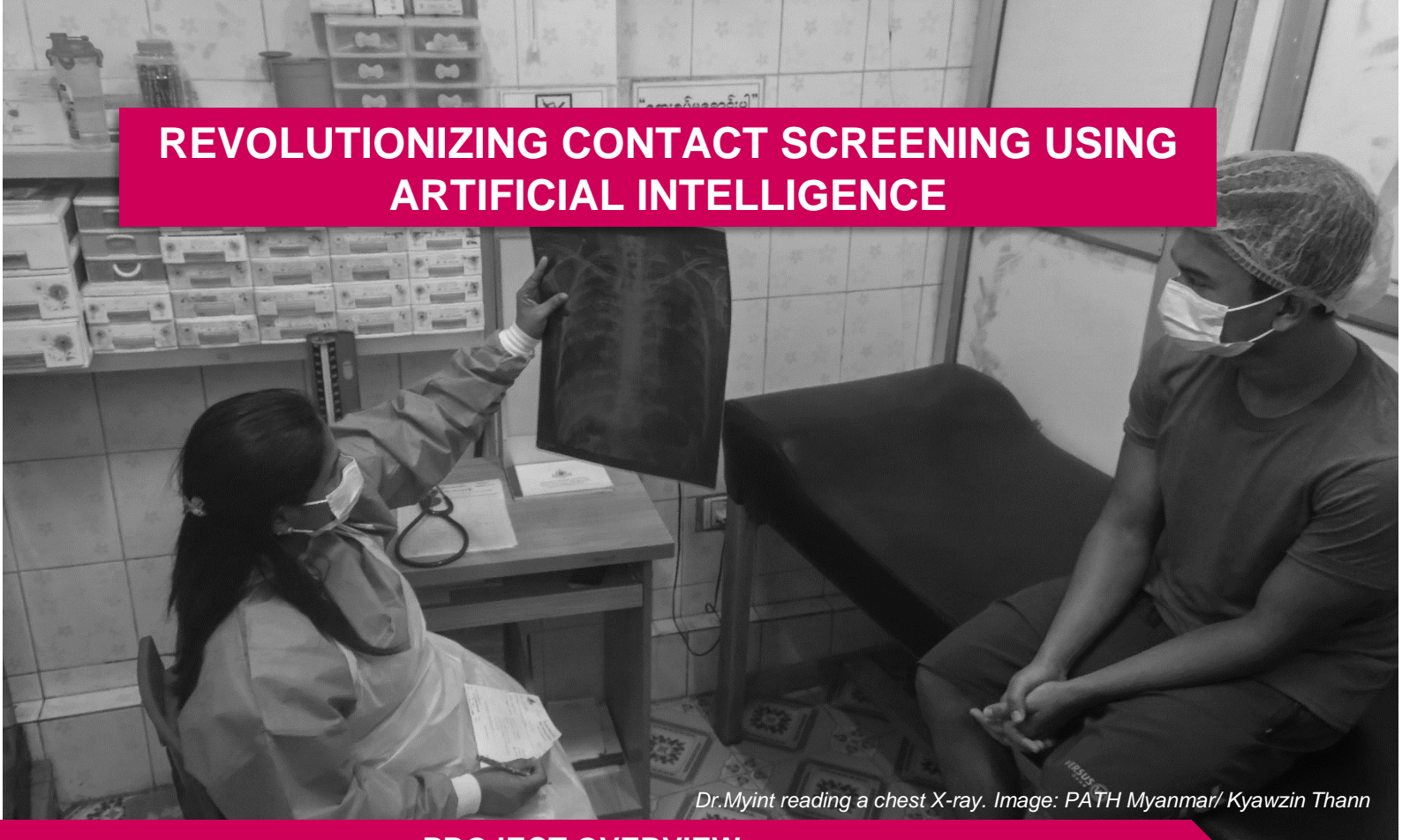# REVOLUTIONIZING CONTACT SCREENING USING ARTIFICIAL INTELLIGENCE

Dr.Myint reading a chest X-ray. Image: PATH Myanmar/ Kyawzin Thann

PROJECT OVERVIEW

Yangon, Myanmar

August 2020-ongoing

qXR (Qure.ai)

