

# 2024 Annual Meeting

12 November 2024

Bali, Indonesia





7<sup>TH</sup> GLOBAL FORUM  
ON TB VACCINES

8-10 October 2024  
Rio de Janeiro, Brazil

Driving innovation from discovery to access

# Overview and Key Outcomes: 7<sup>th</sup> Global Forum on TB Vaccines



# 7<sup>th</sup> Global Forum on TB Vaccines

## 8 – 10 October 2024

### Rio de Janeiro, Brazil

- First Global Forum convened in the Americas
- Nearly **340 registrations** from **34 countries**
- More than 120 participants identified as **early career researchers**
- Convened under the overarching theme “Driving innovation from discovery to access”, program addressed the full spectrum of research and development and explored strategies to ensure new TB vaccines reach the populations that most need them and to maximize the public health impact
- Program was developed around five thematic tracks, aligned with global frameworks for TB vaccine development and implementation
- 85 speakers across 20 plenary, oral abstract, discussion, and poster viewing sessions

# Opening and Closing Sessions



Keynote address by WHO Chief Scientist  
Jeremy Farrar



Secretary of Health Surveillance and  
Environmental Health Ethel Maciel and  
Brazil Vaccine Mascot Zé Gontinha  
welcome participants



Opening panel discussion with Suvanand Sahu (Stop  
TB Partnership), Mario Moreira (Fiocruz), Nina Russell  
(Gates Foundation), Ruben Rizzi (BioNTech, Mark  
Hatherill (SATVI) and Ethel Maciel (Ministry of Health)



Lucica Ditiu (Stop TB Partnership) and Michel Kazatchkine give remarks during the Closing Session

# Diversifying the TB Vaccine Pipeline

David Lewinsohn





# Program-at-a-glance

Time	Tuesday, 8 October	Wednesday, 9 October	Thursday, 10 October	Friday, 11 October
08:30 – 09:00	Poster Set-up	Arrival   Coffee   Networking	Arrival   Coffee   Networking	Site Visits
09:00 – 09:30	Registration   Coffee Poster Viewing	Plenary 3: Advancing TB vaccine clinical development: Learning from experience & looking to the future	Plenary 5: Innovative approaches to TB vaccine development	
09:30 – 10:00				
10:00 – 10:30	Opening Session & Keynote Address	Coffee/Tea Break	Coffee/Tea Break	
10:30 – 11:00				
11:00 – 11:30		Oral Abstract Sessions <ul style="list-style-type: none"><li>• OA1: Mechanisms of biomarkers &amp; protection, novel approaches, human challenge, optimizing animal models</li><li>• OA2: Advancing clinical development</li></ul>	Oral Abstract Sessions <ul style="list-style-type: none"><li>• OA3: Improved formulation &amp; delivery platforms, preclinical research</li><li>• OA4: Impact, implementation, policy</li></ul>	
11:30 – 12:00				
12:00 – 12:30	Lunch	Lunch	Lunch	
12:30 – 13:00				
13:00 – 13:30	Plenary 1: From discovery to access	Plenary 4: Country scale-up & implementation of new TB vaccines	Discussion Sessions (x3)	
13:30 – 14:00				
14:00 – 14:30	Break   Poster Viewing	Break   Poster Viewing	Break (15 mins)	
14:30 – 15:00			Plenary 6: Enabling TB vaccine development through funding, political will, open science, & engaged communities	
15:00 – 15:30				
15:30 – 16:00			Plenary 2: Global & regional enablers for the introduction of new TB vaccines	
16:00 – 16:30	Free Evening			
16:30 – 17:00		Welcome Reception (until 20:00)	Free Evening	
17:00 – 17:30				
17:30 – 18:00				
18:00 – onward				

This is a preliminary program and subject to change

# TB Vaccine Pipeline

## Vaccine candidates under clinical development

There are 15 vaccine candidates in the pipeline as of September 2024, of which 12 are in active trials. The candidates are placed under the phase which corresponds to the most advanced ongoing or completed trial.

