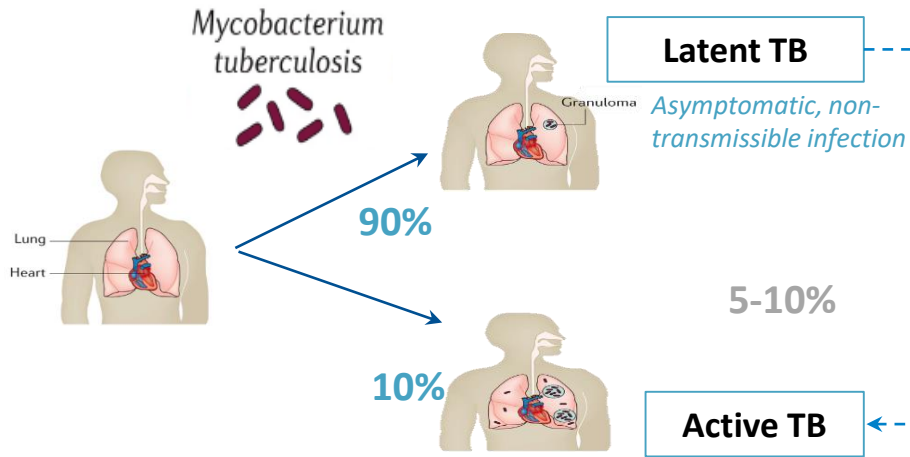


# APRECIT : Improving the Management of Latent Tuberculosis Infection

Infection *M. tuberculosis* (TB)

Transmission by aerosol (cough, sneeze)



Needs treatment for latent TB infection to prevent active TB disease but it has no reference test

## Questions :

**1: What is the performance of TST, IGRA tests in detecting the LTB knowing that there is no reference test ?**

**2: How does living condition affect the development of latent infection to develop into active TB in Madagascar?**

**Acknowledgment :** E2M2 team, Mirella, Rila, Marius, Anthonio

# What is the performance of TST, IGRA tests in detecting the latent infection knowing that there is no reference test ?

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## Model class latent

**R function** : `poLCA(formula = cbind(TST, QTF, TSPOT) ~ 1, data = df, nclass = 2, nrep = 10, na.rm = FALSE, graphs = TRUE)`

**Outcome** : Presence/absence of latent infection

**Distribution** : Binomial

**Predictors** : TST, QTF, TSPOT

**Hypothesis** : TST, QTF and TSPOT detect sufficiently the latent infection.

## Data

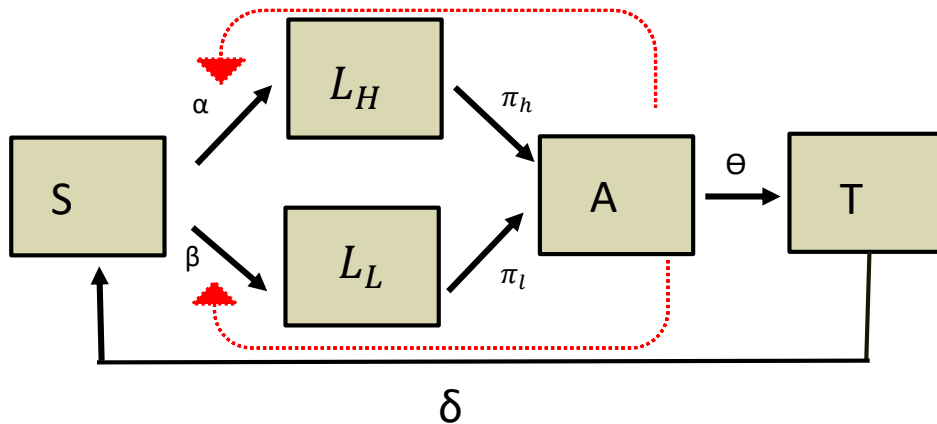
The project recruited index cases with TB disease

Set up household surveys of index active tuberculosis cases and follow-up over 18 months

Each household contact was tested with QTF, TST, TSPOT and has data on exposure variables in questionnaire

# How does living condition affect the development of latent infection to develop into active TB in Madagascar?

## Model diagram



### States :

- **S** : susceptible
- **L<sub>L</sub>** : latent low nutrition
- **L<sub>H</sub>** : latent high nutrition
- **T** : Treated
- **A** : active TB

### Processes :

- **$\alpha$**  : Transmission latency rate from susceptible to latente with high nutrition
- **$\beta$**  : Transmission latency rate from susceptible to high nutrition
- **$\pi_h$**  : Activation rate from latent high nutrition to active TB
- **$\pi_l$**  : Activation rate from latent low nutrition to active TB
- **$\Theta$**  : treated rate from active to treated
- **$\delta$**  : rate from treated to susceptible

## Next steps

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- 1- Stratification of the analysis in age group
- 2- Study more living conditions : clean water, time in household...
- 3- Opened population