PATH Myanmar

AI INTERVENTION

In 2020, Myanmar was home to an estimated 167,000 people with Tuberculosis (TB) – this means the country shoulders one of the highest TB burdens in the world.[1] To make matters worse, at least one third of people with the disease are not diagnosed and notified.[1] A key reason is **limited screening of high-risk populations**, such as those living in the same household as someone with TB. In Myanmar, somebody who is ill with TB will normally seek help from a private general practitioner (GP) who **lacks the tools** to screen the household.

With a densely packed population, Yangon has the highest burden of TB in the country.[2] Here, Stop TB Partnership's TB REACH initiative supported PATH Myanmar to **revolutionize** the screening of household contacts of people with TB **by using artificial intelligence** (AI). PATH partnered with an implementing GP network under Myanmar Medical Association (MMA) to launch this project.

Together, they equipped private X-ray facilities with the new AI tool (qXR) to read chest X-rays, and prepared GPs to collaborate with the X-ray facilities. Because the software was compatible with **any type of X-ray equipment already in use** (digital, computerized or analogue) . The GPs welcomed the assistance of a tool to read the chest X-rays taken of people with potential TB symptoms. This helped GPs to offer an **accessible and user-**

friendly service and identify who needed further testing for TB with a free state-of-the-art molecular test (Xpert).
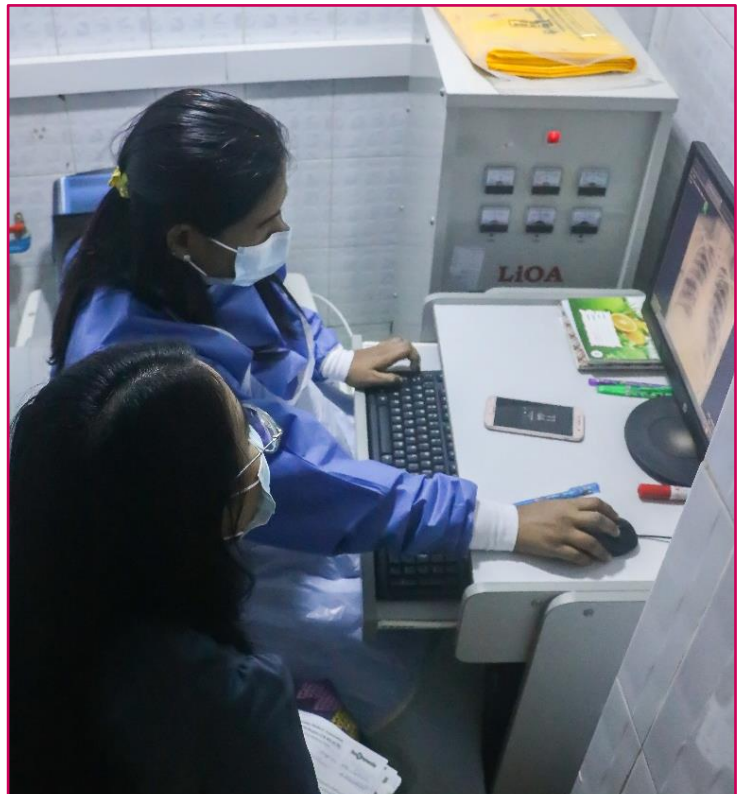
GPs were also connected with a network of community volunteers – known as "TB Champions" – who gathered the contact details of people diagnosed with TB. The champions would then **visit the household, discuss the screening procedure, screen and counsel the family for TB**, including young children. If anyone else in the household was thought to have TB, they too would then receive a chest X-ray – read by AI.

