



# Agenda

**TB vaccination overview**

**BCG revaccination**

**BCG vaccination in healthcare workers**

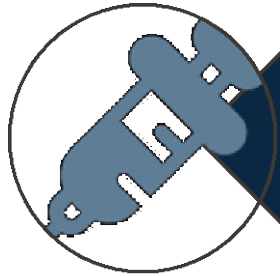
**Main results**

**Conclusion**

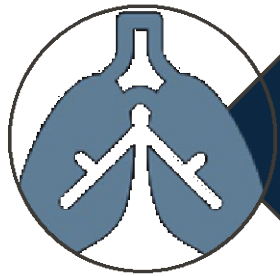
# TB vaccination overview



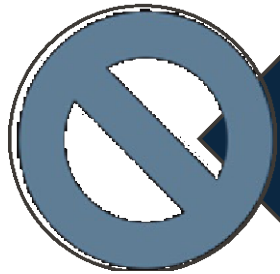
# TB vaccination overview



BCG: only vaccine approved for TB prevention



Offers protection in young children against various forms of TB



Uncertain efficacy in adults



# BCG revaccination



# BCG revaccination: mixed results



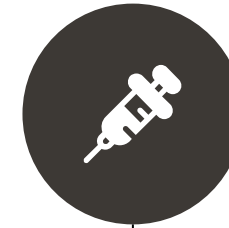
## Malawi

Participants aged 3 months - 70 years: no significant protection against confirmed TB infection after 6–9 and 30 years of follow-up.



## Brazil

Among adolescents aged 7–14 years: 9% over 5 years and 12% in 9 years of follow-up. Modest efficacy in one site.



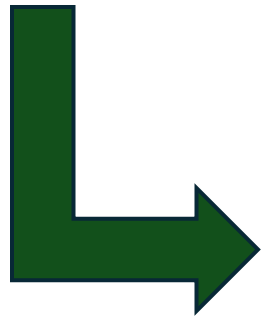
## South Africa

Among adolescents aged 12 to 17 years: did not show efficacy in preventing initial QFT conversion, but sustained QFT conversion was reduced by 45.4%



# Brazil study objective

- A nested randomized controlled trial within the BRACE trial (NCT04327206)

