Economic considerations for models of diagnostic testing for latent, incipient, and subclinical TB

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TB MAC/WHO Annual Meeting
September 14th, 2018
Washington DC

Overview

- Systematic TB screening is one of many interventions to enhance TB control
- LTBI screening < screening for active TB
- LTBI screening strategies vary widely
  - uncertainty about impact, feasibility, cost and cost-effectiveness of LTBI screening and treatment among different populations

Goals of economic evaluations of latent/incipent TB

- Primarily to inform efficient resource allocation within health system or TB specific budget.
- Systematic programmatic TB screening is usually funded through public health budgets, although LTBI testing may also be funded under clinical care budgets.
- Clarify anticipated funding sources – competing goals (ex. TB versus HIV program)

General approach to modelling

- Markov with time horizon long enough to capture effect of disease over time
- Perspective and administrative level of analysis (municipal, state, federal)
- Societal perspective, if feasible
- Use local costing data when available
- Include programme performance parameters and cover as much of LTBI treatment cascade as possible
- Include MDR-TB data
- **Perform sensitivity analysis**

Epidemological parameters

- Generic

1. TB reactivation rate
2. Incipient/latent TB diagnostic test characteristics
3. Efficacy of treatment regimens

- Local

1. LTBI prevalence
2. Screening coverage
3. Proportion of eligible for treatment who accepted treatment
4. Treatment initiation rate
5. Treatment completion rate

Perspective	Cost parameters	Outcomes
TB Programme Perspective	• Direct medical costs • Direct non-medical costs (covered by TB programme)	Cost per averted TB case as the primary outcome
Health system perspective	• Direct medical costs (TB related or clinical) • Direct non-medical costs (covered by health system)	Cost per QALY or savings as primary outcome and cost per averted TB case as secondary outcome
Patient perspective	• Out-of-pocket payments related to treatment • Productivity loss	
Societal perspective	• Direct medical, non-medical, out-of-pocket expenses, productivity loss	Cost per QALY as primary outcome and cost per averted TB case as secondary outcome

Testing and preventive therapy for people living with HIV

- Costs of testing to confirm latent/incipient/subclinical TB
  - Cost of training, repeat patient visits, reliable supply of diagnostic tests (tuberculin, QFT)
  - Possible benefits in the absence of TST/QFT testing – treat all, regardless of TST/QFT results

- How to reliably rule out TB?
  - Use of symptom screening → reasonalble sensitivity among PLHIV
  - Increased sensitivity with chest radiograph → increase in costs, depending of existing infra-structure
- Creation of TB drug resistance?
  - No evidence of increased INH resistance with IPT. Other drug regimens? Effects of scale-up. Cost of treating MDR-TB.

- Adherence and treatment completion
  - Highly variable - integrated TB-HIV services
- Prevention and monitoring adverse events
  - Costs of monitoring / managing adverse events

Final considerations

- What are the costs / impact of testing for latent, incipent TB
- How will it be implemented?
- Importance of patient perspective and access to healthcare