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#### BACKGROUND:

- Latent tuberculosis infection (LTBI) may be present in one third of the world's population and the progress to its active form is higher in immunocompromised patients.
- Early diagnosis of LTBI allows patients to submit themselves to the recommended treatment to prevent its progression. This health strategy is essential to reduce and control the global burden of tuberculosis (TB).
- The result of the PPD test is influenced by the Bacille Calmette-Guérin (BCG) vaccine, while the positive result of the IGRA test is strongly associated with risk factors for the active TB in endemic areas.
- Brazil is on the global list of high-burden countries for TB. However, the country also has high vaccination coverage with BCG and the PPD test is usually applied for ILTB diagnosis.
- This study's aim was to evaluate the accuracy of IGRA in detecting LTBI and predicting the active tuberculosis in patients with immune-mediated inflammatory diseases (1st group) and solid organ transplant candidates (2nd group).

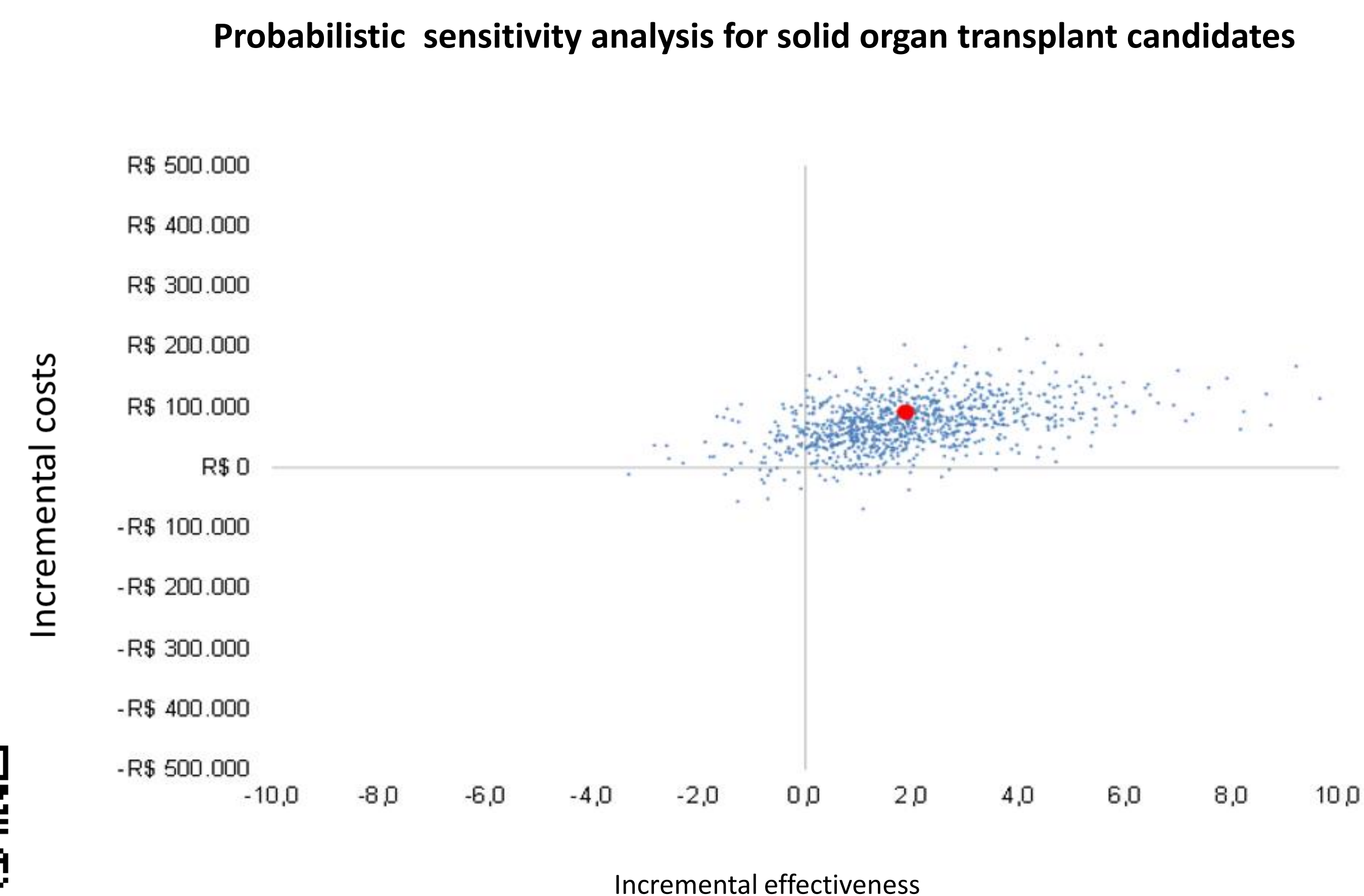
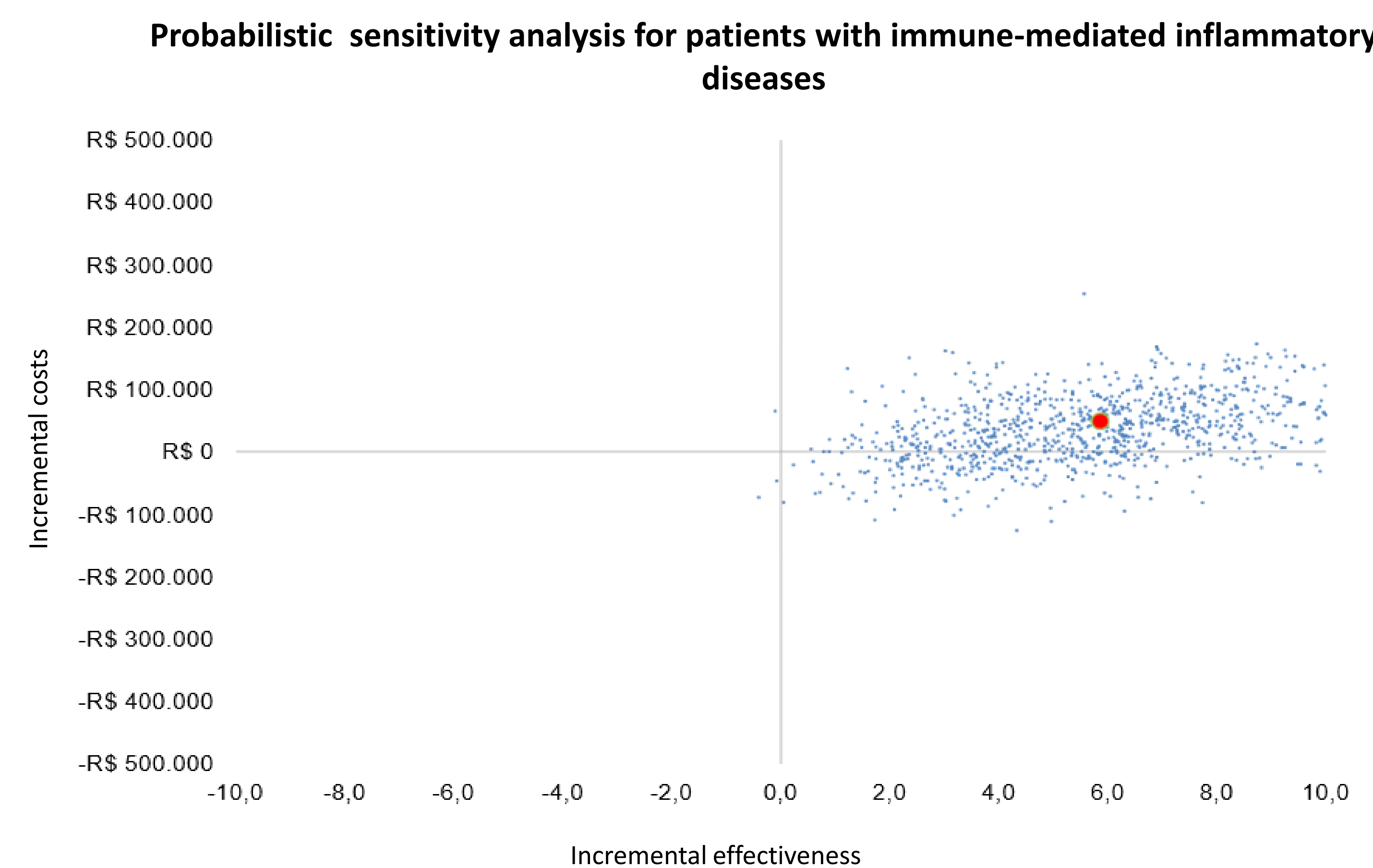
#### METHODS

