"TB Reach South-Kivu wave 2 project : Increasing Tuberculosis detection in a high burden and low income setting. Learning from experience."

André, Emmanuel

Abstract
Presentation of the results of the project implemented during 2012 at the world TB Reach Grantee Meeting (World Health Organization/Stop TB Partnership)

Document type: Communication à un colloque (Conference Paper)

Référence bibliographique
André, Emmanuel. TB Reach South-Kivu wave 2 project : Increasing Tuberculosis detection in a high burden and low income setting. Learning from experience. World TB Reach Grantee Meeting (Stop TB Partnership / World Health Organization) (Addis-Ababa (Ethiopia), du 25/02/2013 au 28/02/2013).
South-Kivu Province

Democratic Republic of Congo

CPLT-SK (NTP) & UCLouvain (Belgium)

Emmanuel ANDRE, MD
Objectives of the project:

1. Increase TB detection in a province with historical low detection rate (30-40%)
2. Evaluate innovative and sustainable strategies that could be extended at a national level

List of interventions:

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Label(s)</th>
</tr>
</thead>
</table>
| 1. Introduction of active case finding through former TB patients | 1. “Club des Amis Damien” is an existing national organisation of former TB patients spreading general education messages and supporting DOTs at local level. A group of 50 former TB patients existed before the start of project, but did not perform screening activities.  
2. Through this project, we formed 540 former TB patients to active case finding strategies (door-to-door in locally identified high-risk groups). ACF activities started at Q3.  
3. Monitoring of their activities is performed at the BMU level through a SMS-based reporting system developed locally |
| 2. Introduction of Genexpert MTB/Rif for SS- TB suspects | 1. A network of 78 BMUs performed ZN microscopy tests before the start of the project.  
2. Through this project, we introduced 8 Genexpert machines for SS- suspects  
3. In order to increase referral of samples by peripheral labs, we validated an alcohol-based system for conservation of samples  
4. Monitoring of their activities is performed through a WEB-based reporting system developed locally with the support of IRD |
| 3. Capacity reinforcement of local and provincial staff through a network or international experts, including from other TB Reach projects (IRD) |                                                                                                                                                                                                                                                                                                                                 |


Strategies (2)

Involve former TB patients that would screen their communities for TB suspects. **Expected yield : 10%**

TB suspects would be tested with ZNM. **Expected yield : 10%**

SS- TB suspects would be tested with Xpert MTB/Rif. **Expected yield : 10%**

For 1,000 individuals screened, we would get 10 SS+ and 9 SS-/Xpert+.
Location of the project

COORDINATION PROVINCIALE LEPRE ET TUBERCULOSE DU SUD KIVU
ZONE D’INTERVENTION DE DEUX PROJETS TB REACH WAVE 1&2
ANNEE 2012

Légende
CPT/ TB REACH 2012
ONLY TB REACH W2
TB REACH W1&2

0  100000  200000

Genexpert
Location of the project (2)
Active Case Finding activities

• 540 former patients involved (54 groups)
• ACF started at Q3

Results:
• 44,000 individuals screened (80/former TB patient)
• 6,400 TB suspects identified (15%)
• 1,003 new B+ cases notified (16% positivity)
Xpert activities

Over 6,700 SS- individuals tested
494 SS-/Xpert+

Evolution of MTB/Rif tests performed and trends in positivity

- Smear negative individuals tested
- Positivity (%)
At Q4 of the project, 43% of SS- patients in the South-Kivu Province received Xpert test.
Referral of samples:

In order to increase referral of samples, we validated a conservation method of sputum based on 1/1 dilution in 95°C ethanol.

This permitted to reach remote rural areas where the quality of ZNM is lower than in urban hospitals.

Poster presented at K-L Union meeting (November 2012)

Errors:

Error rates were >10% during the first quarter (training period, human) After that, some modules presented high error rates and had to be replaced -> Monitor closely the error rates of each module

Bad indications for test:
The «Known Resistant « cases were tested by medical doctors during the first months (Rif Resistance 15%) then the problem was solved naturally (Rif resistance among new SS- cases : 5-10%)
TARGET POPULATION, EVALUATION POPULATION and CONTROL POPULATION

<table>
<thead>
<tr>
<th>Population</th>
<th>Size of the population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation Pop : South-Kivu Province</td>
<td>5.876.937</td>
</tr>
<tr>
<td>Target Pop : South-Kivu Province</td>
<td>5.876.937</td>
</tr>
<tr>
<td>Control Pop : Maniema Province</td>
<td>2.049.300</td>
</tr>
</tbody>
</table>

2 TB Reach projects active in the same province:
- 8 Health-Zones with Wave 2 only (22.4% of S-K population)
- 26 Health-Zones with Wave 1 + Wave 2 (62% of S-K population)
Results: evolution of SS+/B+ TB cases

