways a short narrative describes the main achievements, illustrated by a color-coded schedule, mentioning the main interventions. The meaning of the color-coding is explained in Table 2.

Table 2: Explanation of the color-coding.

Legend for the interpretation of the color coding	
Color coding:	The intervention is in the following phase:
	Conceptualization phase
	Proof of concept phase
	Demonstration phase
	Scale-up phase
	The intervention received WHO endorsement

5.1 Innovations in research-epi methods and modeling

During 2022 KNCV made progress on contributing to improving methodologies for TB prevalence surveys and participated in updating the WHO guidance on TB prevalence surveys and TB burden estimate methods. KNCV is in the writing team of the newest

edition of the WHO TB prevalence survey handbook. Initial steps were made to develop an innovative, user-friendly, transmission model, to enable country level utilization of modeling in planning. For this model, KNCV worked with the ETBE team in Ethiopia in fitting parameters to TB and HIV data. Additional modeling work included COVID-19 and TB modeling in Nigeria, and COVID-19 and BCG coverage impact modeling.

Table 3: NTPs apply improved methods and user-friendly tools to develop valid TB burden estimates and to optimize their TB response.

A. NTPs apply improved methods and user-friendly tools to develop valid TB burden estimates and to optimize their TB response	2020	2021	2022	2023	2024	2025
Improved methods for TB prevalence surveys	Proof of concept	Demonstration	Demonstration			
			WHO endorsed			
Methods for subnational disease burden estimates	Demonstration	Scale-up phase				
Development of novel, user friendly modeling approaches			Demonstration			

5.2 Health systems solutions

The PCF hub and the updated e-learning modules were finalized and disseminated through the PCF hub and social media. The PCF e-Learning, an easy follow self-paced learning, was launched and is freely available to countries. The scale-up of application of the PCF approach is ongoing with support from different partners including WHO and The Global Fund.

The use of the PCF dashboard is demonstrated in 6 countries in 2022. Supportive PCF tools and approaches were endorsed by The Global Fund and included in the upcoming TB information note for the New Funding Mechanism Round 4 proposal, due starting from 2023. At different occasions, KNCV presented the dashboard to countries and DHIS2

experts and received good feedback e.g. a request from Sierra Leone to explore implementation, University of Oslo to publish the dashboard in their next monthly newsletter, and an opportunity to include the dashboard in the University of Oslo app hub in 2023.

Policy development on the use of COVID-19 self-test has been supported in all 5 project countries. Feasibility and acceptability studies are ongoing to support evidence generation on the use of COVID-19 self-tests.

Under the IMPAACT4C19 project progress was made on providing and demonstrating access to COVID-19 diagnostics and linkage to care using digital tools. Under responsibility of KNCV: preparations were made for evidence generation, obtaining WHO

5. MONITORING AND EVALUATION

approval for the planned feasibility and acceptability studies. Self-tests were distributed, and supportive systems developed: guidelines were made with stakeholders and linkages with existing software was started in Ethiopia, including updated information on COVID-19 and linkage to care. This entails an approach to add translated voice prompts to cater to local languages. In Mozambique, the pilot of the DHIS2 based tracker app for bidirectional screening in selected community health posts continue.

To generate evidence on effective approaches for AMR stewardship, this year KNCV completed a systematic review on lessons from TB for AMR management and submitted the paper in PloS One (under review).

On capacity building, KNCV has developed together with WHO three e-learning courses for key resource persons at national / international level to implement WHO guidelines and handbooks. KNCV applied its experience to the many training sessions that were developed during the year.

Table 4: Stronger health systems, data driven approaches to planning and evidence based services delivery for TB and related health problems.

B. Stronger health systems, data driven approaches to planning and evidence based services delivery for TB and related health problems	2020	2021	2022	2023	2024	2025
PCF framework approach	Proof of concept	Demonstration	Scale-up			
		WHO endorsed				
PCF dashboard	Conceptualization	Proof of concept	Demonstration			
COVID-19 self testing, linkage to care and therapeutics		Conceptualization	Demonstration			
AMR stewardship - evidence generation on effective approaches		Conceptualization				

5.3 Stigma

KNCV contributed to policy development on stigma, writing a chapter of WHO guidance on social protection. In addition, KNCV is performing a demonstration project to generate evidence on the effect of stigma reduction interventions in health facilities in Malawi, Kazakhstan and Nigeria (the Allies

approach). The existing KNCV e-Learning tools on stigma are being updated and will be available online Q1 2023.

The Inside-out method, developed by KNCV and partners, for the reduction of self-stigma was externally validated in Vietnam. However, a larger study is needed for conclusive results, as, due to COVID-19,

Table 5: NTPs apply proven tools to reduce TB related stigma in health facilities, patients, and communities.

C. NTPs apply proven effective tools to reduce TB related stigma in health facilities, patients and communities.	2020	2021	2022	2023	2024	2025
Stigma section WHO guideline on social protection		Conceptualization				
Allies approach	Proof of concept		Demonstration			
TB Photo Voices	Proof of concept					
Inside out	Proof of concept					

5.4. Digital tools and electronic information systems

Over 15,000 patients have been enrolled on TB treatment with support of DAT in over 230 facilities in the 5 ASCENT countries (Ukraine, Philippines, Tanzania, Ethiopia, South Africa). Dissemination of early project results was done during several in-country meetings and international meetings (e.g. WHO Stakeholder Consultation on Digital Health). The first scale-up of the use of DATs in support of TB treatment was achieved in the Philippines and Ukraine. In Philippines and Tanzania we demonstrated the proof of concepts to exchange adherence data with existing systems, further supporting the development of a backend supportive system for standardized smart pillbox data storage, processing and use.

Evidence generation continued as part of the ASCENT project, with multiple sub-study results published in international peer-reviewed journals and presented during the Union conference in the study. As part of the Global DAT Task force, KNCV facilitated expansion of the global task force with new members. Two regional DAT workshops for NTPs and

implementing partners were facilitated in Eastern Europe / Central Asia and Africa, preparing for scale-up.

Under the Unite4TB project KNCV, in collaboration with Janssen Pharmaceutical NV, continued the development of the DAT component in support of clinical trials, facilitating innovative ways to monitor clinical research. The DAT Task Force developed and updated supportive tools for countries implementing DAT's and specifically in combination with the programmatic introduction of BPaL. To facilitate uptake of DATs during the next round of The Global Fund grants, French and Spanish translations were added to The Global Fund briefing note on DAT selection and budgeting.

As part of the IMPAACT4C19 project, several digital health supportive systems have been updated, adapted and demonstrated in the Philippines, South Africa, Ethiopia, Ghana and Mozambique for the use of COVID-19 self-tests. These supportive systems included innovative use of IVR based support lines, WhatsApp chatbots and DHIS2 tracker for bi-direction screening of COVID-19 and TB.

Table 6: NTPs apply evidence base digital tools to facilitate people's access to information, health services and effective care for TB and related health problems, fitting each person's needs.

D. NTP's apply evidence based digital tools to facilitate people's access to information, health services and effective care for TB and related health problems, fitting each person's needs.	2020	2021	2022	2023	2024	2025
DAT's	Proof of concept	Demonstration	Demonstration			
			WHO endorsed			
Home based ECG recording	Proof of concept	Demonstration	Demonstration			
Mobile and e-health facilitating health seeking, diagnosis and linkage to care			Demonstration			

5.5 Vaccine readiness

KNCV contributed to evidence generation on TB vaccines by conducting an individual patient data meta-analysis of the effect of BCG (ongoing) and updating and publishing the TB vaccine clinical trial directory. Several organizations showed interest in the directory. KNCV contributed to advancing future global TB vaccine uptake through finalizing a study

on the acceptability and feasibility of TB vaccine introduction in China, India and South Africa and contributing to studies on the feasibility of novel adult TB vaccination in South Africa, including on cost-effectiveness and budget impact analysis. Under the SMART4TB project KNCV contributed to the development of a work package on strategic planning and policy development for vaccine preparedness.

5. MONITORING AND EVALUATION

Table 7: Designing approaches to ensure access to new or repurposed TB vaccines through people centered vaccine delivery strategies.

1. Designing approaches to ensure access to new or repurposed TB vaccines, through people centered vaccine delivery strategies	2020	2021	2022	2023	2024	2025
Assessment tool for countries' TB vaccine preparedness	Conceptualization	Proof of concept				
Understanding role of BCG re prevention of infection and/or disease						

5.6 Prevention

In Malawi, KNCV provided technical assistance and mentorship for the implementation of the Finding, Actively, Separating, Treating ("FAST") approach aimed at reducing transmission of TB in health facilities through early identification, diagnosis, and treatment of people with TB. The year 2022 saw the successful conclusion of the IMPAACT4TB demonstration project. This project introduced TPT with a 3-month, 12 dose, once weekly treatment in Ethiopia, Indonesia, Malawi, and Tanzania. Within this project, Evidence generation on safety, uptake, completion, and service delivery of the 3HP

regimen is ongoing in Ethiopia. In Indonesia a new demonstration study with a one-month TPT regimen is starting up. In follow-up of this work, through The Global Fund funding, KNCV is providing technical assistance to strengthen TPT and introduction of shorter TPT regimens in Ethiopia (also with ETBE USAID funding), Nigeria, Tanzania, and Zambia; this short-term project provides an opportunity for scale-up in countries beyond the IMPAACT4TB demonstration countries.

In addition, KNCV provided technical assistance with The Global Fund assignment to the scale-up of infection prevention and control measures in Zambia.

Table 8: People have access to short, effective, and safe TPT, tailored to their needs.

2. People have access to short, effective and safe TB preventive TB tailored to their needs	2020	2021	2022	2023	2024	2025
Use of 3 month once weekly treatment regimen 3HP	Demonstration	Demonstration	Scale-up			
		WHO endorsed				
Use of 1 month daily treatment regimen 1 HP		Demonstration	Demonstration			
		WHO endorsed				
Infection prevention and control			Scale-up			

5.7 Early diagnosis: (active) case finding and access to care

In Ethiopia the engagement of women in diagnosis of TB and childhood TB was demonstrated to be successful. The results were published. Also in Ethiopia, effectiveness of the TB/DB bidirectional screening approach was demonstrated and published. The rollout of this screening is now included in the national policies for scale-up beyond project sites, with mainstream funding. Based on the demonstration project data, a TB/DB risk-scoring chart is under development for inclusion in a digital tool. In Ethiopia, KNCV is involved in developing an

innovative approach to engage urban communities to access TB preventive, diagnostic and treatment services as part of the ETBE project.

In Malawi KNCV supported engagement and capacity building for HIV support groups in TB care. In collaboration with Lund University, KNCV is supporting a PhD candidate on a randomized trial of an innovative approach to engage adolescents in HIV care in Ethiopia. In Vietnam KNCV assessed TB case finding against the background of the ongoing COVID-19 pandemic, with special attention to case finding of TB in children, learning lessons for future expansion of successful practices. Publications on the recent Vietnam TB

prevalence survey and the 2007 national tuberculin survey (Nguyen ao, BMC Infect Dis. 2022;22(1):506) and (Nguyen et al, Clin Inf Dis, accepted for publication) contribute to the development of effective

community screening algorithms; The TriAD study started enrolling patients on treatment by combining Xpert Ultra testing with the Xpert XDR test as a reflex test in Ethiopia with support from KNCV.

Table 9: People access to TB services through community owned approaches for active case finding and linkage to care.

3. People access to TB services through community owned approaches for active case finding and linkage to care.	2020	2021	2022	2023	2024	2025
Women engagement in family TB care	Proof of principle	Demonstration	Scale-up			
Involvement of urban communities in TB service delivery and care			Demonstration			
Involvement of HIV support groups in TB service delivery and care			Scale-up			
TB- Diabetes bidirectional screening	demonstration	Demonstration	Scale-up			
TB COVID bidirectional screening			Demonstration			
Novel approach to engaging adolescents in HIV care		Proof of principle	Demonstration			

5.8 Diagnostics

In 2022, as an essential step in policy development, WHO endorsed the SOS stool processing method for Xpert testing, developed by KNCV. Further evidence was generated on the cost-effectiveness of the method (Mafirakureva et al. 2022) and a protocol to further investigate optimize the method developed (de Haas et al. 2022). KNCV provided trainings to support the implementation and scale-up of stool testing for the diagnosis of TB in various countries.

In Nigeria and Ethiopia KNCV developed supportive systems, by strengthening the management and operationalization of the TB diagnostic network, including the introduction of cartridges for the detection of XDR by Xpert testing. In Kyrgyzstan KNCV worked on the local validation of Xpert XDR testing.

Within the framework of the Dream Fund project "No more pandemics", supported by Nationale Postcode Loterij, study protocols and standard operating procedures were developed and staff was trained to support the introduction of an innovation; genome sequencing for routine diagnostics by using portable nanopore sequencing devices. The aim of this project is to demonstrate this diagnostic innovation in three low middle-income countries at decentralized level. The

preliminary work was presented at two large European congresses.

The PAS4AMR research project, focusing on nanopore sequencing, was approved for funding through the Dutch TKI - LSH publiek-private samenwerking (public private partnership) match call. In this project we aim to develop an innovative sequencing methodology for the surveillance of AMR.

Within the framework of the GC labs demonstration project, non-bacteriological laboratories in Kyrgyzstan and Vietnam were supported to establish quality assurance mechanisms to strengthen their supportive systems for aDSM of patients on new anti-TB drugs.

In 2022, enrolment in the SeroSelect study started in Tanzania and Ethiopia. In this study, that was already ongoing in South Africa, a clinical trial is performed to evaluate a true point of care triage test for TB. If successful, then this test could become an important innovation in TB care. KNCV provides laboratory quality assurance for this study.

Under the SMART4TB project a work plan was developed for the multi-center evaluation of innovative point of care diagnostics.

5. MONITORING AND EVALUATION

Table 10: People access diagnosis of TB close to their homes through evidence based, rapid, diagnostics utilizing optimized diagnostic networks.

