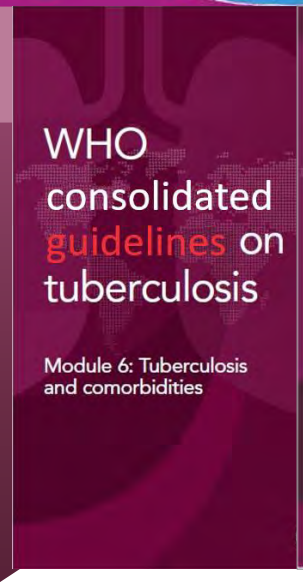
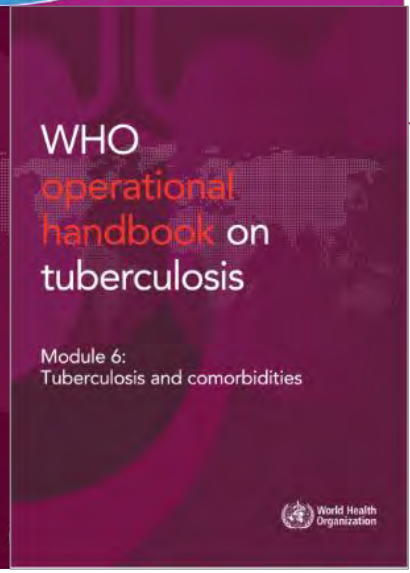
WHO Policy Updates: Nutritional Interventions and Food Assistance for people with TB and their household contacts

Annabel Baddeley
WHO Global Tuberculosis Programme





Joint SEAR-WPR workshop to plan the accelerated implementation of new WHO TB policies, 1-4 April 2025, Hanoi, Viet Nam

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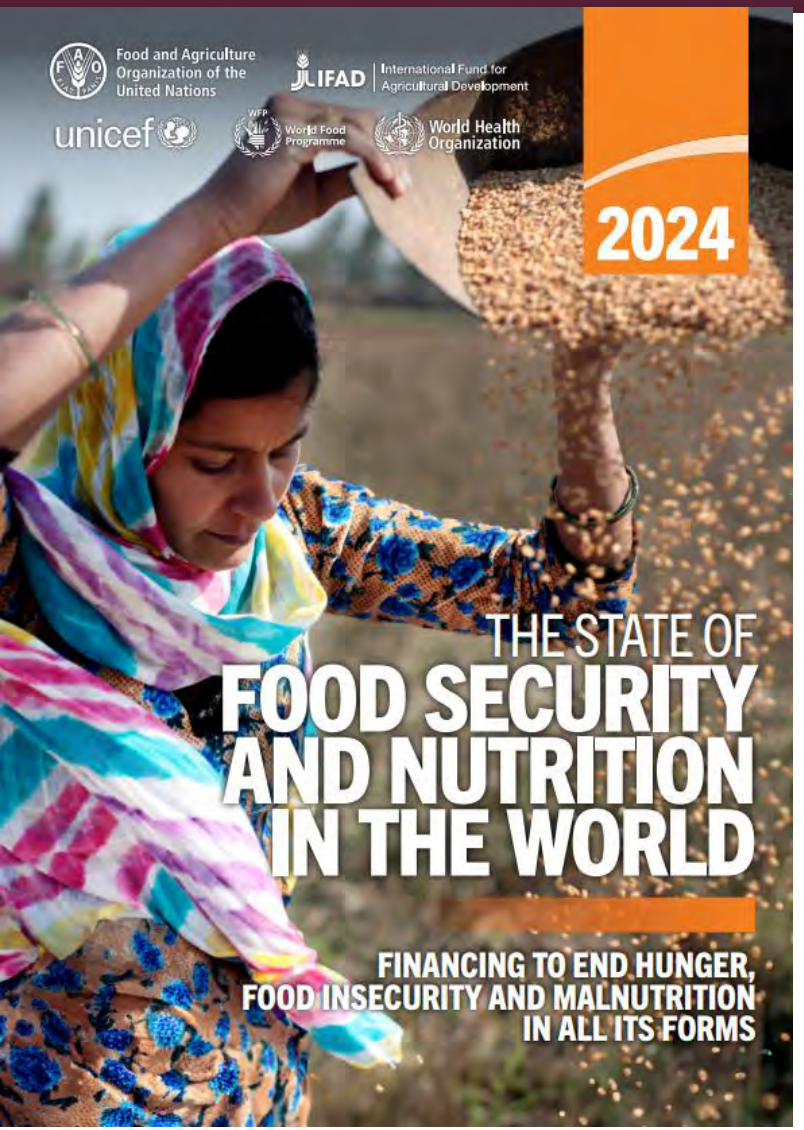
Hunger numbers remain high as global crises deepen



24 July 2024 News Release

“Hunger numbers stubbornly high for three consecutive years as global crises deepen: 2024 joint UN report

1 in 11 people worldwide faced hunger in 2023, 1 in 5 in Africa

Around 733 million people faced hunger in 2023, equivalent to one in eleven people globally and one in five in Africa, according to the latest State of Food Security and Nutrition in the World (SOFI) report published today by five United Nations specialized agencies.

..... The report shows that the world has been set back 15 years, with levels of undernourishment comparable to those in 2008-2009.”

