WP 4: Outreach for early diagnosis

WHO recommends systematic screening for active TB in subpopulations that have poor access to healthcare. Romania and Bulgaria are countries in transition from a high to intermediate incidence and are experiencing high TB rates among certain populations. In this work package we will utilise a mobile diagnostic unit equipped with digital radiography and molecular point of care tests to improve early diagnosis in these populations.

Main achievements to date

- Mobile x-ray unit (MXU) was designed and built, including digital x-ray equipment, computer aided detection for TB (CAD4TB) and molecular point of care sputum testing. MXU started screening for TB on 31st of July 2018.
- Electronic health record system was developed supporting the screening operation, follow up of presumptive TB patients and evaluation of the activity.
- Approval was obtained from the Romanian National Radiation Council (C.N.C.A.N.) to operate the MXU.
- Training was provided to pulmonologists on the use of CAD4TB technology and the radiologists operating the x-ray equipment. Staff operating the MXU received training during a field visit to the UK Find & Treat Project.
- Surveillance data was analysed to prioritise and understand dynamics of high-risk populations.
- A video was made showing the operation of screening in the MXU.
- The Romanian Minister of Health officially launched the screening project on 20/11/2018, which was well covered by the media.

Mobile X-ray unit

Minister of Health at the launch of the screening

Main objectives

- To ensure early diagnosis in vulnerable populations (prisoners, drug users, homeless persons and Roma population) in Romania and to pilot the screening for 1 week in Bulgaria. The aim is to screen 12,800 persons per year.
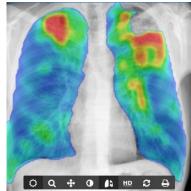- To strengthen care integration using an outreach strategy by providing a one-stop "shop" (clinic).

E·DETECT**TB**
early detection & treatment of tuberculosis in europe

Screening results 2018

- Screening started on 1/8/2018.
- In 5 prisons, a total of 1,788 persons were screened with a chest x-ray.
- 109 (5.9%) had a CAD4TB score higher than 60.
- All CXRs are uploaded to a cloud server allowing chest physicians to instantly read them.
- Chest physicians identified 65 (3.7%) presumptive TB cases. Of these, 7 were highly suspect and 3 had TB (168 per 100,000).
- The two cases described below demonstrate the benefits of the E-DETECT TB screening project. Both patients were diagnosed with TB before presenting with symptoms, and started treatment within a few days after diagnosis. Early treatment, with less advanced illness, has a better treatment outcome. Secondly, by suspecting TB early, adequate infection control measures could be taken and (potential) transmission stopped.

- *Patient A.* CXR had a high CAD4TB score (89). CXR was read by the chest physician on the same day and classified as highly suggestive for TB. The patient was separated from other prisoners on that same day, and placed alone in a cell. On the next working day, sputum was collected and sent to the laboratory of the Marius Nasta Institute for microscopy and GeneXpert (GX) examination. The tests were done the next day and showed GX positivity with negative microscopy result. The patient was referred to the prison with medical facilities and started treatment for TB.

- *Patient B.* CXR had a CAD4TB score of 55. The chest physician also rated this CXR as highly suggestive for TB. GX and microscopy were negative, but the culture showed several weeks later growth of Mycobacterium tuberculosis. The patient was also referred to the prison with medical facilities and started treatment.