

MASTER OF PUBLIC HEALTH

Johns Hopkins Bloomberg School of Public Health & IIHMR University

PRACTICUM REPORT

By

Aishwarya Dhumale

Cohort-10

(2022 – 24)

Under the Guidance of

Dr Neetu Purohit

Professor, IIHMR University, Jaipur, Rajasthan

&

Dr Hemant Shewade (Preceptor)

Scientist - E, Division of Health Systems Research

ICMR - National Institute of Epidemiology (ICMR-NIE), Chennai

(Dept of Health Research, MoHFW, Govt of India)

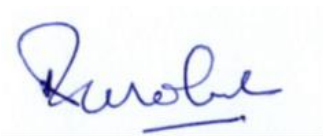
CERTIFICATE FROM FACULTY ADVISOR

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Aishwarya Dhumale, student of Master of Public Health Program offered by IIHMR University, Jaipur in cooperation with Johns Hopkins Bloomberg School of Public Health, Baltimore has undergone Practicum Training at the ICMR - National Institute of Epidemiology (ICMR-NIE), Chennai, India (Dept of Health Research, MoHFW, Govt of India from 16-10-2023 to 17-11-2023).

The Practicum Training is in fulfilment of the course requirements.

I wish her success in all his future endeavours.



Dr Neetu Purohit

Practicum Advisor

Professor, IIHMR University, Jaipur

CERTIFICATE BY SCHOLAR

This is to certify that the Practicum Project submitted by me, Aishwarya Dhumale, with Enrolment No. IIHMR-U/07/2022-2024/0057 and Hopkins ID: F33736 under the supervision of Dr Neetu Purohit (my practicum advisor) and Dr Hemant Shewade (my preceptor) for the award of Master of Public Health carried out during the period 16-10-2023 to 17-11-2023 embodies my original work and has not formed the basis for the award of any degree, diploma associateship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Aishwarya Dhumale

MPH Cohort-10 (2022-24)

CERTIFICATE FROM THE ORGANIZATION

	
INTERNSHIP CERTIFICATE	
This is to certify that	
<u>AISHWARYA RAJESH DHUMALE</u>	
<u>MPH, JHUBSPT & IIMR, JAIPUR</u>	
has successfully completed the ICMR-NIE Internship program	
in <u>HEALTH SYSTEM RESEARCH</u>	
between <u>16-10-2023</u> and <u>17-11-2023</u>	
 Coordinator Internship program, ICMR - NIE, Chennai	 Director ICMR - NIE, Chennai

ACKNOWLEDGEMENTS

This practicum report was done under the guidance of Dr Neetu Purohit (Professor, IIHMR University, Jaipur, India) and Dr Hemant Shewade (Preceptor) Scientist - E, Division of Health Systems Research ICMR - National Institute of Epidemiology (ICMR-NIE), Chennai (Dept of Health Research, Ministry of Health and Family Welfare, Govt of India). I would like to express my sincere gratitude to my mentor and professor, Dr Neetu Purohit for her constant support and guidance throughout my MPH journey. I would also like to thank Dr Kiran Pradeep (Consultant at ICMR) who guided my practicum journey and my practicum preceptor Dr Hemant Shewade for giving me the opportunity to work on the TB-ACF evaluation project and involving me in numerous other activities at the institute. Special thanks to Dr Seema Mehta (Professor, IIHMR University, Jaipur) for her encouragement throughout the course, her patience, and the unwavering support. I am thankful to my colleagues at IIHMR University and ICMR-NIE, who helped me make my MPH journey a memorable one. Last, but not least, I would like to take this opportunity to thank my mother, my sister, and my partner, who have always inspired and supported me in all my academic endeavours. I owe them a sincere debt of gratitude for always believing in me and guiding my future steps.

Contents

ABBREVIATIONS	7
PRACTICUM DETAILS	8
LEARNING OBJECTIVES.....	8
PROJECT REPORT	9
1. ABOUT THE ORGANIZATION.....	9
1.1 PROJECT DETAILS	9
1.2. INTRODUCTION & BACKGROUND	11
1.3. TB-ACF EVALUATION PHASE 3 OBJECTIVES.....	16
1.4. METHODOLOGY	16
1.4.a. Study Population	16
1.4.b. Tasks conducted under the project.	17
1.4.c. Operational definitions of study population.....	17
1.4.d. Understanding Pre-treatment delay.	18
1.4.e. Inclusion criteria for study participants.....	18
1.4.f. The 5 criteria for severe illness for objective 3.a	19
1.4.g. Data Collection tools.....	19
1.5. Digitizing the questionnaire using Epicollect	20
ROLES AND RESPONSIBILITIES DURING THE PRACTICUM	21
CHALLENGES FACED.....	21
REFERENCES	29

ABBREVIATIONS

ICMR	Indian Council of Medical Research
NIE	National Institute of Epidemiology
HSR	Health Systems Research
LMIC	Low-and-middle income countries
TB	Tuberculosis
ACF	Active Case Finding
NNS	Number Needed to Screen
USAID	The United States Agency for International Development
JSI	John Snow International
NTEP	National Tuberculosis Elimination Program
SDG	Sustainable Development Goals
TIFA	Tuberculosis Implementation Framework Agreement
M&E	Monitoring and evaluation
NI-KSHAY	Ni (Eliminate) kshay (Tuberculosis)
CBNAAT	Cartridge based nucleic acid amplification test.
SSM	Sputum smear micrography

PRACTICUM DETAILS

1. Duration: 16-10-2023 to 17-11-2023
2. Hours: 160 hours
3. Name of the Institute: ICMR - National Institute of Epidemiology (ICMR-NIE), Chennai.
4. Name of the Division of Internship: Division of Health Systems Research
5. Supervisor: Dr Hemant Shewade, Scientist - E, Division of Health Systems Research
6. Faculty Advisor: Dr Neetu Purohit, Professor, IIHMR University, Jaipur.

LEARNING OBJECTIVES

1. To understand the organization's mission, hierarchy, and activities.
2. To actively get involved with the ongoing activities of the institute and develop project management skills.
3. To learn about the government programs that support the goal of elimination of Tuberculosis in India.
4. To gain operational knowledge of health systems and process of program evaluation.
5. To apply and develop at least two of the following identified skills and competencies, based on my area of interest.