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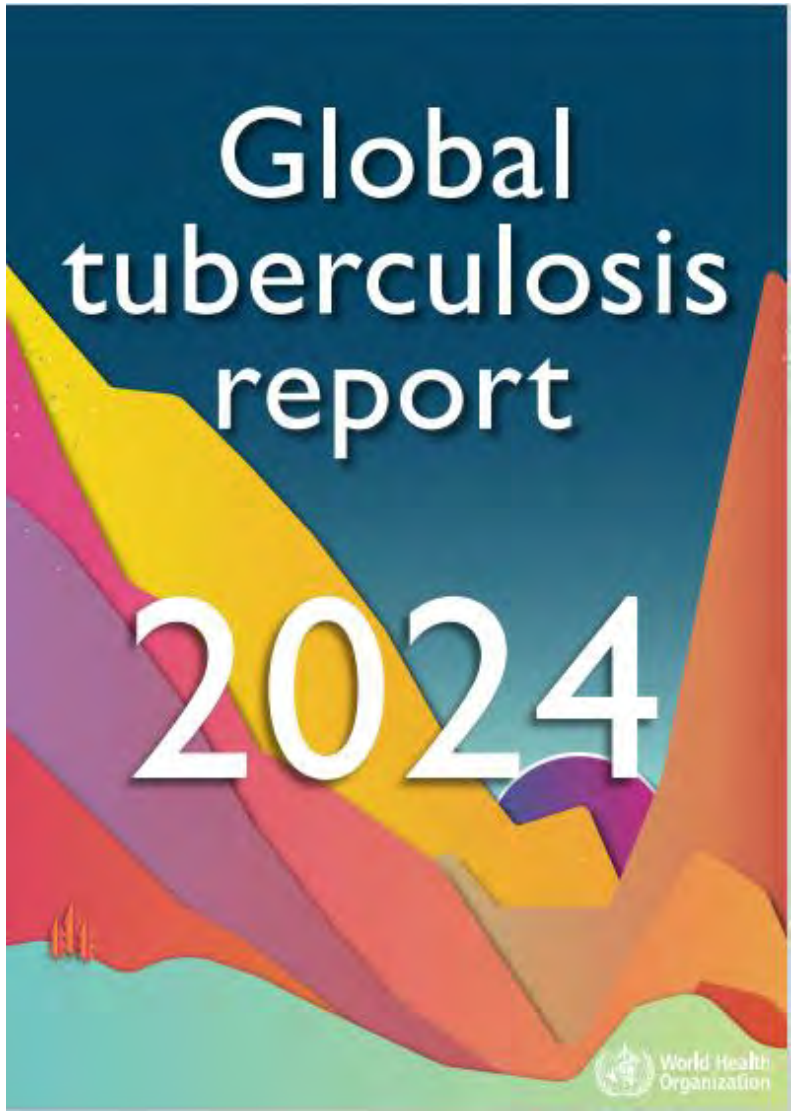
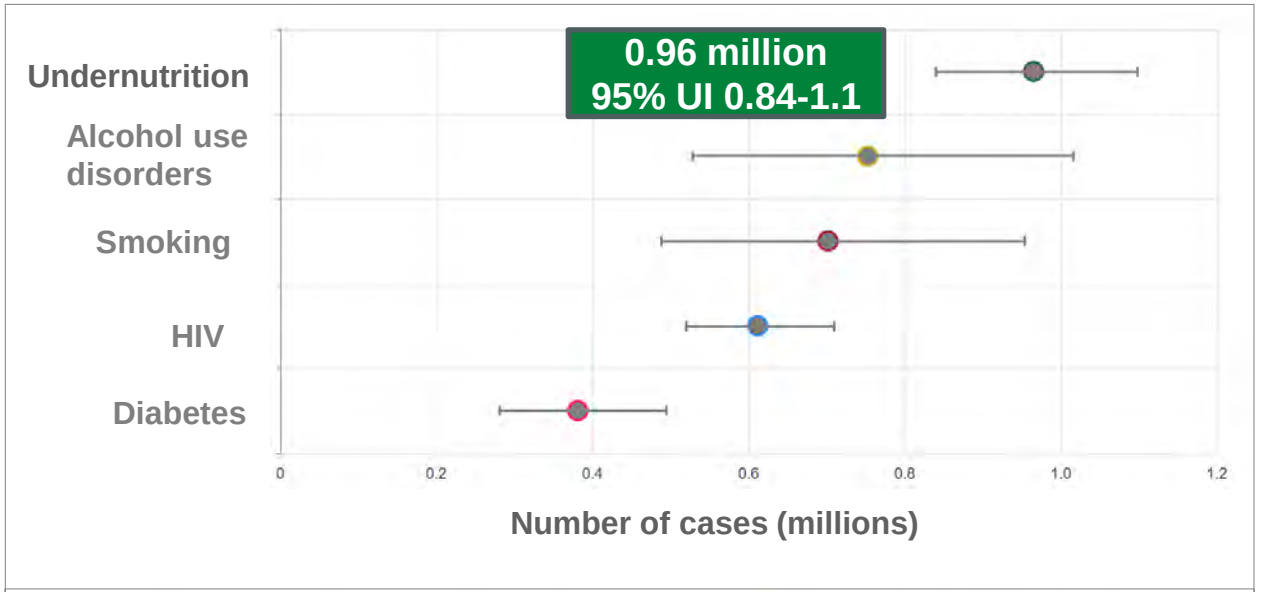
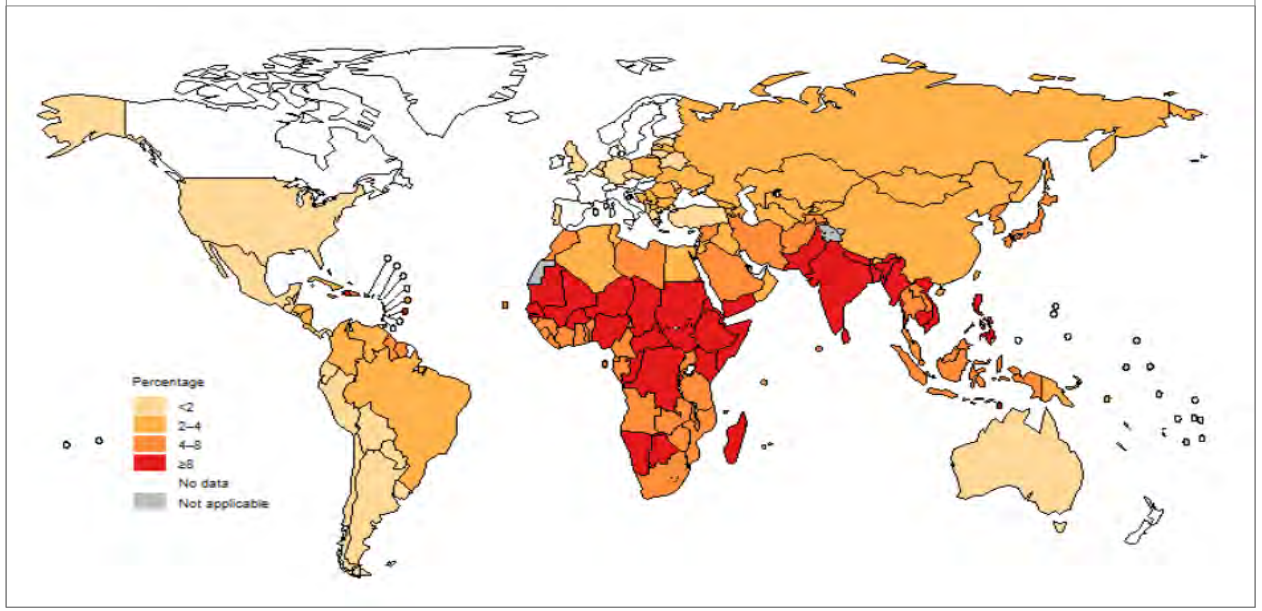
Background