4. People access diagnosis of TB close to their homes through evidence based, rapid diagnostics, through optimized diagnostic networks	2020	2021	2022	2023	2024	2025
SOS stool processing methods to diagnose (DR) TB in children and PLHIV	Demonstration	Demonstration	Scale-up			
			WHO endorsed			
Point of Care (POC) TB triage test	Proof of concept	Proof of concept	Proof of concept			
Decentralized use of sequencing for TB, other infectious diseases and AMR	Conceptualization	Proof of concept	Demonstration			
Roll-out of rapid molecular XDR testing			Scale-up			
			WHO endorsed			
Quality assurance for non bacteriological laboratories			Demonstration			

5.9 Treatment and care

Under the LIFT-TB and SMT projects, KNCV continued to provide support to the implementation of BPAL based regimens in 8 countries. Approximately 500 patients will have been enrolled by the end of the year. At the same time KNCV actively supports countries in preparing BPAL scale-up and early uptake of the new WHO recommendations as formulated in their rapid communication (May 2022) on the programmatic implementation of BPAL and Bedaquiline, Pretomanid, Linezolid and Moxifloxacin (BPALM) treatment regimens. KNCV is developing and updating supportive tools, like the generic BPAL and BPALM protocols, clinical guideline and FAQ to be in line with the WHO Rapid Communication to support countries update their respective national guidelines.

In India (IDefeat project) KNCV is providing technical assistance to the development of supportive systems, by drafting a document on “Measuring effectiveness of the different DR-TB regimens used by the National TB Elimination Program” and operationalizing an international clinical knowledge/ expertise sharing

Table 11: People receive effective, short, and safe treatment for TB and drug resistant TB close to their homes with support tailored to their needs.

5. People receive effective, short and safe treatment for TB and drug resistant TB close to their homes with support tailored to their needs.	2020	2021	2022	2023	2024	2025
Treatment of pre-XDR TB by BPAL	Demonstration	Demonstration	Scale-up			
	WHO: ops research		WHO endorsement			
Treatment of MDR TB by BPAL based fully oral treatment regimens			Scale-up planning			
			WHO endorsement			

platform. Under the Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding project “Mobile ECG in Kazakhstan” the feasibility of remote monitoring of ECG, relevant for the treatment of drug resistant TB, was demonstrated.

This year the endline assessment of the PAVIA project (strengthening pharmacovigilance in Africa) was conducted in Eswatini, Tanzania, and Nigeria. KNCV also started updating the benchmarking tool on TB in children and adolescents, following the publication of the latest WHO guidance, which refers to the tool.

KNCV contributed to the development of a work package on development of new TB, DR TB treatment, and preventive treatment regimens under the SMART4TB project.

In the EDCTP funded Triad project for M/XDR TB and BPAL triage KNCV contributes to demonstrate effectiveness of the approach in Ethiopia, as well as acceptability and feasibility across all four study countries.

While most innovation pathways are well represented in evidence generation, Figure 7 shows that in 2022 there were no publications on stigma (publications are expected in 2023). Given the

dearth of evidence on stigma reduction interventions more studies are urgently needed. In 2023 several publications are expected from ongoing work in the ASCENT study on digital tools.

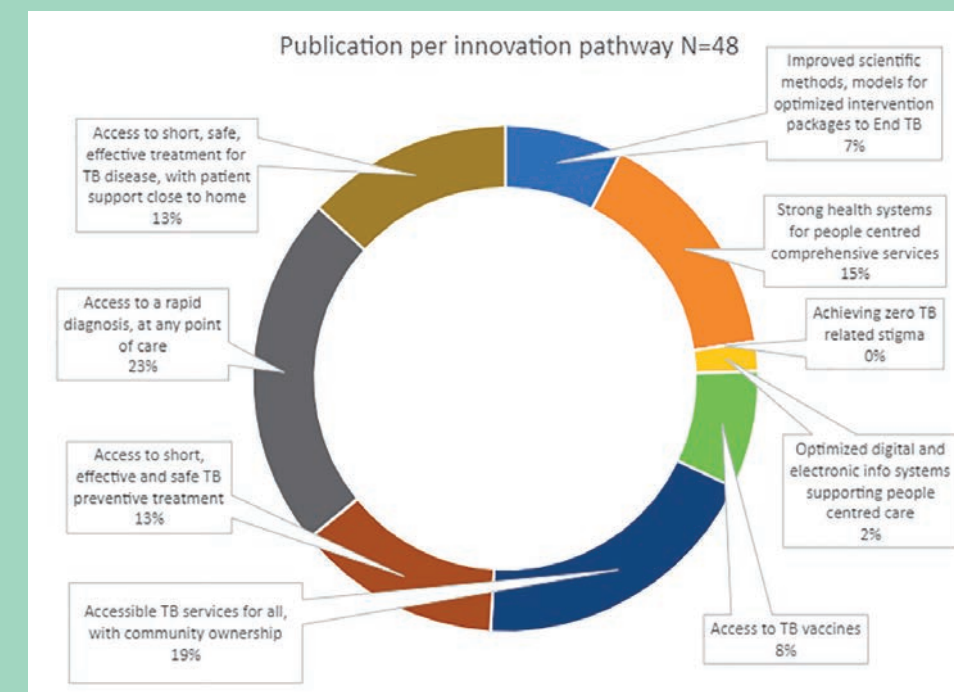


Figure 7: Distribution of scientific publications along the KNCV innovation pathways.

5.10 Progress towards the End TB 2025 targets in selected countries

Table 12 presents the 2022 Global TB report (Global TB Report 2021) data for selected countries, being the countries with KNCV branch offices or affiliated national

entities. The color coding shows the progress towards End TB 2025 targets: the darker the green, the closer the country is to achieving their EndTB targets. Table 12: Overview of 2022 Global TB report, showing 2021 surveillance data for countries with KNCV branch offices or affiliated national entities.

Table 12: Overview of 2022 Global TB report, showing 2021 surveillance data for countries with KNCV branch offices or affiliated national entities.

UNHLM Indicator	Ethiopia	Indonesia	Kazakhstan	Kenya	Kyrgyzstan	Malawi	Nigeria	Philippines	Tajikistan	Tanzania	Uzbekistan	Viet Nam	Netherlands	UNHLM Targets
1) TB treatment coverage	73%	45%	68%	57%	54%	55%	44%	43%	48%	65%	64%	46%	87%	≥90%
2) TB treatment success rate	^86%	^86%	88%	85%	^82%	90%	76%	91%	96%	91%	91%	83%	83%	≥90%
3) Catastrophic costs due to TB		^38%		***27%			***71%	***42%		****45%		**63%		0%
4) Newly notified patients diagnosed with rapid tests		50%	99%	65%	83%	30%	63%	65%	85%	41%	98%	98%	78%	≥90%
5) LTBI treatment coverage - (HIV)	64%	5%	83%	32%	32%	96%	65%	45%	92%			49%		
- <age of 5	76%	4%	55%	32%	11%	47%	12%	6%	100%	75%	67%	13%	100%	
- Average	70%	4%	69%	32%	22%	72%	39%	25%	96%			31%		≥90%
6) Contact investigation coverage	89%	98%	100%	85%	100%	91%	81%		****83	89%	88%	76%		≥90%
7a) - % of bacteriologically confirmed TB cases tested for rifampicin resistance - New cases	49%	73%	100%	63%	94%	51%	76%	89%	100%	90%	100%	89%	86%	100%
7b) % of bacteriologically confirmed TB cases tested for rifampicin resistance - Previously treated cases	88%	94%	100%	73%	95%	64%	94%	93%	93%	98%	100%	93%	71%	100%
8) New TB drug treatment coverage - not available														≥90%
DR-TB treatment coverage	100%	61%	127%	103%	105%	104%	74%	78%	88%	99%	105%	96%	100%	
9) HIV Status among TB Patients (TB_STAT)	82%	48%	99%	97%	96%	99%	97%	34%	99%	99%	100%	82%	66%	100%
10) Case fatality ratio (CFR)	15%	16%	9%	25%	8%	32%	28%	9%	15%	22%	7%	9%	4%	≤5%

Testing for drug susceptibility is only possible among bacteriologically confirmed cases. Catastrophic costs are provisionally defined as total costs that exceed 20% of annual household income.

* 2016 ** 2017 *** 2019 **** 2020

5. MONITORING AND EVALUATION

Subsequent tables highlight recent trends in performance on key indicators, that in many countries were strongly affected by the COVID-19 pandemic, with the darker the red color, the more significant the decline.

While TB notification in several countries on average showed increases in notification or a mild decline, in all countries a significant decrease occurred in 2020 due to

C19, except Nigeria and Tanzania. Nigeria even achieved a strong increase in notification, based on rapid expansion of the diagnostic network and introduction of COVID-19-TB bidirectional screening. Indonesia, Kyrgyzstan, the Philippines and Tajikistan recorded the largest decline. In 2021, most countries started to recover, except for Ethiopia, Malawi and notably Vietnam, where the COVID-19 epidemic hit hard in 2021.

Table 13: Trend of TB notification 2013 – 2021 in selected countries.

YoY Change									
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ethiopia		-9%	14%	-7%	-7%	-3%	-2%	-3%	-3%
Indonesia		-1%	3%	10%	21%	29%	-2%	-31%	13%
Kazakhstan		-20%	-8%	-12%	1%	3%	-3%	-23%	2%
Kenya		-2%	-8%	-6%	10%	13%	-11%	-16%	7%
Kyrgyzstan		-10%	10%	0%	-5%	-5%	-3%	-31%	8%
Malawi		-9%	-3%	-1%	6%	-5%	8%	-10%	-5%
Nigeria		-9%	1%	12%	5%	1%	13%	16%	51%
Philippines		6%	14%	20%	-5%	17%	10%	-37%	25%
Tajikistan		4%	1%	1%	-1%	-3%	1%	-28%	0%
Tanzania		-4%	-1%	6%	6%	9%	9%	4%	2%
Uzbekistan		-12%	-11%	-2%	5%	-3%	-1%	-26%	12%
Viet Nam		0%	0%	1%	1%	-3%	3%	-3%	-22%
Netherlands		-2%	4%	3%	-12%	2%	-6%	-18%	9%

Table 14 shows that the national trends of TB notification of TB children aged 0-14 trend resemble the overall TB notification trends, with children and adolescents even more severely affected than adults, except for Tanzania. Indonesia, Kyrgyzstan, the Philippines and Tajikistan recorded more than a 40% decrease between 2019 and 2020. Most countries made a recovery in the

notification of TB in children in adolescents, alongside the recovery among adults. In the Netherlands the number of children notified is very low (20 in 2019, 4 in 2021), showing variation of the years, which is not easily interpreted. Vietnam recorded a decline of notification in children and adolescents in 2021 of 47%, compared with 22% in overall notification.

Table 14: Trend of TB notification in children and adolescents 2013 – 2021 in selected countries.

YoY Change									
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ethiopia		-25%	16%	-18%	-15%	-6%	-9%	-2%	-6%
Indonesia		-11%	23%	15%	62%	29%	2%	-49%	18%
Kazakhstan		-12%	-13%	-17%	24%	-10%	-3%	-14%	-1%
Kenya		93%	-20%	-1%	15%	30%	-17%	-32%	32%
Kyrgyzstan		-26%	23%	-24%	7%	-29%	-2%	-41%	33%
Malawi		0%	-15%	-12%	24%	-18%	9%	-9%	-3%
Nigeria		-5%	-13%	10%	38%	13%	16%	-12%	55%
Philippines		490%	169%	48%	-19%	16%	-6%	-57%	15%
Tajikistan		-14%	-2%	19%	-9%	-2%	17%	-41%	-4%
Tanzania		-3%	-12%	14%	36%	19%	16%	11%	3%
Uzbekistan		-2%	-6%	12%	-1%	2%	8%	-21%	5%
Viet Nam		1%	-14%	1264%	1%	-3%	3%	-18%	-47%
Netherlands		50%	-13%	17%	-31%	-41%	130%	-59%	37%

5.11 Additional M&E indicators

In 2022 KNCV continued working in 24 countries, although participants in global and regional webinars and trainings came from many more countries. Around 500 community members directly participated in KNCV-led activities and KNCV offered training sessions to over 10,000 healthcare workers.

“Development of electronic information systems and digital health solutions along the patient pathway” and “innovation and optimization of diagnostic technologies and strategies” were the most commonly attended topics in 2022, accounting for

27% and 26% respectively. Training related to Evidence generation (scientific methods) made up of 20% of all training attendance in 2022.

In addition, the WHO online training courses developed jointly with KNCV in 2021 were highly visited. The three courses were on ‘Diagnostics’, ‘TB Preventive Treatment’ and ‘Management of Drug Resistant TB’. Under the Unitaid funded ASCENT project in 2022 the number of people using digital adherence support tools increased from 8310 in 2021 up to 10599 in 2022. Out of the 5 countries where the project is implemented, the Philippines contribute most of the increase; only South Africa has fewer enrollments.

Figure 8: Distribution of participation in training along the innovation pathways.

