Post Tuberculosis Lung Disease (PTLD)

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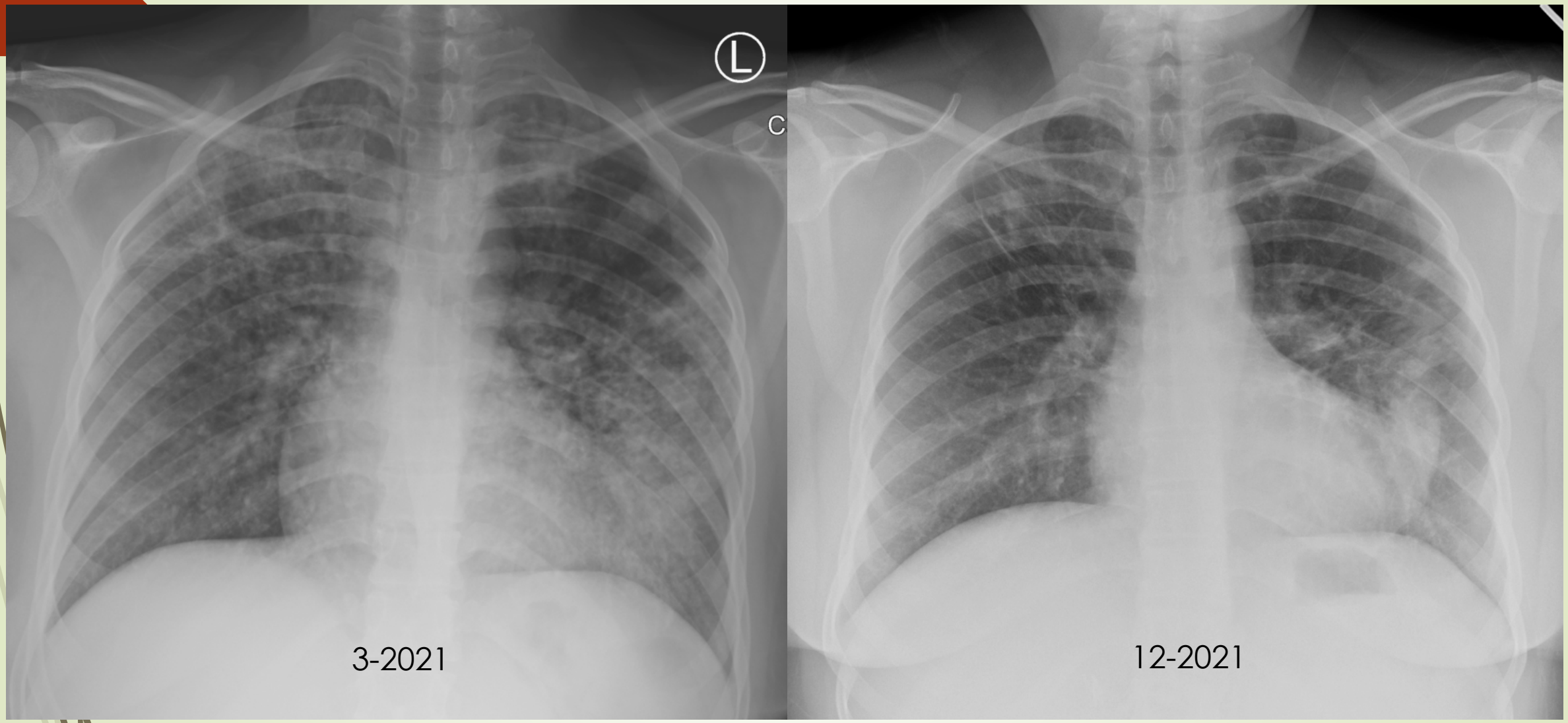
3-24-2023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Post Tuberculosis Lung Disease (PTLD)

- Chronic respiratory abnormality, with or without symptoms, attributable at least in part to previous pulmonary tuberculosis
  - Spectrum of disorders may affect large and small airways, lung tissue and vasculature and pleura
  - May be complicated by co-infection and hemoptysis
  - Increased risk of recurrent TB
- Results in significant disability with economic, social and psychological impact
  - Stigmatization does not stop
- Shortened life expectancy
  - Standardized mortality ratio 3
- No evidence-based recommendations for evaluation and management

Allwood et al 2021

Pulmonary function tests

- Determine the presence of obstruction to air flow
- Measure lung capacity – small lung capacity ~ restriction
- Measure ability of lung tissue to exchange gases – O2 and CO2
- Exercise tests –
  - Walk tests
  - Full cardiopulmonary exercise testing