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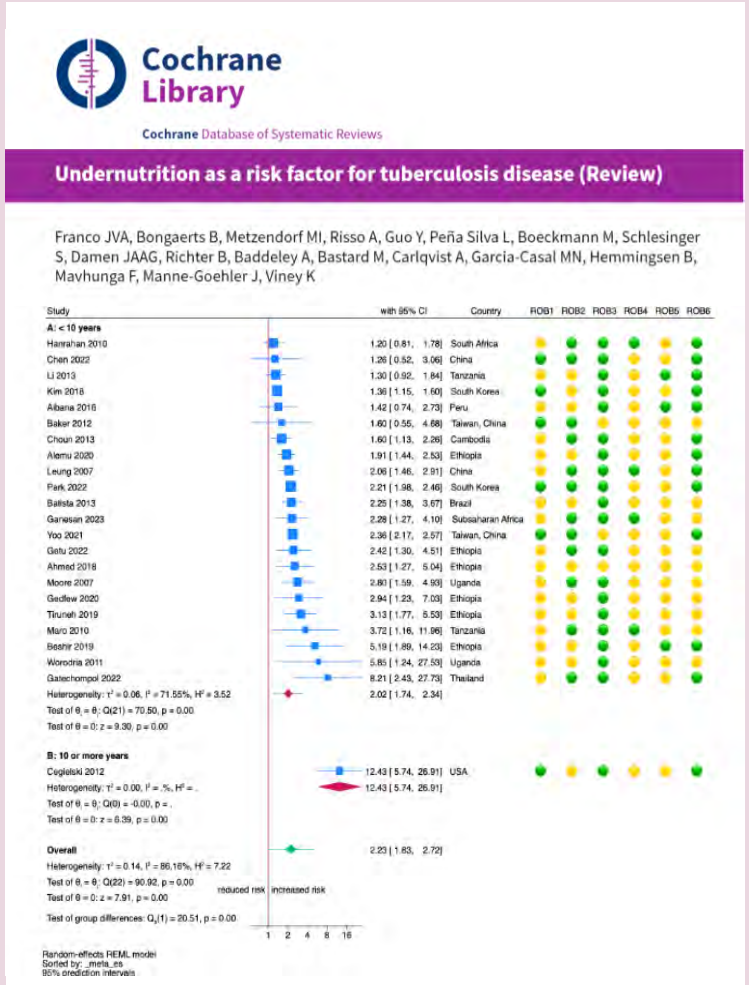
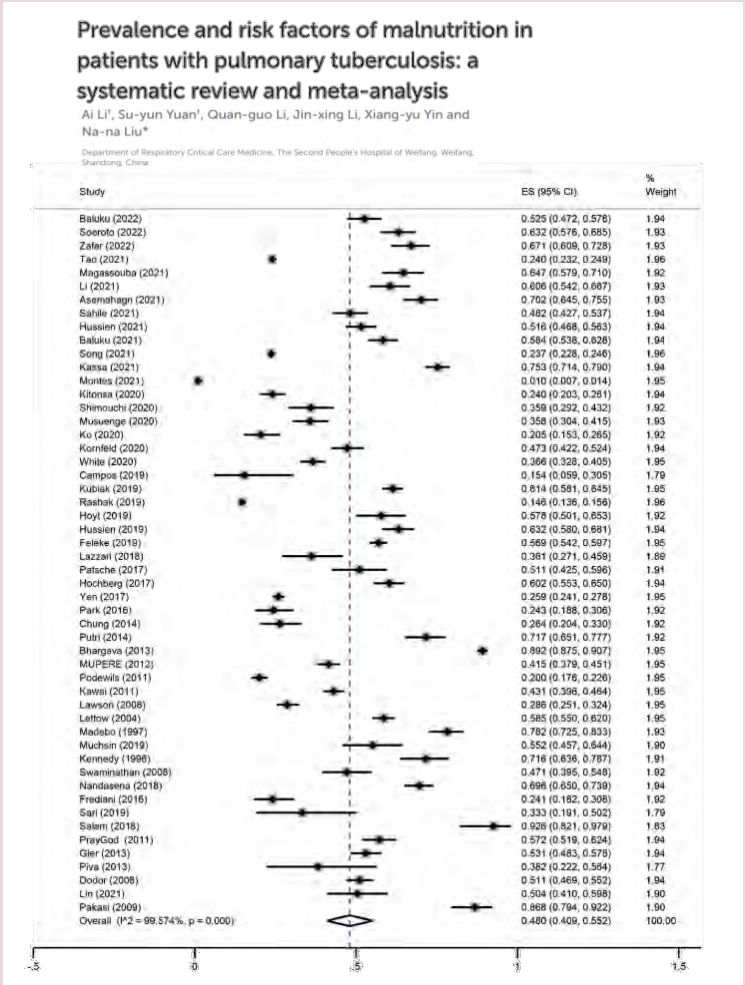
Tuberculosis and undernutrition