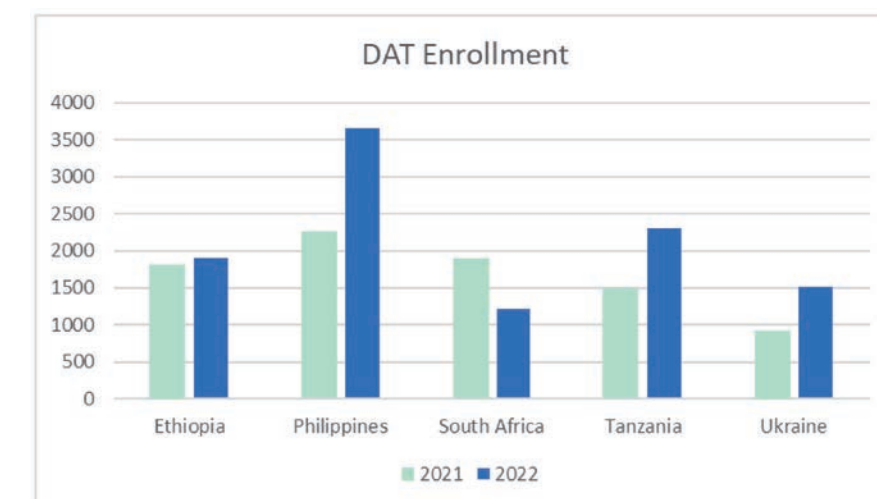
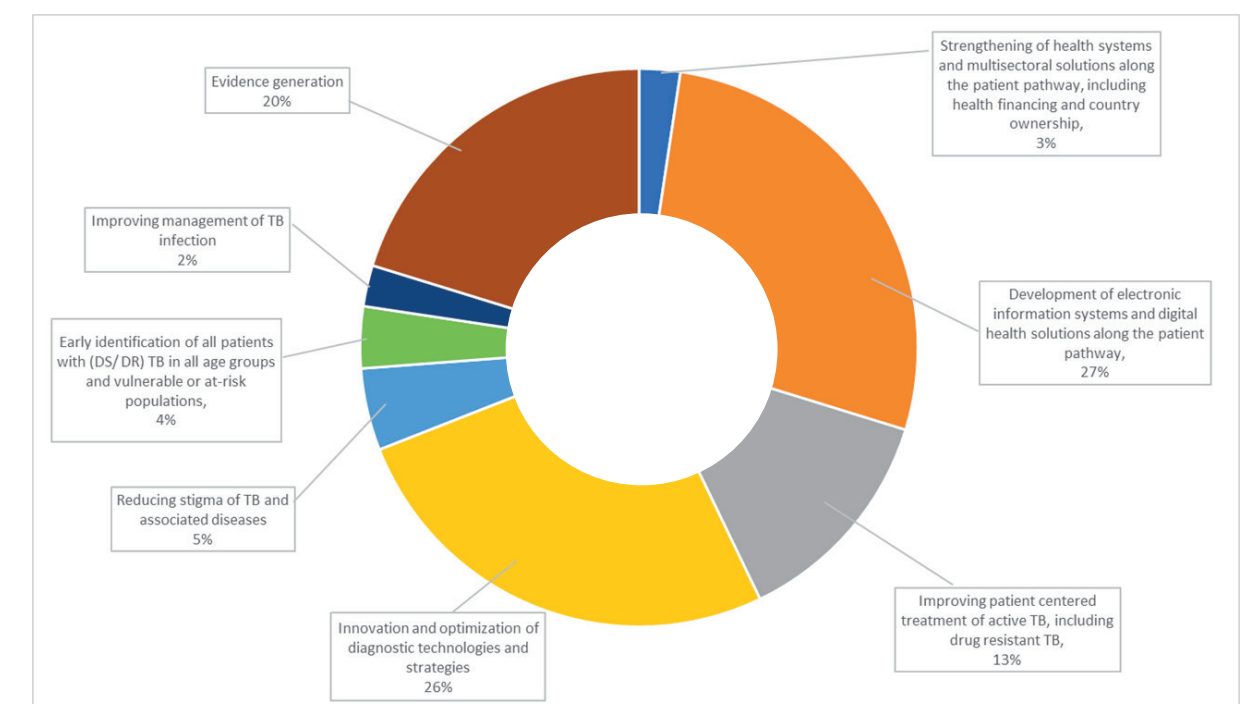


Figure 9: Number of people using digital adherence support tools in KNCV supported projects.

5. MONITORING AND EVALUATION

The number of people starting on BPaL treatment in KNCV supported projects, with support from the TB Alliance, Korea International Cooperation Agency (“KOICA”), TB REACH and Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding increased from

197 by the end of 2021 to 521 by the end of 2022. In 2022, KNCV, under the IMPAACT 4 TB project, offered more 3HP treatment to PLHIV, but less for household contacts; in Malawi the provision of 3HP was taken over by the government.

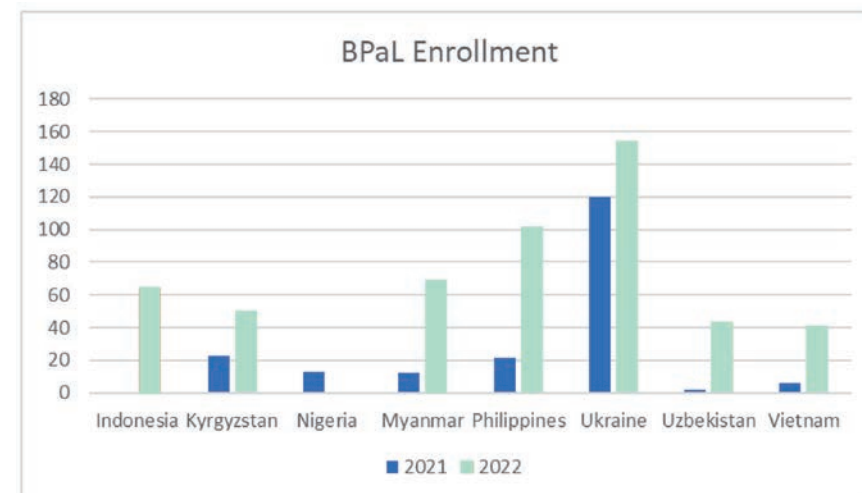
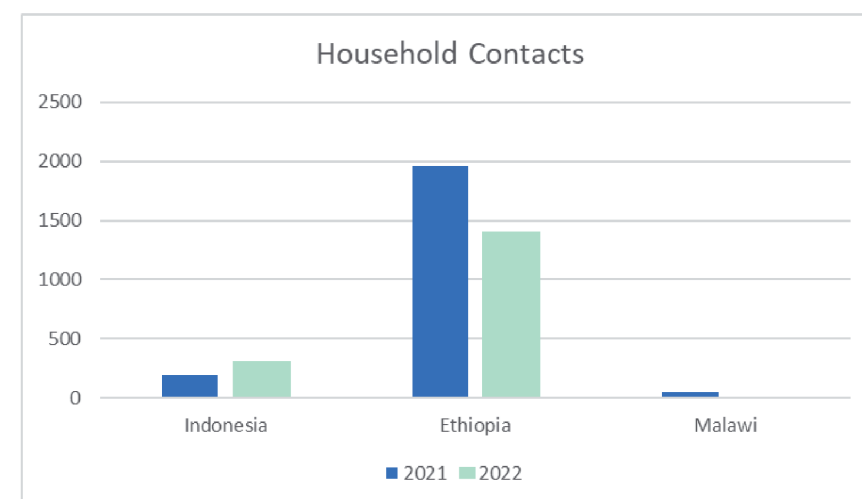
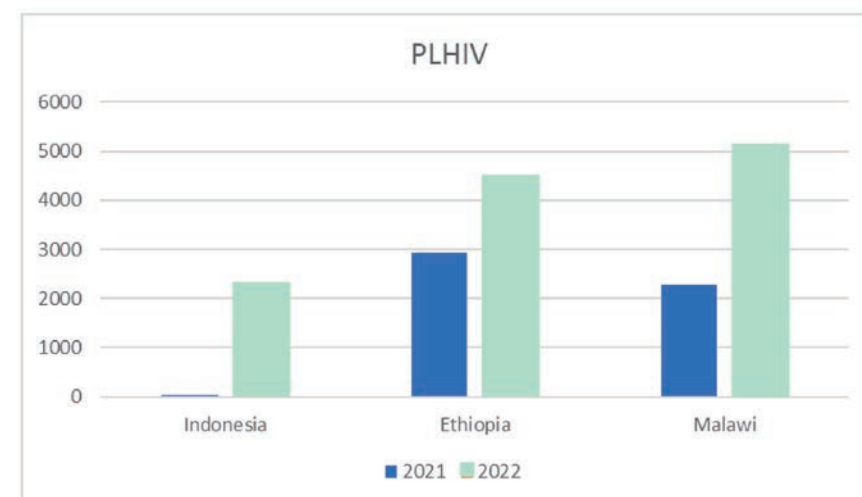


Figure 10: The number of people starting on treatment with the BPaL regimen in KNCV supported projects.



6. KNCV NETWORK

The KNCV Network is an international network of national centers of excellence in TB and infectious disease control and elimination, supported by a knowledge academy and central hub focused on TB elimination, health services strengthening, innovation and research.

KNCV has historically fulfilled our mission through projects initiated and managed centrally, utilizing project-based branch offices in countries with a high burden of TB. The KNCV Network initiative seeks to transform this structure: New interconnected national KNCV centers of excellence will be created, each focused on acquiring new projects and supporting national TB programs, whilst maintaining KNCV's quality and integrity standards.

This new structure is a continuation of KNCV's mission and our operating philosophy, sharing our knowledge, expertise, and innovation to support and build local capacity to end human suffering due to TB.

Strong national KNCV centers of excellence are key pillars for achieving KNCV's mission and strategic objectives. Developing national expertise will increase KNCV's global reach, enhance local knowledge, and expand KNCV's ability to advocate at the national and community level. It is envisioned that the national KNCV centers of excellence will act as civil society actors: becoming more active in agendasetting, advocating, collaborating, and engaging with communities and the government for TB control and elimination action.

Strengthening the KNCV Network

The initial focus of KNCV Network initiative is to strengthen KNCV's existing country offices. Where possible, current KNCV branch offices will transition to local entities that will act as national KNCV centers of excellence.

The KNCV Network currently has a presence in the following countries:

KNCV Global Office, the Netherlands

National KNCV centers of excellence:

- Indonesia
- Kenya
- Kyrgyzstan
- Nigeria

KNCV Regional Office:

- Kazakhstan KNCV Branch Offices:
- Ethiopia
- Tanzania
- Nigeria
- Philippines
- Vietnam

The technical and operational capacities of the existing KNCV branch offices and affiliates vary. Strengthening the branch offices and transforming these into national KNCV centers of excellence in TB and infectious disease control, and effective civil society organizations, will require investment in organizational capacity.

Maintaining KNCV's reputation for innovation and research, and the quality of our experts and our work, is also critical. Quality standards, equality, mutual

respect and support, and reciprocal rights and obligations within the KNCV Network are, therefore, core aspects of KNCV Network strengthening. KNCV believes that capacity building and knowledge sharing among KNCV Network partners will ensure standardization in quality practices with the overall aim of improving TB program performance. Furthermore, we are seeking to increase collaboration and support for fundraising and project proposals to improve funding for the overall KNCV Network.

6. KNCV NETWORK

KNCV Network Charter

A KNCV Network meeting was held in May 2022 to reconnect with the network partners and jointly develop a KNCV Network Charter. In the Charter the KNCV Network partners agreed to:

- Adhere to the KNCV Network’s purpose, vision, and mission.
- Build genuine collaboration through equality, respect, empowerment, transparency, and a collective approach.
- Strengthen mutuality through respect, mutual accountability, and establishing an inclusive governance structure to create binding policies and decision-making.
- Maintain the high quality and relevance of KNCV Network’s work by jointly developing and adhering to the KNCV Network strategy, using a rights-based approach, community and TB patient involvement, investing in research and innovation, and cooperation and coordination between the KNCV Network’s technical teams.
- Invest in an attractive learning culture by investing in learning and personal growth of staff, and in capacity strengthening.
- Act in accordance to sound financial and fundraising practices by through maintaining integrity and

- transparency in our fundraising activities, applying sound financial management and accountability to donors and other stakeholders, invest in fundraising activities and support for project and research proposals, and develop a strong, and diverse, fundraising base.
- Strengthen the KNCV brand through adherence to the KNCV Network Charter, and designing and adhering to a set of quality standards.
 - Adhere to the KNCV governance structure.

The follow up actions from the KNCV Network meeting were:

- Continue the knowledge exchange between the KNCV Network partners through biannual KNCV Network meetings.
- Review and update the KNCV partnership agreement with national entities based on principles of equality and mutual respect.
- Review and update the KNCV country office manual.
- Provide training to KNCV Network staff on F&A and Operations processes and requirements.
- Seek new preferred partners to join the KNCV Network in additional countries with high TB burden countries

Yayasan KNCV Indonesia

Yayasan KNCV Indonesia was established in 2016. The organization currently has 30 staff and is implementing 3 projects. The organization is supporting the introduction

of a new shorter regimen for TPT and DR-TB. Yayasan KNCV Indonesia is known for providing quality technical assistance to all provinces.

KNCV Kyrgyzstan

Kyrgyz - Netherlands Community of Volunteers (KNCV) Kyrgyzstan is a public foundation established in 2019. The organization currently has 12 staff members and works with 15 volunteers. KNCV Kyrgyzstan is currently implementing 5 projects.

Since 2019 KNCV Kyrgyzstan has been engaged in the following projects:

- Stop TB funded TB Reach project and the UN Office of Project Services funded Wave 8 (as subgrantee to AFEW International). KNCV Kyrgyzstan was the first organization in Kyrgyzstan to engage Private Health Care providers for TB detection. Thus far more than

- 300 patients were detected and started TB treatment due to these initiatives. As a result, the NTP has included private providers in detection of TB cases.
- TB Alliance funded LIFT-TB project: Implementation of BPaL Operational Research (50 patients were enrolled and completed TB treatment).
 - The Global Fund grant to introduce new technology (digital forms) to reporting adverse events as part of Kyrgyzstan’s active TB Drug Safety Monitoring System.
 - Nationale Postcode Lotterij funded Dream Fund Project: Piloting nanopore sequencing using MinION devices, for the diagnosis of infectious diseases and antimicrobial drug resistance.

KNCV Nigeria

KNCV Nigeria is a Nigerian NGO established in 2016 and registered with Corporate Affairs Commission Nigeria. The organization currently has 204 staff: 62 staff working in the central office and 142 regional staff.