PROJECT REPORT

1. ABOUT THE ORGANIZATION

ICMR- National institute of Epidemiology is a premier institute of the Indian Council of Medical Research and World Health Organization collaborating centre for Leprosy Research and Epidemiology. It was created in 1999, by merging the JALMA institute of Leprosy (CJIL Field Unit), Avadi with institute for Research in Medical Statistics, Chennai.

Organizational objectives:

- Epidemiological studies
- Human resource development in epidemiology and biostatistics
- Networking for epidemiological purposes
- Consultancy

Research activities conducted in the institute includes epidemiological and outbreak investigations, interventional studies, statistical evaluations, health scheme evaluations and disease control programs.(1)

1.1 PROJECT DETAILS

Evaluation of Active Case Finding implemented by National Tuberculosis Elimination Programme among Marginalized and Vulnerable Populations of India.(1,2)

ICMR – National Institute of Epidemiology, Chennai led the project with funding from John Snow International (JSI), through USAID’s Tuberculosis Implementation Framework Agreement (TIFA). The project was operational for 18 months from (August 2022 to February 2024)(2)

It was divided into 3 phases and each phase of the project had its respective objectives. The project concluded in February 2024 with the manuscript submissions and publication work that concluded Mid-April 2024. Below is the link to a short video shared by ICMR-NIE to document the journey of the project.

Link: [TBACF evaluation project short video](#).

Below is the list of publications and manuscript submissions from the project in each phase.

Phase 1: Quality of active case finding for tuberculosis in India: A national level secondary data analysis. (Published in Global Health Action)(3)

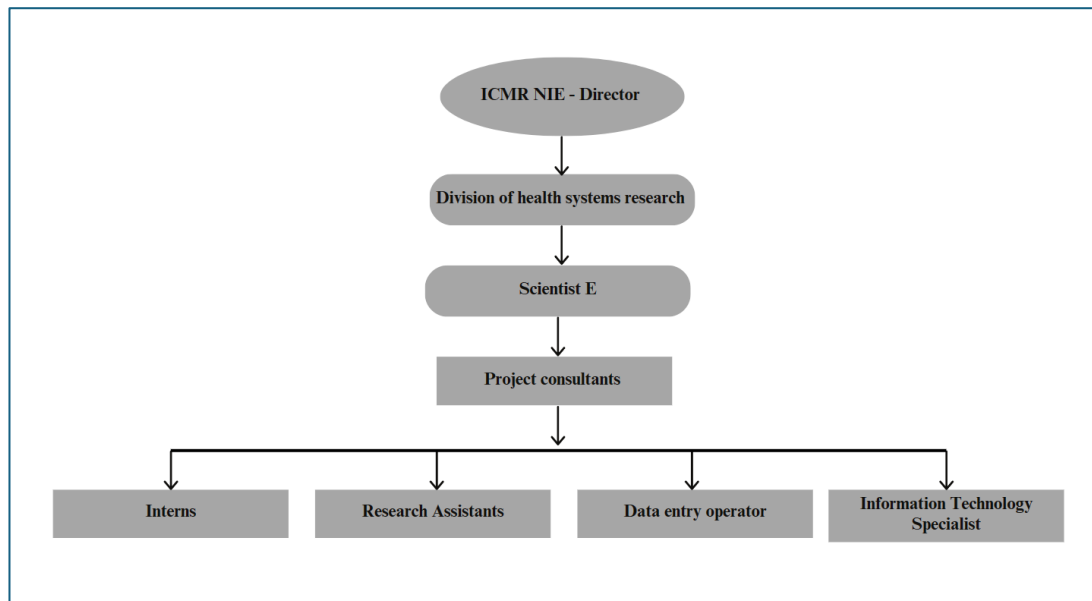
Phase 2: Bridging the “know-do” gap to improve active case finding for tuberculosis in India: A qualitative exploration into program staff perspectives. (TBACF in India: Program staff perspectives) (Manuscript submitted)

Phase 3: ACF for Tuberculosis in India: Assessment of quality benchmarks, time taken in care cascade and use of rapid molecular diagnostic tests (Manuscript submitted).

I was mainly involved in **phase 3** of the project. Which aimed at identifying the proportion of severe illness amongst ACF and PCF detected TB patients and to quantify the pre-treatment delay in ACF and PCF detected TB patients at the patient, diagnostic and facility level.

Under the guidance of the director and head of division of health system at ICMR-NIE, Scientist E (Principal investigator) appointed 2 consultants on the project (Co-investigators) who were given the project management activities such as managing interns, regular follow-up with research assistants on field, ensuring data entry in web-based tool, and guiding the information technology team for management of the web-based tool. Web based tool was specially created for data management of TBACF evaluation project (The tool has now been disabled due to project conclusion). Allied activities included weekly meetings, training sessions, field trips, human resource management and stakeholder management such as district TB officer training and liaison.

Fig.1.1. a. Project Organogram.



1.2. INTRODUCTION & BACKGROUND

In the year 2022, over 10.6 million were ill due to tuberculosis. The goal of SDG Target 3.3 is to lower the TB related deaths by 90% and the TB incidence rate that is new cases per 100,000 population per year by 80% compared to the results from 2015. The aim is to reach the target by 2030. (4) The End TB strategy curated by World health organization, acts as a blueprint for achieving this target. It outlined 3 main pillars and 4 key principles to reduce TB deaths and suffering.(5)

End TB key principles:

- Government stewardship and accountability with M&E
- Civil society and communities' coalition
- Protecting and promoting human resource ethics and equity
- Global collaboration and adaptation of strategy and targets.

Table.1.2. a. End TB Pillars.

