Options for additional data collection

Marieke J. van der Werf
KNCV Tuberculosis Foundation
At the end of this presentation

Participants know what additional data collection can be done

Participants understand the advantages and disadvantages of performing additional data collection
Why consider additional data collection?

A TB prevalence survey is an opportunity to collect additional data because:

- Representative sample of the population
- Infrastructure (logistics and manpower) for study is already there, performing additional questionnaires/data collection is of relatively low cost
Types of additional data collection

- Exposure to TB risk factors such as HIV, smoking, malnutrition, diabetes, alcoholism, indoor air pollution, etc.
- Drug-resistant TB
- HIV infection
- Socio economic status
- Delay from onset of disease to diagnosis and start of appropriate treatment, and health care utilization patterns prior to diagnosis
- Tuberculin survey
TB risk factors
A Model for the Epidemiology of Tuberculosis

Risk factors → Exposure → Subclinical infection → Infectious tuberculosis → Death

Risk factors → Subclinical infection → Non-infectious tuberculosis

Risk factors → Death

Rieder HL. Infection 1995;23:1-4
Exposure → Infection

- Exposure to source
  - Type of tuberculosis of index case
  - Proximity to index case
- Population density and household size
- Housing (ventilation)
- Social mixing patterns
- Smoking?
- Host genetics?
Selected Risk Factors for Tuberculosis Given that Tuberculous Infection has Occurred

Referent: Infection >7 yr past
- Infection <1 yr past
- HIV infection
- Fibrotic lesions
- Silicosis
- Carcinoma of head or neck
- Hemophilia
- Immunosuppressive treatment
- Hemodialysis
- Underweight
- Diabetes
- Smoking, heavy
- Gastrectomy
- Jejunoileal bypass
- Infecting dose

Relative risk / odds (log scale)
How to measure?

The prevalence survey guidelines include instruments for how to measure

- Smoking
- Alcohol abuse
- Indoor air pollution
- Crowded living conditions
- Diabetes
- Nutritional status

More valid measurements of nutritional status, as well as a diagnosis of diabetes would require drawing blood and performing biochemical measurements, which presents obvious practical challenges.
Data collection

Data collection in a subset of the survey sample to obtain a reasonable precise measure of prevalence of exposure to these risk factors.

Nested case control study - to assess association between factors and risk of prevalent TB, where data on the risk factors is obtained on all diagnosed TB cases as well as on a subset of the non-TB cases.
Drug susceptibility testing

DST using standard solid or liquid culture media of all identified prevalent culture positive cases
Advantages of DST

- Useful if no other drug resistance information is available because it provides an estimate that can be used to design true drug resistance survey
- Comparison of drug resistance prevalence in incident cases (DST survey) and in prevalent cases
- Determining INH resistance as first step towards implementing INH preventive treatment programs
Disadvantages of DST

- Small sample size (n~100)
- Since prevalence = incidence x duration of disease sample is biased towards patients with long-standing illness who have never presented for diagnosis (which may be related to their DST pattern)
- Thus those with rapidly evolving disease (which may be linked to resistance pattern) will be underrepresented
- Often difficult to ensure proper treatment of identified MDR TB patients
HIV testing: Whom to test?

- Identified TB cases
- TB suspects
- Identified TB cases and their household contacts
- All or random sample of study population
HIV testing: information obtained

- HIV prevalence in prevalent TB patients (compare with incident TB cases)
- HIV prevalence in TB suspects
- HIV prevalence in household contacts
- HIV prevalence in general population
Issues to consider

- Returning HIV test result to participant
- Provision or HIV treatment
- Anonymous testing or not?
- How to organize VCT?
- How to obtain informed consent?
- Is informed consent necessary for testing of identified TB cases?
Disadvantages

- HIV high risk groups (prisoners, truck drivers etc) often not adequately represented in study sample

- Complicates logistics of survey since
  - Informed consent needs to be obtained
  - VCT needs to be provided
  - (Blood) sample collected
  - Results of test returned

- May jeopardize main study objective
Why measure socio economic status?

Provides information about:

- Prevalence of TB in different socioeconomic groups
- The extent to which the programme is reaching TB patients with low SES
  - The SES profile among people with TB identified in a prevalence survey can be compared with that among a sample of TB patients registered for treatment in the national TB programme.
- Access to quality treatment for the poorest
  - The history of health services utilization among survey respondents with chest symptoms can be compared between different SES segments
How to measure SES?

- Income
- Education
- Occupation
- Assets

Some combination of these
Health care utilization

People diagnosed with TB in a prevalence survey could be interviewed to assess
- Knowledge about the disease
- Current treatment
- Previous health care utilization
- Delays in seeking care

These questions may also be extended to all people with chest symptoms, and/or a sub-sample of all survey subjects.
Tuberculin survey

To provide information on the magnitude of (and trends in the magnitude of) tuberculosis transmission

Objectives:
- To assess the prevalence of tuberculosis infection in children.
- To assess BCG coverage in children.
- To estimate the annual risk of tuberculosis infection (ARTI)
Why include tuberculin survey in TB prevalence survey?

Comparison of results of TB prevalence survey with results of tuberculin survey

N.B. If results of a previous national tuberculin survey are available adding a tuberculin component should be considered.
Disadvantages

- Lot of work
- Often tuberculin survey has different study population
- Tuberculin surveys do not always provide interpretable results
What can be done with the additional data?

- Put the estimates of the prevalence of TB in a proper context.
- Provide information that could be used for analytical epidemiological studies to improve the evidence base for various TB risk factors.
- If prevalence surveys and additional data collection are repeated over time analysis of causes of changes in the trend in TB prevalence in a particular direction can be performed.
Considerations

The main drawback of an extended data collection is that it can interfere with the data collection for the primary objective of the survey (prevalence of TB)

- Time constraints
- Reduced quality of work
- Increased non-participation rates
Recommendation

Assess what additional data collection would be useful in your country.

Assess whether the survey human resources capacity is sufficient to perform additional data collection.