KNCV Nigeria is currently implementing 7 projects. These projects include:

- USAID funded TB Local Organizations Network 1 and 2 in 14 states.
- USAID funded Global Vaccine Access (“Global VAX”) project in 10 states.
- UN Office of Project Services and STOP TB Partnership funded connectivity project in 18 states.
- USAID and TB Implementation Framework Agreement (“TIFA”) project in 2 states.
- The Global Fund funded Pooled Procurement Mechanism in 5 states.
- USAID and JENSEN funded pediatric surge project in

- 4 states.
- USAID funded Accelerating Control of the HIV Epidemics in Nigeria (“ACE”) project in 3 states.

Since 2016, a significant number of KNCV Nigeria’s innovations have been adopted, and implemented, by Nigeria’s NTP and other implementing partners. These innovations include, amongst others, the country wide roll out of TB-LAMP, EWORS, Stool based GeneXpert test, portable digital x-ray for targeted community TB screening, XMAP for real time digital chest x-ray reporting, and Competency Based Training for continuous learning.

KNCV Nigeria has diversified its portfolio outside TB to include COVID, HIV and Health Systems Strengthening and increased its’ presence in Nigeria from 14 to 21 states. KNCV Nigeria’s vision is “to be a globally recognized center of excellence for the control of TB and other diseases”.

7. ORGANIZATIONAL REPORT

7.1 Social Report

KNCV recruited over 45 positions in the Netherlands and abroad in 2022. KNCV undertakes projects in certain countries where we have no established subsidiary. In these countries, KNCV's Human Resources (HR) team established out-staffing arrangements (engaging remote employees through a local company) for new colleagues.

HR has received additional support to move forward with some of the action points resulting from the 2021 Evaluation Report on KNCV's Organizational Structure, specifically:

- The HR team organized an online cultural awareness workshop for all KNCV employees.
- The HR team created a new plan for staff

development pathways and ongoing training.

The HR team has already created and implemented a strategy to hire people globally to address the issues within the job market in the Netherlands. In addition, we can confirm the following:

- No volunteers were contracted by KNCV in The Hague office in 2022.
- Sick leave at The Hague office was 6.93 percent in 2022 versus 3.68 percent in 2021. The 6.93 percent consists of 0.86 percent short-term sick leave, 0.76 percent mid-term sick leave and 5.30 percent long term sick leave.

In the table below we show some key figures on the total number of staff employed in both the office in The Hague and the various country offices:

Table 15: Key figures on the total number of KNCV staff.

	Inflow staff	Outflow staff	Total headcount as per end of year	Total number of sick leave days
Ethiopia	23	26	57	29
Kazakhstan	-	-	2	5
Malawi	-	10	3	6
Nigeria	-	9	12	29
Philippines	3	3	11	25
Tajikistan	-	-	1	3
Tanzania	-	3	8	3
The Hague	12	8	53	1031
Vietnam	9	5	6	17
TOTAL	73	64	153	1148

7.2 Works Council

KNCV's Works Council members are Ineke Huitema (chair), Rachel Powers (vice-chair), Amanda Garcia Alonso, Harmen Bijster and Inez de Kruijf. The Works Council is supported by an external secretary, Johan Lantinga.

KNCV's Works Council held elections in 2022, resulting in the appointment of four new Works Council members, and held six Works Council meetings in 2022

and met with KNCV's Management Board four times. The Works Council's main activities / highlights in 2022 include:

- Participation in KNCV's Management Team and Board of Trustee's strategic retreat.
- Contributing to the follow-up on the organizational structure evaluation; and
- Providing input on KNCV's:
 - Travel policy
 - HR hiring process
 - Working from home / in the office policy



7. ORGANIZATIONAL REPORT

7.3 Integrity System

Codes of Conduct

KNCV has several codes and policies that provide guidance for the ethical behavior of staff and set out KNCV's norms and values. These include:

- KNCV Code of Conduct
- KNCV Policy on Fraud, Money laundering and Counter Terrorism
- External complaints procedure and complaints register
- Whistleblowers procedure

The KNCV Code of Conduct, external complaints procedure, and whistleblowers procedure are available on the KNCV website. All KNCV staff contract through the Netherlands participated in cultural sensitivity training in 2022.

Person of trust

KNCV has appointed a person of trust. KNCV staff can speak with the person of trust, in strict confidence, if they experience undesirable behavior, such as intimidation, bullying, aggression and unwanted (sexual) advances, aggression, violence, and/or discrimination that takes place during work or in connection to the workplace.

Reporting

Violations of KNCV code of conduct can be reported, either by victims or witnesses, through the following channels:

Channel 1: Management

Channel 2: HR

Channel 3: External channel: Whistleblowers Advisory Centre

2022 Reports

KNCV received one report of alleged unethical conduct by a KNCV staff member in one of KNCV's branch offices in 2022. The report was submitted by an external party, alleging an interpersonal violation by the KNCV staff member. KNCV management investigated the report, however, the claimant did not respond to KNCV's request to assist the investigation. The claim was reported to the local authorities. In the absence of evidence to support the claim of unethical conduct, KNCV took no further internal action.

Whistleblowers procedure

KNCV has a formal whistleblowers procedure in place utilizing an external lawyer. KNCV staff may consult this external lawyer regarding suspected misconduct

or irregularities. The staff member may request confidentiality.

The external lawyer provides an annual, anonymized, report to KNCV's Works Council, regarding the nature of any reports, the outcomes of any investigations and the viewpoint of KNCV.

Investigations, measures, & communication

The external lawyer is responsible for investigating any reports received through the whistleblowers procedure. The lawyer will review the claim of misconduct to determine whether it is actionable and, if so, investigate of the allegations. The external lawyer reports the outcome of her investigations to the Board of Trustees. Management and HR, engaging internal and external expertise as required, are responsible for investigating any reports lodged internally through either the management and/or HR channels.

Assessment of KNCV's integrity policy

KNCV's integrity policy is adequate for the task. More work can be done to improve the systems and processes. KNCV has a clear, established code of conduct that has been communicated to all staff. A number of systems and processes, including an independent person of trust and an external whistleblowers procedure, are in place to ensure that staff can raise concerns in confidence. KNCV has carried out an assessment of the integrity system and is looking into further enhancements.

7.4 Quality Systems

KNCV has established quality management systems. These systems aim to ensure that KNCV delivers quality products and services that meet regulatory, customer and donor requirements. KNCV's quality management systems include the following elements:

- a. Quality Standards
- b. Documented Processes and Procedures
- c. Organizational Structure and Responsibilities
- d. Partner and external supplier quality management
- e. Quality Monitoring Systems: Internal and External
- f. Continuous quality improvement

a. Quality Standards

KNCV quality standards are laid out in a set of quality standards, operating procedures, and guidelines, on technical assistance. In addition to these standards, most projects we undertake also have individual donor and partner

reporting and governance requirements. These requirements are documented in the donor and/or partner contracts.

b. Documented Processes and Procedures

KNCV has documented our processes, procedures, and controls for delivering quality services to our customers, donors and other stakeholders. These include:

- Modus Operandi KNCV.
- KNCV Country Office Manual.
- Standard operating procedures and policies for operations, finance, communications, HR, fundraising, proposal development, and security.

c. Organizational Structure and Responsibilities

KNCV has a clearly defined organizational structure and responsibilities for managers and staff. This organizational structure is available on KNCV's website.

d. Partner and external supplier quality management

KNCV enters into a standard contract with partners and external suppliers. Pursuant to this contract, the parties are required to comply with KNCV's codes of conduct, standard operating procedures and policies.

e. Quality Monitoring Systems: Internal and External

Internal

KNCV's project teams undertake quarterly reviews of each project: Assessing performance against implementation milestones and budget. As necessary, remedial actions are taken in coordination with TBE&HSI and Operations Division staff to ensure that KNCV's quality standards are maintained, and project deliverables are met.

KNCV creates and submits regular reports to donors and partners (in line with the respective donor/partner contract) regarding the project status and implementation.

External

KNCV's projects are regularly audited by independent auditors on behalf of the respective donor(s). The scope and timing of these audits are determined by the donor's requirements and are set out in the donor contract.

Independent auditors perform an annual audit of KNCV's operations, financial statements, internal controls, and compliance on behalf of USAID. An independent audit of KNCV's administration and finance operations is also performed annually by PricewaterhouseCoopers Accountants N.V.

f. Continuous quality improvement

KNCV undertakes a formal annual planning and control process to review operating performance and create action plans to improve the quality and scope of KNCV's services.

In addition to this formal process, KNCV's staff regularly review and update, and document new, quality standards and processes and procedures.

7.5 Risk Management

KNCV's Management Team monitors operational risks on an ongoing basis. Project managers are also required to identify operational risks and their actions to minimize or manage such risks as part of their quarterly project reviews.

The Executive Director reports on risks to the Board of Trustees on a regular basis. A comprehensive risk analysis is performed each year. This analysis assesses KNCV's operational risks, controls, and mitigating actions. The report is compiled and reviewed by the Management Team, and reviewed by the Audit Committee and the full Board of Trustees.

The Audit Committee and the Board of Trustees are also consulted on any significant changes and/or improvements to KNCV's internal controls.

7.6. Resource Mobilization, Private Fundraising, and Advocacy

KNCV receives unearmarked funding and earmarked funding from private donors, institutional donors, and partnerships. In 2022, we received project funding from several existing donors and partners and expanded by partnering with a broader range of donors on new projects and initiatives.

Private donors

We are grateful to our private donors who support our mission. These loyal supporters have often experienced TB personally in their lifetime and know the devastation this disease can cause.

The number of private donors has decreased over the years because they are, in general, older and either pass away, or due to increased living expenses.KNCV posts fundraising letters to approximately 11,000 private donors five times per year. KNCV also publishes quarterly e-newsletters providing information on KNCV's project work, research activities, innovation pathways, and our efforts to lobby for TB control and elimination.

7. ORGANIZATIONAL REPORT

The Resource Mobilization, Private Fundraising, and Advocacy Division, undertook the following of private donor activities in 2022:

- Performed a private donor satisfaction survey in late 2022. Data will be processed and results and action points available in 2023.
- Reactivated KNCV's legacies program, to secure longer term income.
- Analyzed KNCV's donor database to assess donation trends and opportunities in late 2022. Results available in 2023.

Advocacy

As part of our mission to end TB, KNCV engages in advocacy in the Netherlands and internationally. The goal of KNCV's advocacy work is to create political support and policy space, and generate funding for national TB programs, and non-governmental and community-based organizations to step up the fight against TB.

KNCV's advocacy team builds and works through, advocacy coalitions to drive policies and maximize our shared resources for advocacy initiatives. KNCV currently works through the Dutch Global Health Alliance and Product Development Partnerships in the Netherlands, as well as partnering with Aidsfonds, Cordaid and the One Campaign to sustain the Dutch commitment to and engagement with The Global Fund.

Anne Kuik, MP (CDA) is a key contact and champion for advancing the TB and Global Health agenda in the Dutch Parliament. Anne Kuik both acts as a TB Ambassador in the Netherlands and serves as cochair of the West European Region of the Global TB Caucus.

KNCV's advocacy work in the Netherlands contributed to significant successes in 2022:

- The Dutch government established the first ever Dutch Global Health Strategy in October 2022. This new Dutch policy aims to contribute in a coordinated and targeted way to improving public health around the world and is the result of a multi-year effort co-initiated by KNCV in 2017.
- TB and Antimicrobial Resistance are explicitly mentioned in the Dutch Global Health Strategy.
- The Dutch government allocated a € 86.3 million budget for grants to Product Development Partnerships to develop and improve access to medical products for sexual and reproductive health and rights and poverty-related diseases over a 5-year period.
- The Dutch government announced a 15% increase in its pledge to The Global Fund for 2023-2025.

On the international level, one of KNCV's advocacy staff was appointed to The Global Fund Board representing Developed Country NGOs. This board appointment is for a two-year term and will strengthen KNCV's advocacy for global TB control and provide opportunities to increase our visibility within The Global Fund and with international donors and organizations engaged in health system strengthening and the fight against TB, HIV and Malaria.

7.7 Communication with stakeholders and the public

KNCV's stakeholders include private and institutional donors, governments, ministries of health, NTPs, research institutions, international organizations, national and international NGOs, community-based organizations, and project implementation partners. All of KNCV's communications are governed by the principles of transparency and accountability. The overall goal of our corporate communication is to support our mission and uphold our guiding principles:

- We are transparent and report on our successes and lessons learned.
- We strive to communicate proactively.
- We aim to communicate through unambiguous and consistent key messages.
- We tailor our communication messages and media to reach our different target groups.

KNCV's staff engage in a variety of stakeholder consultations at the global, regional, and country levels. This includes formalized processes (such working with the WHO as a non-State actor partner), participating in board level discussions within international non-governmental organizations (such as KNCV's representatives on the boards of The Global Fund and the Stop TB Partnership), high-level meetings with donors and annual End TB summits with representatives from the TB high burden countries.

Stakeholders have an opportunity to exchange thoughts with the Executive Director, the Management Team, and KNCV staff: Including during the KNCV's annual General Assembly.

KNCV also uses national and international media such as newspapers, magazines, television coverage, scientific publications, conferences and social media to profile our work fighting TB and to reach the public, professionals, politicians and policymakers. If we receive complaints relating to communications, GDPR, campaigns, misconduct, fraud, or other

issues, these are formally registered and immediately addressed by the departments responsible. We monitor how the complaint is progressing, note all actions and outcomes in an overview available to select colleagues. For confidentiality, no personal details are included in the overview. The complaints are reported to the management team and board of trustees on a quarterly basis, and all complaints are reported in the annual report.

7.8 Corporate Social Responsibility and Sustainable Development Goals

7.8.1 KNCV's mission to eliminate TB and our work in TB control contributes to the following United Nations Sustainability Goals:

- Goal 3: Good Health and Well-being. KNCV's work directly contributes to improved health outcomes for persons with, and the elimination of, TB.
- Goal 1: No Poverty. TB can deprive families of income and contribute to poverty. KNCV's work seeks to reduce the burden of TB on society.
- Goal 5: Gender Equality. KNCV works in stigma reduction, including addressing gender bias and discrimination based on sexual orientation.