<table>
<thead>
<tr>
<th>SS+/B+ notification</th>
<th>Total SS+/B+ notification target = 5189</th>
<th>Additionality = 2358</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>2010</td>
<td>2011</td>
</tr>
<tr>
<td>Q1 Q2 Q3 Q4</td>
<td>Q1 Q2 Q3 Q4</td>
<td>Q1 Q2 Q3 Q4</td>
</tr>
<tr>
<td>Evaluation population</td>
<td>787 834 586 592</td>
<td>684 715 720 712</td>
</tr>
<tr>
<td>Control population</td>
<td>664 588 696 683</td>
<td>635 653 608 599</td>
</tr>
<tr>
<td>Target SS+/B+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SS+/B+ case detection

- Evaluation population (South-Kivu Province)
- Control population (Maniema Province)
- Target SS+/B+

SS+/B+ case detection

- 70% case detection
- 50% case detection
- 25% case detection
### Results: evolution of all forms TB cases

<table>
<thead>
<tr>
<th>All forms notification</th>
<th>Total SS+/B+ notification target</th>
<th>Additionality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6613</td>
<td>2129</td>
</tr>
</tbody>
</table>

| Year | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 2009 | 1270 | 1335 | 1068 | 1033 | 1181 | 1242 | 1257 | 1176 | 1383 | 1351 | 1128 | 1151 | 1221 | 1407 | 1498 | 1301 |
| 2010 | 1010 | 879 | 1090 | 1057 | 1011 | 1010 | 932 | 981 | 924 | 893 | 968 | 931 | 941 | 813 | 839 |
| 2011 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 | 1653 |

#### Evaluation population
- Target All forms: 1653

#### Control population
- Target All forms: 1653

![All forms detection chart](chart.png)

- **Evaluation population (South-Kivu Province)**
- **Control population (Maniema Province)**
- **Target**
Results: additionality

Latest review (Q3) : 430 cases

<table>
<thead>
<tr>
<th>Additionality calculations:</th>
<th>Wave 1</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS+/B+ only</td>
<td>Difference from trend for 27 BMUs</td>
<td>69</td>
<td>100</td>
<td>173</td>
<td>342</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50% of additionality (after subtraction of Xpert cases) of 32 BMUs</td>
<td>-13</td>
<td>-25</td>
<td>26</td>
<td>-13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>56</td>
<td>75</td>
<td>199</td>
<td>329</td>
<td></td>
</tr>
<tr>
<td>Wave 2</td>
<td>Difference from trend for 19 BMUs (includes Katana Xpert machine)</td>
<td>6</td>
<td>40</td>
<td>15</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>Xpert cases (7 machines, except Katana)</td>
<td>64</td>
<td>179</td>
<td>138</td>
<td>381</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50% of additionality (after subtraction of Xpert cases) of 32 BMUs</td>
<td>-13</td>
<td>-25</td>
<td>26</td>
<td>-13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>57</td>
<td>194</td>
<td>179</td>
<td>430</td>
<td></td>
</tr>
</tbody>
</table>

Proportion Wave 1 43%
Proportion Wave 2 57%

Wave 2 health zones only

162% compared to baseline ;
215% @ Q4

R² = 0.4567
Results: Control population

Considering the evolution in the control population (Maniema Province), the number of additional cases linked to this project is in fact greater than the increase observed.
Results

Involve former TB patients that would screen their communities for TB suspects. Yield: 15% of individuals were TB suspects.

TB suspects would be tested with ZNM. Yield: 13.6% (15.6% among patients referred by former TB patients).

SS- TB suspects would be tested with Xpert MTB/Rif. Yield: 5.5%.

We found 1,003 SS+ or Xpert + new patients through this strategy.
Discussion (1)

• Insecurity & instability have had a daily impact on implementation of the project, but were not impossible to overcome.

• Quality of data is ensured by using only NTP-validated reports. But close follow-up of activities is done through e-Health tools.

• Involving former TB patients for ACF activities can be highly cost-effective
Is Xpert cost-effective in our setting?
  – Xpert without « first line microscopy » would yield 15-20% of TB suspects
  – But : Maintenance issues (heavier than expected), short shelf life
  – Solution?
    • Centralize TB labs and thus facilitate monitoring/maintenance
    • Increase reference systems (conservation/transport/communication of results)
Year 2: next steps

• Why?
  – We consider that the experience did not show its maximal potential
  – Teams on the field are highly motivated by encouraging results
  – Cost-effectiveness will decrease as major investments have been done during Year 1

• Strategy:
  – 1,000 vs 540 Former TB patients involved
  – 10 vs 8 Xpert machines
  – 12 vs 8 Months of full activity
Tips for new TB REACH grantees

- Start case-finding activities as soon as possible
- Implement a close Monitoring system for all sites involved
- Consider collaboration between projects and collaborate with TB Reach secretariat (they often have inspiring ideas!)
- Never give-up!
Thanks!

emmanuel.andre@uclouvain.be