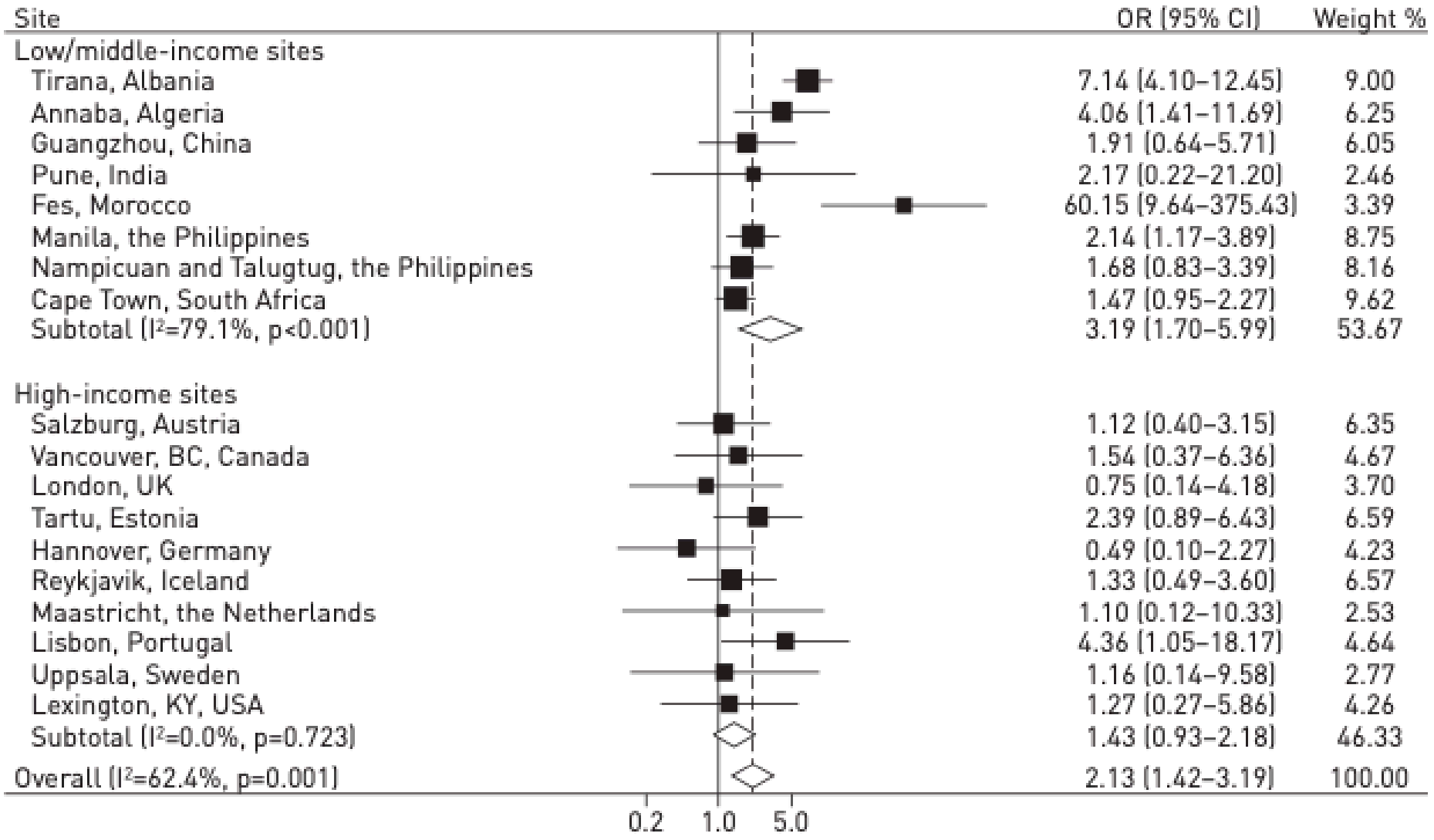
- 43 patients, at different times during and after TB treatment
- PFT – spirometry, lung volumes and diffusing capacity
- CT scan – high resolution with inspiratory and expiratory protocol
- Symptom questionnaire

- At baseline
  - FEV1 and FVC are reduced (median % predicted 59 and 63 respectively)
- Over period of study: 2 to 18 months from diagnosis
  - DLCO was low and remained low (median 65% predicted); seen in 79% patients
  - CT scan - gas trapping increased and correlated with measures of obstruction

