CONTACT INVESTIGATION - THE MISSING LINK TO FINDING AND TREATING THE MISSING PERSONS WITH TB

THE CHALLENGE TB APPROACH IN NIGERIA

PROJECT CONTEXT

The WHO 2018 Global Tuberculosis Report shows that out of an estimated 10 million people who developed TB disease in 2017, an estimated 3.6 million people were missed by health services[1]. Since the adoption of the End TB Strategy in 2015, countries have committed to increasingly ambitious targets for 'finding missing patients' to close the notification gap more rapidly and work towards the elimination of tuberculosis (TB). The Global Fund prioritizes case-finding and designates significant volumes of additional funds - called "catalytic" - funding to this intervention area to accelerate progress whereas USAID's Challenge TB project provides appropriate technical assistance. However, progress in many countries remains slower than anticipated and new approaches are needed to ensure that we can reach the global Sustainable Development Goals (SDGs) and End TB Strategy targets for 2030 and 2035.

In 2014, USAID initiated the Challenge TB project, a flagship global mechanism for addressing TB through collaboration with other national and international initiatives in providing global leadership and support to national TB control efforts. Finding and treating the missing persons with TB is one of the high priority areas under this project, as it is the key to ending the TB epidemic. This is reflected in the project's three main objectives (which are aligned with the Global TB Strategy of the US Government) to (1) Improve access to high-quality patient-centered TB, drugresistant TB, and TB/HIV services, (2) Prevent transmission and disease progression, and (3) Strengthen TB service delivery platforms. Under Challenge TB, supported countries have therefore performed 'assess and prioritize' exercises to determine the most efficient approaches to improve case-finding activities and address gaps between the estimated TB burden and actual notification.







Systematic contact investigation reduces the risk of developing TB disease, and for those with TB disease it prevents poor treatment outcomes due to late diagnosis, adverse social and economic consequences of TB, and further transmission of TB. Household, and other close, highly exposed contacts of TB index patients are at an increased risk of becoming infected and developing TB disease, with a recorded prevalence of 3.5 – 5.5 percent (9.6% in young children)[2]. Contact investigation is well recognized as an effective method for the timely diagnosis of TB patients and an opportunity to provide TB preventive treatment to recently infected contacts. A critical element in prioritizing TB contact investigation interventions is the assessment of the duration, intensity, and frequency of exposure combined with the vulnerability of the exposed contact (susceptibility to infection, the risk of disease progression, and the severity of disease including complications). Close contacts are by definition a relatively easy to identify and reach at-risk population, due to their close proximity to the index patient and the already established interaction of the latter with the health facility. This is under the assumption that index case interviews are of high-quality and can elicit accurate information regarding infectiousness periods and the names of contacts who might have been exposed during that time.

Nigeria is among the ten countries with the largest gap between notification of TB incident patients and the best estimates of TB incidence for both drug-sensitive and drug-resistant TB. In 2014 the country reported a treatment coverage of only 24 percent (95% CI: 17%-36%). In 2014, an estimated 387,000 (95% CI: 252,000 - 549,000) persons developed TB in Nigeria, out of whom 91,354 were notified by the National TB program (NTP) - leaving a gap of nearly 76 percent.[3] The WHO Global TB Report 2015 estimated that in 2014 Nigeria accounted for 7 percent of the global case notification gap of 4 million. Between 2014-2017 the national notification gap has only been reduced by 3 percent, and 71 percent (95% CI: 68%-73%) of patients are still facing catastrophic costs, despite large sustained international investments in TB control in Nigeria [1,4]. With an estimated 76 percent of its national TB budget unfunded, Nigeria needs to look for efficient approaches to address its TB notification gap. Challenge TB has therefore developed a systematic contact investigation approach to contribute to and accelerate the national efforts to finding and treating the missing persons with TB.

