Artificial Intelligence Software Used for Covid-19 Screening in Pakistan

The Stop TB Partnership has initiated the use of an artificial intelligence technology for screening and triaging people with COVID-19 and TB-related symptoms in Pakistan. The technology is state-of-the-art. A handheld digital X-ray device developed by FujiFilm, Xair, enables Chest X-rays (CXRs) to be taken instantly from presumptive patients. The device weighs less than 1.8kg and can thus be easily transported wherever required. For the purposes of this project, Xair has been linked to a computer-aided reading software, Lunit INSIGHT, which uses an artificial intelligence algorithm trained to almost instantly recognise COVID-19-related symptoms from CXRs taken using the digital X-ray device. With this technology, CXRs can be taken and read by the algorithm within minutes. Results are available to clinicians to aid the triage process.

The research project is being carried out at the Pakistan Institute of Medical Sciences in Islamabad by the DOPASI Foundation, with funding support from the Stop TB Partnership. FujiFilm have donated the Xair digital X-ray equipment required for this project. Over a period of 20 days, the devices will be used to take CXRs from over 1,500 patients entering the institute. The Lunit algorithm will be used to read the CXRs and provide physicians with a tool to promptly detect COVID-19 related symptoms in individuals entering the institute. The reliability of these readings will be assessed in relation to the interpretation of COVID-19 diagnostic tests and considered opinions received from expert radiologists.

The Lunit algorithm has also been trained to recognise Tuberculosis (TB)-related symptoms, providing further information to be used in the triage process. Each year, an estimated 510,000 new TB cases emerge in Pakistan. The screening technology provides a useful and cost-effective tool to aid in the diagnosis of TB, complementing more expensive and time-consuming diagnostic methods.

This is the first project to utilise computer-aided reading software for the screening of both COVID-19 and TB. Currently, COVID-19 testing is prioritised over TB testing in many areas. By allowing for simultaneous COVID-19 and TB screening – this technology could be transformative. If successful, it

holds promise to screen and triage patients in areas which lack access to relatively expensive and cumbersome COVID-19 and TB diagnostic tests.