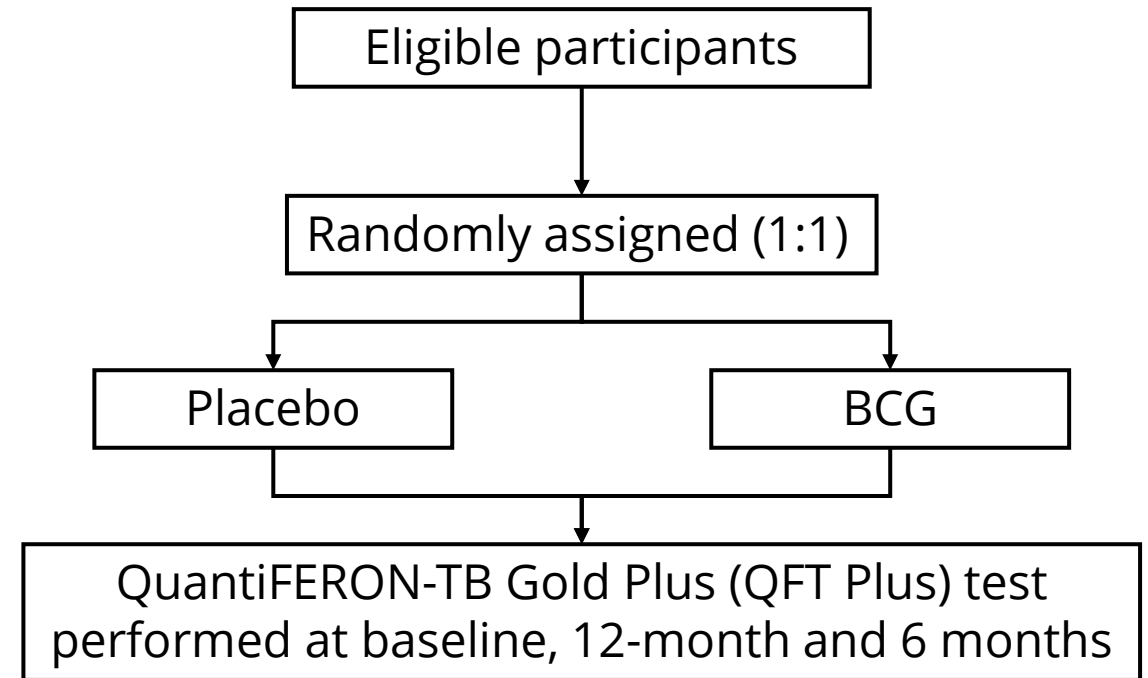


**To evaluate the effect of BCG-Denmark on preventing initial and sustained QFT Plus conversion in adult Brazilian healthcare workers without previous *M. tuberculosis* infection.**



# Study design

- **Study population:** healthcare workers;
- **Sites:** Campo Grande, Manaus, and Rio de Janeiro.
- **Inclusion:** aged  $\geq 18$  years, regardless of previous BCG vaccination.
- **Exclusion:** contraindications to BCG vaccine, specific TB treatments, adverse reactions to BCG vaccine, recent BCG vaccination, and non-compliance.



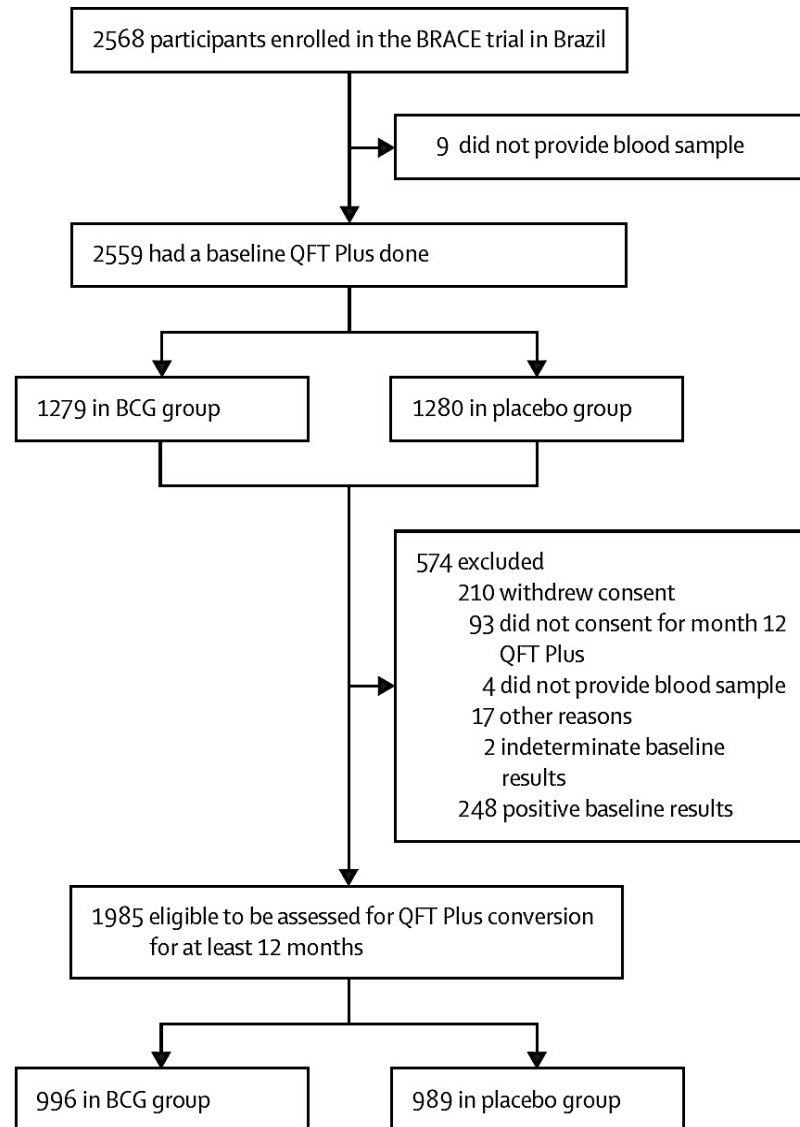
**Primary outcome:** QFT Plus conversion by 12 months who had a negative baseline result.