PROBLEM STATEMENT

As described above, Nigeria is struggling to make adequate progress in addressing its TB epidemic. In 2016, the NTP identified contact investigation as a key intervention for finding 'missing' patients. The national policy prioritizes contacts of bacteriologically confirmed pulmonary TB patients, who constituted 75 percent of all TB patients notified in 2016. However, the implementation was not yet systematically organized, the initial uptake was limited, and results were not reported.

At the outset of the project, Challenge TB specifically chose to support areas which faced significant implementation challenges, lower than national average performance results, and larger notification gaps, and therefore required an additional boost to address and mitigate the situation.

STRATEGIC APPROACH & PROJECT IMPLEMENTATION

In July 2016, the Challenge TB project initiated a systematic contact investigation intervention in 76 high burden local government areas (LGAs or districts) across the 14 supported states in Nigeria. In order to ensure acceptability and maximum uptake of the intervention from the outset, the project engaged with a broad selection of key stakeholders and opinion leaders for intervention design, community sensitization, and implementation. Key stakeholders included TB program at all levels, community elders and leaders, heath care workers, contact investigators, community gatekeepers, and opinion leaders who facilitate community entry and acceptance of the intervention.

In the Challenge TB model, contact investigation includes household visits to the homes of the index patients and other close contacts (for instance work colleagues), symptomatic screening, sputum sample collection and transportation, and counseling of close contacts of index TB patients. Contact Investigators are either health workers or members of community-based organizations, who live in the same community or local government area as the patients and are trained to conduct contact investigation (4-hour orientation program). The contact investigation task is added to their regular scope of work and Challenge TB provides them with an allowance to cover the costs of transportation for home visits and for delivering the collected sputum specimen to diagnostic centers.

Contact investigation is performed systematically, starting by contact investigators visiting their local health centers to compile a list of index patients and their addresses from TB treatment registers. Eligible index patients are defined as having bacteriological confirmed pulmonary TB, as per national guidelines. The contact investigators then visit the households of these index patients at a date and time previously agreed with the health care provider during the admission interview. They make a list of close contacts with the help of the index patient and screen contacts using a questionnaire, assess their risk for TB infection or disease and determine for whom laboratory investigation is required. Sputum samples from presumptive TB patients are collected and transported by the contact investigators to TB diagnostic centers, preferably sites able to perform Xpert© MTB/RIF testing. Those diagnosed with TB are referred to the health facility to commence on appropriate treatment and be recorded in the TB treatment register under routine program conditions, while symptomatic contacts with negative initial sputum samples are referred to the health facility for further investigation. Asymptomatic contacts eligible for preventive therapy (children under 5 and PLHIV of any age) are counseled and advised to start TB Preventative Therapy (TPT) using isoniazid, they are then referred to the health facility to be registered for this purpose.

Challenge TB supported the development of new tools to facilitate the contact investigation process, its documentation and evaluation. These include:

- **1.TB index patient interview and contact investigation form** to document key information for each index patient and their contacts, and to assess a contact's risk of TB infection/disease;
- **2.TB contact investigation and management summary report form** to monitor the intervention. The reporting form provides a monthly summary of cascade data in the Local Government Area, disaggregated by sex, age, and type of TB, including drug-resistance status.

(Sample forms can be found on pages 9 &10)

CHALLENGE TB TECHNICAL BRIEF

The project monitors the following key indicators (segregated by age, gender, and drug resistance status and HIV status among presumptive TB and confirmed TB patients) for performance improvement:

- 1. Index patient coverage (The number of index patients for whom contacts are identified and investigated divided by the total number of index patients).
- 2. Contact investigation coverage (The number of contacts investigated divided by the total number of identified eligible contacts as part of a contact investigation).
- 3. Ratio of screened contacts to index patients
- 4. Proportion of screened contacts, who were presumptive TB clients
- 5. Proportion of presumptive TB clients tested for TB
- 6. TB bacteriological positivity rate among tested presumptive clients
- 7. Prevalence of TB (all forms) among screened contacts
- 8. Proportion of TB patients started on treatment
- 9. Proportion of clients eligible for TPT who started on TPT.