Undernutrition more than **doubles the risk of TB** (HR 2.23, 95% CI: 1.83–2.72)



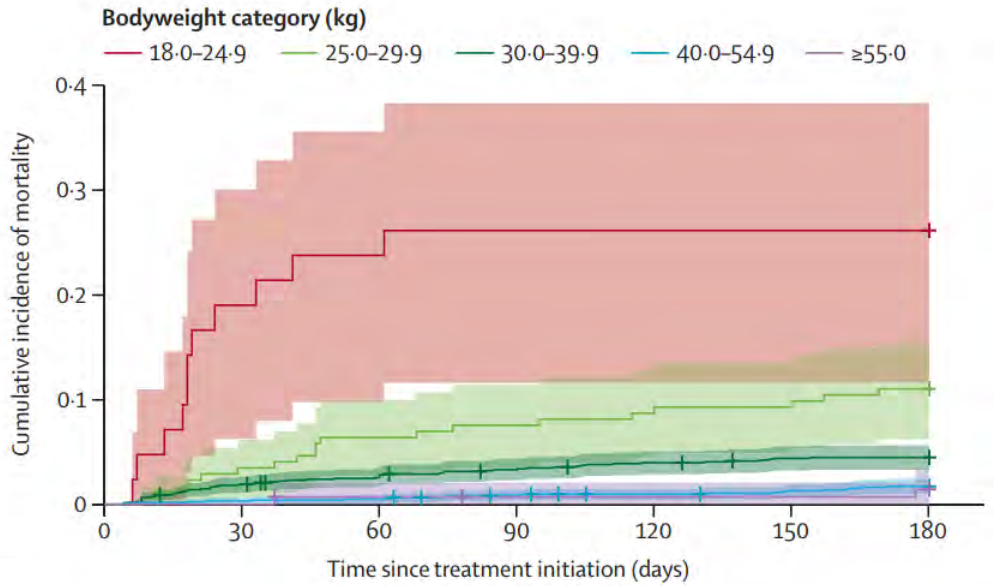
48% (95% CI: 40.9–55.2%) prevalence of undernutrition among people with TB.



Impact of the dual burden – a bidirectional relationship

Adjusted incidence rate ratios for unfavourable treatment outcomes and death			
	Unfavourable aIRR (95% CI)	Loss to Follow-Up aIRR (95% CI)	Death aIRR (95% CI)
BMI at treatment initiation (kg/m^2) <16 c/w 18.5-22.9	2.05 (1.42-2.98)	1.81 (1.46-2.25)	4.17 (1.97-9.53)
Unchanged or decreased BMI	1.81 (1.27-2.61)	6.24 (3.78-10.87)	5.16 (1.51-17.65)

Sinha et al, Clin Infect Dis. 2022 Nov 25;76(8):1483–1491. doi: 10.1093/cid/ciac915



Barghava et al, Lancet Glob Health 2023; 11: 1402–11
https://doi.org/10.1016/ S2214-109X(23)00324-8

- Undernutrition is associated with more severe disease, delayed sputum conversion, and worse TB treatment outcomes including death
- Tuberculosis can lead to/worsen undernutrition
- Patient cost surveys have found high proportion of catastrophic costs due food and nutritional supplementation