**Secondary outcome:** QFT Plus sustained conversion (two consecutive positive QFT Plus results at least 6 months apart).

**Exploratory outcomes:** alternative QFT Plus threshold values for QFT conversion ( $\geq 0.7$  IU/mL,  $\geq 2.0$  IU/mL, and  $\geq 4.0$  IU/mL); and QFT Plus conversion by 12 months in individuals with an initial QFT Plus value of 0.2 IU/mL or less.

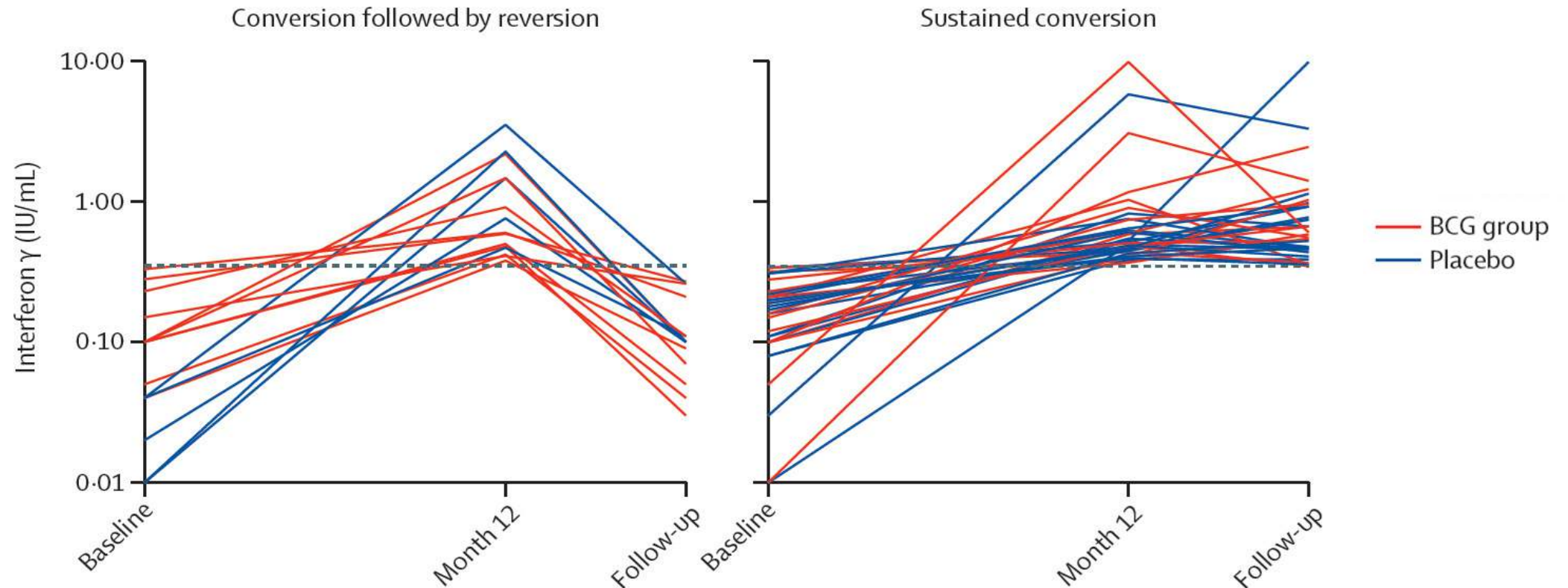


# Main results



	BCG group (n=996)	Placebo group (n=989)
<b>Sex</b>		
Female	723 (72.6%)	752 (76.0%)
Male	273 (27.4%)	237 (24.0%)
<b>Age (years)</b>	39.0 (31.0–47.0)	40.0 (32.0–48.0)
<b>Coexisting condition</b>		
Diabetes	35 (3.5%)	40 (4.0%)
Chronic respiratory disease	51 (5.1%)	42 (4.2%)
Cardiovascular disease or hypertension	137 (13.8%)	146 (14.8%)
<b>Any alcohol use</b>	479 (48.1%)	459 (46.4%)
<b>Smoker</b>	96 (9.6%)	106 (10.7%)
<b>Previous BCG vaccination status</b>		
No	37 (3.7%)	40 (4.0%)
1–5 years ago	7 (0.7%)	11 (1.1%)
>5 years ago	952 (95.6%)	938 (94.8%)
<b>Previous positive tuberculin skin test</b>		
No	948 (95.2%)	918 (92.8%)
Not sure	23 (2.3%)	31 (3.1%)
Yes	25 (2.5%)	40 (4.0%)
<b>Occupation</b>		
Allied health	123 (12.3%)	125 (12.6%)
Administrative or clerical	84 (8.4%)	89 (9.0%)
Physician	36 (3.6%)	36 (3.6%)
Nurse or midwife	97 (9.7%)	103 (10.4%)
Other role	518 (52.0%)	527 (53.3%)
Patient service assistant or hospital maintenance	138 (13.9%)	109 (11.0%)
<b>Site</b>		
Campo Grande	546 (54.8%)	545 (55.1%)
Rio de Janeiro	291 (29.2%)	293 (29.6%)
Manaus	159 (16.0%)	151 (15.3%)

# Outcome by study group



**We did not find evidence of a difference between the groups of participants who experienced reversion or sustained conversion after the initial QFT Plus conversion.**

# Outcome by study group

	BCG group	Placebo group	Risk ratio (95% CI)	p value