Pillar 1	The integrated patient centered TB care and prevention.	• Early diagnosis of TB and systematic screening for contacts and high risk group, including drug susceptibility testing • Treatment of all people with all types of TB. • Preventive treatment of individuals with high-risk and TB vaccination. • Co-morbidity management and collaborative HIV/TB activities.
Pillar 2	Bold policies and supportive systems	• Resource management for TB prevention and care along with political commitment. • Civil society engagement in public and private sector providers. • Social protection, poverty alleviation and actions on other determinants of TB • Regulatory frameworks for notification of cases, ensuring universal health coverage, vital registrations along with rational use of medications for infection control.

Pillar 3	Intensified research innovation	• Creating and developing with quick adoption of new tools and methods. • Research on how to implement and enhance innovations.
-----------------	---------------------------------	--

Despite of the progress made and the programs in place the health system fails to provide sufficient care to more than 3.6 million TB affected individuals across the globe.(5) In order to combat the issue of detection delays and lack of access to care, since 2017, India has implemented active-case findings amongst high-risk populations as a strategic plan under the NTEP. (3) High risk population could be identified based on clinical, socioeconomic, and geographical backgrounds.(6)

Table.1.2. b. Identification groups of high-risk population.

Clinical	Socioeconomic	Geographical
• Undernutrition • HIV • Diabetes mellitus • Alcohol/ smoking • Immunocompromised • Existing Comorbidities • Contacts of TB	• Prisons, old age homes, shelters • Occupational risk with TB • Health care worker • Slums • Areas with high level of poverty • Migrant population	• Hard to reach areas. • Indigenous/ tribal population • Areas with clustering of cases

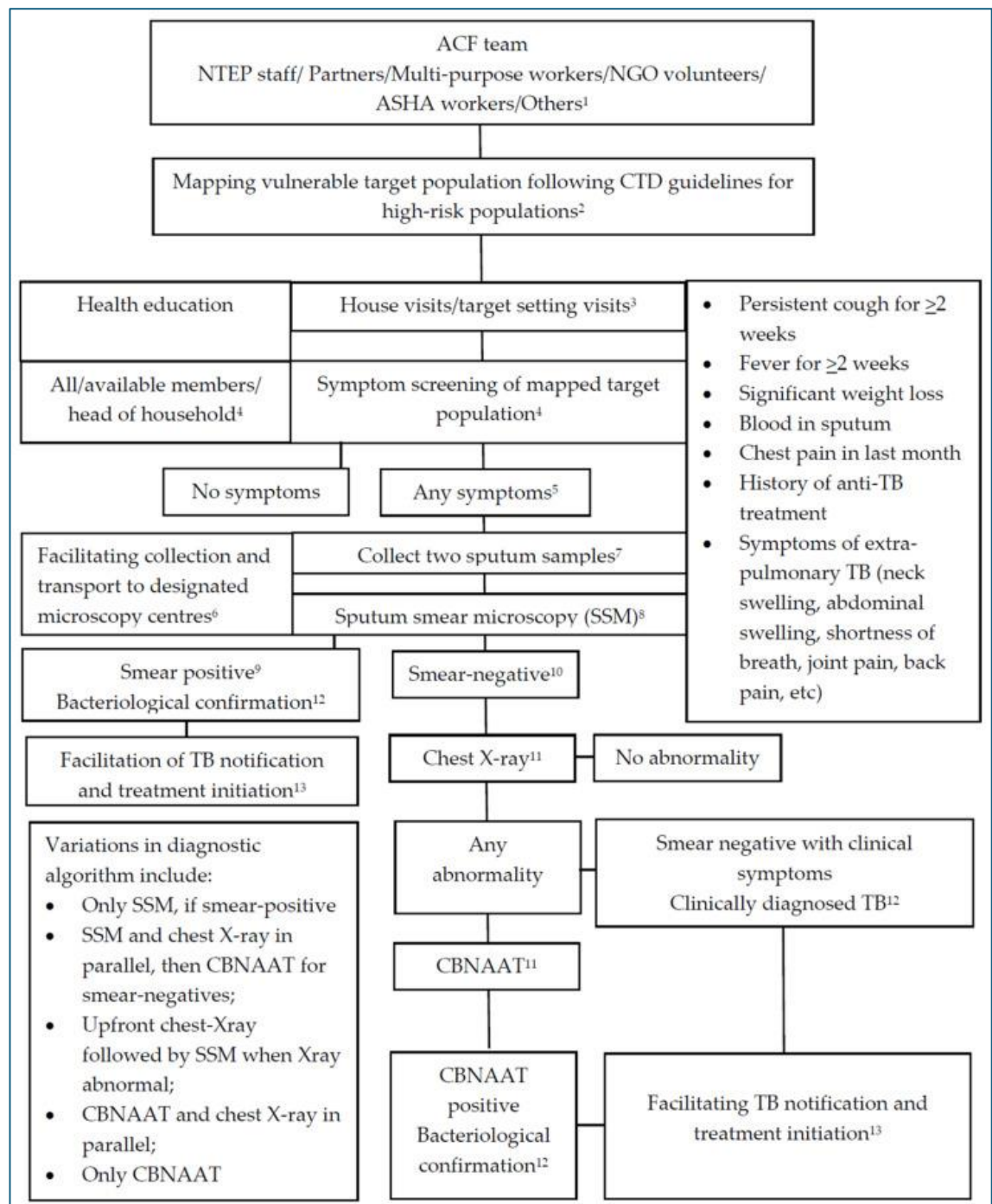
Case detection can be through either Passive case finding or Active case finding. PCF often leads to detection and diagnostic delays especially in LMICs along with catastrophic healthcare costs for the patient.(3) (7) Active case findings improve the patient outcomes and improves the quality of life of the patient as they receive adequate treatment in time.(6) . Key differences between active and passive care findings are as noted below.

Table.1.2.c. ACF and PCF key differences.

Active-case finding	Passive case finding
High risk population and potential contacts are systemically screened and clinically evaluated.	Individuals affected by TB are cognizant of their symptoms and access healthcare facilities where they are evaluated by health workers.
Identified individuals would not otherwise have access to diagnostic care.	Identified individuals have access to diagnostic care at the health facilities.
Proactively searching for cases.	The cases are detected only when the affected individuals reach out for care.
The cases are detected out of the healthcare facilities.	The cases are detected at healthcare facilities.