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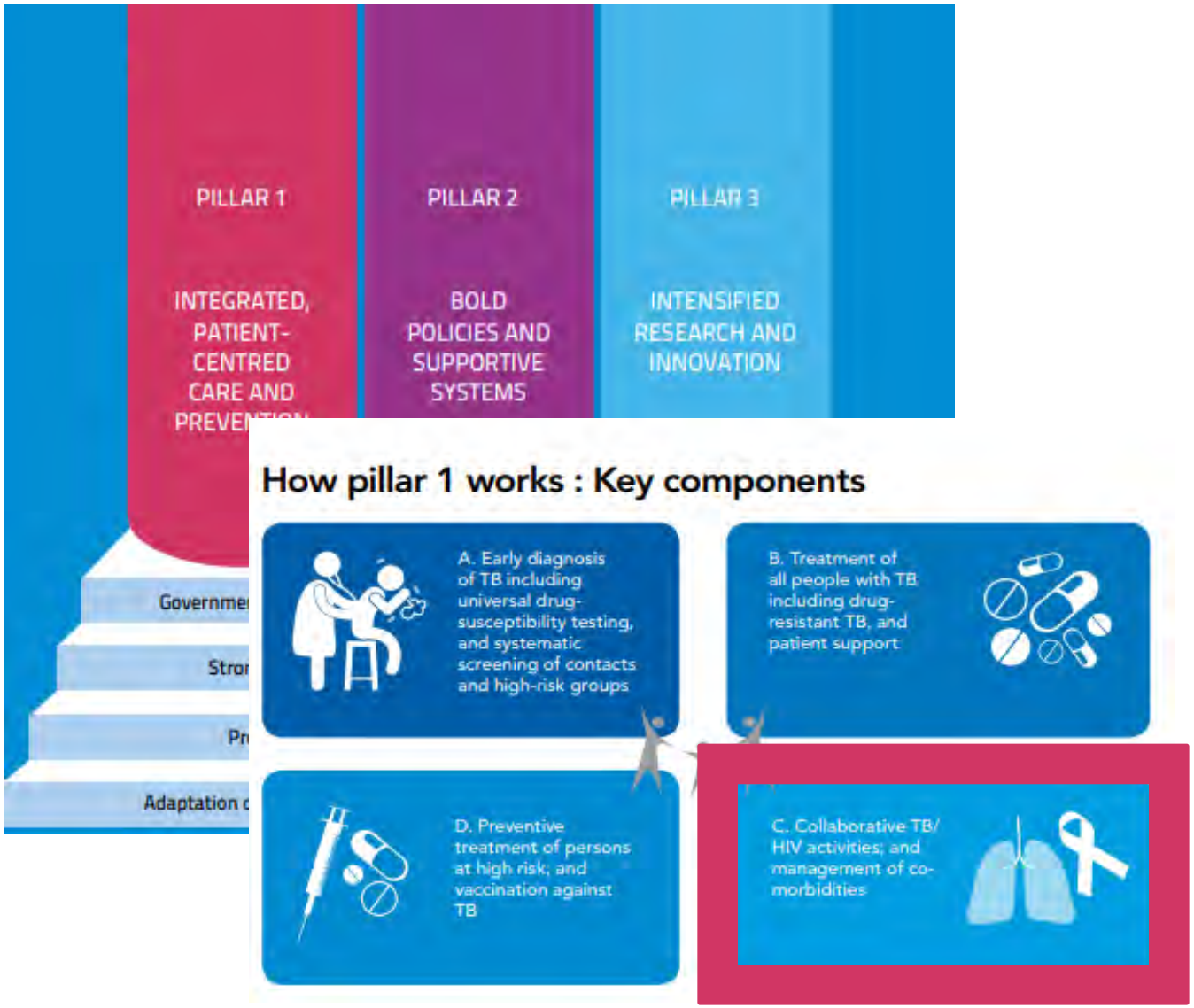
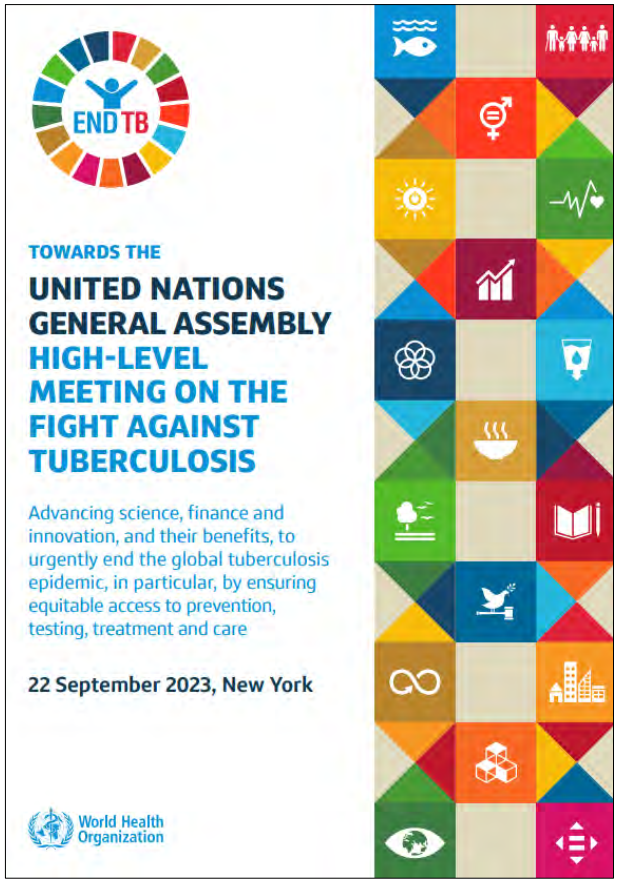
TB comorbidities in the End TB Strategy

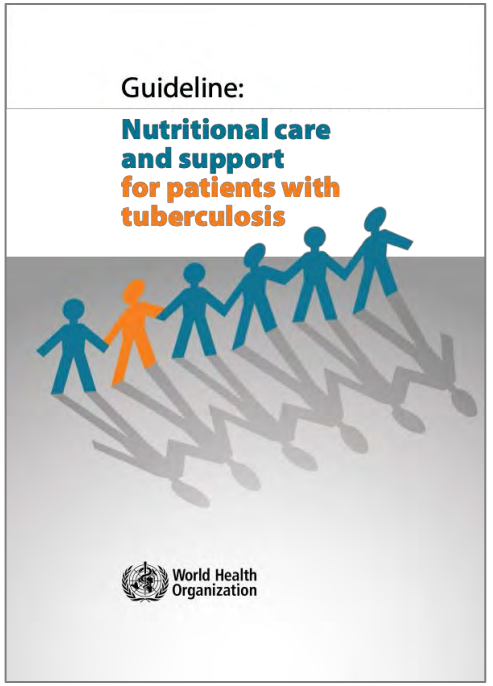




Implementing the End TB Strategy: the essentials is available at: https://www.who.int/publications/i/item/9789240065093

Background

- WHO guideline *Nutritional care and support for patients with tuberculosis* published in 2013
- New evidence on nutritional interventions and micronutrient supplementation for people with TB, and on the impact of food assistance on TB prevention in household contacts
- WHO commissioned systematic reviews on three PICO questions
  1. Nutritional interventions for people with TB
  2. Micronutrient supplementation for people with TB
  3. Food assistance to household contacts of people with TB
- WHO also commissioned surveys among MoH participants and people who have had TB and their household contacts.
- Guideline development group (GDG) meeting convened June–July 2024 to review evidence and formulate recommendations