RESULTS AND ACHIEVEMENTS

The contact investigation model piloted in Challenge TB supported areas has shown encouraging results. The intervention augmented the national guidelines with additional tools for symptomatic screening and a contact investigation monitoring framework as described above. The intervention was well accepted and after adaptation of reporting formats, in 2016 and 2017 the Challenge TB supported area reported a 38 percent and 65 percent coverage of index patients respectively, with initial data from January – June 2018 showing a coverage of almost 95 percent. The average number of identified contacts per index patient was four.

In 2017, 19,866 bacteriological confirmed index cases were registered, of whom 12,877 (65%) were covered in the contact screening exercise. Out of the total of 49,565 household contacts screened for TB, 12,674 (26%) were identified as symptomatic - classified as presumptive TB - and sputum samples were collected for further investigation if the person in question could produce a sample. As sputum is collected on site and transported to the facility by the contact investigator in person, the loss to follow-up at this stage was minimal and 11,783 (93%) contacts with presumptive TB completed evaluation, with 1,398 (11% of presumptive TB patients identified) being diagnosed with TB – all but 7 of whom started on TB treatment (see Figure 1 below for details). The yield of TB among screened contacts was 2.8 percent (2,821 per 100,000 population) in 2017, which is in line with what can be expected from TB screening among close contacts, according to WHO Guidelines. This prevalence is more than ten times higher than the estimated annual incidence among the general population. Comparing prevalence with incidence data has its limitations, but the data indicate that as expected contacts are indeed a high-risk group in Nigeria.



As the intervention was rolled out throughout the project areas, the contribution of contact investigation to the overall case notification becomes more apparent, as can be seen in **Figure 2** below. In 2017, contact investigation contributed about three percent of the total number of patients notified.

Figure 2: Contact investigation contribution to TB notification in Challenge TB areas in Nigeria over the last three years



Contact investigation requires a very low number needed to screen (NNS) to identify one TB patient. The NNS through any intervention is usually compared to the NNS screen in the general population (based on prevalence survey data) as a key indicator to determine efficiency. The lower the number, the more preferential a case-finding method is. In Nigeria, the number of contacts needed to be screened to identify one patient was 35, compared to 191 in the general population (**see Figure 2**), this demonstrates the efficiency of active contact investigation in this setting.

Figure 3: Number needed to screen to find 1 TB patient (NNS)¹ for contact investigation according to 2017 data and the NNS among the general population (using the latest national prevalence survey data) in Nigeria



The uptake of TPT amongst eligible contacts under 5 years of age was 67 percent during 2017. Figure 3 shows the overall contribution of the Challenge TB contact investigation intervention to TPT initiation for children under 5 years of age.





The additional cost of the contact investigation intervention came to USD 57 per diagnosed patient in the first year but had reduced by USD 9 to USD 48 in 2018.

1. (lower NNS denotes higher efficiency)



LESSONS LEARNED

Contact investigation was well accepted in the community, although there are still instances of index patients who refuse to facilitate contact investigation due to anticipated stigma. Important factors for success were involving key opinion leaders and community gatekeepers from the outset, engaging contact investigators from within the community, ensuring availability of sufficient staff and time, transport and the communication skills of the investigators. The project demonstrated that these factors can and should be addressed, with adequate resource allocation, user-friendly tools and protocols, and well-trained teams.

Good communication with index patients - i.e., providing sufficient information about the rationale for and benefits of contact investigation, thorough explanation of processes and procedures and as well as mutually agreeable timing of visits were found to be essential to maximize collaboration, yield, and success.

Collecting samples during the screening visit instead of asking presumptive patients to visit the health facility was found to be a successful intervention to minimize the inconvenience for the family and thus the risk of dropout at the diagnostic stage.

Simple and user-friendly tools facilitated the screening, recording, and monitoring processes. This has not only increased case-finding among contacts and facilitated documentation but has also contributed to a very high-rate of contacts completing the evaluation process successfully.