WHO defines ACF as the “Systematic identification of people with suspected active TB, in a predetermined target group, using tests, examinations or other procedures that can be applied rapidly”(8). For those who have a positive screening result, the diagnosis must be confirmed by one or more diagnostic tests and extra clinical evaluations, which collectively have high accuracy.(9,10) The main objectives of ACF are early detection of cases and reduced risk of TB transmission and to increase the access to diagnostic care to the population that would otherwise be inaccessible.

Fig. 1.2. a. ACF campaign activities as per National Tuberculosis Elimination Program Guidelines.



Sources: (7)

According to the central TB division: Active case finding guidance document, these are the expected indicators for active case finding campaign in the NTEP; (ACF Care cascade)(7)

- 11% of vulnerable population per 1 million population to be mapped.
- Out of the mapped target group >90% population should be screened.
- Amongst those screened individuals 5% should be with presumptive TB.

- Presumptive TB patients to be screened by (SSM, CBNAAT or other investigations) should be **>95%**.
- Amongst the investigated population **5% (minimum >2% to 3%)** should have smear-positive test results and remaining **>90%**, sputum smear negative TB patients should be followed up by chest X-ray or CBNAAT.
- **5%** should be diagnosed with TB and amongst those **>95%** should be put on treatment. (7)

1.3. TB-ACF EVALUATION PHASE 3 OBJECTIVES.

Phase 3 study is quantitative type of study which was done using the 2022 ACF data with the objectives mentioned below. My practicum training activities revolved around the objective 3. a and 3.b. Annexure S3 and S4 were used to collect data from 2000 ACF and 2000 PCF detected cases of adults with age ≥ 15 years of age with Pulmonary TB diagnosis (Drug sensitive).

Table.1.3. a. Project objectives for PHASE 3 objectives.

Objective 1	Objective 2	Objective 3
Loss of ACF care cascade from screening, to presumptive TB diagnosis , to testing and confirmation and medication initiation.	What proportion of presumptive TB patients underwent rapid diagnosis tests like XPERT MTB/RIF (Rapid diagnostic test)	What is the proportion of severe illness among ACF and PCF detected TB patients. (5 criteria of severe illness)
		What is pretreatment delay in ACF and PCF detected TB pts. (Patient level, diagnostic level, treatment level delay)

1.4. METHODOLOGY

1.4.a. Study Population

30 NTEP districts were selected randomly from **9 states** of India. Below is the list of states and districts. Each selected NTEP district TB centre had one Research assistant posted till December 2023 to facilitate the ACF evaluation process.

1. Uttarakhand (n=4) - Rudraprayag, Garhwal, Nainital, Haridwar
2. Telangana (n=3) - Adilabad, Hyderabad, Nalgonda
3. Tamil Nadu (n=3) - Vellore, Pudukkottai, Tiruppur
4. Meghalaya (n=3) - West Garo Hills, Ri Bhoi, East Khasi Hills
5. Rajasthan (n=3) – Ganganagar, Jaipur I, Bundi
6. Odisha (n=3) – Deogarh, Anugul, Kalahandi
7. Gujarat (n=4) – Patan, Ahmedabad Municipal Corporation, Kheda, Narmada
8. Delhi (n=4) - BSA Chest Clinic, Hedgewar Chest Clinic, LN Chest Clinic, LRS
9. Bihar (n=3) – Katihar, Begusarai, Aurangabad-BI

1.4.b. Tasks conducted under the project.

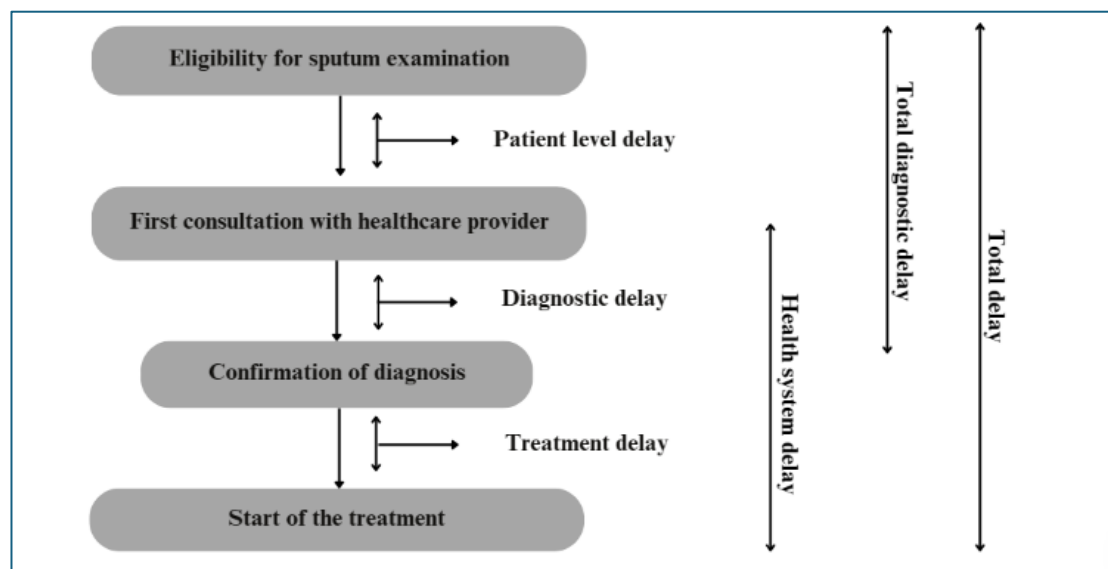
- I. Individual level data capture of first ACF Cycle in the district
 - To know the losses in ACF care cascade.
 - Proportion of presumptive undergoing Xpert MTB/RIF.
 - For the first ACF cycle.
- II. Interviews of patients identified by ACF and PCF.
 - For comparison of proportion of severe illness.
 - To compare the delay in diagnosis / treatment starting from symptom onset.
 - From Dec 2023 to Dec 2024.