PICO 1 – Nutritional interventions for people with TB

- The systematic review identified 18 randomized controlled trials
- Which measured the impact of the following interventions on one or more critical outcomes

Intervention	Certainty of evidence	Balance between benefits and harms
Arginine	Moderate	Probably favours intervention
High Energy-protein	Low-moderate	
Financial support and psychosocial counselling	Moderate	
Food vouchers	Moderate	
Green tea extract	Low	Uncertain
Fish oil/vitamin D/zinc	Very low	
Channa striata	Low	
Dietary nursing	Low-moderate	

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The balance of effects for the studies on green tea extract, fish oil/vitamin D/zinc, channa striata and dietary nursing was uncertain. The GDG therefore judged that the evidence did not support the provision of these interventions for people with TB. No trials measured the impact of nutritional assessment and counselling.

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Intervention/outcome	Study	Effect size	Certainty of evidence
Arginine-rich food			
TB cure – 6 month, PLHIV	Schön T et al, Tuberculosis (Edinb); 2011	RR 1.58 (1.11; 2.25)	Low ⊕⊕◯◯
Underweight at 1 month	Farazi A et al. Tuberc Res Treat; 2015	RR 0.35 (0.13; 0.99)	Moderate ⊕⊕⊕◯
High energy-protein supplementary food			
TB treatment completion	Jahnavi G et al, Singapore Med J; 2010	RR 1.20 (1.04; 1.37)	Low ⊕⊕◯◯
% weight gain (2 months)	Martins N, Bmj; 2016	MD 1.7% (0.19; 3.21)	High ⊕⊕⊕⊕
% weight gain (8 months)	Martins N, Bmj; 2016	MD 2.6% (0.51; 4.69)	High ⊕⊕⊕⊕
Adherence (2 months)	Martins N, Bmj; 2016	MD -4.7 (-8.58; -0.82)	Moderate ⊕⊕⊕◯
Change in lean body mass (6 weeks)	Paton N et al, Am J Clin Nutr: 2004	MD 1.13 kg (0.40; 1.86)	Moderate ⊕⊕⊕◯
Grip strength (3 months)	Jahnavi G et al, Singapore Med J; 2010 and Paton N et al, Am J Clin Nutr: 2004	MD 1.51 (1.10; 1.92)	Moderate ⊕⊕⊕◯
Financial support and psycho-social counselling			
Cure (MDR-TB)	Baral et al; BMC Public Health; Jan 17 2014	RR 1.21 (1.00; 1.46)	Moderate ⊕⊕⊕◯
Food vouchers			
Cure	Reis-Santos et al; Am J Trop Med Hyg; 2022	RR 1.08 (1.03; 1.13)	Moderate ⊕⊕⊕◯

PICO 2 – Micronutrients for people with TB

- The systematic review identified 33 RCTs on single micronutrients (Vit A, Vit D, selenium and zinc)
- 17 RCTs on multiple micronutrients (single administration of 2 or more single micronutrients)

Intervention	Certainty of evidence overall	Balance between benefits and harms overall
Vitamin D	Low	Probably favours intervention
Vitamin A	Low	Favour neither the intervention nor comparison
Selenium	Low	
Zinc	Low	
Multiple micronutrients	Moderate	

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Selenium	Low	
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Multiple micronutrients	Moderate	

None of the studies investigating Vit A, selenium, Zinc, and multiple micronutrients demonstrated a balance between benefits and harms in favour of the interventions for any critical clinical outcomes other than for an increase in serum levels. The GDG therefore judged that a recommendation would not be appropriate.

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Intervention/outcome	Study	Effect size	Certainty of evidence
Vitamin D			
TB cure	Hasanain A, et al, Indian J Tuberc; 2019 and Wen Y et al, BMC Infect Dis; 2022	RR 1.25 (1.09; 1.43)	Low ⊕⊕◯◯
Any adverse events	Daley P et al, Lancet Infect Dis; 2015, Wejse C et al, Am J Respir Crit Care Med; 2009, Hasanain A et al, Indian J Tuberc; 2019, Farazi A et al, Egyptian Journal of chest diseases and tuberculosis; 2017	RR 0.70 (0.50; 0.99)	Very low ⊕◯◯◯
Change in serum vitamin D 2-3 months[1,16,17,18]	Ganmaa D et al, Am J Respir Crit Care Med,; 2017, Zhang L et al, Neuropsychiatr Dis Treat; 2018, Kota S et al, Diabetes Metab Syndr; 2011, Afzal A et al, Pakistan journal of medical sciences; 2018	SMD 4.10 (2.64; 5.56)	Very low ⊕◯◯◯

The two trials investigating the impact of Vitamin D on TB cure differed in Vit D dosage and Vit D status in the trial participants.

PICO 3 – Food assistance for household contacts

- The systematic review identified 1 randomized controlled trial (Bhargava et al, Lancet, 2023)
- Measured one critical outcome (TB incidence)

Intervention/outcome	Certainty of evidence	Effect size	Balance between benefits and harms
Food basket with multiple micronutrients			
TB incidence	Moderate	RR 0.61 (0.43 to 0.85)	Favours the intervention

No trials assessed the impact of assessment and counselling on TB incidence among household contacts of people with TB.