7.8.2 KNCV aims to minimize the environmental footprint our activities, whilst also our core mission of eliminating TB:

- International flights: As an international organization our experts must travel to our project locations by plane. We seek, however, to minimize flights, where possible, using video conferencing and web-based communication. When KNCV staff must fly to a project or country we seek to combine activities within the country and project
- Transport to and from the KNCV office: We promote the use of public transport to the office in the Netherlands and to external meetings within a reasonable distance.
- Office: We avoid paper wastage by enforcing double-sided black and white printing as much as possible and the use of environmentally friendly printing toner.

7.8.3 As an employer, KNCV promotes equal employment opportunities.

7.8.4 The management of the investments of KNCV's financial reserves is placed under an Environmental, Social, and Governance mandate. This is further

elaborated on in the Notes to the Annual Accounts under the section "Accounting policies - assets and liabilities".

7.9 Information Security and Issues Report 2022

KNCV is subject to the European Union's General Data Protection Regulation (GDPR) and the Dutch GDPR Implementation Act ("Uitvoeringswet Algemene verordening gegevensbescherming"). KNCV's obligations under the GDPR include the duty to report data leaks to the Dutch Data Protection Authority ("meldplicht datalekken in de Wet bescherming persoonsgegevens").

KNCV has a data security policy and an established procedure for reporting data leaks. This includes an inventory of types of sensitive information within KNCV, drafting of 'Data Processing Agreements' with suppliers, and preparing a checklist with action points. KNCV has appointed a data security officer. The website was made compliant to GDPR requirements. All data processing processes have been inventoried and checked against GDPR requirements.

The data security issues that arose in 2022 included:

One of KNCV's servers in Malawi failed in 2022: temporarily limiting the availability of the data on the server. No personal data was disclosed, lost or destroyed. The data had to be re-entered and additional back up arrangements were put in place to maintain availability of the online data in the event of future server failures.

ICT Central Office has conducted a security scan in 2022 together with partner ISO Groep as assigned by accounting partner PWC reviewing our data protection as well as our network security where no major issues have been detected. KNCV and ISO Groep have put several Risk Management policies and mechanisms in place to prevent any major breaches of our data protection and/or network security.

7.10 Local Legal, Tax, Regulatory and Financial Reporting Requirements

KNCV engages local lawyers to advise on the local legal, tax, regulatory and financial reporting requirements in the countries in which KNCV operates. KNCV surveys the local offices each year to confirm and update the legal, tax, regulatory, fraud, and

financial reporting requirements for their respective country. Operations works through these requirements with the respective local offices to ensure that KNCV is in compliance. The reviews of the assessments are done in close collaboration with F&A.

KNCV also engages independent auditors to perform country specific audits as required under local laws and financial reporting requirements. In 2022 country specific audits were carried out in Ethiopia, Malawi, Tanzania and Vietnam.

7.11 Security

In February 2022, we responded to the war in Ukraine. A core Crisis Management Team was activated

and discussions were held with PATH on the security and the continuation of project implementation in the Ukraine. Next to this our focus was on ensuring the safety of KNCV staff in neighboring countries. Other security related activities included:

- Overall security plan development and advice on ongoing situations
- The country security plans for Vietnam, Tanzania, Nigeria and Ethiopia were reviewed. In the same countries tabletop exercises were done to train the country teams in crisis management

These activities are done in collaboration with our Global Security Advisor from Forth Global.

8. KNCV GOVERNANCE

8.1 KNCV SUPERVISORY GOVERNANCE STRUCTURE

The table below presents the membership of the Board of Trustees as per May 2022 and an overview of other positions held by the Members. The self-

assessment, conducted early February 2022, confirmed that all requisite competencies are available within the current composition of the Board of Trustees. The following table provides a mapping of competencies available within the Board of Trustees.

Table 16: Positions held by Members of the KNCV Board of Trustees.

Member	Positions held
Mirella Visser (Chair)	Director Centre for Inclusive Leadership. Vice chair Supervisory Council ING Pensionfund. Vice chair Supervisory Board MPD. Chair Board of Directors Stichting PSI – Europe. Strategic Advisor to Dutch Women’s Council (NVR). Member of the Environmental Council Schiphol (ORS). Former member of the European Integration Committee of the Advisory Council on International Affairs (AIV).
Jan Hendrik Richardus (Vice-chair)	Professor Emeritus Infectious Diseases and Public Health at the Department of Public Health of Erasmus MC, University Medical Center Rotterdam. Member of many scientific advisory committees and steering groups in the Netherlands and overseas, including membership of the Technical Advisory Group for Leprosy of the World Health Organization. Primary investigator of several national and international research projects.
Johan van 't Hag (Chair Audit Committee)	Member Executive Committee at Dümme Orange, responsible for Strategy, Product management and M&A. Until 2019 served as CFO at several participations of private equity fund in health care. Previously employed at Unilever in various senior financial and international management positions in Rotterdam, Stockholm, andHamburg.
Tjipke Bergsma	Acting CEO of Terre des Hommes Netherlands. Previously, amongst others, CEO of War Child Holland and Deputy CEO of Plan International. Active in various non-executive roles such as Member of the Supervisory Board of the Dutch Review of Books and Member of the Supervisory Board of Refugee FM.
Wieneke Meijer	Medical doctor, Consultant Physician in TB-control of the Municipal Public Health Service (GGD) in Amsterdam, Utrecht and Gooi & Vechtstreek. Chair Committee for Practical TB Control Netherlands (CPT).
Rolph van der Hoeven	Professor Emeritus Institute of Social Studies (ISS, Erasmus University, The Hague), and Member of the United Nations Committee for Development Policy (UN-CDP). Earlier functions include Member of the Committee Development Cooperation (COS) of the Dutch Advisory Council for International Affairs (AIV), Chief Economist at the United Nations Children Fund (UNICEF) and Director for Policy Coherence at the I n ternational Labour Organisation (ILO), with postings in Lusaka, Addis Ababa, New York and Geneva.
René Stumpel	Director of Public Health Gooi & Vechtstreek, with comprehensive responsibility for public health in this region. Serves in the KNCV Board of Trustees on behalf of the collective Municipal Health Services (GGD) in the Netherlands, reinforcing the operational linkage between KNCV and the Dutch TB control system as embedded in the Municipal Health Services.

Table 17: Competency mapping Board of Trustees.

	Mirella Visser	Jan Hendrik Richardus	Johan van 't Hag	Tjipke Bergsma	Rolph van der Hoeven	Wieneke Meijer	Rene Stumpel
Medical and Public Health (incl TB control)							
Academic TB research							
IT and innovation							
Funding, accountability, and control							
International Development Cooperation							
Strategy, Organization and Management							
Fundraising (public and institutional)							
Fundraising (corporate and private)							

8.2 SUPERVISORY REPORT LETTER FROM THE CHAIR AND VICE-CHAIR OF THE BOARD OF TRUSTEES

KNCV continued to expand its' donor base and complete its' transformation into a flexible and dynamic organization capable of effectively delivering a highly diverse project portfolio, serving end user needs, and meeting donor expectations. The Board of Trustees has supported and guided this transformation and commends management and staff for their flexibility and commitment throughout the process. KNCV's internal structure was reorganized in early 2022: Establishing cohesive technical teams and separating the finance and operations functions. This reorganization strengthened KNCV's project delivery capacity. The organization also made progress along the innovation pathways set out in the Strategic

Plan 2020-2025. Efficiencies of remote working continue to be captured, even as travel gradually resumes post-COVID, with a mix of in-country and remote technical support utilized.

An in-person KNCV Network meeting, the first in over two years, was held in May 2022.The Board of Trustees and management discussed the outcomes this meeting during their annual strategic retreat. The growing strength and awareness of the KNCV brand and an emerging partnership structure, which enhances synergies and complementarities, constitutes a significant strategic step in organizational development. Looking ahead, KNCV will explore how to better reflect the voices of our KNCV Network partners and the communities we serve in our governance structures. During its' meeting in September 2022, the Board of Trustees discussed the outcomes of an externally conducted midterm review of the implementation of

the KNCV Strategic Plan 2020-2025.

KNCV successfully attracted new contracts during 2022. These contracts included a significant role in a new five-year USAID funded global research program. KNCV's participation in this research program will further enhance its' role as an innovator within the field of TB prevention and care, its' position as a knowledge institute, and KNCV's strong links with implementers and academic institutions. KNCV is impacting global TB prevention and care through its' innovation, the demonstration and scale-up of new approaches to deliver TB care and prevention, and supporting health systems strengthening.

KNCV's operations broke-even in 2022, reflecting strengthened project implementation and operational oversight. The 2022 financial loss is mostly attributable to fluctuations in investment and foreign exchange valuations. These occurred in the wake of the war in Ukraine and globally rising inflation levels. KNCV's continuity reserves ensure KNCV's financial resilience despite these external fluctuations.

Board of Trustees oversight 2022

The Board of Trustees held four meetings in 2022 and participated in the annual strategic retreat with management. The Audit Committee convened twice: meeting to review to the Annual Accounts 2021 ahead of the Board of Trustees meeting in April 2022 and meeting to review the Annual Plan and Budget 2023 ahead of the Board of Trustees meeting in November 2022.

The Board of Trustees oversaw the regular planning and control cycle, and provided strategic guidance on brand development, KNCV's evolution as a knowledge institute, strengthening ties and collaboration with academia, and KNCV's role in TB prevention and care in the Netherlands. The Board of Trustees also provided guidance on the evolution of the KNCV Network organization. The Audit Committee provided hands-on counsel to the Finance Department in a period of capacity constraint.

The annual meeting between representatives of the Board of Trustees and the Works Council was postponed to early 2023. The Board of Trustees looks forward to continuing its highly valued interaction with the Works Council.

The General Assembly of Members was convened in May 2022. The members received a briefing on, and held a discussion regarding, the developments in 2021, and approved the Annual Report and Accounts 2021.

Board of Trustees developments

The composition of the Board of Trustees remained unchanged throughout 2022. In February 2022, as part of its' annual self-assessment, the Board of Trustees noted the constructive and open interaction both within the Board of Trustees and with the Executive Director and KNCV's management. The Board of Trustees assessed the competencies available within the Board of Trustees and determined that these are adequate for fulfilling its supervisory governance task. The next annual self-assessment is planned for April 2023.

The resumption of in-person and hybrid Board of Trustee meetings during 2022 has been welcomed. In-person meetings enhance interaction between Members of the Board of Trustees as well as between the Board of Trustees and management.

Looking ahead to 2023

KNCV set itself ambitious targets in its' Annual Plan 2023. Building on a solid financial and organizational foundation, and a strengthened KNCV Network, KNCV's 2023 objectives include continuing its' work to enhance TB programs and delivering innovations in health systems for effective, integrated, and patient-centered care. The Board of Trustees is confident that KNCV will continue to deliver on these objectives. The Board of Trustees acknowledges the results KNCV has achieved in a challenging environment. We commend and express our gratitude to all KNCV staff for their work and commitment to KNCV and KNCV's mission to end human suffering due to TB.

Mirella Visser
Chair of the Board of Trustees

Jan Hendrik Richardus
Vice-chair of the Board of Trustees



9. FINANCES

9.1 Financial Highlights 2022

FINANCIAL FIGURES FOR THE PERIOD 2018-2022 (x €1,000)

The financial figures for the last 5 years are shown below in table 6:

FINANCIAL FIGURES IN EUR	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Budget 2022	Average 2020-2022
Total income	92.918	63.406	15.462	15.910	16.564	18.626	15.978
Expenses - mission related goals	91.132	62.157	15.291	13.468	15.192	16.934	14.650
Expenses - fundraising	961	789	585	810	1.064	1.207	819
Expenses - administration and control	1.164	1.165	1.098	675	541	607	771
Total Expenses	93.257	64.110	16.973	14.953	16.796	18.747	16.241
Balance of income and expenses	-339	-704	-1.512	957	-233	-121	-262
Net investment income	-216	543	199	483	-979	-69	-099
Balance of income and expenses	-555	-161	-1.312	1.440	-1.212	-190	-361

The actual 2022 income is higher than in 2021 and lower than budgeted income of Euro 18.6 million. The income was impacted by two major events:

- 1) There were fewer KNCV staff available to execute projects. This leads to less time charged to projects and, therefore, less income from grants and non-profit organizations.
- 2) The income from fundraising was less than budgeted, in particular income from legacies.

The cost efficiency initiative, driven by better data analysis, resulted in the lower expenses for both administration and control. KNCV's expenses decreased from Euro 0.7 million in 2021, to Euro 0.5 million in 2022. Due to decreasing stock prices and rising interest rates the net investment income was nearly Euro 1.0 million negative, which is over Euro 0.9 million lower than budgeted, and over Euro 1.5 million lower than the net investment income in 2021.

An amount of €450.000 is included in the 2022 expenses for fundraising. This amount reflects income from De Lotto that is passed through on to third parties. Also the amount includes the personnel and material cost for both private fundraising and resource mobilization (institutional fundraising).

The effect overall is a negative deficit of Euro 1.2 million compared to last year's surplus of Euro 1.4 million and against a budgeted deficit of Euro 0.2 million. A proposal for the allocation of the net result for 2022 is presented within the Annual Accounts.

Financial ratios
In line with the guidelines for annual reporting, the standards issued by the Dutch Accounting Standards Board guideline RJ 650 (for fundraising organizations) and the requirements from the CBF financial monitoring data is shown for the period 2018 to 2022.