1.4.c. Operational definitions of study population

ACF TB Case	PCF TB Case -Eligible (E)	PCF TB Case -Not-eligible (NE)

Study participant diagnosed through NTEP's Active Case Finding Strategy, i.e., the participant resides in a village/urban ward where ACF activity was conducted before the date of diagnosis, <u>the participant was detected because of the ACF activity</u> and documentation of ACF activity in the village / urban ward is available in the Nikshay Portal	Study participant not fitting the 'ACF TB case' criteria and belonging to a village/urban ward where ACF activity was not conducted in the last 3 months before the date of diagnosis.	Study participant not fitting the 'ACF TB case' criteria and belonging to a village where ACF activity was conducted in the last 3 months before the date of diagnosis.
--	--	---

1.4.d. Understanding Pre-treatment delay.



1.4.e. Inclusion criteria for study participants.

- Adult (≥ 15 y)
- Pulmonary TB patients

- Diagnosed / Notified from the public facilities.
- No known drug allergies at diagnosis.
- From the marginalized and vulnerable populations of the NTEP district.

All patients fulfilling the above criteria included irrespective of treatment status/outcome status (i.e., death, cured, loss to follow up) /transfer out. All ACF-detected and an equal number of PCF-detected patients were included. (2000 ACF: 2000 PCF).

1.4.f. The 5 criteria for severe illness for objective 3.a

- Body mass index (BMI) ($\leq$) 14.0 kg/m²
- BMI ($\leq$) 16.0 kg/m² along with leg swelling
- Respiratory rate ($>$) 24 per minute
- Oxygen saturation ($<$) 94%
- Inability to stand without support (standing with support / squatting / sitting / bed ridden)(11,12)

1.4.g. Data Collection tools.

As per the NTEP ACF activities involve the following:(6,9,13)

- ACF algorithm is to screen for symptoms, the individuals with (two-week cough, two-week fever, unexplained weight loss, chest pain, haemoptysis) followed by sputum smear examination.
- On average ACF activities are conducted **thrice** in a year: once in Jan and then in July and finally in Dec.
- Each round is for **two weeks**. There could be state-specific variations.
- ACF includes preparation/training, mapping, ACF activity (outreach, sample transport and testing), quality control, recording and reporting including online data capture.
- At every PHI level, details of mapping of marginalized and vulnerable populations are uploaded (with a unique identifier) in NIKSHAY (Patient data management

tool for tuberculosis) and against each mapping aggregate numbers related to the ACF activities are filled.

The ASHA workers visited the mapped marginalized and vulnerable population. Mapping of the population was the task performed by the NTEP staff at DTC. During the ACF activity S3 annexure was used by ASHA workers to document patient information and symptoms. Based on the inclusion criteria if the patient qualified the study criteria as mentioned above then, the NTEP intimidated the Research Assistant of the TBACF evaluation project. With the Annexure S3 data, patients with presumptive TB diagnosis and NIKSHAY ID were screened for severe illness using the S4 Annexure. The patients were considered severely ill if the 5 criteria mentioned above in 1.4.f were fulfilled. To identify the pre-treatment, delay detailed patient interviews were conducted of these patients using the S5 Annexures. Each interview was recorded with consent and the audio recording was shared with the project consultants. The collected data was periodically updated from manual format to digital format in the web-based tool. The images of the data collected by ASHA workers in S3 annexure was cross checked during the M&E activity and ensured that all patient meeting the participant criteria were included in the online data set. The research assistants were instructed to retain all the record at the DTC.

1.5. Digitizing the questionnaire using Epicollect5

Due to the extensive nature of the S4&S5 annexure questionnaire, manual data collection was difficult and left a lot of room for error. To ensure that the collected data could be converted to an analysable format, I was trusted with the activity of converting the S5 Annexure questionnaire into digital format using Epicollect. The Wellcome Trust Foundation funded Epicollect5, and it uses open-source technologies to offer the service at no cost.

It is an online data collection tool, where researchers can create their project related forms which can be accessed easily through the mobile application. It can be used in a creator, manager, and data collector mode. Creator and manager can monitor and access the collected data. Each question or field can be further mapped and can be downloaded in csv or json format for analysis. It provides features such as skip, double entry, data range, bulk uploads, and geotagging. (14) As the project was spread across 9 states and 30 districts, data management was facilitated through Epicollect5. After creating the S4 & S5 annexure questionnaire in Epicollect5. I conducted training sessions for Research Assistants. The training sessions were guided by my preceptor and consultant. After

understanding the operational details of Epicollect tool, Epicollect5 training sessions were also conducted by me for the field investigators of ICMR-NIE working in various other projects. This activity helped me understand the importance of digital tools in public health research. My involvement in the data collection activity was limited to creating the form in Epicollect and testing it. Due to the sensitivity of the collected data, the access was revoked after the conclusion of the project. Data analysis activity was conducted in the month of March 2024 post conclusion of my practicum training; hence the key findings are confidential owing to the awaited publication.

ROLES AND RESPONSIBILITIES DURING THE PRACTICUM

The scope of internship activities involved the following:

- Literature review
- Monitoring and evaluation
- Policy analysis
- Data validation
- Digitization of data collection tool

For a detailed account of daily activity please review 5.2. under the Annexures section.

CHALLENGES FACED

My experience at ICMR-NIE revolved around the aspects of project management. With the previous experience of concept application to my MPH assignments I was able to grasp the gravitas of the ongoing project and understand the deliverables required from me within the first week. My preceptor and the program consultant were supportive during the process. However, being a national institute, the biggest challenge was navigating the administrative processes. As the scope of the project included 30 districts spread across 9 states in India and the activities were monitored remotely from the ICMR-NIE centre, the access to field activities was limited. Understanding the roles and responsibilities of the Research Assistants, data collection practices and challenges on the field were difficult. Transitioning from the Western region of India to Chennai was a cultural challenge, I struggled to get around the institute and the city because of the language difference. This in turn helped me understand the significance of cultural barriers in public health.

MY TAKEAWAY'S FROM THE PRACTICUM TRAINING.

My experience during the practicum training helped me understand the magnitude of tuberculosis as a public health issue in India. During the literature review and reading the resources shared by my preceptor I could understand the evolution of tuberculosis elimination programs in India which encompasses 6 decades of consistent effort towards the elimination of a public health issue.