Recommendations on nutritional assessment & care

- **Reworded from 2013:** At diagnosis and throughout treatment all individuals with TB should be offered nutritional assessment and appropriate counselling based on their nutritional status. *(strong rec, no direct evidence available)*
- **New:** Household contacts of people with TB should be offered nutritional assessment and counselling as part of contact tracing. If undernutrition is identified it should be managed according to WHO guidance. *(strong rec, low certainty of evidence)*
- **New:** Nutritional interventions should be offered to individuals with TB who have severe, moderate or mild undernutrition as part of a comprehensive package of TB care. *(strong rec, low-moderate certainty of evidence)*
- **New:** In settings with food insecurity, food baskets in combination with multiple micronutrient supplements should be offered to all households of people with TB. *(strong rec, moderate certainty of evidence)*
- **New:** Vitamin D supplementation may be provided to people with TB in the context of rigorous research. *(conditional rec, low certainty of evidence)*

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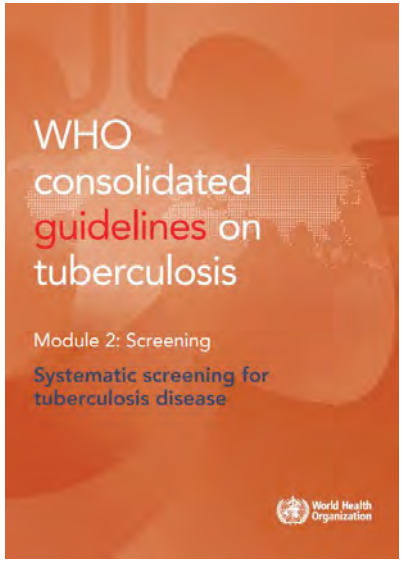
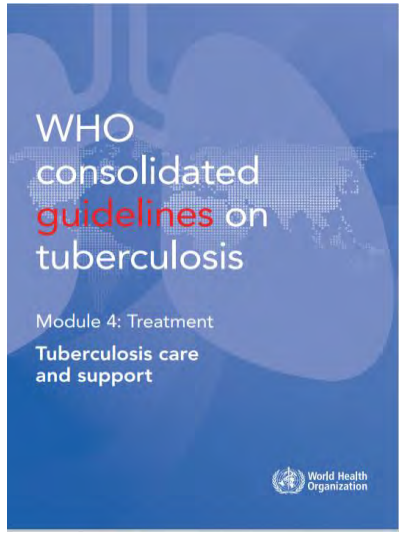
Consolidated recommendations

- TB screening in people with a risk factor for TB who are either seeking health care or in health care in settings where the TB prevalence in the general population is 100/100 000 population or higher.
- TB screening among subpopulations with structural risk factors for TB.
- Treatment adherence interventions, regardless of nutritional status, including material support (e.g. meals, food baskets, food supplements, food vouchers)





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Key considerations

- Multi-sectoral engagement is critical for planning, budgeting, implementation, and monitoring and evaluation.
- Assessment of undernutrition & food insecurity and counselling
  - ✓ Mapping of food insecurity
  - ✓ Equipment (measures of mid-upper arm circumference, scales, stadiometers)
  - ✓ Models of delivery (facility and community-based)
  - ✓ Training and SOPs including causes, e.g. helminth infections, counselling content
  - ✓ Frame nutritional interventions as a medical intervention
- Nutritional interventions and food assistance
  - ✓ Tailor according to nutritional status
  - ✓ Options include specially formulated food, food (e.g. food baskets) and financial support
  - ✓ People-centred delivery (convenience and minimize stigma)