Allwood BW et al. Int J Chronic Obstr Pulm Dis 2020

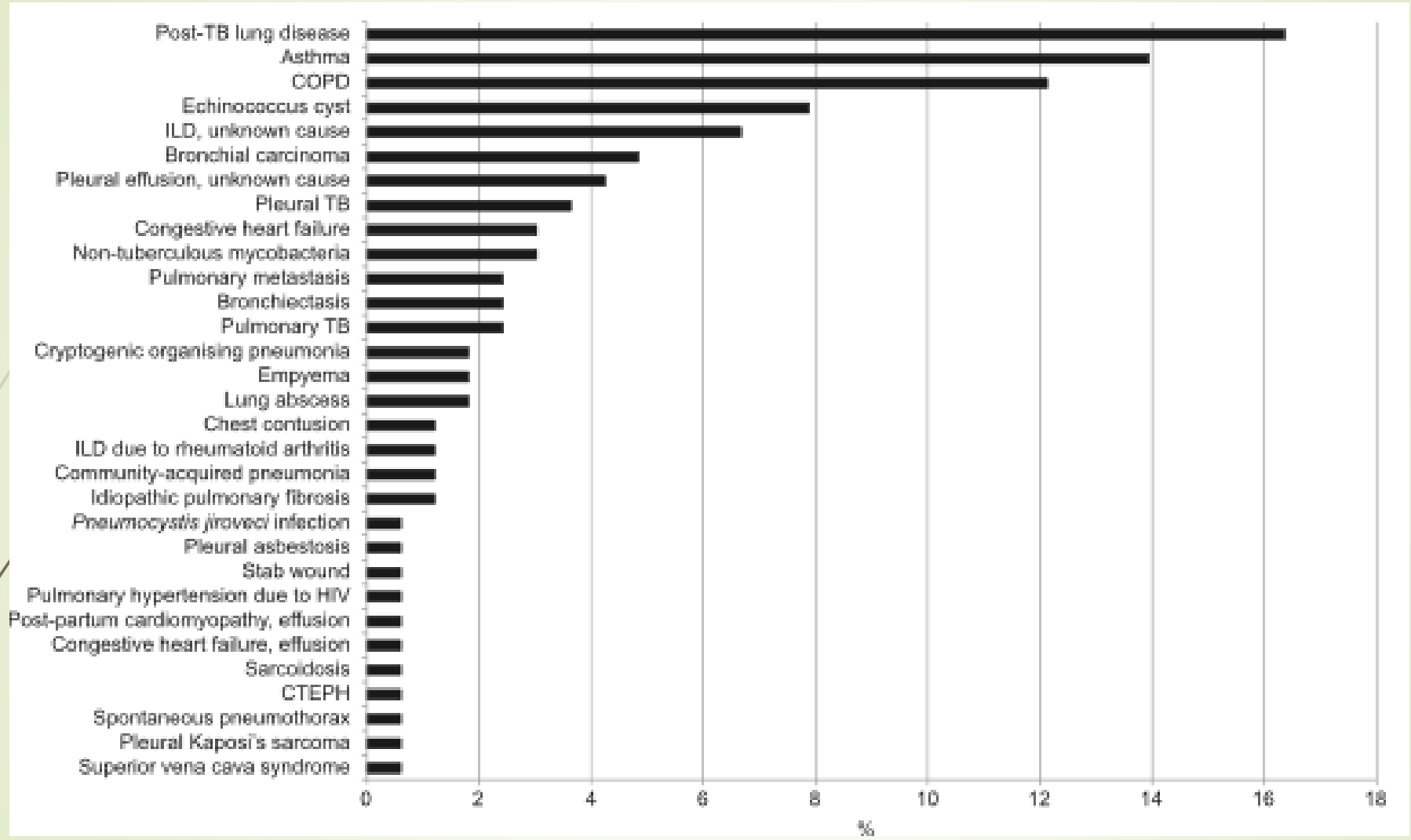
- BOLD: Burden of Obstructive Lung Disease
- Post bronchodilator spirometry and standardized questionnaire
- 14 050 participants had acceptable spirometry
- OR 2.5 for obstruction and hx of TB
  - Association stronger for low /middle income countries
  - No heterogeneity
- OR 2.13 for restriction and hx of TB
  - High income countries – risk was low
  - Low / middle countries – risk high with heterogeneity

Amaral A et al. ERJ 2015



Odds ratio for restriction

Amaral A et al. ERJ 2015



Pulmonary diseases in new patients at a Chest clinic in Namibia, 2015. Gunther G. Int J Tuber Lung Dis 2021