Finally, the intervention has demonstrated that the integration of contact investigation into routine program implementation in Nigeria is both feasible and highly effective. It is providing a good yield, and significantly contributing to finding and treating patients who otherwise would not access care and increased notification. It also makes a significant contribution to the prevention of TB disease in vulnerable contacts, by providing easy access to TPT.

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CONCLUSION

The overall case notification in Challenge TB supported areas has increased sharply since the project commenced, which is attributable to a number of combined interventions, of which contact investigation was only one. However, contact investigation has proved to be the most effective and efficient intervention with a high yield relative to the number of persons evaluated (low NNS), early identification, and treatment initiation for those who have developed disease while at the same time providing maximum potential of protection for those at risk of developing disease.

Contact investigation should be treated as an integral part of routine TB care and prevention services. It is generally well accepted and feasible to implement under routine program conditions but adequate funding (for staff, transport, and training) is needed. Given the high yield demonstrated in the project areas an accelerated roll-out of the protocols and approaches throughout the country should be recommended. Given the achievements the team demonstrated with 66 percent coverage and a restrictive definition of 'index patient', it stands to reason that a coverage of close to 100 percent and treating every TB diagnosis as an index patient regardless of disease site and bacteriological status, would increase the gains even further. After all, even if the patient themself is not considered infectious, they have to have been infected by someone, and that someone is very likely close by.

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NIGERI/	
CONTROL PROGRAMME,	'INVESTIGATION FORM
LEPROSY	CONTACT
AND	AND
TUBERCULOSIS	TB INDEX CASE /
NATIONAL	

Contact Invest	tigation Information		Index Case Information	
Name of TB Contact Investigator		TB/DR-TB Reg./No. of Index Case		
Designation of TB Contact Investigator		Type of TB (tick as appropriate)	DS-TB: DR-TB:	
Phone Number of TB Contact Investigator		Consent obtained for contact investigation	Yes: No: No:	
Date Contact Tracing Started		Contact Address		

Contact Investigation Outcome and Actions (Yes/No)	Sputum Samples Collected										
	Presumptive TB case referred for diagnosis										
	Presumptive TB Case Identified										
/No)	Fever										
ecklist (Ye:	Night Sweats										
nptom Ch	Weight Loss ²										
TB Syn	Cough ≥ 2 weeks¹										
	Relationship with Index Case										
ct Information	Phone No.										
) Conta	Sex										
l (Close	Age										
Household	Name (Surname, First)										
	S/N	-	2	m	4	5	9	7	∞	6	10

1. A PLHIV with cough of any duration is a presumptive TB case.

2. Indicate yes if weight loss is ≥ 3 kg in a month or contact describes appreciable weight loss

CHALLENGE TB TECHNICAL BRIEF

NATIONAL TUBERCULOSIS AND LEPROSY CONTROL PROGRAMME, NIGERIA

Quarterly Facility TB Contact Investigation and Management Summary Report

Facility:	
LGA:	Quarter:
State:	Year:

CNI	Data Element		M	ale	Fen	Total	
211			<15 yrs	≥15yrs	<15 yrs	≥15yrs	TOLAT
1	1 Total number of Index patients						
	2 Number of TB index patients whose contacts were screened						
	Number of TD contracts	DS-TB					
3	3 Number of TB contacts						
	Number of TD contacts series	DS-TB					
4	4 Number of TB contacts screened						
	Number of presumptive TB clients among	DS-TB					
	screened contacts	DR-TB					
6	Number of presumptive TB clients tested for TB	DS-TB					
		DR-TB					
_	Number of tested presumptive TB clients	DS-TB					
ĺ ′	diagnosed with TB						
	Number of TB patients started on treatment	DS-TB					
ð		DR-TB					
9	Number of screened contacts eligible for IPT						
10	Number of persons eligible for IPT started on IPT						

Name of Reporting Officer:

Sign:

Date: