Integration of CAD-enabled X-ray into diagnostic algorithms and monitoring & evaluation frameworks

MODULE 5
INTRODUCTION

This module will help national programs to track and monitor the impact of their usage of computer-assisted diagnosis and digital x-ray to screen for pulmonary tuberculosis.
Course Outline

→ Putting it all together: Screening algorithm using CAD and X-ray

→ Directing patients from screening to diagnosis

→ Linkage of screening and diagnostic data

→ Closure
Learning Objectives

By the end of this module, participants should be able to:

• Describe the screening algorithm used in this program.
• Know the criteria for a “screen positive” person and know how to link them to confirmatory testing.
• Understand how X-ray and CAD data is connected to diagnostic data in the health information system.
In general populations without HIV aged 15 years and older where TB screening is recommended…

• Systematic screening for TB disease may be conducted using a symptom screen, chest X-ray with computer-aided detection (CAD) software, or molecular WHO-recommended rapid diagnostic tests, alone or in combination.

• CAD software may be used in place of human readers for interpreting digital chest X-rays for screening and triage for TB disease.
CONNECTING CAD-ENABLED X-RAY TO CONFIRMATORY DIAGNOSIS
Putting it all together: National screening algorithm using CAD and X-ray – For NTP to customize

Describe the local screening algorithm using X-ray and CAD.
This slide should reinforce:
- Where is CAD used in the algorithm? Is it used in parallel to any other screens?
- Who receives and interprets CAD output? What is the role of the human reader?
  What is the chosen threshold score?
- What is the confirmatory diagnostic test? What happens in borderline cases (where the score is just slightly under or over the threshold)?
- What happens in the case of children <15 years?
CAD-enabled X-ray results lead to confirmatory testing by the reference standard – For NTP to customize

The slide should lay out:

- How to make the connection between screening and diagnosis?
  - Do patients have to go to nearby lab or is specimen collected at screening site & transported to labs?

- How are CXR & CAD results transmitted to patients / health provider?
  - Should the X-ray/CAD report be printed?
  - For all patients or only for those above the threshold score?

Who is responsible for this process?
How is CAD data linked to confirmatory test data? – For NTP to customize

• The slide should lay out how to link the X-ray data with diagnostic data
  • How are patients registered for X-ray screening?
  • How are patients registered for lab diagnosis?
  • Are unique patient identifiers used for both system and are linked?
  • If a paper-based system is used, explain this process?
ASK YOURSELF...

1. Do I think CAD and X-ray will help to identify more TB cases?
2. Where does CAD and X-ray fit in with my role in the TB programme?
3. What steps do I have to take to ensure screen positive people receive diagnosis?
4. What adaptations to our current protocols are needed to use CAD and X-ray fully?
5. What do I want to learn from the manufacturer training?
CLOSURE

- Next steps
- Practical training by manufacturer
- Installation plans
- Monitoring
- Ongoing support