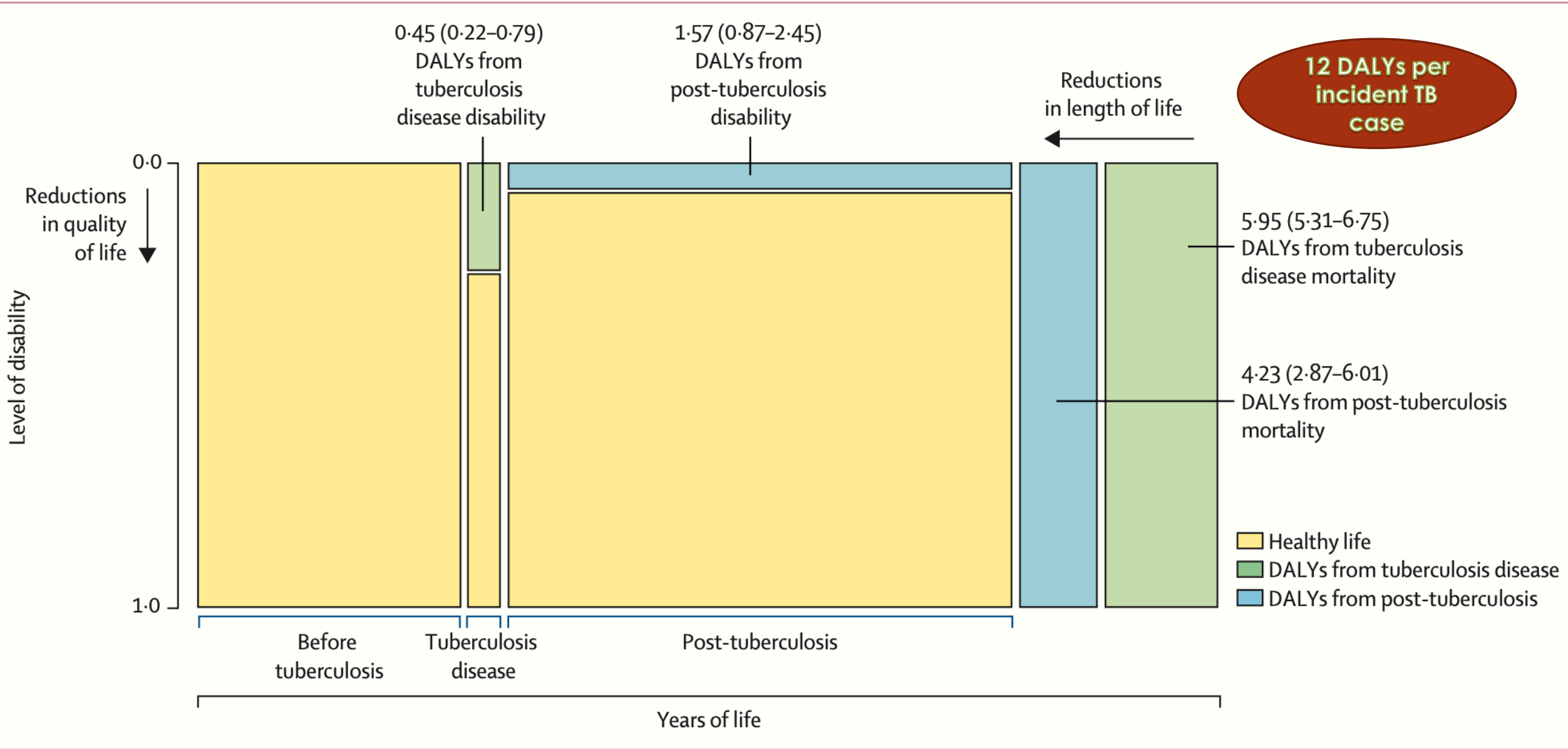
Burden of lung disease after TB treatment, India

- 172 participants who had spirometry
  - Airflow obstruction 24%
  - Restriction pattern 52%
  - Normal spirometry 23%
- Factors associated with airflow obstruction
  - Longer duration of illness
  - Sputum smear grade
- Factors associated with restriction
  - Female
  - Diabetes
  - Sputum smear grade