9. Finances

FINANCIAL MONITORING DATA COMPARED TO INTERNAL STANDARDS

	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Budget 2022	Average 2020- 2022
FINANCIAL RATIOS IN %							
Ability to spend income on objectives:							
Spent on mission compared to total income ¹	98,1%	98,0%	98,9%	84,7%	91,7%	90,9%	91,7%
Overall efficiency of the organization:							
Spent on the mission compared to total expenses	97,7%	97,0%	90,1%	90,1%	90,4%	90,3%	90,2%
Spent on fundraising compared to total expenses	1,0%	1,2%	3,4%	5,4%	6,3%	6,4%	5,0%
Spent on administration and control compared to total expenses	1,2%	1,8%	6,5%	4,5%	3,2%	3,2%	4,7%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Spent on administration and control compared to total expenses excluding Challenge TB coalition share in activities ²	2,5%	3,1%	7,1%	4,5%	3,2%	3,2%	4,7%
Efficiency of fundraising:							
Spent on private fundraising compared to total fundraising income	24,3%	21,9%	16,3%	10,2%	22,1%	55,5%	15,9%
Spent on fundraising compared to total fundraising income	1,0%	1,2%	3,8%	5,1%	6,4%	6,5%	5,1%

The Dutch Charities Branch Association (Goede Doelen Nederland) has issued recommendations on the implementation of guidelines to ensure transparency and comparability in our sector. KNCV follows these guidelines.

Expenses to mission related goals

Spent on mission compared to total expenses is 90.4%. This is comparable to last year's 90.1% and is better than the budgeted 90.3%. Influences on the indicator can be due to (temporary) increases and decreases of expenditures for fundraising and for administration and control compared to the total activity.

Expenses to fundraising

Spent on fundraising compared to total expenses is 6.3%. This is higher than budget, and higher than last year's 5.4%. This is in line with the strategy of trying to diversify our income. KNCV's internal policy

states that, calculated as an average over a 3-year period, the costs cannot be higher than 25% of the income from own fundraising activities (individuals and companies). Over the last 3 years the annual costs compared to income percentage from own fundraising activities (individuals and companies) has been 21.9%, 10.2% and 16.3%, resulting in an average of 15.8% over this period. The underspending compared to budget is a result of not realizing all objectives. This percentage is impacted by the unpredictability of, and annual variations in, legacy income.

Expenses to administration and control

Spent on administration and control compared to total expenses is 3.2%. This is lower than last year's 4.5% and just on budget. This is due to KNCV's increased focus on efficiency and cost control after experiencing a large income drop following the end of with the funded USAID Challenge TB project.

9.2 Financial statements 2022

BALANCE SHEET KNCV TB PLUS PER 31 DECEMBER 2022

All figures in Euro, after result appropriation

		12/31/2022	12/31/2021
Assets			
Office construction work		14.889	21.192
Office inventory (including regional office)		39.452	52.078
Computers		29.310	6.724
Tangible fixed assets	B1	83.650	79.994
Accounts Receivable	B2	1.696.132	2.408.537
Investments			
-Shares	B3	1.872.034	2.472.140
-Bonds	B3	3.979.740	3.815.267
-Alternatives	B3	449.452	428.963
Cash and Banks	B4	17.826.088	23.402.314
Current Assets		25.823.446	32.527.221
Total		25.907.096	32.607.215
Liabilities		12/31/2022	12/31/2021
Reserves and funds			
- Reserves	B5		
Continuity reserve		6.951.067	7.706.627
Decentralization reserve		602.147	608.833
Earmarked project reserves		1.850.095	1.916.160
Unrealized exchange differences on investments		0	386.947
Fixed Assets reserve		83.650	79.995
		9.486.959	10.698.562
- Funds			
Earmarked by third parties	B6	953.804	953.804
		953.804	953.804
Reserves and funds		10.440.763	11.652.366
Long term liabilities	B7	7.875.966	8.128.664
Various short-term liabilities	B8		
-Taxes and social premiums		409.841	318.731
-Accounts payable		474.060	312.145
-Other liabilities and accrued expenses		6.706.466	12.195.309
		7.590.367	12.826.185
Total		25.907.096	32.607.215

9. Finances

STATEMENT OF INCOME AND EXPENDITURE KNCV TB PLUS 2022

All figures in Euro

		Budget 2022	Actual 2022	Actual 2021
Income				
- Income from individuals	R1	950.000	524.016	777.827
- Income from companies	R2	0	855.937	811.885
- Income from lotteries	R3	1.356.000	1.466.368	1.645.969
- Income from government grants	R4	5.490.574	2.684.237	4.136.451
- Income from allied non-profit organizations	R5	53.256	499.252	607.366
- Income from other non-profit organizations	R6	10.666.777	10.387.929	7.853.914
Total fundraising income		18.516.606	16.417.739	15.833.412
- Income for supply of services	R7	109.808	144.517	76.118
- Other income	R8	0	1.628	-15
Total income		18.626.414	16.563.884	15.909.515
Expenses				
Expenses to mission related goals	R9			
- TB control in low prevalence countries		264.953	248.252	706.097
- TB control in high prevalence countries		15.250.707	13.710.363	11.397.466
- Research		768.027	719.617	741.391
- Education and awareness		649.840	513.382	622.753
		16.933.527	15.191.614	13.467.707
Expenses to fundraising				
- Expenses private fundraising		527.029	304.334	161.794
- Expenses share in fundraising with third parties		324.195	453.603	363.208
- Expenses government grants		356.001	305.718	284.791
		1.207.225	1.063.656	809.793
Administration and control				
- Expenses administration and control		606.701	541.224	675.073
Total Expenses		18.747.452	16.796.495	14.952.573
- Net investment income	R10	-69.125	-978.993	482.661
Surplus / Deficit		-190.164	-1.211.603	1.439.603
Spent on mission compared to total expenses		90,3%	90,4%	90,1%
Spent on mission compared to total income		90,9%	91,7%	84,7%
Spent on private fundraising compared to income		6,5%	6,5%	5,1%
Spent on administration and control compared to total expenses		3,2%	3,2%	4,5%
Result appropriation				
Surplus / Deficit appropriated as follow				
Continuity reserve		0	-755.560	219.823
Decentralization reserve		-23.264	-6.686	0
Earmarked project reserves		-160.600	-66.065	856.112
Unrealized differences on investments		0	-386.947	-172.741
Fixed Assets reserve		0	3.655	-45.684
Earmarked by third parties		-6.300	0	582.093
Total		-190.164	-1.211.603	1.439.603



9. Finances

EXPENSE ALLOCATION KNCV TB PLUS 2022

All figures in Euro

Expenses	Budget 2022	Actual 2022	Actual 2021
Grants and contributions	20.500	14.825	18.256
Contributions to allied organizations	0	0	0
Purchases and acquisitions	3.019.968	2.963.976	1.917.965
Outsourced activities	1.250.000	1.213.608	1.031.718
Publicity and communication	479.100	240.277	301.315
Personnel	10.842.186	10.376.179	9.477.833
Housing	183.500	185.213	180.961
Office and general expenses ¹⁾	2.909.190	1.769.898	1.978.624
Depreciation and interest	43.008	32.520	45.902
Total	18.747.452	16.796.495	14.952.574

Allocation to destination

Actual 2022	Related to the mission goals			
	Low prevalence countries	High prevalence countries	Research	Education and Awareness
Grants and contributions	0	14.825	0	0
Contributions to allied organizations	0	0	0	0
Purchases and acquisitions	-341	2.498.222	-988	-445
Outsourced activities	0	1.213.608	0	0
Publicity and communication	0	0	0	172.372
Personnel	221.049	8.307.255	640.763	297.495
Housing	7.679	116.666	22.259	10.025
Office and general expenses	18.482	1.538.779	53.574	32.129
Depreciation and interest	1.383	21.009	4.008	1.805
Total allocated	248.252	13.710.363	719.617	513.382

Allocation to destination

Actual 2022	Income fundraising			Administration & Control
	Private fundraising	Share in third parties activities	Grants	
Grants and contributions	0	0	0	0
Contributions to allied organizations	0	0	0	0
Purchases and acquisitions	-269	449.966	18.429	-600
Outsourced activities	0	0	0	0
Publicity and communication	67.905	0	0	0
Personnel	176.496	3.320	253.656	476.144
Housing	6.050	88	8.707	13.506
Office and general expenses	53.062	213	23.359	49.742
Depreciation and interest	1.089	16	1.568	2.432
Total allocated	304.334	453.603	305.718	541.224

For further information we refer to our audited Annual Accounts.

CASH FLOW STATEMENT KNCV TB PLUS 2022

All figures in Euro

		Actual 2022	Actual 2021
Surplus excl. interest		-1.220.223	1,442,316
Interest paid/ received	R10	8.620	-2,713
Total surplus		-1.211.603	1,439,603
Depreciation - Fixed Assets	B1	33.352	46,978
Cash Flow from income and expenditure		-1.178.251	1,486,581
Accounts receivable	B2	712.405	789,524
Funds earmarked by third parties	B6	0	-2,665
Non-current liabilities		-252.698	8,128,664
Current liabilities	B7	-5.235.818	6,010,629
Increase/ (Decrease) net working capital		-4.776.112	14,926,152
Cash flow from operational activities		-5.954.362	16,412,733
Investments	B3	415.144	-488,298
Disinvestments fixed assets	B1	529	0
Investments fixed assets	B1	-37.536	-1,294
Cash flow from investments fixed assets		378.137	-489,592
Net cash flow		-5.576.226	15,923,141
Cash and banks as at 1 January	B4	23.402.314	7,479,172
Cash and banks as at 31 December	B4	17.826.088	23,402,314
Increase/ (Decrease) Cash on hand		-5.576.226	15,923,142

The decrease in cash and banks in 2022 is caused by:

- A negative cash flow from net working capital of Euro 6.0 million, predominantly caused by a decrease of other liabilities and accrued expenses.
- A negative cash flow resulting from the cash flow from income and expenditures.

For further information we refer to our audited Annual Accounts which are available at kncvtbc.org.

9.3 Outlook - Budget 2023

KNCV TB PLUS BUDGET FOR 2023 AS PER GUIDELINE RJ 650 (x €1,000)

	Actual 2021	Actual 2022	Budget 2023
Income:			
- Income from individuals	778	524	750
- Income from companies	812	856	0
- Income from lotteries	1.646	1.466	1.325
- Income from government subsidies	4.136	2.684	3.500
- Income from allied non-profit organizations	607	499	0
- Income from other non-profit organizations	7.854	10.388	13.600
Total fundraising income	15.833	16.418	19.175
- Income for supply of services	76	145	0
- Other income	0	2	0
Total income	15.910	16.564	19.175
Expenses:			
Expenses to KNCV's mission			
- TB control in low prevalence countries	706	248	260
- TB control in high prevalence countries	11.397	13.710	15.747
- Research	741	720	754
- Communication and advocacy	623	513	639
Expenses to acquisition of funds			
- Costs for own fundraising activities	162	304	453
- Costs for joint fundraising activities	0	0	0
- Costs for activities by third parties	363	454	329
- Costs to acquire subsidies	285	306	373
Management and control			
- Costs for management and control	675	541	644
Total expenses	14.953	16.796	19.199
Result before income from investments	957	-233	-24
- Income from investments	483	-979	24
Net result	1.440	-1.212	0

	Actual 2021	Actual 2022	Budget 2023
Change in expenses to KNCV's mission compared to previous year	88%	92%	128%
Ratio total expenses versus total income	94,0%	101,4%	100,1%
Ratio expenses for fundraising versus fundraising income	5,1%	6,4%	6,0%
Ratio continuity reserve versus organizational expenses	1,22	1,09	0,99
Ratio expenses on mission versus total expenses	90,1%	90,4%	90,6%
Ratio expenses to the mission versus total income	84,7%	91,7%	90,7%
Ratio expenses management and control versus total expenses	4,5%	3,2%	3,4%



ANNEX 1

KNCV PARTNERS IN 2022

KNCV Tuberculosis Foundation thanks all partners for their collaboration and support.

In the Netherlands:

- ABN AMRO Group
- Academic Medical Centre Amsterdam (AMC)
- AFEW International
- Aids Fonds
- AIGHD
- Amref Flying Doctors
- Amsterdam Institute for Global Health and Development (AIGHD)
- AOUTH Obufemi Awolowo University Teaching Hospitals
- Center for Infectious Disease Control Netherlands (CIb), at National Institute of Health
- Central Bureau for Fundraising
- Centraal Orgaan opvang asielzoekers (COA)
- Cepheid
- Committee for Practical TB Control (CPT) Netherlands
- Coördinatiecentrum Expertise Arbeidsomstandigheden en Gezondheid (CEAG), Ministry of Defense;
- Cordaid
- Delft Imaging Systems BV
- Dr. C. de Langen Stichting voor Mondiale Tuberculosebestrijding (SMT)
- Dutch Global Health Alliance
- EDCTP
- Erasmus University Rotterdam
- FIND Foundation for Innovative New Diagnostics
- Goede Doelen Nederland
- GGD GHOR Nederland
- 's-Gravenhaagse Stichting tot Steun aan de Bestrijding der Tuberculose
- Health Holland
- Hivos
- IAVI International Aids Vaccine Initiative
- IOM International Organization for Migration
- KIT Royal Tropical Institute
- KLM Royal Dutch Airlines
- KLM Flying Blue program
- LAREB
- Leids Universitair Medisch Centrum
- Maastricht University
- Mainline
- Madurodam Support Fund (Stichting Madurodam Steunfonds)

- Medical Committee Netherlands-Vietnam
- Ministry of Security and Justice - Penitentiary Services (Ministerie van Veiligheid en Justitie - Dienst Justitiële Inrichtingen)
- Mr. Willem Bakhuys Roozeboomstichting
- Municipal Public Health Services in the Netherlands (GGD)
- Municipality The Hague
- Nationale Postcode Loterij
- Nederlandse Loterij
- Nederlandse Vereniging van Artsen voor Longziekten en Tuberculose (NVALT)
- Nederlandse Vereniging voor Medische Microbiologie (NVMM)
- Ministry of Foreign Affairs/Development Cooperation (DGIS)
- Ministry of Health, Welfare and Sport (VWS)
- Netherlands School of Public and Occupational Health (NSPOH)
- NWO-WOTRO
- OGD
- PharmAccess Foundation
- Pharos
- Private Donors
- Radboud University Nijmegen
- Rijks Instituut voor Volksgezondheid en Milieu (RIVM)
- Royal Tropical Institute (KIT)
- SGF Samenwerkende Gezondheidsfondsen
- SMT
- Stichting Loterijacties Volksgezondheid (SLV)
- Stichting Suppletiefonds Sonnevanc
- Stop Aids Now!
- Taskforce Health Care
- Topsector Life Sciences and Health
- Tuberculosis Vaccine Initiative (TBVI)
- University Medical Center Groningen
- University Medical Center Utrecht
- Vereniging van Artsen werkzaam in de Tbc-bestrijding (VvAwT)
- Verpleegkundigen & Verzorgenden Nederland, Platform Verpleegkundigen Openbare Gezondheidszorg (V&VN/OGZ)
- VriendenLoterij
- WEMOS
- ZonMW
- And many others...

