Prevalence survey in Vietnam
2006-2007

Present by: Nguyen Binh Hoa, MD, MPH
Viet Nam NTP
- 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 2006:
  - 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

BỘ Y TẾ
BỆNH VIỆN LAO VÀ BỆNH PHÓI TRUNG ƯƠNG
CHƯƠNG TRÌNH CHỐNG LAO QUỐC GIA
WWW.BVLAOBF.ORG / VNTP@BVLAOBF.ORG

HƯỞNG DẪN ĐIỀU TRA
VINCOTB-06

HÀ NỘI, 8 / 2006
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 (+)

Clinical screening (-)

Interview Q2

Request 1st sputum, Appointment for the 2 others sputum

CXR examination

CXR normal

CXR abnormal

Interview Q2, Request sputums

Re-interview 10% Q1 & Q2

Gift
Using CXR in the prevalence survey
Data management
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>survey sites</td>
<td>70</td>
</tr>
<tr>
<td>central level staff involved</td>
<td>&gt; 170</td>
</tr>
<tr>
<td>local staff involved</td>
<td>1,050</td>
</tr>
<tr>
<td>team days in field</td>
<td>980</td>
</tr>
<tr>
<td>total participants</td>
<td>94,179</td>
</tr>
<tr>
<td>interviews done</td>
<td>93,758</td>
</tr>
<tr>
<td>X-rays done</td>
<td>89,376</td>
</tr>
<tr>
<td>tuberculin tests done</td>
<td>22,427</td>
</tr>
<tr>
<td>suspects</td>
<td>7,498</td>
</tr>
<tr>
<td>sputum smears</td>
<td>22,319</td>
</tr>
<tr>
<td>sputum cultures</td>
<td>7,298</td>
</tr>
<tr>
<td>data files</td>
<td>2,100</td>
</tr>
<tr>
<td>overall cost</td>
<td>USD 1,000,000</td>
</tr>
</tbody>
</table>
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
Study population (Data Census & present) 103,924 persons

Participants 94,179 (90.6%)

Clinical Screening 93,758 (90%)

Suspects by screening interview 4,572 (4.9%)

Suspects by X-ray abnormalities 3,681 (4.1%)

Total number of suspects: 7,498

Chest X-rays done: 89,376 (86%)

In-depth suspect interview 7,580 (7,040 TB suspects)

Sputum smear examination 7,648 (7,083 TB suspects)

Cultures 7,298 (6,772 TB suspects)

Sputum smear positive: 174
New smear positive: 137

SS+, C- : 37 (21% of S(+) cases)
SS+, C+ : 137 (79% of S(+) cases)

Culture positive: 232

SS(-) / C(+): 95 (41% of C(+) cases)
Bacteriologically positive: 269
## PREVALENCE OF TUBERCULOSIS

*(all ages)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Prevalence /100 k</th>
<th>95% CI</th>
<th>Estimated number of Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTB AFB(+) new</td>
<td>114</td>
<td>88 140</td>
<td>73,845 117,771</td>
</tr>
<tr>
<td>PTB AFB(+) all forms</td>
<td>145</td>
<td>110 180</td>
<td>92,704 151,122</td>
</tr>
<tr>
<td>PTB Culture (+)</td>
<td>189</td>
<td>152 226</td>
<td>128,328 190,470</td>
</tr>
<tr>
<td>Bacteriologically confirmed PTB</td>
<td>226</td>
<td>183 269</td>
<td>154,164 226,516</td>
</tr>
<tr>
<td>PTB AFB(+) (/100K ≥15 Years)</td>
<td></td>
<td></td>
<td>Whole country :197</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(North: 163, Central: 152, South: 256 )</td>
</tr>
</tbody>
</table>
Case detection rate in Vietnam as calculated using the notification rates for new SS+ TB from NTP data 2006 and the prevalence rates of new-SS+ TB, by sex

<table>
<thead>
<tr>
<th>Category</th>
<th>Notification rate per 100,000 persons per year</th>
<th>Weighted prevalence rate per 100,000 persons</th>
<th>PDR*</th>
<th>CDR**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>93</td>
<td>155</td>
<td>0.60</td>
<td>55%</td>
</tr>
<tr>
<td>Male</td>
<td>137</td>
<td>273</td>
<td>0.50</td>
<td>50%</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>57</td>
<td>0.86</td>
<td>63%</td>
</tr>
</tbody>
</table>

* Patient diagnostic rate;

** Case detection rate calculated as CDR=PDR/(PDR+0.5)
Case detection rate in Vietnam as calculated using the notification rates for new SS+ TB from NTP data 2006 and the prevalence rates of new-SS+ TB, by zones

<table>
<thead>
<tr>
<th>Category</th>
<th>North</th>
<th>Middle</th>
<th>South</th>
<th>Whole country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notification rate new SS+ TB</td>
<td>66</td>
<td>77</td>
<td>131</td>
<td>93</td>
</tr>
<tr>
<td>Prevalence new SS+ TB</td>
<td>123</td>
<td>144</td>
<td>200</td>
<td>155</td>
</tr>
<tr>
<td>PDR*</td>
<td>0.54</td>
<td>0.53</td>
<td>0.66</td>
<td>0.60</td>
</tr>
<tr>
<td>CDR (%)**</td>
<td>52</td>
<td>52</td>
<td>57</td>
<td>55</td>
</tr>
</tbody>
</table>

* Patient diagnostic rate;  
** Case detection rate calculated as CDR=PDR/(PDR+0.5)
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+)

- Private sector: 36%
- Hospital: 23%
- Farmacy: 14%
- CHP: 8%
- not seek health care: 5%
- No symptom: 14%
Participants
N=94,179

- screened by short interview: n=93,758 (99.5%)

Suspects by screening interview
N=4,572 (4.9%)

202 had TB treatment in 2 yrs recently

Total number of suspects: n= 7,498

7,580 in-depth interview, (7,040 suspects)

343 had TB treatment in 2 yrs recently

Suspects by X-ray abnormalities
N=3,681 (4.1%)

- Chest X-rays done: n=89,376 (95%)

270 treated in public facilities reported to NTP (79.9%)

8 treated in public facilities not reported to NTP (2.0%)

27 Treated in private sectors (7.0%)

38 no information on health facilities treated (11.1%)
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 of 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!