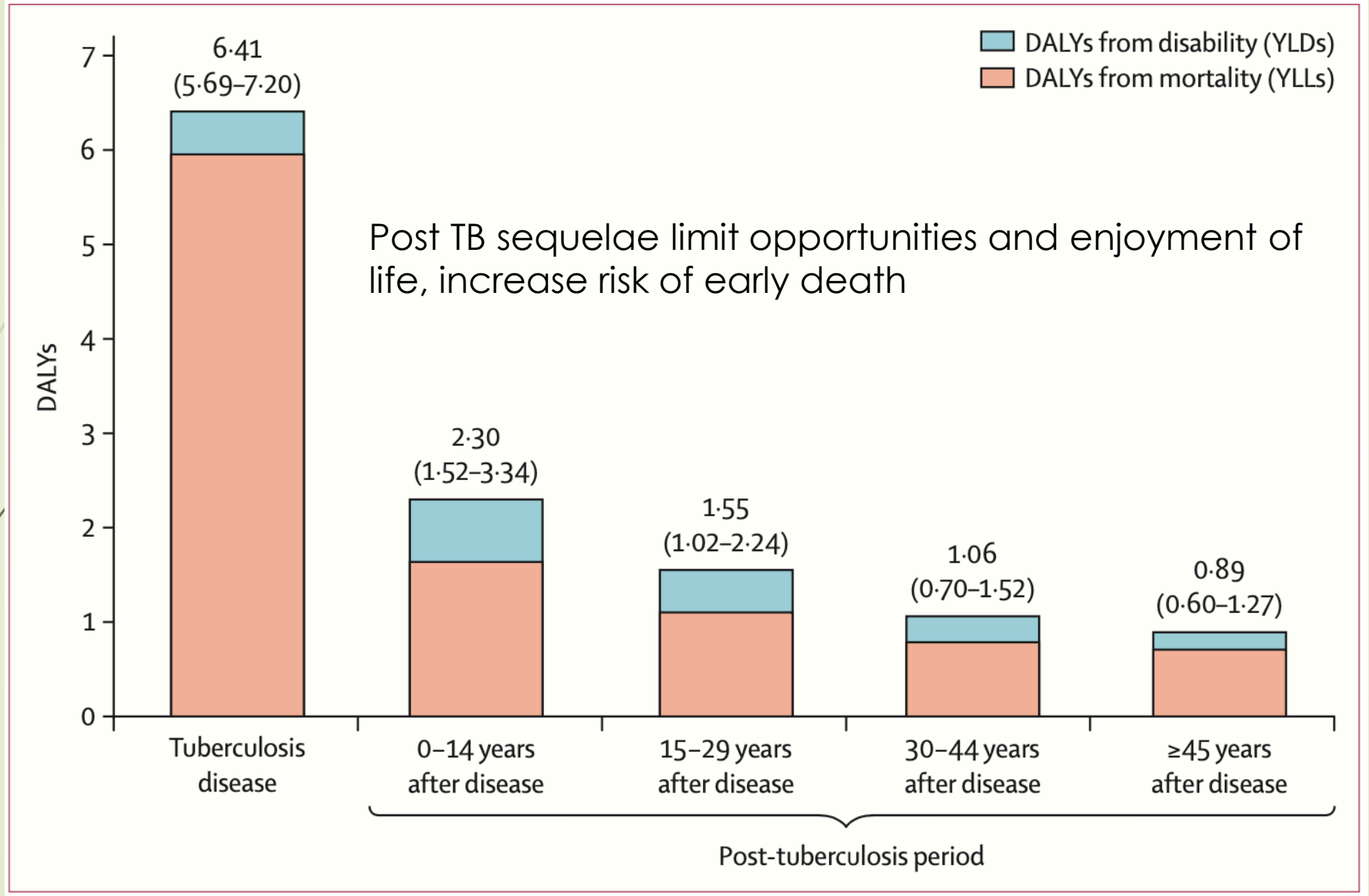
Gupte AN et al PLoS One 2019

- 321 patients in Pakistan – post treatment CXR study in patients with pulmonary or pleural TB
  - 17% had normal CXR
  - 83% - fibrosis, pleural thickening or bronchiectasis

Meghji J et al PLoS One 2016
Zubair SM Monaldi Arch Chest Dis 2021



Menzies NA et al. Lancet 2021



Post TB sequelae limit opportunities and enjoyment of life, increase risk of early death

Menzies NA et al. Lancet 2021

Call to action

- Recognize post TB lung health is part of patient centered TB care
- Perform evaluation of symptoms (use questionnaires) and appropriate pulmonary function, imaging studies
- Research and funding inclusion
- Advocacy to avoid stigmatization of TB survivors
- Include PTLD in calculation of total burden of TB disease for patients and society

- “When we started tuberculosis treatment, no one told us that it would never leave us”
  - A patient
  - From: Allwood B Lancet Infect Dis 2019