Local KNCV Partner organizations

- Yayasan KNCV Indonesia
- KNCV Tuberculosis Foundation Kenya
- KNCV Tuberculosis Foundation Nigeria
- KNCV Tuberculosis Foundation United States
- Kyrgyz Netherlands Community of Volunteers

Local KNCV Partner organizations

- Action Aid, Malawi
- Adelaide Supranational TB Reference Laboratory
- AIDS Center of Almaty City, Kazakhstan
- AFEW Kazakhstan
- ALERT, Ethiopia
- Almaty City healthcare department
- American Thoracic Society (ATS)
- Armauer Hansen Research Insititute (AHRI), Ethiopia
- Association of Family Doctors, Kazakhstan
- Aurum Insititute, South Africa
- Avenir Health
- Bill & Melinda Gates Foundation
- CAPRISA
- Centers for Disease Control and Prevention (CDC)
- Clinton Health Access Initiative (CHAI)
- Club des Ami Damien (CAD) Democratic Republic Congo
- Damien Foundation Belgium (DFB)
- Development Aid from People to People (DAPP) Malawi
- Development Aid from People to People (DAPP), Zimbabwe
- Duke University, USA
- DZK (German Central Committee against Tuberculosis)
- EGPAF
- Eli Lilly MDR-TB Partnership
- Elizabeth Glaser Pediatric Aids Foundation
- Ethiopian Public Health Institute (EPHI)
- European Centers for Disease Prevention and Control (ECDC)
- European and Developing Countries Clinical Trials Partnership (EDCTP)
- European Union (EU)
- Federal Office of Public Health (Switzerland)
- FHI 360
- The Finnish Lung Health Association (Filha)
- Foundation for Innovative New Diagnostics (FIND)
- German Leprosy Relief Association (GLRA)
- Regional GLCs (Green Light Committees)
- Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)
- GHC Global Health Committee
- Gondar University, Ethiopia
- GSK Biomedicals
- Hain Life Sciences
- Haramaya University, Ethiopia
- Harvard Medical School
- Indonesian Association against Tuberculosis (PPTI)

- Initiative Inc, Democratic Republic Congo
- Institute of Human Virology, Nigeria
- International Union Against Tuberculosis and Lung Disease (The Union)
- IRD (Interactive Research and Development)
- Japan Anti-Tuberculosis Association (JATA)
- John Hopkins University School of Medicine
- Karolinska Institute, Sweden
- Kazakhstan Union of People Living with HIV (PLHIV)
- Kazakhstan Prison System
- Korean Institute of Tuberculosis
- Korea International Cooperation Agency (KOICA)
- La Fondation Femme Plus, Democratic Republic of Congo
- Latvia TB Foundation
- Leprosy Mission International
- Les ambassadeurs de Sud-Kivu, Democratic Republic of Congo
- Ligue National Contre la Lèpre et la Tuberculose du Congo (LNAC)
- Liverpool School of Tropical Medicine (LSTM)
- London School of Hygiene and Tropical Medicine (LSHTM)
- Makerere University, Uganda
- Malawi TB Research Network
- Management Sciences for Health (MSH)
- Maternal and Child Health Integrated Program (MCHIP), Zimbabwe
- McGill University
- Médecins Sans Frontières (MSF)
- Mekelle University, Ethiopia
- Ministry of Health (in many countries)
- MSH Management Sciences for Health
- Namibian Red Cross Society
- National Agency for Control of AIDS (NACA), Nigeria
- National TB Reference Laboratories in the countries
- Netherlands-African partnership for capacity development and clinical interventions against poverty-related diseases (NACCAP)
- National TB Control Programs (NTPs) in many countries
- NGO Doverie Plus, Kazakhstan
- NGO Zabota, Kazakhstan
- Office of the US Global AIDS Coordinator
- Organization for Public Health Interventions and Development (OPHID) Trust, Zimbabwe
- Oxford Nanopore Technologies
- Partners in Health (PiH)
- Penduka, Namibia
- Population Services International (PSI)
- Private Health Sector Program, Ethiopia
- Program for Appropriate Technology in Health (PATH)
- Project Hope (in Kazakhstan, Kyrgyzstan, Namibia, Tajikistan)
- Qiagen
- Reach Ethiopia
- Regional Center of Excellence on PMDT, Rwanda

- Regional Health Bureaus (Ethiopia)
- Rehabilitation and Prevention of Tuberculosis (RAPT), Zimbabwe
- RESIST-TB
- Resource Group for Education and Advocacy for Community Health (REACH), India
- Riders for Health
- Sanofi
- St Peter specialized Hospital, Ethiopia
- Stellenbosch University
- Stop TB Partnership
- Swiss Tropical and Public Health Institute
- TB Alliance
- TB Europe Coalition
- TB Proof
- Treatment action Group
- Tuberculosis Modelling and Analysis Consortium (TB MAC)
- Tuberculosis Operational Research Group (TORG), Indonesia (including representatives of University of Indonesia, Padjadjaran University, Gadjah Mada University, Universitas Seblas Maret, Diponegoro University, University of Surabaya, Udayana University, and others)
- Tuberculosis Research Advisory Committee TRAC, Ethiopia
- UNICEF - University Clinical Centre
- Unitaid
- United Nations Development Program (UNDP)/Global Fund
- United States Agency for International Development (USAID)
- University of Antwerp, Belgium
- University of California San Francisco (UCSF)
- University of Cape Town - SATVI
- University of Gadjah Mada, Indonesia
- University of Oslo
- Vanderbilt University, USA
- World Health Organization (Headquarters and Regions)
- Zimbabwe National Network of People Living with HIV (ZNNP+)



ANNEX 2 POLICY BODIES IN WHICH KNCV WAS ACTIVE IN 2022

In 2022, KNCV was actively involved in:

- Important global WHO forums, such as: STAG-TB (Strategic and Technical Advisory Group); Global Task Force on TB Impact Measurement; Global Task Force on Latent TB Infection; Expert Committee on LTBI (product profiles); Global Task Force on New TB Drugs and Regimens.
- WHO Guideline development work: member of Guideline Development Group revision of the MDR TB treatment Guideline; support development Companion Handbook for DR-TB, WHO/TDR Short Generic Protocol for Operational Research, Guidance document on subnational TB incidence estimation (under preparation). Revision of interim guidance on bedaquiline and delamanid for the treatment of MDR-TB (technical resource person to the Guideline Development Group).
- Several regional WHO TB Technical Advisory Groups on TB Control (SEARO; WPRO); WHOEuro Childhood TB Task Force; Members/chair of regional GLC s in SEARO, EURO, WPRO.
- Stop TB Partnership's Coordinating Board.
- Several Stop TB Partnership working groups, sub-working groups and task forces, such as: GLI (Global Laboratory Initiative); GDI (Global Drug resistant TB Initiative); GDI DR-TB Research Task Force; GDI DR STAT Task Force; TB/HIV Co-infection (STBP); TB-Infection Control Working Group; Public Private Mix Working Group; Childhood TB Core Group;
- The Union: Europe Region Executive Committee; TB/HIV Working Group; TB & Migration Working Group, Ethics Working Group; Nursing and Allied Professionals sub section (secretariat)
- 50th Union World Conference on Lung Health 2019 in Hyderabad; review abstracts and chairing symposia
- Global Fund: NGO Developed Countries Delegation to the GF Board; CCM (Country Coordinating Mechanism) of Kazakhstan; Friends of the Global Fund Europe (member of the Advisory Committee); in 11 countries KNCV is a member of CCM-Global Technical Working Groups on TB and TB/HIV
- Alliances, Associations, Coalitions: TB Alliance SHA (Stakeholders Association); TB Europe Coalition (member Oversight Advisory Committee).
- Research Collaboration: TB Science; RESIST-TB (Research Excellence to Stop TB Resistance) Steering Committee.
- Wolfheze: Program Committee; Working Groups (Collaborative TB/HIV activities; New drugs and regimens, Patient-Centered Care).
- Steering Committees, Professional Associations in the Netherlands: CPT (Netherlands Committee for Practical TB Control); GGD (Municipal Public Health Services) Tuberculosis Steering Committee in the Netherlands; V&VN/OGZ (Professional Association of Nurses), TB Control Committee; MTMBVe (Professional Association of Medical Technical Assistants).
- Board member or/advisor to Foundations, NGOs in the Netherlands: Eijkman Stichting; 's-Gravenhaagse Stichting tot Steun aan de Bestrijding van Tuberculose; SMT (Stichting Mondiale Tuberculosebestrijding); Stichting Lampion (nationwide information point for care for undocumented immigrants); MCNV (Medical Committee Netherlands Vietnam)
- KNCV staff were also on the Editorial Board of:
- IJTLD (International Journal of Tuberculosis and Lung Disease).
- Periodical "Tegen de Tuberculose" (Against Tuberculosis).



ANNEX 3

SCIENTIFIC PUBLICATION

LIST 2021

1. **Mulder C**, Rupert S, Setiawan E, **Mambetova E**, **Edo P** et al. Budgetary impact of using BPaL for treating extensively drug-resistant tuberculosis. *BMJ Glob Health* 2022;7(1). Abstract

2. Asnake M, Henock A, Abayneh M, Getu S, Hailemariam S, **Zerihun D**. Acute interstitial nephritis with Prothionamide. *Sage Open Med Case Rep*. 2022. Abstract

3. **Pelzer PT**, **Smit Y**, Tiemersma EW, Huong NT, **Nhung NV**, Cobelens F. Does BCG vaccination protect against infection with *M. tuberculosis*? *Int J Tuberc Lung Dis*. 2022;26(6):529-536. Abstract

4. **Teferra G**, Teklemariam K, **Wares DF**, Negeri C, **Bedru A**. Hearing aid support for patients with DR-TB in Ethiopia. *Public Health Action* 2022;12(2):74-78 Abstract

5. Lazarchik A, Nyaruhirira AU, Chiang CY, **Wares F**, Horsburgh CR. Global availability of susceptibility testing for second-line anti-tuberculosis agents. *Int J Tuberc Lung Dis*. 2022; 26(6):524-528. Abstract

6. **Mitiku P**, **Scholten JN**, Getachew M, **Mulder C**. 3HP almost doubled the uptake of TB preventive treatment among PLHIV. *Int J Tuberc Lung Dis*. 2022;26(4):381-382. No abstract available.

7. **Spruijt I**, **Joren C**, van den Hof S, Erkens C. Tailored approaches facilitate high completion of tuberculosis infection treatment among migrants. *Eur Respir J*. 2022;59(3). No abstract available.

8. **Spruijt I**, **Joren C**, Schimmel H, Procee F, **Alam Y**, van den Hof S et al. The identification of prevalent tuberculosis disease through infection screening among high-risk migrants in the Netherlands. *Eur Respir J*. 2022;59(5). No abstract available.

9. Migliori GB, Wu SJ, Matteelli A, Zenner D, Goletti D, **Erkens C** et al. Clinical standards for the diagnosis, treatment and prevention of TB infection. *Int J Tuberc Lung Dis*. 2022;26(3):190-205. Abstract

10. **Jerene D**, **Muleta C**, Ahmed A, Tarekegn G, Haile T, **Bedru A**, **Gebhard A**, **Wares F**. High rates of undiagnosed diabetes mellitus among patients with active tuberculosis in Addis Ababa, Ethiopia. *J Clin Tuberc Other Mycobact Dis*. 2022;23-27. Abstract

11. Starke JR, **Erkens C**, Ritz N, Kitai I. Strengthening Tuberculosis Services for Children and Adolescents in Low Endemic Settings. *Pathogens* 2022;11(2):158. Abstract

12. Munteanu I, Cioran N, van Hest R, Abubakar I, Story A, **de Vries G et al**. Tuberculosis Surveillance in Romania Among Vulnerable Risk Groups Between 2015 and 2017. *Ther Clin Risk Manag*. 2022(18):439-446. Abstract

13. Umubyeyi Nyaruhirira A, **Scholten JN**, **Gidado M**, Suarez PG. Coronavirus Disease 2019 Diagnosis in Low- and Middle-Income Countries: The Big New Bully Disrupting TB and HIV Diagnostic Services. *J Mol Diagn*. 2022;24(4):289-293. Abstract

14. Shanaube K, Schaap A, Klinkenberg E, Floyd S, Bwalya J, **de Haas P et al**. SARS-CoV-2 seroprevalence and associated risk factors in peri-urban Zambia: a population-based study. *Int J Infect Dis* 2022118:256-263. Abstract

15. **Erkens C**, **Tekeli B**, van Soolingen D, Schimmel H, Verver S. Recurrent tuberculosis in the Netherlands - a 24-year follow-up study, 1993 to 2016. *Euro Surveill* 2022;27(12). Abstract

16. **Odume B**, **Chukwu E**, **Fawole T**, **Nwokoye N**, **Ogbudebe C**, **Chukwuogo O** et al. Portable digital X-ray for TB pre-diagnosis screening in rural communities in Nigeria. *Public Health Action* 2022;12(2):85-89. Abstract

17. Kilale AM, Pantoja A, Jani B, Range N, Ngowi BJ, **Mahamba V** et al. Economic burden of tuberculosis in Tanzania: a national survey of costs faced by tuberculosis-affected households. *J.BMC Public Health* 2022;22(1):600. Abstract