The vast expanse of the project and involvement of over 30 districts and research assistant guided me in understanding the importance of team efforts in public health. As the project was conducted through the Division of health systems research in the institute, I could understand the Tuberculosis care cascade in India and the involvement of various stakeholders in identifying the patients with TB and mobilizing care.

Competency based learning:

As per the Problem solving in public health module, I was able to define the problem, understand the magnitude of the problem, identify the key determinants and stakeholders. Map various interventions in place, understand the implementation and evaluation process of the programs in place and overview the campaign for TB elimination. I could successfully use analysis and assessment skills to review the data captured by the Research assistants. Understand and interpret the policies in place to aid in TB elimination. Communication with various stakeholders helped me garner communications skills. During my interviews with the Research assistants and transcription of audio for Phase 2 of the project. The main challenge faced by the Research assistants were inability to communicate with the population due to language barriers or lack of co-operation from the population due to social factors such isolation from the communities due to a tuberculosis diagnosis. I was able to understand the cultural competencies in play during the implementation of widespread national programs such as active case finding cycles.

ANNEXURES

1. Data collection tools.

Fig.1. a. S3 Annexure Tool for capturing individual level data of first ACF cycle in the district.

Annex S3. Daily ACF field activity form (phase III, Objective 1 and 2)																	
State:				District Name:				TU Name:				PHI Name:					
Exact address of mapped area:				District Code:				TU Code:									
				Type of marginalized /vulnerable pop -													
Date of ACF activity(dd/mm/yyyy):																	
S.no	Name	Mobile Number	Age (in years)	Sex (M/F/O)	Symptoms (write number of days)					Presumptive TB? (Yes/No)	Date of sputum collection (dd/mm/yy)	Date of sputum examination (dd/mm/yy)	Whether rapid diagnostic test used upfront? (Yes/No)	TB diagnosis (Yes/No)	Date of treatment start (dd/mm/yy)	Date of notification (dd/mm/yy)	NIKSHAY ID if TB diagnosed
					Cough	Fever	Weight loss	haemoptysis	Chest pain								
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Fig.1. b. S4 Annexure for screening for severe illness at diagnosis/notification.



ICMR-NIE led USAID/JSI TB ACF Evaluation Project
S4 Annex
Screening for severe illness at diagnosis/notification
Paper-based data collection tool (Single paper, Front n Back Print)

General Instructions to the RA: Study participants enrolled in the study (ACF / PCF-E) should be assessed for severe illness using this tool. This must be done as early as possible after diagnosis and enrolment into the study. Initial visits of the patient to PHI immediately after diagnosis may be utilized for data collection. If the patient is not able to stand without support, then weight and height cannot be calculated (mention missing). No field should be blank. Mention 'missing' if data is not available. If any one of the indicators is present, then severe illness is yes, immediately inform the MO and STS for local level action (referral and inpatient care). Store these filled forms in a file at the district TB cell. Refer to the SOP for filling the S4 Annex.

Nikshay ID _____ Date of diagnosis (dd/mm/yyyy): _____

Date of enrolment into the study (dd/mm/yyyy): _____ Mobile number: _____

Type of the study participant: ACF TB Case/ PCF TB Case (Eligible)

Name in CAPITAL LETTERS: _____

Age in completed years: _____

Gender: (Male / Female / TG / Others): _____

NTEP 'Diagnosis' Study District: _____

'Diagnosis' TU name and code: _____ & _____

'Diagnosis' Public Peripheral Health Institution (PHI) name: _____

Is the TB patient admitted in hospital at the time of assessment (Tick one option)

☐ No ☐ Yes

- Weight (kilograms (kg), rounded to one decimal point - compulsory) - _____
- Height (centimetre, no decimal point) - _____
- BMI (kilogram per metre square (kg/m²), one decimal point, compulsory) - _____
(Use only N-TB Application for calculating BMI)
- Swelling in the leg (press for 15 sec inner side, 2cm above the ankle), tick only one option
☐ No ☐ Yes
- Respiratory rate per minute (in sitting position after 30 min rest) - _____
- Oxygen saturation (%) using pulse oximeter measured after 30 min rest - _____
- Able to stand without support (tick appropriate response), choose only one option
☐ No (not able to stand without support) ☐ Yes (standing without support)
- Severe illness, tick only one option (see criterion on the back side of this page)
☐ No ☐ Yes

Date of completing assessment and filling this form by RA (dd/mm/yyyy): _____

Name and designation of RA/staff completing the form: _____

If 'high risk of severe illness' is yes, then the following to be filled here

(Circle the correct option)

Whether referred / intimated STS / MO for inpatient care? ☐ No ☐ Yes

Admitted for inpatient care? ☐ No ☐ Yes

Fig.1. b continued.



FOR INFORMATION ONLY

If at least one of the following is present (any one or more), then the adult with TB is

'severe illness - yes'

If all of the following are absent, then the adult with TB is

'severe illness - no'

1. Body mass index (BMI) less than or equal to ($\leq$) 14.0 kg/m²
2. BMI 14.1 to 16.0 kg/m² with both leg swelling
3. Respiratory rate more than ($>$) 24 per minute
4. Oxygen saturation less than ($<$) 94%
5. Not able to stand without support (standing with support / squatting / sitting / bed ridden)

Fig.1. c. S5 for patient interviews of ACF and PCF detected TB patients.

