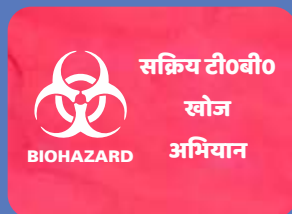




SAMPLE TRANSPORTATION SYSTEM

for Improving Access to
Tuberculosis Diagnostic Testing

An Initiative by the State of Uttar Pradesh



BACKGROUND

India contributes to more than a quarter of the tuberculosis (TB) burden globally¹. One in five persons notified with active TB comes from Uttar Pradesh (UP)², India's most populous state which has the third highest pulmonary TB prevalence among adults (>15 years of age) (after Delhi and Rajasthan), and the fifth highest for all forms of TB for all ages³.

Globally and in India, a third of individuals with TB remain undetected each year. Among those diagnosed a little above one-third are microbiologically confirmed. Human resources, tools and techniques, laboratory equipment and infrastructure, and clinical skills to for the presumptive and definitive diagnosis of active TB has witnessed rapid expansion during and post the Covid-19 pandemic. However, gaps in ensuring a 100% shift towards microbiological confirmation and use of upfront molecular testing for the diagnosis of TB still persist.

Quality specimens are vital for the laboratory diagnosis of TB. Sputum, a respiratory secretion originating from deep within the lungs, is the most frequently collected specimen for TB testing. It is more feasible to move samples rather than people for TB testing. Thus, a system of sputum collection and transportation for TB testing to designated laboratories becomes crucial.

The National Strategic Plan 2017–25 developed under the National TB Elimination Program (NTEP) envisaged a "TB free India" by 2025, with strategies under the broad themes of "Prevent, Detect, Treat and Build" pillars for universal coverage and social protection. The detection objective includes early identification of TB, at the first point of contact (private or public sectors), and accurate diagnosis using highly sensitive and specific diagnostic tests.

The Central TB Division, with World Bank Funding chose IHAT to implement the State TB Technical Support Unit (STSU) in Uttar Pradesh. The STSU began functioning in March 2022.

¹ World Health Organization, Global TB Report 2022

² Central TB Division, India TB Report 2023

³ National TB Prevalence Survey in India 2019-2021 (<https://tbcindia.gov.in/showfile.php?lid=3659>)



SAMPLE TRANSPORTATION STRATEGY

Ensuring timely specimen collection and transportation to the nearest TB Diagnostic Centre poses a key challenge in UP. The postal department was engaged to transport samples, since September 2020.

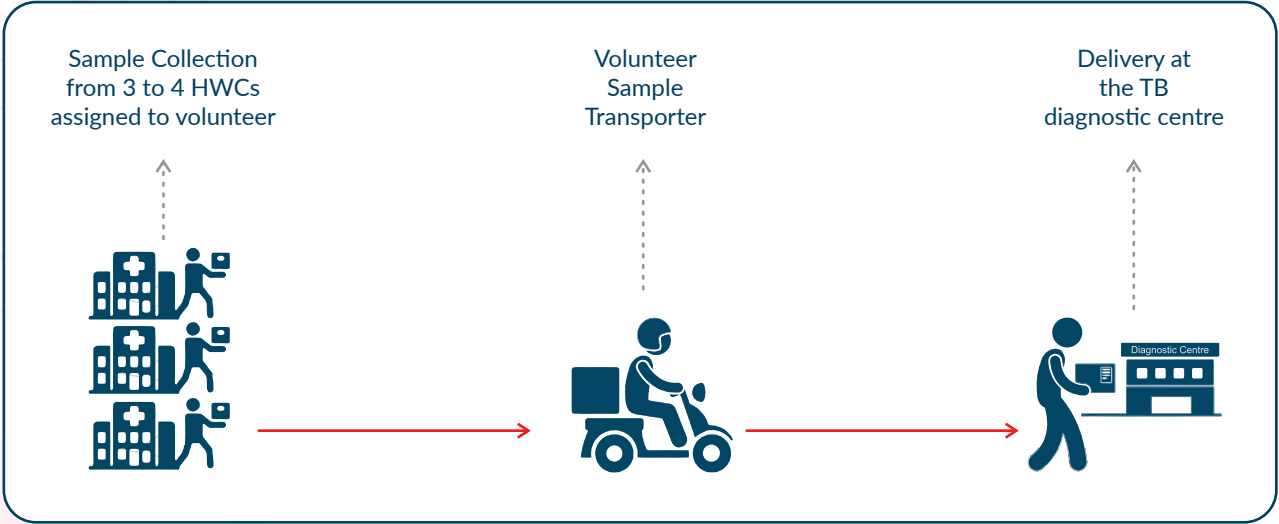
This provision was made for transportation of samples from peripheral health institutions (PHIs) to the nearest functional testing site. It was observed that there was no such provision in place for samples to be transported from Health and Wellness Centres (HWC)/community level to the TB Diagnostic Centre (TBC). Individuals with symptoms suggestive of TB would therefore have to make multiple visits to the PHI before a TB diagnosis is made and treatment is initiated. Moreover, the postal department protocols often resulted in delays in the sample reaching the TBC. Thus, the STSU supported the introduction of a system to conveniently transport sputum samples from the HWC to the nearest TB Diagnostic Centre (TDC). A meeting chaired by the Managing Director of the National Health Mission (NHM) - UP in August 2022, played a pivotal role in proposing and approval for this innovative initiative.

