

THE INTRODUCING NEW TOOLS PROJECT (iNTP)

Improving Access to TB Screening and Detection in Bangladesh through the roll-out of Ultra-portable Digital X-ray Systems and Software for the Computer-aided Detection of TB



Country in Focus: Bangladesh

Background

In 2021, 307,600 people in Bangladesh were diagnosed with TB.¹ Every year efforts to diagnose and treat individuals fall short of the target, due to the number of individuals with TB that are not reported (missing) and lack of access to proper testing and screening facilities across the country.

To facilitate increasing TB notifications further, ultra-portable digital X-ray systems with computer-aided detection (CAD) of TB software have been incorporated into the national algorithm, following recommendations to utilise innovative tools in the Stop TB Partnership's Global Plan to End TB.² CAD software utilises artificial intelligence (AI) to analyse chest X-rays and detect signs of TB. When paired with ultra-portable X-ray systems, it has the potential to identify individuals who may have otherwise remained undiagnosed, particularly in areas with limited access to healthcare professionals and X-ray facilities. By improving TB detection and screening in remote and hard-to-reach areas, these innovations

¹ World Health Organization. Global TB Report 2022. Available from: <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2022>

² Stop TB Partnership. The Global Plan to End TB 2023-2030. Available from: <https://www.stoptb.org/global-plan-to-end-tb/global-plan-to-end-tb-2023-2030>

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Stop TB Partnership



icddr,b

can help to address the challenges of TB control in Bangladesh and continue to aid the progress made in the fight against TB.

The Stop TB Partnership, in collaboration with the United States Agency for International Development (USAID), initiated the *introducing New Tools Project* (iNTP) in Bangladesh to help increase access to TB screening and detection. Through the project, fourteen Delft Light ultra-portable digital X-ray systems with CAD4TB software (Delft Imaging, the Netherlands) have been rolled out by the National Tuberculosis Control Program (NTP) under the Ministry of Health (MoH). The Bangladesh NTP has been rolling out these innovative tools with support from the USAID Bangladesh Mission and the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) under the Alliance for Combating TB (ACTB) Project. These tools are being implemented in facility-based and community-based settings across the following districts in Bangladesh: Bogura, Naogaon, Rajshahi, Sirajganj, Chapainawabganj, Pabna, Natore, Joypurhat, Sylhet, Moulvibazar and Sunamganj.

Figure 1: Map of Bangladesh with stars indicating the three divisions where ultra-portable X-ray/CAD systems have been implemented



Source: Based on United Nations Map



Implementation Experience

The implementing partner organisation, icddr,b, has worked with the NTP to successfully integrate the use of digital X-ray with CAD technology as a screening tool into the national TB guidelines. The products used in the iNTP were selected by the Bangladesh NTP from the Stop TB Partnership Global Drug Facility (GDF) catalogue, inclusive of a training and support package and a CAD4TB perpetual software licence. These were provided at GDF-negotiated rates. The products were ordered in September of 2021 and arrived in the country by December.

Following customs clearance of the products, approval from the Bangladesh Atomic Energy Regulatory Authority (BAERA) was made in March 2022. Training was delivered on-site by the manufacturer Delft Imaging in collaboration with the Stop TB Partnership in May 2022. The implementing partners had to wait for an additional six months before implementation could begin, as third party accidental damage cover had to be procured as a local requirement. Implementation began thereafter in January 2023, starting with six Delft Light and CAD4TB systems at facilities in the Rajshahi division. The targeted populations for screening activities consisted of high-risk groups, including indigenous populations, household contacts of bacteriologically positive people with TB, and other hard-to-reach communities.

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Project Impact

Bangladesh has been carrying out both facility and community based activities, to bring care to hard-to-reach areas and high-risk populations. The iNTP has successfully reached hundreds of individuals with TB who would have otherwise gone undetected, enabling them to access the care they need whilst reducing community transmission. As of April 2023, icddr,b together with the NTP have successfully screened over 32,689 individuals. Out of the total screened, over 5,060 individuals displayed abnormal chest X-ray results, and a total 1,452 individuals were diagnosed with TB.

32,689+

total individuals
successfully screened

~15.5%

displayed abnormal
chest X-ray results

1,452

individuals were
diagnosed with TB

Lessons Learnt

Bangladesh was no exception to challenges in implementation, as this was the first systematic large-scale roll-out of ultra-portable X-ray and CAD in the country. Some of the key challenges that were encountered in the early stages of implementation were: delays due to complex documentation requirements at customs clearance; lengthy approvals processes for receiving special licences to operate; third party insurance, which was a specific local requirement of the implementing partners to utilise the equipment as custodians, and which took six months to be secured; a few minor equipment malfunctions, which were promptly resolved by Delft Imaging's local agent. Despite the challenges, icddr,b and the NTP together with Delft Imaging and Stop TB were able to successfully overcome these obstacles and move forward with implementation.



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Looking Ahead

Bangladesh continues to implement these digital tools in eleven districts under the iNTP, and the National TB Program is developing plans for scale-up, which includes procurement of an additional 40 ultra-portable digital X-ray and CAD systems. The lessons learnt from the iNTP are being used by other districts across Bangladesh as part of broader efforts to adopt these new technologies.



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For more information on the introducing New Tools Project, visit:

<https://www.stoptb.org/accelerate-tb-innovations/introducing-new-tools-project>