Data collection tool for patient interviews of ACF and PCF detected TB patients (phase III – objective 3, Annex S5 of TB ACF proposal)

Front and back print (single paper, two pages)

(PLEASE FILL USING CAPITALS LETTERS; DO NOT LEAVE ANY FIELD BLANK; MENTION MISSING)

Note: - Before starting the interview, the first 12 rows (sno 1 to 12) shaded below has to be filled based on existing secondary data of the patient in programme records. This will provide the interviewer an idea about the patient and will provide pointers to conduct the interview

Sno	Variable	Source of data / possible values	Value
1	NIKSHAY ID (episode ID of the current TB episode)		
2	Date of enrolment into the study	dd/mm/yyyy	
3	Date of interview	dd/mm/yyyy	
4	Date of TB diagnosis / sputum examination (date of notification)	Dd/mm/yyyy. This date will help you to derive the smoking / alcoholic status of the patient.	
5	Date of treatment start	dd/mm/yyyy	
6	Type of TB	New / Previously treated, Bacteriologically / Clinically confirmed	
7	Whether urban or rural	Interviewer to interpret from address of patient	
8	Distance (km) of Village/Mohalla from nearest PHC or Urban Dispensary	To interpret from address of patient, if required use googlemap (road distance)	
9	Distance (km) of Village / Mohalla from nearest DMC	Same as above if DMC is located in the nearest PHC/Disp, if required use googlemap (road distance)	
10	Does the patient fulfil the study participant criteria?	Yes / No. Adult (≥ 15 y) pulmonary TB patient notified from public facilities, not known to be drug-resistant at diagnosis	
11	Whether patient is ACF or PCF detected?	ACF / PCF	
12	If ACF, date of ACF activity as per records	dd/mm/yyyy	
13	Highest education of the patient	Codes below	
14	Highest education of Head of Household	Codes below	
15	Occupation of Patient before diagnosis of the present TB episode	Codes below	
16	Occupation of Head of Household	Codes below	
17	Number of Household members		
18	Number of adults (≥ 15 y)		
19	Number of children (< 15 y)		
20	Total income of all household members per month (INR)	(mention unknown if the patient does not know)	
21	Any documentation of Below Poverty Line?	Yes / No	
22	Alcoholic at diagnosis **	Yes/No	
23	Smoker at diagnosis **	Yes/No	
24	Any known patient with TB in the household ever	Yes / No	
25	Any known TB death in the household ever	Yes / No	
26	Date of start of cough for this episode of TB	Dd/mm/yyyy mention 01/01/2000 if not applicable (no history of cough between symptom onset and diagnosis)	

Fig.1. c. Continued.

27	Date of start of fever for this episode of TB	Dd/mm/yyyy mention 01/01/2000 if not applicable (no history of fever between symptom onset and diagnosis)	
28	Date of first episode of haemoptysis for this episode of TB	Dd/mm/yyyy mention 01/01/2000 if not applicable (no history of haemoptysis between symptom onset and diagnosis)	
29	Date when onset of weight loss was observed by the patient	Dd/mm/yyyy mention 01/01/2000 if not applicable (no history of weight loss between symptoms onset and diagnosis)	
30	Date of start of chest pain	Dd/mm/yyyy mention 01/01/2000 if not applicable (no history of chest pain between symptom onset and diagnosis)	
	If asymptomatic, then 01/01/2000 has to be mentioned in the above five dates		
31	Date when first visited a health care provider after symptom onset	Dd/mm/yyyy	
32	Type of health care provider first visited after symptom onset	1 qualified 2 quack/unqualified	
33	If qualified, the type of health care provider first visited	Govt. doctor (qualified), Pvt doctor (qualified), RHCP (quack), ANM/ASHA/MPHW/AWW, Others (specify)	
34	Number of health care providers visited before TB diagnosis	Include first health care provider visited, include the final visit to DMC when sputum examination was done and TB diagnosed. (Do note that if the patient didn't have to visit the DMC for sputum examination, then the DMC visit did not happen for diagnosis) This is number of health care providers, NOT number of visits	
35	Between symptom onset and diagnosis, whose advice led to eventual sputum examination at DMC?	1 ASHA 2 RHCP 3 family member 4 Govt doctor 5 Pvt Doctor 6 MPW/ANM 7 Private Chemist 8. Govt health staff other than doctor 9 Self-referral 10 Community member other than above 11 ASHA or other volunteer during ACF 12 Someone else (specify)	

Education Codes: 0 Cannot read or write / 1 Can read write, not completed primary school / 2 Primary School (class 5) completed
3 Middle School(class 8) completed / 4 Secondary School (class 10) / 5 Senior Sec (class 12), Graduate, Degree, Diploma, ITI, Professional

Occupation Codes: 1 Studying / 2 Household work only (females) / 3 Unemployed / 4 Daily wage labourer / 5 Agriculture / animal rearing
6 Service / 7 Shopkeeper / 8 Business / 9 Professional. **If there is any change of occupation, please consider latest occupation before the date of diagnosis**

*Number of HCPs (not consultations). Ignore additional visits or consultation with the same HCP.
**Yes if consumed alcohol / smoked tobacco within 30 days from the date of diagnosis / sputum examination

Health Care Provider (HCP) include qualified allopathic (Govt or private), qualified medical AYUSH (Govt or private), qualified paramedical (ANM, ASHA, AWW, LT, pharmacist, MPW) and unqualified RHCP. If a Govt doctor does private practice and the patient meets him/her in his/her private clinic then it will be considered as 'private' HCP. If a Govt doctor does private practice and the patient meets him/her in his/her Govt clinic then it will be considered as 'Govt' HCP.

2. Internship daily activity log as reviewed by the preceptor.




INTERNSHIP ACTIVITY LOG

I, Dr. Aishwarya Rajesh Dhumale, have completed the proposed period of internship at ICMR – National Institute of Epidemiology under the guidance of Dr. Hemant Deepak Shewade, Scientist E, Division of Health Systems Research on TB ACF evaluation project. My key areas of work during internship involved, monitoring and evaluation activity, data collection tool preparation and training, data validation. My main focus was to understand and observe the process of project management and implementation. Below is the activity log for my internship.

Total no of working days - 20

Total no of working hours – 160 hours.

Total no leaves - 3

Week 1

Sr.no	Date	Activity
1.	16/10/2023	- Read “Quality of active case-finding for tuberculosis in India: a national level secondary data analysis”. - Reviewed S4 and S5 codebook for “Evaluation of Active Case Finding implemented by National Tuberculosis Elimination Programme among Marginalized and Vulnerable Populations of India (USAID/JSI TB ACF Project)”. - Watched tutorial for creating questionnaire for PHASE 3 of project on EpiCollect.
2.	17/10/2023	- Project discussion and orientation with Dr. Kiran Pradeep. - Worked on EpiCollect questionnaire.
3.	18/10/2023	- Completed the EpiCollect Phase 3 questionnaire. - Read the difference between ACF and PCF
4.	19/10/2023	- Read the complete project proposal. - Fixed some bugs in the Phase 3 questionnaire. - Tested the Phase 3 questionnaire. - Attended the meeting with Ministry of Georgia. - Read about Georgia’s health system.
5.	20/10/2023	Read about TNKET and Ni-kshay, Read Ni-kshay.