Platform

Mycobacterial - Live attenuated

Mycobacterial - Inactivated

Viral vector

Protein/Adjuvant

RNA

Candidate target population

Elderly

Adults

Adolescents

Children

Infants

People living with HIV

-Mtb

People without Mtb infection

+Mtb

People with Mtb infection

aTBd

People with active TB disease

MDR

People with MDR-TB

cTB

People cured of active TB

Trial status

Active trials

No active trials

Primary candidate indication

POI

Prevention of Infection

POD

Prevention of Disease

POR

Prevention of Recurrence

Thp

Therapeutic

Phase 1	Phase 2a	Phase 2b	Phase 3
<b>BNT164a1</b> BioNTech, Gates Foundation POD +Mtb Active trials	<b>AEC/BC02</b> Anhui Zhifei Longcom POD +Mtb Active trials	<b>DAR-901</b> Dartmouth POD No active trials	<b>BCG (traveler vaccine)*</b> HJF POI -Mtb Active trials
<b>BNT164b1</b> BioNTech, Gates Foundation POD Active trials	<b>ChAdOx1.85A +MVA85A</b> Univ. Oxford POD cTB -Mtb +Mtb No active trials	<b>RUTI®</b> Archivel Farma Thp +Mtb cTB aTBd MDR Active trials	<b>GamTBvac</b> Gamaleya Res. Centre, MoH Russia POD Active trials
<b>TB/FLU-05E</b> Smor Res Inst of Influenza, Russia MoH POI Active trials	<b>ID93 + GLA-SE</b> NIAID/NIH POD QTP101 Quratis No active trials		<b>Immuvac (MIP)</b> ICMR, Cadilla Pharma POD Active trials
<b>H107/CAF10b</b> SSI POD -Mtb +Mtb Active trials			<b>MTBVAC</b> Biofabri, Univ. Zaragoza, TBVI, IAVI, Bharat, HVTN POD Active trials
			<b>VPM1002</b> SIIPL, VPM POI cTB Active trials
			<b>M72/AS01E</b> Gates MRI, GSK POD -Mtb +Mtb Active trials

**Strength:**  
Diversity of vaccine platforms

**Weakness:**  
Few candidates (14 + BCG)  
Few novel antigens

Stop TB Partnership  
WORKING GROUP ON  
NEW TB VACCINES

Information reported by vaccine sponsors or found in clinical trial registries or other public sources

Institutions listed are vaccine sponsors and development partners

Additional information, including the full list of clinical trials for each candidate, can be accessed via the QR code or at [newtbvaccines.org/tb-vaccine-pipeline/](https://newtbvaccines.org/tb-vaccine-pipeline/)

Last update: 2 September 2024

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# Key Topics Addressed

*Efforts to develop biomarkers, correlates of protection, and measure of bacterial burden*

- Lessons learned from the M72 prevention of disease trial (Nemes) and the H56:IC31 prevention of recurrence trial (Scriba, Mendelsohn)
- Intravenous BCG in nonhuman primates (Darrah, Verreck)
- Aerosol BCG (Li)
- Understanding bacterial burden through the lymph node (Young)

*Increase diversity through novel approaches and delivery platforms*

- Increasing the diversity of antigens (Ogongo)
- Explore novel delivery platforms for TB vaccines, including self-adjuvanting vaccines (Tran et al) and RNA (Fulton, Kovalchuke)
- Co-infection (Cohen) and humanized mouse model (Trentini) for clearance of infection



## *Optimize animal models to better reflect human disease*

- Ultra low-dose (Plumlee, Fulton) and NHP models (Verreck, Darrah) for **prevention of infection**
- Using the mouse co-infection (Plumlee) and humanized mouse as a model for immunotherapy (Trentini) for **clearance of infection**

## *Human challenge model/Controlled human infection model*

- Progress and lessons learned in developing an aerosol BCG human challenge model

# Accelerating Clinical Development

Ann Ginsberg

(no slides)



# Ensuring Public Health Impact & Implementation of New TB Vaccines

Richard White



# Highlights

## Impressive country preparedness

- Preparing the landscape for TB vaccines: South Africa's strategic planning

## First data on new (TB) vaccine acceptability

- Generic vaccines in TB HBCs
- TB Vx - HCW/community in Zambia; pregnant women in 4 countries; adolescents in Khayelitsha; adolescents in Mozambique
- Standardised survey questions available

## Useful modelling/framework activities

- What to do if vaccine doses are limited? & Fair allocation frameworks?
- TB vaccine impact models being developed in LMICs – India at conf (Jessy); S Africa, Indonesia, Brazil coming...



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- **Preparing the landscape for TB vaccines: South Africa's strategic planning**

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# Preparing the landscape for TB vaccines: South Africa's strategic planning

*Ndjeka et al, S Africa MoH*

## Describe country preparedness

South Africa has prioritised vaccine preparedness as reflected in the NTP Strategic Plan, 2023-28. In collaboration with the national TB Think Tank and NAGI, preparatory work for the introduction of TB vaccines is currently in progress



Three TB vaccine-related activities were prioritised in South Africa's TB Strategic Plan 2023-28



A new indicator was introduced to monitor provincial TB vaccine readiness



A TB Vaccine Working Group was established in the National Advisory Group on Immunization (NAGI)



South Africa's Health Minister sits on World Health Organization's TB Vaccine Accelerator Council

=> Encouraging

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# New tuberculosis vaccines are in late-stage trials, but how confident is the public in high burden countries in vaccines?

## Hesketh et al, GAVI/LSHTM

### Analysis of existing vaccine confidence data in TB HBCs

Of the 18 countries included, 14 had an overall 2023 vaccine confidence score of 80% or higher. Four countries had a score over 90%: Vietnam (98.5%), Ethiopia (95.5%), India (91.8%), and Sierra Leone (90.6%).

Cameroon had the lowest score with 63.0% followed by Ukraine (66.2%), Russia (70.5%), and South Africa (75.5%). These four countries make up 5.75% of the total TB burden in our sample and may require future attention to ensure confidence in a new TB vaccine.

Country	Estimated number of incident TB cases in 2022	Combined vaccine confidence score for 2023 (% positive)	Difference in combined vaccine score compared to 2022 (% difference)
India	2,820,000	91.8	-4.8
Indonesia	1,060,000	84.3	NA
Philippines	737,000	84.8	+4.1
Pakistan	608,000	83.8	+5.1
Nigeria	479,000	89.1	+6.0
DRC	314,000	83.2	+7.2
South Africa	280,000	75.5	+0.7
Vietnam	172,000	98.5	+0.6
Ethiopia	156,000	95.5	NA
Kenya	128,000	89.3	+3.9
Thailand	111,000	87.2	NA
Brazil	105,000	88.5	-3.4
Uganda	94,000	88.9	+3.4
Russia	56,000	70.5	+5.9
Cameroon	44,000	63.0	-11.4
Ukraine	36,000	66.2	NA
Sierra Leone	25,000	90.6	NA
Liberia	16,000	87.9	NA

→ Encouraging, with caveats



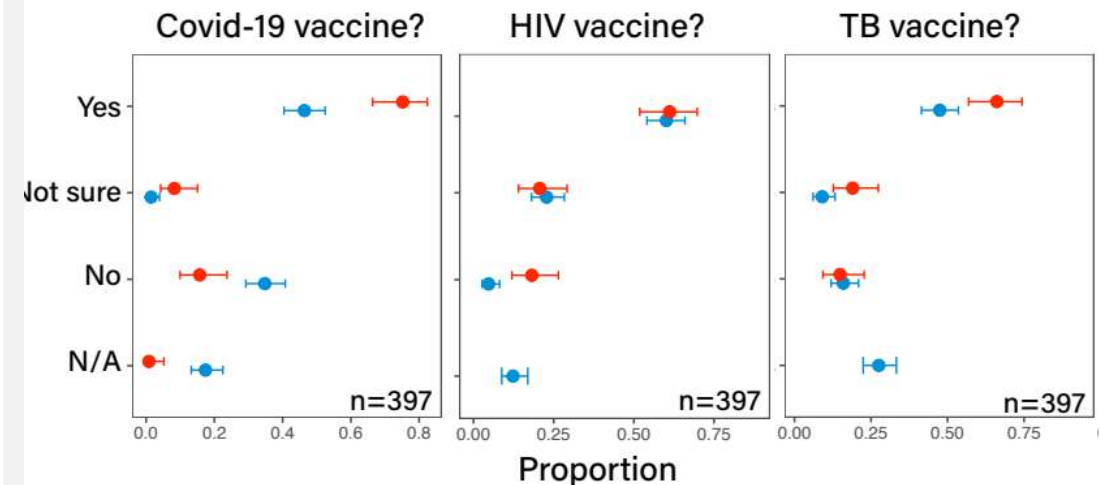
# Insights into TB vaccine acceptability among adolescents in Khayelitsha through community engagement

**Koch et al, UCT**

Adolescents (400), Khayelitsha, South Africa

High acceptability, but reasons for not sure/no often due to lack of understanding about TB risk

## 2. Adolescent reluctance/willingness to vaccinate



=> Encouraging, but education necessary

# Willingness to receive a future adult tuberculosis vaccine in Lusaka, Zambia: Perspectives from community members and healthcare workers.

*Kerkhoff et al, UCSF*

Aim - To reach adult community members and HCWs in high TB burden settings, it is crucial to understand both preliminary willingness to receive a TB vaccine and communication preferences to design strategies to optimize demand and acceptance.

Zambia community (400) and HCWs (100) from low covid vx uptake communities

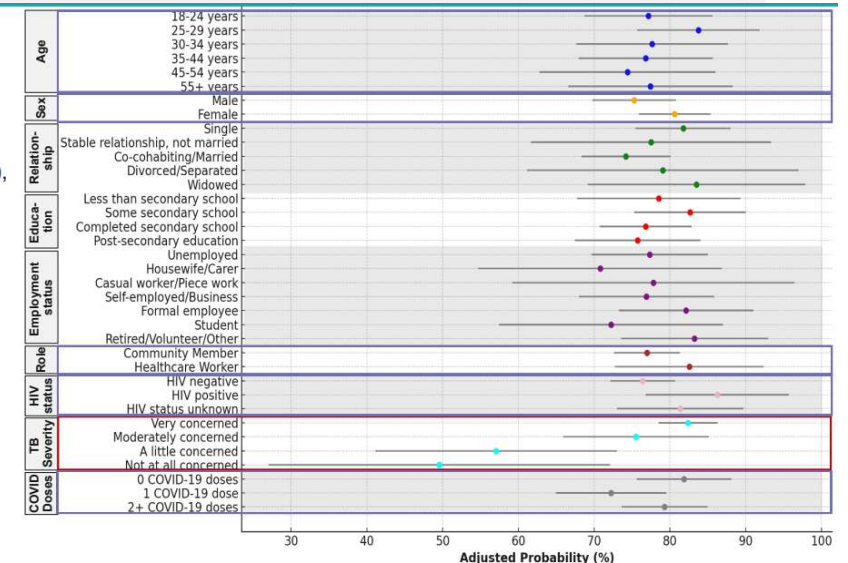
- **High predicted TB vaccine intention across most subgroups and no major differences.**

- HCWs (83%) and CMs (77%), age, sex, or HIV status

- **No association with number of COVID-19 vaccine doses.**

- **Intention strongly associated with perceived TB threat.**

- Both TB risk perception and concern about TB severity



➔ Encouraging, but education necessary

Garcia-Basteiro, Manhica Health Research Center (CISM), Mozambique

Aim - Document intention to receive a new TB vaccine or BCG booster dose among adults, adolescents (aged 9-17) and their caretakers, in Manhica, southern Mozambique.

Overall, intention to receive a new TB vaccine or a BCG booster among adults and adolescents is high in southern Mozambique

Table. Intention to vaccinate by group and gender for new TB vaccine or a BCG booster dose

Characteristic	Adult			Adolescent			Caretaker		
	Male N = 59	Female N = 92	Overall N = 151	Male N = 14	Female N = 27	Overall N = 41	Male N = 5	Female N = 44	Overall N = 49
Would Receive New TB Vaccine									
Yes	44 (75%)	68 (74%)	112 (74%)	11 (79%)	25 (93%)	36 (88%)	5 (100%)	31 (70%)	36 (73%)
No	11 (19%)	4 (4.3%)	15 (9.9%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (9.1%)	4 (8.2%)
Maybe	4 (6.8%)	20 (22%)	24 (16%)	3 (21%)	2 (7.4%)	5 (12%)	0 (0%)	9 (20%)	9 (18%)
Would Receive BCG Booster									
Yes	54 (92%)	71 (77%)	125 (83%)	11 (79%)	26 (96%)	37 (90%)	5 (100%)	39 (89%)	44 (90%)
No	2 (3.4%)	8 (8.7%)	10 (6.6%)	0 (0%)	1 (3.7%)	1 (2.4%)	0 (0%)	2 (4.5%)	2 (4.1%)
Maybe	3 (5.1%)	13 (14%)	16 (11%)	3 (21%)	0 (0%)	3 (7.3%)	0 (0%)	3 (6.8%)	3 (6.1%)

n (%)

=> Encouraging

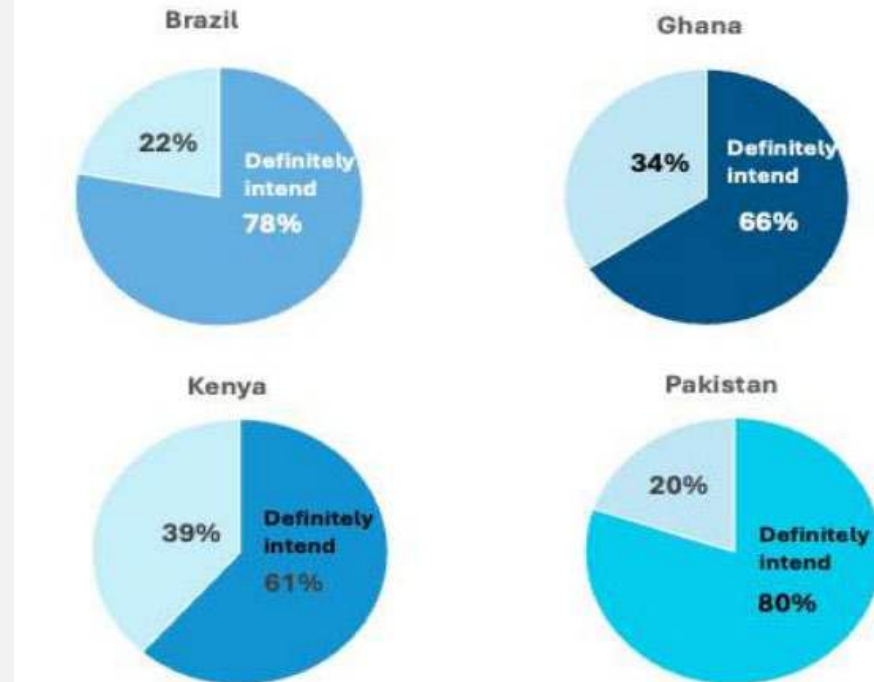
# Willingness to receive a future TB vaccine among pregnant women living in Brazil, Ghana, Kenya, and Pakistan

**Limaye et al, JHU**

Our study assessed the willingness of pregnant women across four countries - Brazil, Ghana, Kenya, and Pakistan to receive a future TB vaccine.

~400 per country

We surveyed 1597 women total. When asked about their intentions to receive a future TB vaccine, the majority of women in each country indicated that they would “definitely intend to receive a TB vaccine”: 77.9% in Brazil, 65.6% in Ghana, 61.5% in Kenya, and 80.2% in Pakistan



=> Encouraging



- Now standardised survey questions available, to improve comparability
- Contact [rebecca.clark@Isthm.ac.uk](mailto:rebecca.clark@Isthm.ac.uk)

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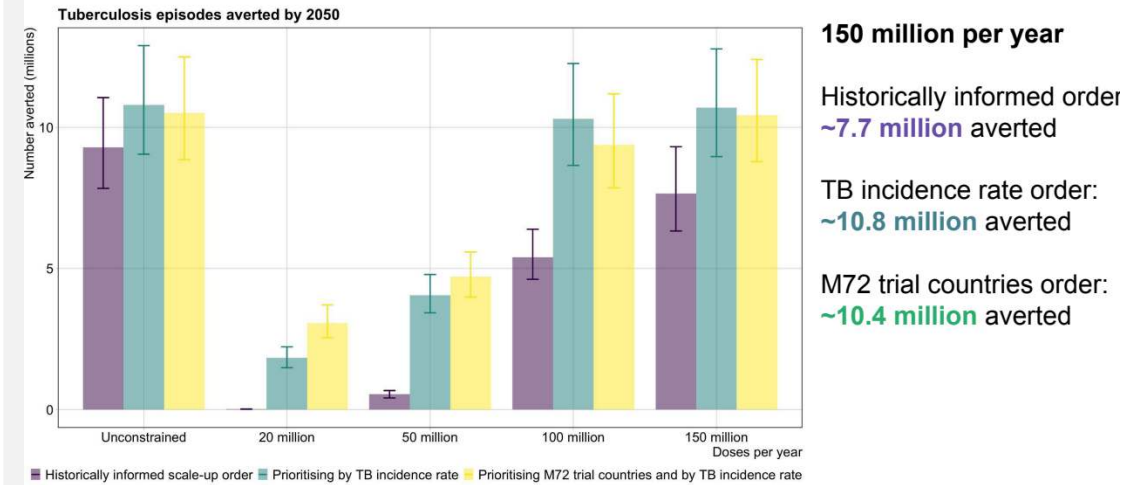
# 'Facing up to reality— What to do if M72/AS01E doses are limited?'