The *Volunteer Sample Transporter System* was piloted in two districts of Uttar Pradesh: Lucknow and Muzzafarnagar. Three Community Health Centres (CHCs) (Chinhat, Mal, and Malihabad) were selected in Lucknow and four CHCs (Chatarpur, Galibpur, Khatauli, and Purkazi) in Muzzafarnagar.

Under this innovation, a volunteer was chosen from the community who would pick up the sample from HWCs and carry it to the nearest designated TDC on the same day.

For every HWC the transporter visits, they would receive Rs 50/- (Rupees Fifty only) for the first sample collected. Additionally, for every additional sample collected during the same visit to an HWC, the transporter would receive Rs. 15/- (Rupees Fifteen only) per sample. The maximum amount payable per day from a single HWC facility was capped at Rs. 105/- (Rupees one hundred and five only).





For effective documentation, the triple Chit System was followed; wherein each sputum sample was accompanied with three slips, one each maintained by the Community Health Officer, the Volunteer and the Testing Facility. This system ensured clear communication, streamlined operations, and enhanced accountability throughout the sample transportation process. The system was also used to process the payments of the volunteer transporters.

In both the districts, the new strategy aimed to ensure that 100% of the samples were collected at the identified HWCs and transported to the nearest TDC [Microscopy or Nucleic Acid Amplification Test (NAAT) Facility].



RESULTS FROM THE PILOT

Comparative assessment between the number of samples transported in May-June 2022 and during the pilot study period in October-November 2022 is shown in the Table 1. There were significant improvements in the number of samples transported after the implementation of the pilot.

TABLE 1: Average OPD and Samples Transported in Muzaffarnagar by Testing Unit

Muzaffarnagar	No. of HWCs	May-June 2022		Oct-Nov 2022	
		Average OPD in the HWCs	Average Samples Transported from the HWCs	Average OPD in Selected HWCs	Average Samples Transported from the HWCs
Charthawal	19	835	2	375	22
Galibpur	15	759	2	644	20
Khatauli	11	705	2	579	12
Purkazi	14	246	5	459	44
Overall	59	645	3	501	25

TABLE 2: Average OPD and Samples Transported in Lucknow by Testing Unit

Lucknow	No. of HWCs	May-June 2022		Oct-Nov 2022	
		Average OPD in the HWCs	Average Samples Transported from the HWCs	Average OPD in Selected HWCs	Average Samples Transported from the HWCs
Chinhat	11	584	6	404	8
Mal	25	16	0	452	14
Malihabad	28	16	0	475	10
Overall	64	122	1	454	11

Overall, the proportion of samples transported from the OPD in the selected Testing Units of the 2 districts increased from 5 per 1000 OPD in May-June 2022 to 38 per 1000 OPD in Oct-November 2022 (Table 3).

TABLE 3: Testing proportion of OPD (per 1000) by Testing Unit

TU Name	May-June 2022		Oct-Nov 2022		May-June 2022	Oct-Nov 2022
	OPD (a)	Samples Transported (b)	OPD (c)	Samples Transported (d)	[(b/a)*1000]	[(d/c)*1000]
Charthawal	14193	34	7125	425	2	60
Galibpur	11392	29	9654	303	11	19
Khatauli	7760	19	6366	127	3	31
Purkazi	3437	75	6425	615	2	20
Chinhat	6422	68	4445	85	3	32
Mal	327	1	9491	303	2	21
Malihabad	426	1	12833	264	22	96
Total	43957	227	56339	2122	5	38



SCALING UP THE INITIATIVE

Building upon the success achieved in the pilot stage, the State scaled up the Volunteer Sample Transporter System across all 75 districts via letter no.10/NTEP/NP/2022-23/7098-2, dated 27-12-2022.

In January and February 2023, a total of 36847 samples (70 per 1000 of total OPD) were collected from HWC, of which 30280 (83%) were tested and 4.53% were confirmed to have active TB. About 10% of those diagnosed were not yet initiated on treatment, three months after confirmation of the diagnosis.⁴

While these numbers indicate a significant increase from a near zero figure earlier, it must be pointed out that only 37% (6887 of 18463 HWC registered in Ni-kshay) have entered at least one Presumptive TB individual into the Ni-kshay system. Efforts to explore and engage with the remaining HWCs, and to reduce the linkage losses for testing and treatment initiation are ongoing.

As the Volunteer Sample Transporter system continues to expand, we can anticipate significant strides in increasing the quality of TB diagnosis and in reducing out-of-pocket expenditure for individuals with TB, thus ensuring that the right persons are treated at the right time in the right place, closer to their homes. This will contribute to reducing the TB burden, enhancing the well-being of individuals, and bringing us closer to achieving the goal of a TB-free India.

⁴ Data extracted from e-kavach portal



State TB Technical Support Unit – Uttar Pradesh

India Health Action Trust implements the TB State Technical Support Unit (STSU-UP) under the guidance of the Central TB Division and the National Technical Support Unit. The STSU, with the technical assistance of the Institute for Global Public Health, University of Manitoba, is supporting the Government of Uttar Pradesh in expanding the capacity of the State TB cell to manage large-scale private sector engagement, strategic purchasing, DBT and multi-sectoral collaboration using an evidence based approach in Uttar Pradesh.

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