Week 2

Sr.no	Date	Activity
1.	26/10/2023	• Discussion and orientation with Dr. Kiran Pradeep • Monitoring and evaluation activity for Bihar
2.	27/10/2023	• Resolved Epicollect related issues. • Incorporated changes suggested in Epicollect questionnaire. • Monitoring and evaluation activity for Bihar • Validated the data entered for Aurangabad District, validated TB ACF online data entries.

Week 3

Sr.no	Date	Activity
1.	30/10/2023	• Monitoring and evaluation activity for Bihar • Validated the data entered for Aurangabad District, validated TB ACF online data entries.
2.	31/10/2023	• Monitoring and evaluation activity for Bihar • Validated the data entered for Aurangabad District, validated TB ACF online data entries. • Completed the Monitoring and evaluation activity for Bihar and shared the details with the RA for No dues. • Transcription of RA interview from Hindi to English.
3.	01/11/2023	• Transcription activity • Monitoring and evaluation activity • Read the Project proposal.
4.	02/11/2023	• Meeting with Dr. Kiranpradeep • Validated the submissions made by RA for No dues. • Weekly meeting.

Week 4

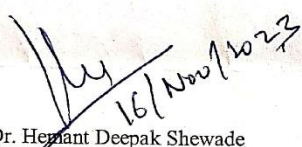
Sr.no	Date	Activity
1.	06/11/2023	• Monitoring and evaluation activity for Bihar • Validated the data entered for Begusarai District, validated TB ACF online data entries.
2.	07/11/2023	• Monitoring and evaluation activity for Bihar • Validated the data entered for Aurangabad District, validated TB ACF online data entries.
3.	08/11/2023	• Monitoring and evaluation activity for Bihar

		- Validated the data entered for Begusarai District, validated TB ACF online data entries. - Completed the Monitoring and evaluation activity for Bihar and shared the details with the RA for No dues.
4.	09/11/2023	- Resolved Epicollect queries. - Read Georgia final report.
5.	10/11/2023	- Read the project proposal - Downloaded and reviewed Epicollect preliminary data.

Week 5

Sr.no	Date	Activity
1.	14/11/2023	- Conducted brief interview of Dr. Kiran Pradeep for maters report. - Reviewed Begusarai data for final verified folder.
2.	15/11/2023	Reviewed Aurangabad district data for verified folder.
3.	16/11/2023	Reviewed Aurangabad district data for verified folder.
4.	17/11/2023	Final submission of data folders.

Supervisor.



Dr. Hemant Deepak Shewade

Scientist E

Division of Health Systems Research

ICMR – National Institute of Epidemiology

Chennai, India.

REFERENCES

1. ICMR-National Institute of Epidemiology (NIE) - Home [Internet]. [cited 2024 Apr 30]. Available from: <https://nie.gov.in/index.php/Home>
2. Indian Council of Medical Research | Government of India [Internet]. [cited 2024 Apr 30]. Available from: <https://main.icmr.nic.in/>
3. Shewade HD, Kiruthika G, Ravichandran P, Iyer S, Chowdhury A, Kiran Pradeep S, et al. Quality of active case-finding for tuberculosis in India: a national level secondary data analysis. Glob Health Action [Internet]. 2023 [cited 2024 Apr 16];16(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/37732993/>
4. SDG Target 3.3 Communicable diseases [Internet]. [cited 2024 Apr 28]. Available from: https://www.who.int/data/gho/data/themes/topics/sdg-target-3_3-communicable-diseases
5. World Health Organization. The End TB strategy.
6. Optimizing active case-finding for tuberculosis Implementation lessons from South-East Asia.
7. Nagaraja SB, Thekkur P, Satyanarayana S, Tharyan P, Sagili KD, Tonsing J, et al. Active case finding for tuberculosis in india: A syntheses of activities and

outcomes reported by the national tuberculosis elimination programme. *Trop Med Infect Dis* [Internet]. 2021 Dec 1 [cited 2024 Apr 16];6(4):206. Available from: [/pmc/articles/PMC8705069/](https://pubmed.ncbi.nlm.nih.gov/398705069/)

8. Biermann O, Dixit K, Rai B, Caws M, Lönnroth K, Viney K. Building on facilitators and overcoming barriers to implement active tuberculosis case-finding in Nepal, experiences of community health workers and people with tuberculosis. *BMC Health Serv Res* [Internet]. 2021 Dec 1 [cited 2024 May 1];21(1):1–13. Available from: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06290-x>
9. Systematic screening for active tuberculosis: an operational guide. 2021.
10. Biermann O, Lönnroth K, Caws M, Viney K. Factors influencing active tuberculosis case-finding policy development and implementation: a scoping review. *BMJ Open* [Internet]. 2019 Dec 1 [cited 2024 Apr 28];9(12):e031284. Available from: <https://bmjopen.bmj.com/content/9/12/e031284>
11. Shewade HD, Nagaraja SB, Murthy HJD, Vanitha B, Bhargava M, Singarajipura A, et al. Screening people with tuberculosis for high risk of severe illness at notification: Programmatic experience from Karnataka, India. *Trop Med Infect Dis* [Internet]. 2021 Jun 1 [cited 2024 Apr 29];6(2):102. Available from: <https://www.mdpi.com/2414-6366/6/2/102/htm>
12. National Center for Biotechnology Information [Internet]. [cited 2024 Apr 30]. Available from: <https://www.ncbi.nlm.nih.gov/>
13. Ministry of Health and Family Welfare. National Strategic plan for TB elimination.
14. Epicollect5 - Free and easy-to-use mobile data-gathering platform. [Internet]. [cited 2024 Apr 30]. Available from: <https://five.epicollect.net/>