18. Foster N, Nguyen HV, Nguyen NV, Nguyen HB, **Tiemersma EW**, Cobelens FGJ et al. Social determinants of the changing tuberculosis prevalence in Viêt Nam: Analysis of population-level cross-sectional studies. *PLoS Med* 2022;18-19. Abstract

19. Mafirakureva N, Klinkenberg E, **Spruijt I**, **Levy J**, Shaweno D, **de Haas P** et al. Xpert Ultra stool testing to diagnose tuberculosis in children in Ethiopia and Indonesia: a model-based cost-effectiveness analysis. *BMJ Open* 2022;12(7). Abstract

20. Watumo D, Mengesha MM, Gobena T, Gebremichael MA, **Jerene D**. Predictors of loss to follow-up among adult tuberculosis patients in Southern Ethiopia: a retrospective follow-up study. *BMC Public Health* 2022;22(1):976. Abstract

21. Baarsma ME, van de Schoor FR, Gauw SA, Vrijmoeth HD, Ursinus J, **Kremer K** et al. Diagnostic parameters of cellular tests for Lyme borreliosis in Europe (VICTORY study): a case-control study. *Lancet Infect Dis*. 2022;22(9):1388-1396. Abstract

22. **Lwanga A**, Mwanga HH, Mrema EJ. Prevalence and risk factors for non-collision injuries among bus commuters in Dar es Salaam, Tanzania. *BMC Public Health* 2022;22(1):963. Abstract

23. **Jerene D**, **Assefa D**, Tesfaye K, **Bayu S**, Seid S, Aberra F et al. Effectiveness of women-led community interventions in improving tuberculosis preventive treatment in children: results from a comparative, before-after study in Ethiopia. *BMJ Open* 2022;12(7). Abstract

24. Muhammad Dayyab F, Ilyasu G, Garba Ahmad B, Aliyu Umar I, Musa Shuaib N, **Bajehson M** et al. Emerging threat of drug-resistant tuberculosis and trends in the era of COVID-19: A descriptive study from northwestern Nigeria. *J Clin Tuberc Other Mycobact Dis*. 2022;28. Abstract

25. Floyd S, **Klinkenberg E**, **de Haas P**, Kosloff B, Gachie T, Dodd PJ, Ruperez M et al. TREATS study team.Optimising Xpert-Ultra and culture testing to reliably measure tuberculosis prevalence in the community: findings from surveys in Zambia and South Africa. *BMJ Open*. 2022;12(6). Abstract

26. Gebreegziabher SB, **Marrye SS**, Kumssa TH, Merga KH, Feleke AK, **Dare DJ** et al. Assessment of maternal and child health care services performance in the context of COVID-19 pandemic in Addis Ababa, Ethiopia: evidence from routine service data. *Reprod. Health*. 2022;19(1):42. Abstract

27. Nguyen HV, **de Haas P**, Nguyen HB, Nguyen NV, Cobelens FGJ, **Mirtskhulava V** et al. Discordant results of Xpert MTB/Rif assay and BACTEC MGIT 960 liquid culture to detect *Mycobacterium tuberculosis* in community screening in Vietnam. *BMC Infect Dis*. 2022 22(1):506. Abstract

28. **Sintayehu K**, Zeleke ED, Temesgen B, Kifle M, Assefa DG, Zenebe K et al. Determinants of stock-outs of first line anti-tuberculosis drugs: the case of public health facilities of Addis Ababa city administration health bureau, Addis Ababa, Ethiopia. *BMC Health Serv Res*. 2022 22(1):1047. Abstract

29. de Groot LM, Straetemans M, Maraba N, Jennings L, Gler MT, **Efo E** et al. Time Trend Analysis of Tuberculosis Treatment While Using Digital Adherence Technologies-An Individual Patient Data Meta-Analysis of Eleven Projects across Ten High Tuberculosis-Burden Countries. *Trop Med Infect Dis*. 2022;7(5):65. Abstract

30. Corbett C, Kalmambetova G, Umetalieva N, Ahmedov S, Antonenka U, **Myrzaliev B** et al. QuantiFERON-TB Gold plus testing for the detection of LTBI among health care workers in major TB hospitals of the Northern Kyrgyz Republic. *BMC Infect Dis*. 2022;22(1):180. Abstract

31. Hoeve-Bakker BJA, Jonker M, Brandenburg AH, den Reijer PM, Stelma FF, **Kremer K** et al. The performance of nine commercial serological screening assays for the diagnosis of Lyme borreliosis: a multicenter modified two-gate design study. *Microbiol Spectr*. 2022; 27;10(2). Abstract

32. van Gorkom T, Voet W, van Arkel GHJ, Heron M, Hoeve-Bakker BJA, **Kremer K et al**. Retrospective evaluation of various serological assays and multiple parameters for optimal diagnosis of Lyme neuroborreliosis in a routine clinical setting. *Microbiol Spectr*. 2022; 10(3). Abstract

33.**Kremer K**, van Weezenbeek K. Mondiale blik op tuberculose en recente ontwikkelingen in de tuberculosediagnostiek. *Ned. Tijdschr. Med. Microbiol*. 2022; 30:2;76-84. Abstract

34. Cobelens F, Kumar Suri R, Helinski M, Makanga M, Weinberg A, Schaffmeister B et al. Accelerating research and development of new vaccines against tuberculosis: a global roadmap. *Lancet* 2022. (Vol. 22): 108-120. Abstract

35. **Pelzer PT**, Seeley J, Yueqian Sun F, Tameris M,

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83

Tao L, Yanlin Z, et al. Potential implementation strategies, acceptability, and feasibility of new and repurposed TB vaccines. PLOS Global Public Health 2022. Abstract

36. Salazar-Austin N, **Mulder C**, Hoddinott G, Ryckman T, Hanrahan CF, Velen K et al. Preventive Treatment for Household Contacts of Drug-Susceptible Tuberculosis Patients. Pathogens 2022; 11(11):1258. Abstract

37. Mangochi P, Bossard C, Catacutan C, Van Laeken D, **Meis M**, **Abura A** et al. TB screening, prevention and treatment cascade in a Malawi prison. Int J Tuberc Lung Dis. 2022; 26(10):956-962. Abstract

38. Nnaemeka VC, Onwe RO, Ekwedike AL, Oyedele OE, Tsiterimam TS, **Nwokoye NN** et al. Predictors of COVID-19 Vaccine Acceptance among Healthcare Workers in Nigeria. Vaccines 2022;10(10):1645. Abstract

39. **Gidado M**, Mitchell EMH, Adejumo AO, Levy J, Emperor O, Lawson A et al. Assessment of TB underreporting by level of reporting system in Lagos, Nigeria. Public Health Action 2022;12(3):115-120. Abstract

40. Kilale AM, Makasi C, Majaha M, Manga CD, Haule S, **Mahamba V** et al. BMC Public Health. 2022;22(1):2187. Implementing tuberculosis patient cost surveys in resource-constrained settings: lessons from Tanzania. Abstract

41. Menezes D, Zenner D, de Vries G, **Erkens C**, **van Rest J**, **Spruijt I** et al. Int J Tuberc Lung Dis. 2022;26(10):942-948. Country differences and determinants of yield in programmatic migrant TB screening in four European countries. Abstract

42. Jayawardana S, Weerasuriya CK, **Pelzer PT**, Seeley J, Harris RC, Tameris M. et al. Feasibility of novel adult tuberculosis vaccination in South Africa: a cost-effectiveness and budget impact analysis. NPJ Vaccines 2022; (1):138. Abstract

43. **Jerene D**, **Muleta C**, **Bedru A**, **Mustapha G**, **Gebhard A**, **Wares F** et al. The yield of chest X-ray based versus symptom-based screening among patients with diabetes mellitus in public health facilities in Addis Ababa, Ethiopia. J Clin Tuberc Other Mycobact Dis. 2022;29. Abstract

44. Milaham M, Van Gorp M, Adewusi OJ, Okonuga OC, Ormel H, **Gidado M** et al. Assessment of tuberculosis case notification rate: spatial mapping of hotspot, coverage and diagnostics in Katsina State, north-western Nigeria. J Public Health Afr. 2022;13(3):2040. Abstract

45. Mengesha MM, Embibel M, Gobena T, Tunje A, **Jerene D**, Hallström IK. Antiretroviral therapy non-adherence among children living with HIV in Dire Dawa, Eastern Ethiopia: a case-control study. BMC Pediatr. 2022;22(1):653. Abstract

46. **de Haas P**, Yenew B, Diriba G, Amare M, **Slyzkyi A**, **Demissie Y** et al. The Simple One-step stool processing method for detection of Pulmonary tuberculosis: A study protocol to assess the robustness, stool storage conditions and sampling strategy for global implementation and scale-up. PLoS One. 2022;17(10). Abstract

ANNEX 4

ABBREVIATIONS

1HP a TPT regimen of daily doses of isoniazid and rifapentine taken for 1 month
3HP a TPT regimen of weekly doses of isoniazid and rifapentine taken for 3 months
ASCENT Adherence Support Coalition to End TB
ACE Accelerating Control of the HIV Epidemic in Nigeria
ADRs Adverse Drug Reaction
aDSM Active Drug safety management and monitoring
Ag-RDTs antigen-detection rapid diagnostic tests for COVID-19
AIGHD Amsterdam Institute for Global Health and Development
AMR Antimicrobial Resistance
ASCENT Adherence Support Coalition to End TB
BCG Bacille Calmette Guérin
BMGF Bill & Melinda Gates Foundation
BPaL a 6 Month treatment for patients with advanced forms of drug-resistant TB utilizing
the drugs: Bedaquiline, Pretomanid and Linezolid
BPaLM a 6 Month treatment for patients with advanced forms of drug-resistant TB
utilizing the drugs: Bedaquiline, Pretomanid, Linezolid and Moxifloxacin
BSc Bachelor of Science
CAPRISA Center for the AIDS Program of Research in South Africa
CBF Centraal Bureau Fondsenwerving (Central Bureau for Fundraising in the Netherlands)
CD4D2 Connecting Diaspora for Development
COVID-19 Corona Virus Disease 2019
CTP Netherlands Tuberculosis Control Policy Committee
DAPP Development Aid from People to People
DATs Digital Adherence Technologies
DHSI2 Digital Health Information System
DOTS Directly Observed Treatment, Short-course
DR-TB Drug-Resistant Tuberculosis
ECG Electrocardiogram
EDCTP European and Developing Countries Clinical Trials Partnership
EPHI Ethiopian Public Health Institute
EQA External Quality Control
ETBE Eliminate Tuberculosis from Ethiopia
EWORS Early Warning Outbreak Recognition System
F&A KNCV's Finance and Administration Division
FAST Finding, Actively, Separating, Treating
GDPR the European Union General Data Protection Regulation

GGD Municipal Public Health Services
Global VAX Global Vaccine Access
HIV Human Immunodeficiency Virus
HR KNCV's Human Resource team
IGRA Interferon Gamma Release Assay
IHVN Institute for Human Virology of Nigeria
Impaact4C19 Improving Public Health Outcomes through Enhancing Accelerated Access
to Care ad Treatment for COVID-19
IMPAACT4TB Increasing Market and Public health outcomes through scaling up Affordable
Access models of short Course preventive t for TB
iNTP Introducing New Tools Project
IVR Interactive voice recognition
KIT Royal Tropical Institute
KNCV Koninklijke Nederlandse Centrale Vereniging tot bestrijding der Tuberculose
KOICA Korea International Cooperation Agency
Labmicta Laboratory for Microbiology Twente
Achterhoek
LIFT-TB Leveraging Innovation for Faster Treatment of Tuberculosis
LON-2 Local Organizations Network-2
LSH Life Sciences and Health
LTBI Latent Tuberculosis Infection
M&E Monitoring and Evaluation
M.tuberculosis or MTB Mycobacterium tuberculosis
MDF Management for Development Foundation
MDR-TB Multidrug-resistant Tuberculosis
MSc Master of Science
NGO Non-Governmental Organization
NSPOH Netherlands School for Public & Occupational Health
NTP National Tuberculosis Program
NTLP National Tuberculosis and Leprosy Program
OAUTH Obafemi Awolowo University Teaching Hospital
ONT Oxford Nanopore Technologies
Operations KNCV's Operations Division
PANGenS Pan-African network for Genomic Surveillance
PAS4AMR Portable Adaptive Sequencing technology to detect Antimicrobial Resistance
PAVIA PhArmacoVigilance Africa
PCF People Centered Framework for TB Programming
PhD Doctor of Philosophy
PLHIV People Living with HIV
PLoS one Open Access publisher
PODTEC Painless Optimized Diagnosis of Tuberculosis in

Ethiopian Children
PV Phamacovigilance
RIVM Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health
and the Environment)
SARS-CoV-2 Severe Acute Respiratory Syndrome Coronavirus 2
SITRUST Sistem Informasi Treking Untuk tranSporTasi
SMART Specific, Measurable, Achievable, Relevant and Time-bound
SMART4TB Supporting, Mobilizing, and Accelerating Research for Tuberculosis Elimination
SOP Standard Operating Procedure
SOS Simple One Step
SSA Sub Saharan Africa
TB Tuberculosis
TB/HIV Tuberculosis and/or Human Immunodeficiency Virus
TBE&HSI KNCV's TB Elimination and Health Systems Innovations Division
TBI Tuberculosis Infection
TB-LAMP Loop-Mediated Isothermal Amplification for the Diagnosis of Pulmonary
Tuberculosis
The Global Fund The Global Fund to fight AIDS, Tuberculosis and Malaria
TPT Tuberculosis Preventive Treatment
TriAD Triage Tests for All Oral DR TB Regimen
Union International Union Against Tuberculosis and Lung Disease
USAID United States Agency for International Development
WHO World Health Organization
WoW Wellness on Wheels
XDR Extensively Drug-Resistant Tuberculosis

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FOUNDATION

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2022**