- Five systematic reviews of prospective and retrospective cohorts were the basis for the accuracy and effectiveness outcomes of these strategies.
- Accuracy measures for IGRA and PPD tests: sensitivity and specificity.
- Measure of effectiveness: number of cases of TB progression among patients with positive tests results (IGRA or PPD).
- The cost-effectiveness analysis was conducted using a decision tree. IGRA and PPD were compared about the outcome: number of cases of active TB avoided.
- An incremental budget impact analysis was carried out using both groups.
- All costs were obtained from the Brazilian official open data on its Healthcare System perspective.

# Accuracy and Economic Evaluation of the Interferon Gamma Release Test (IGRA) for Detection of Latent Infection By Mycobacterium Tuberculosis in Patients with Immune-Mediated Diseases or Receptors of Solid Organ Transplants

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The studies were not able to identify the most accurate test to detect LTBI and to predict active TB progression. Thus, in the absence of a gold standard, when choosing diagnostic tests to LTBI their cost and availability must be considered. The integrating of IGRA in Brazilian Healthcare System as an alternative test to diagnose LTBI could become a strategic decision in the face of a possible shortage of PPD test. It would even be the best choice for individuals vaccinated with BCG.



#### RESULTS:

- The high heterogeneity did not allow a meta-analysis of the results.
- Sensitivity and specificity of IGRA and PPD tests to detect LTBI were very heterogeneous in both groups of population.
- Most primary studies used in systematic reviews did not consider IGRA indeterminate results and TB progression in patients with negative results.
- The available information about effectiveness to predict the progression of tuberculosis in immunocompromised populations allows us to infer with great uncertainty:  
**1st group:** 826 patients who tested positive for LTBI with IGRA (T-SPOT, QFT-GIT/GOLD), 31 of them (3.7%) progressed to active tuberculosis; 1.156 patients who tested positive for LTBI with PPD (5 and 10mm), 34 of them (3%) progressed to the active form.  
**2nd group:** 489 who tested positive for LTBI with IGRA (T-SPOT, QFT-GIT/GOLD), 9 of them (1.84%) progressed to active tuberculosis; 497 patients who tested positive for LTBI with PPD (5, 10 or 15 mm), 20 of them (4%) progressed to the active form.
- In the economic evaluation, **1st group:** IGRA's ICER was BRL 8.340,68 for each case of tuberculosis avoided, and its incremental budgetary impact in 5 years was BRL 40.527.273,25; **2nd group:** IGRA's ICER was BRL 48.905,19, and its incremental budgetary impact in 5 years was BRL 1.131.654,58.

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