ADVOCATING FOR THE USE OF AI

Dr. Myint is a young doctor running a private X-ray clinic in Yangon. Her clinic provides much needed healthcare in crowded settlements to manual labourers who are extremely vulnerable to diseases such as TB. She set up the first chest X-ray centre in her quarter to bring screening closer to the people who need it.

Enthusiastic about innovation, Dr. Myint joined the project at the outset, and soon began to use AI to help her interpret chest X-rays for TB. Although she does not see herself as particularly confident with new technology, she nevertheless quickly learned how to use the AI software and now regularly trains radiographers on its use.

Because AI makes diagnosis faster for people attending her clinic, their experience is now a smoother one, while her work is more straightforward. At one point, 71% of TB cases notified by the project had a chest X-ray at Dr. Myint's clinic.

Dr. Myint with Dr. Thet Hnin Aye discussing the AI software in her clinic. Image: PATH Myanmar/ Kyawzin Thann

PATH and MMA's TB REACH project is ongoing. Starting in August 2020, the project weathered the storms of COVID-19 – and the country's military coup – to increase the overall number of TB cases notified. **This success is mainly owed to the use of AI by the GPs.**

> **WE'VE HAD LOTS OF POSITIVE FEEDBACK ABOUT THE AI. MOSTLY, THAT THE RESULT CAN BE VIEWED AFTER ONLY A MINUTE AND THEN WE CAN ADVISE THE PERSON HOW TO RECEIVE TREATMENT AND THE VOLUNTEER CAN SCREEN THE HOUSEHOLD QUICKLY.**

– KISHORI MAHAT
DIRECTOR OF INFECTIOUS DISEASES, PATH MYANMAR

The project received excellent feedback from the GPs. They like the way **results from AI are available in a matter of seconds**, speeding up the provision of care. They also appreciate the utility that AI could have for other diseases and strongly proposes using AI to **co-screen for both TB and COVID-19** and advocates for the national TB program to incorporate AI into its COVID-19 response.

PROJECT IMPACT

- ✓ **2,952** people screened for TB using X-ray and AI, so far.
- ✓ **295** people diagnosed and treated for TB.
- ✓ **47 %** of people flagged by AI so far had TB (**295 out of 628**), proving AI to be a helpful decision-support tool.

PROJECT IMPACT- NOT JUST NUMBERS

Ma Sandar is a garment factory worker, living with her husband and son in Yangon. Her husband contracted TB and received treatment from a project GP. However, Ma Sandar had also begun coughing, and the visiting TB Champions soon realized that she also had TB.

However, because her disease was caught in the early stages, both she and her husband are now in good health. Without the project, the family would not have been able to afford TB diagnosis or treatment. (Neither of them passed the disease to their son.)

Ma Sandar receiving TB care kit from project health worker. Image: PATH Myanmar/ Kyawzin Thann

REFERENCES

1.   WHO Country TB profile – Myanmar. Accessed November 25, 2021. https://worldhealthorg.shinyapps.io/tb_profiles/?_inputs_&entity_type=%22country%22&lan=%22EN%22&iso2=%22MM%22

2.   USAID. *Burma Tuberculosis Roadmap Overview, Fiscal Year 2021*. Accessed November 25, 2021. https://www.usaid.gov/sites/default/files/documents/Burma_Narrative_TBRM21_TBDIAH_Version_Final.pdf

ABOUT THIS DOCUMENT

This document is one of a series spotlighting the experiences of these early implementers when using artificial intelligence (AI) / computer-aided detection (CAD), to highlight the added value of CAD for TB programmes and inspire prospective implementers to innovate. Funding of this project was provided by the Stop TB Partnership's TB REACH initiative, launched in 2010 by Global Affairs Canada. In 2012, TB REACH first worked with implementing partners to pilot CAD software. Since then, it has implemented 3 different CAD products in 13 different countries in Sub-Saharan Africa, Latin America, Eastern Europe, and South and South-East Asia.