<b>Primary outcome</b>				
QFT conversion (positivity threshold $\geq 0.35$ IU/mL)	34/996 (3.4%)	32/989 (3.2%)	1.09 (0.67–1.77)	0.791
<b>Secondary outcome</b>				
Sustained conversion (positivity threshold $\geq 0.35$ IU/mL)	15/996 (1.5%)	19/989 (1.9%)	0.80 (0.41–1.57)	0.510
<b>Exploratory outcomes</b>				
QFT conversion (positivity threshold $\geq 0.70$ IU/mL)	15/996 (1.5%)	13/989 (1.3%)	1.15 (0.55–2.45)	0.713
QFT conversion (positivity threshold $\geq 2.00$ IU/mL)	6/996 (0.6%)	5/989 (0.5%)	1.18 (0.36–3.85)	0.788
QFT conversion (positivity threshold $\geq 4.00$ IU/mL)	2/996 (0.2%)	3/989 (0.3%)	0.64 (0.11–3.84)	0.633
QFT conversion (baseline QFT $< 0.20$ IU/mL and positivity threshold $\geq 0.35$ IU/mL)	22/957 (2.3%)	23/950 (2.4%)	0.96 (0.53–1.74)	0.903

Data are n/N (%), unless otherwise specified. QFT=QuantiFERON-TB Gold. \*All analyses were done in the intention-to-treat population.

**The BCG-Denmark vaccine did not prevent either QFT Plus conversion by 12 months or sustained QFT Plus conversion compared with placebo**

# Conclusion





# Conclusions

- ❑ Previous studies have shown conflicting evidence for BCG revaccination in the prevention of TB, with some studies showing modest protection and others, including ours, showing no significant protection.

- ❑ Our study adds to the mixed evidence on the efficacy of BCG revaccination in adults for preventing TB infection, and current data do not support its use for this indication.

**This finding underscores the need to better understand TB prevention  
in high-risk populations...**



# Thank you!



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