Background paper number 7

Lessons learnt and policy implications from recently completed TB disease prevalence surveys and their interpretation - Vietnam

Binh Hoa Nguyen

Present by: Nguyen Binh Hoa, MD, MPH
Viet Nam NTP

Viet Nam

- Area: 331.211 km²
- 84.1 million inhabitants
- Life expectancy: 71.1, 68.3, 74.1 (total, male, female)
- Provinces: 63
- Districts: 673
- Communes: 10.925
- 54 Ethnic minority groups
- TB notification minority groups:
  - New S+: 56.476
  - Total TB cases: 98.408
Aim and objectives

To provide information on the size of the TB problem in Vietnam, to assist planning of TB control

Objectives
• Estimate prevalence of pulmonary TB among adults;
• Provide baseline data for comparison with future surveys.

Research methodology

Survey Population:
105,000 inhabitants aged ≥ 15 years living in 70 selected communes for >3 months and present at time of survey.

Exclusion criteria:
Foreigners, soldiers in military barracks, short-time guests
Selected clusters

Sampling:
Multistage clustered sampling design proportional to the population size (PPS)

District as primary sampling unit

Strata: Urban - Rural - Remote: 2 / 3 / 2

70 clusters: 20 urban
30 rural
20 mountainous clusters

Cluster size: 1,500 ≥15 yrs (population of all ages ~ 2,240)

TB case finding in the Prevalence survey

1. Census: Identification eligible study population
2. Interview: Identification of TB suspects by symptoms/recent history of TB
3. Chest X-ray: Identification of TB suspects by CXR
   - Fluororadiograph with micro films 70x70mm
   - Digital CXR using CD for data storage
4. Sputum examination: Determination of cases
   for all TB suspects identified either by interview or CXR
   - Direct smear: 3 sputum specimens (spot-morning-spot)
   - Culture (morning sputum specimen)
**Survey team**

- Team leader: 1
- Census/interview: 3
- X-ray: 3
- Laboratory: 2
- Tuberculin team: 2
- COPD team: 3
- Drivers: 3

**X-ray truck and 2 cars for survey team**
ORGANIZATION ISSUES:
TRAINING SURVEY TEAMS - 1st REVIEW MEETING

KNCV technical support
GUIDELINE FOR IMPLEMENTATION IN THE FIELD

Outline of the survey

• Selected clusters visited during preparation phase -> construct population lists and collect data (community health workers)
• 14 days per cluster
• First 2 - 3 survey days in cluster: survey census (check population list and collection of household data); inform population on survey procedures
• Remaining days: interviewing all eligible inhabitants for TB symptoms and history (form Q1) and Chest X-ray examination.
• Follow-up of non-attendants (by repeated home visits) to reduce non-participation rate.
Study subject comes with Q1

Screening by Interview Q1

Clinical screening (+)

Interview Q2

Request 1st sputum, Appointment for the 2 others sputum

Clinical screening (-)

CXR examination

CXR abnormal

Interview Q2, Request sputums

CXR normal

Re-interview 10% Q1 & Q2

Gift

Census
Using CXR in the prevalence survey
Field work
Data management

- 10 survey teams with the same guidance and quality assurance system.
- Checking forms for completeness and consistency and progress within cluster after each survey day.
- Data stored in locked room.
- Double data entry in EPIDATA 3.1
- Data validation and cleaning in SPSS
- Data analysis in STATA 9.0
- With assistance from National & international experts (KNCV, WHO, …)
Magnitude of survey

- survey sites: 70
- central level staff involved: > 170
- local staff involved: 1,050
- team days in field: 980
- total participants: 94,179
- interviews done: 93,758
- X-rays done: 89,376
- tuberculin tests done: 22,427
- suspects: 7,498
- sputum smears: 22,319
- sputum cultures: 7,298
- data files: 2,100
- overall cost: USD 1,000,000

RESULTS

Participation rate 90.6%

Age and sex distribution of the eligible population participating in the survey.

Age and sex distribution of Vietnamese adult population, 2006
PREVALENCE OF TUBERCULOSIS
(all ages)

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence /100k</th>
<th>95% CI</th>
<th>Estimated number of Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>minimum</td>
<td>maximum</td>
</tr>
<tr>
<td>PTB AFB(+) new</td>
<td>114</td>
<td>88</td>
<td>140</td>
</tr>
<tr>
<td>PTB AFB(+) all forms</td>
<td>145</td>
<td>110</td>
<td>180</td>
</tr>
<tr>
<td>PTB Culture (+)</td>
<td>189</td>
<td>152</td>
<td>226</td>
</tr>
<tr>
<td>Bacteriologically confirmed PTB</td>
<td>226</td>
<td>183</td>
<td>269</td>
</tr>
</tbody>
</table>

PTB AFB(+) (/100K ≥15 Years) Whole country :197 (North: 163, Central: 152, South: 256)
TB prevalence survey is huge undertaking but opportunity can be used for secondary objectives

Examples from Vietnamese prevalence survey:
• SES indicators in association with TB
• Health seeking behavior
• Linked Tuberculin survey
• Linked COPD survey

Health care seeking of 4747 TB suspects with cough more than 2 wks with sputum
First health care provider (173 S+)

Conclusions and implications for tuberculosis policy

- TB prevalence in Vietnam is 1.6 times higher than previously estimated, a significant amount of cases in community are not yet detected.

- TB should remain high priority for Ministry of Health.
Conclusions and implications for tuberculosis policy

• Result of this survey will be used to evaluate and improve approaches to tuberculosis control
  – Increase case detection: ACSM, PAL, active case finding among high risk groups, PPM, ...
  – CXR as supplement tool along with clinical screening tools

• Survey contributes to building capacity and expertise for the conduct of prevalence surveys globally

Organizational aspects

Important to success of survey:
• leadership MoH
• Strong commitment and support from central and local authorities
• staff commitment
• financial support by MOH (with additional funding from international partners: KNCV, WHO, World Bank, RNE, Global Fund)
• technical support from international partners (KNCV, WHO)
Survey methods

Survey in line with international standards:
• Standardized protocols for data collection
• Combination of screening methods (assessment of symptoms by interview and chest X-ray)
• Microbiological diagnosis by smear examination and culture
• Treatment of TB cases

Summary: Lessons for success

• Strong commitment of local authorities.
• Efficient census through making use of community health workers.
• Informative pilot to check feasibility and effectiveness of field procedures
• Use of digital X-ray equipment (at least for part of the clusters): ease of quality control
• Systematic quality-assurance
• Clear data management plan
Lessons learned

• Definition of eligible population: the definition was sometimes confusing and lead to underrepresentation of mobile populations (e.g. migrant workers).
• Better and quicker availability of technical expertise to repair the digital X-ray equipment.
• 2 culture specimens instead of one (we now may have some underestimation of smear-negative TB).
• Double data entry of only a random subset (e.g. 20%) of the forms.
• Have a list of smear – culture positive TB patients detected in the survey and have completed information in the data of this group.

THANK YOU VERY MUCH

For your attention!