Clark et al, LSHTM

Aim - used modelling to investigate the difference in impact from varying the number of vaccine doses available and varying the country-specific order of vaccine introduction.

Country introduction order:

- Historically Informed
- TB incidence rate/ M72 trial countries first



**=> Makes a big difference, especially at low dose availability**

# Navigating the unknown: Ensuring equitable TB vaccine access to maximize health impact

*Limaye et al, JHU*

A scoping literature review is underway to identify key principles and strategies from vaccine introduction strategies

Key considerations include prioritizing based on need, maximizing health impact, ensuring equity, access, and affordability

The goal is to create a transparent, evidence-based framework that informs national and global policy under conditions of limited supply, while market shaping and communication efforts work toward meeting global demand

## ILLUSTRATIVE SHARED LIMITED VACCINE SUPPLY PRINCIPLES



**Maximum Benefit**

Prioritize protecting public health by reducing severe illness and death, especially for high-risk groups and essential workers. **Balance individual and societal needs** for maximum societal impact.



**Fairness**

Ensure **transparent, inclusive, data-driven decisions** based on ethical principles, with input from affected groups and ongoing public engagement to promote legitimacy and acceptance.



**Greatest need**

Focus on **areas with the highest disease burden** where vaccination programs can have the greatest impact. Maximize lives saved by targeting regions with the highest need.



**Transparency**

Communicate vaccine allocation criteria clearly, including their ethical basis, to **build public trust and ensure accountability** in the vaccination process.



**Mitigation of health inequities**

**Treat all individuals with equal dignity** and ensure non-discriminatory vaccine distribution. Use impartial criteria and, if necessary, random or weighted selection to ensure fairness.



**Evidence-based**

Use the **best available scientific evidence** to guide vaccine phases, adapting as knowledge about disease risk and vaccine effectiveness evolves.



**Fair benefit Sharing**

Give some **priority to countries involved in vaccine development**, but prioritize areas with the highest health impact. In cases of equal need, contributing countries may be given preference.



# TB vaccine impact models being developed *in* LMICs – India at conf (Jessy); S Africa, Indonesia, Brazil coming...

Jessy Joseph et al, IAVI (India)

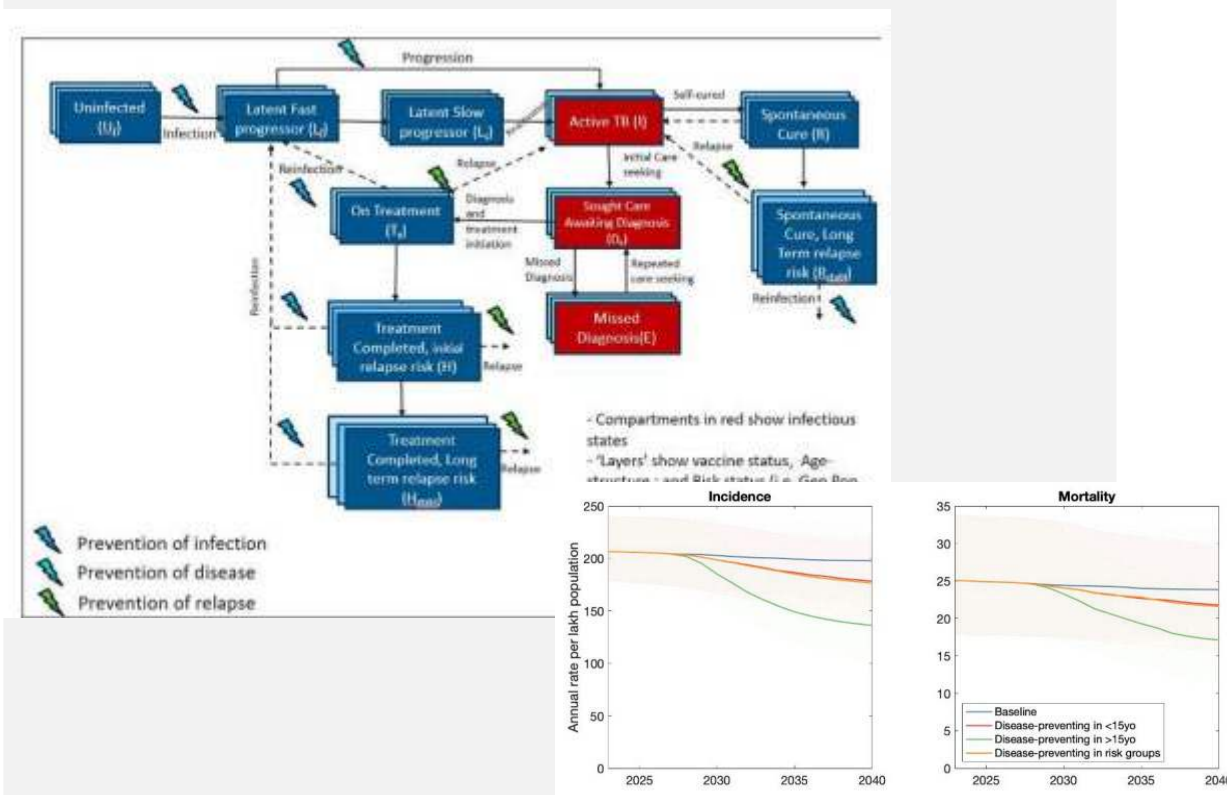
## Advancing evidence-informed in-country decision-making for new TB vaccine introduction: A responsive and integrated vaccine modelling approach from India