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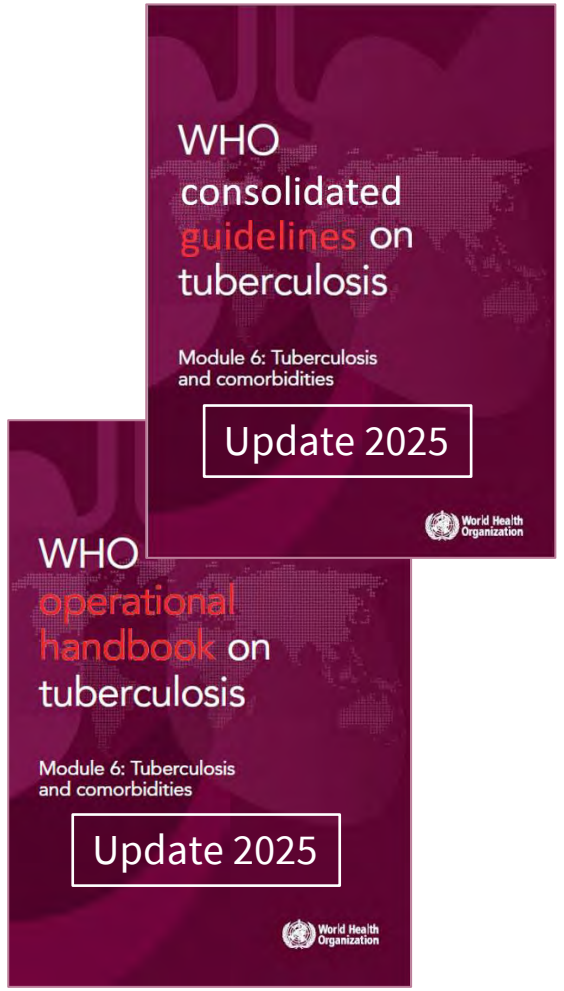
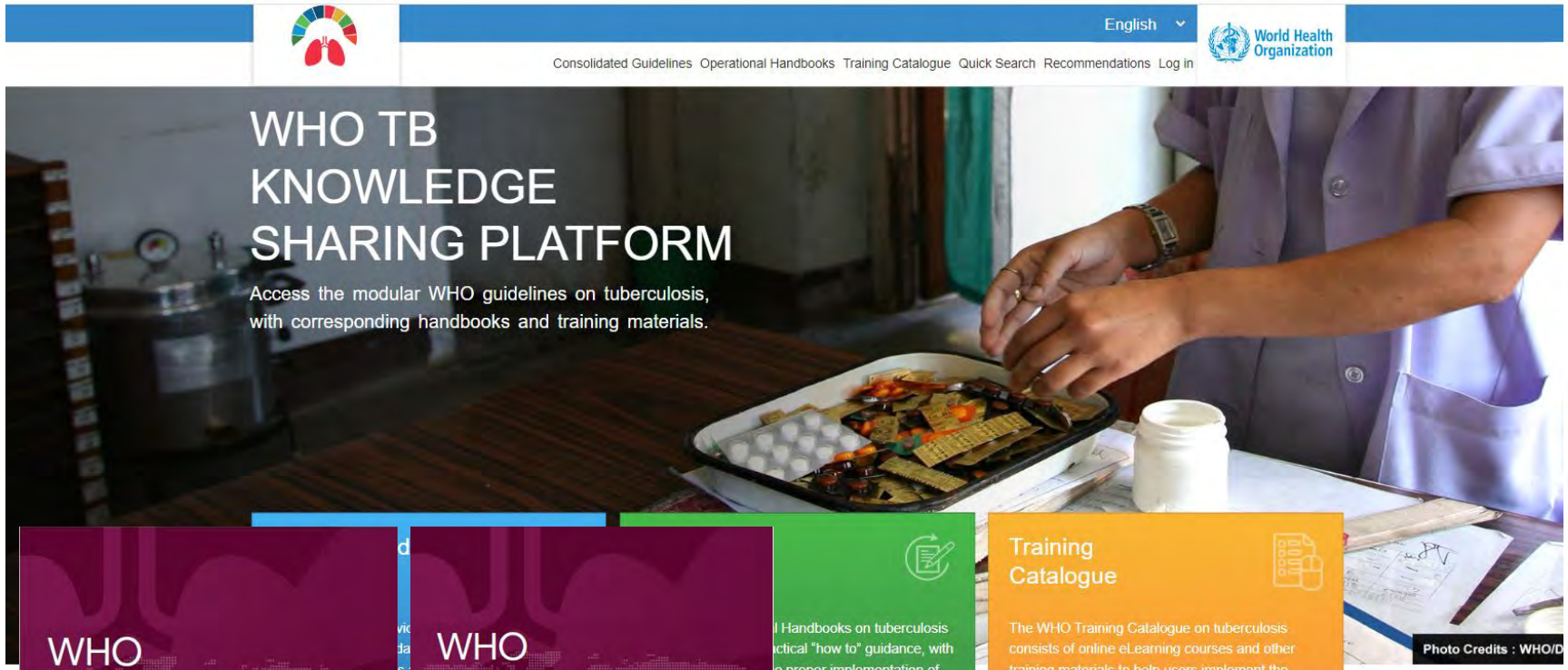
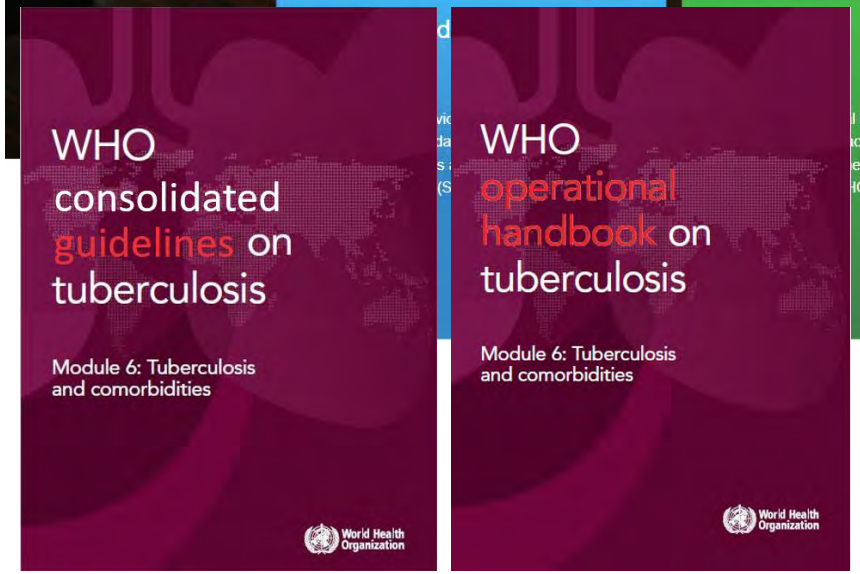
Conclusion

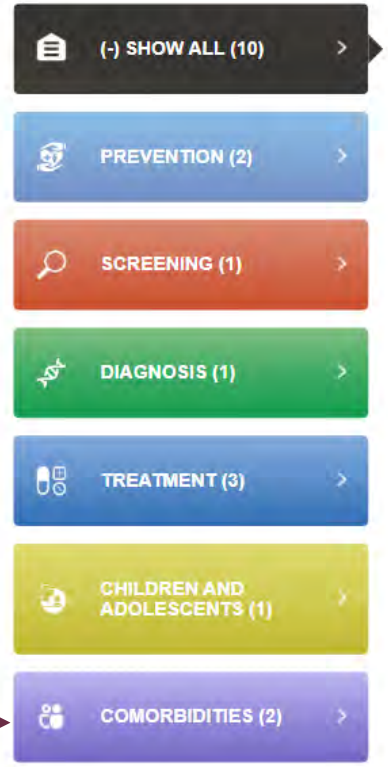
- The association between TB and undernutrition and food insecurity is well documented
- Nutrition plays a critical role in TB treatment and prevention.
- Upcoming WHO guidance on nutritional interventions and food assistance for households of people with TB is more expansive.
- Implementation will require considerable multisectoral engagement and extensive partner collaboration.
- WHO will be conducting further consultation for the development of the operational handbook in 2025.



WHO’s TB Knowledge Sharing Platform







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WHO’s TB Knowledge Sharing Platform available at: https://extranet.who.int/tbknowledge

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Acknowledgements:

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