Aim - used modelling to investigate the difference in impact from varying the number of vaccine doses available and varying the country-specific order of vaccine introduction.

By

- Historically Informed
- TB incidence rate/ M72 trial countries first

=> Make a big difference, especially at low dose availability



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# Enabling Factors, Community Engagement & Advocacy

Shaun Palmer



# Meet the committee

This was the first Forum with a dedicated Community Engagement Committee.

The committee members led the development of the Community Declaration and spoke in plenaries across the program.



**Keyuri Arvind Bhanushali**  
Survivors Against TB,  
India



**Peter Ngo'la Owiti**  
GAVI CSO Steering  
Committee,  
Kenya



**Paulina Siniatkina**  
TBpeople,  
Netherlands



**Ani Herna Sari**  
Rekat Peduli,  
Indonesia



**Patrick P. Agbassi**  
Global TB CAB | Envopharm,  
Côte d'Ivoire



**Ezio Távara**  
Rede-TB,  
Brazil



**Rosa Herrera**  
Global TB CAB | Universidad  
Autónoma de Durango,  
Campus Mexicali,  
Mexico



**Jackie Cuen**  
We Are TB/Somos TB,  
USA



**Shaun Palmer**  
IAVI | TB Vax ARM,  
Netherlands

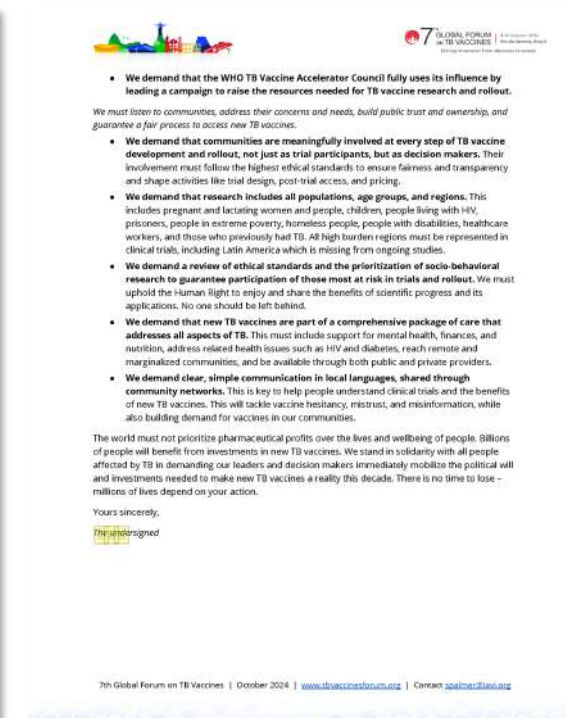
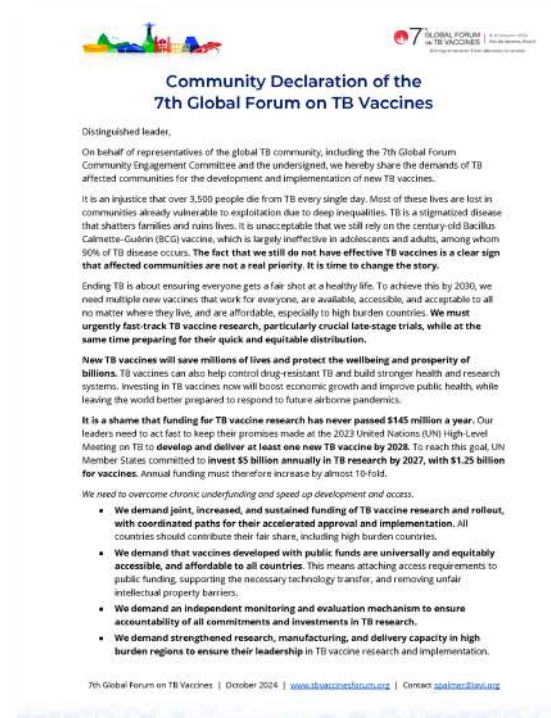


**Vanessa Mwebaza**  
**Muwanga**  
WGNV,  
South Africa

# Community Declaration

## What is it?

- An opportunity to **amplify our collective voice**
- **Share our demands** to attendees of the 7<sup>th</sup> Global Forum and **to leaders and decision makers** about the urgent need to invest in TB vaccine development and introduction



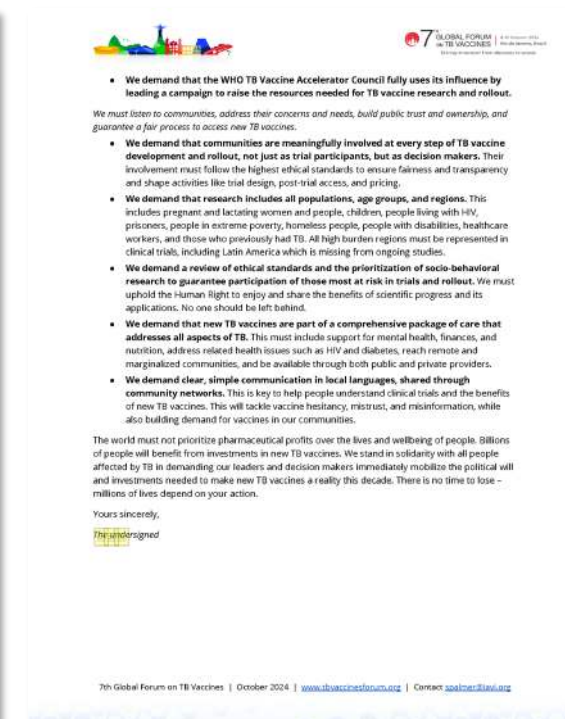


# Community Declaration

## The process

- **Initial feedback from the global TB community from multilingual webinar in August**
- **First draft prepared by the Committee, based on the webinar feedback**
- **Online consultation survey to collect feedback on the first draft**
- **Final version prepared based on the survey feedback**
- **Open for public sign on 17 Sep – 10 Oct**
- **Presented during the Declaration in the Opening Ceremony**

Available in English, French, Hindi, Indonesia, Portuguese, Russian, and Spanish





Thank you to the **1,410**  
individuals and organizations  
from **81** countries who signed  
the Community Declaration!



Read the declaration,  
**share our demands.**



[bit.ly/7GFTBV  
comdecSign](https://bit.ly/7GFTBVcomdecSign)

# Active participation, meaningful visibility



Paulina Siniatkina presenting the community declaration during the Opening Ceremony (Tue, 8 Oct 2024)



TB IS OVER (if you want it) – art installation by Paulina Siniatkina outside of the Grande Sala, Cidade das Artes

# Active participation, meaningful visibility

Committee members spoke at each of the plenary sessions



Ezio Távora, Plenary 1: From discovery to access and Plenary 5: Innovative approaches to TB vaccine R&D



Peter Ngo'la Owiti, Plenary 2: Global & regional enablers for the introduction of new TB vaccines



Keyuri Bhanushali, Plenary 3: Advancing TB vaccine clinical development



Patrick Agbassi, Plenary 4: Country scale-up & implementation of new TB vaccines



Jackie Cuen & Shaun Palmer, Plenary 6: Enabling TB vaccine development through funding political will, open science, & engaged communities