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

MODULE 5

Stop TB Partnership

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

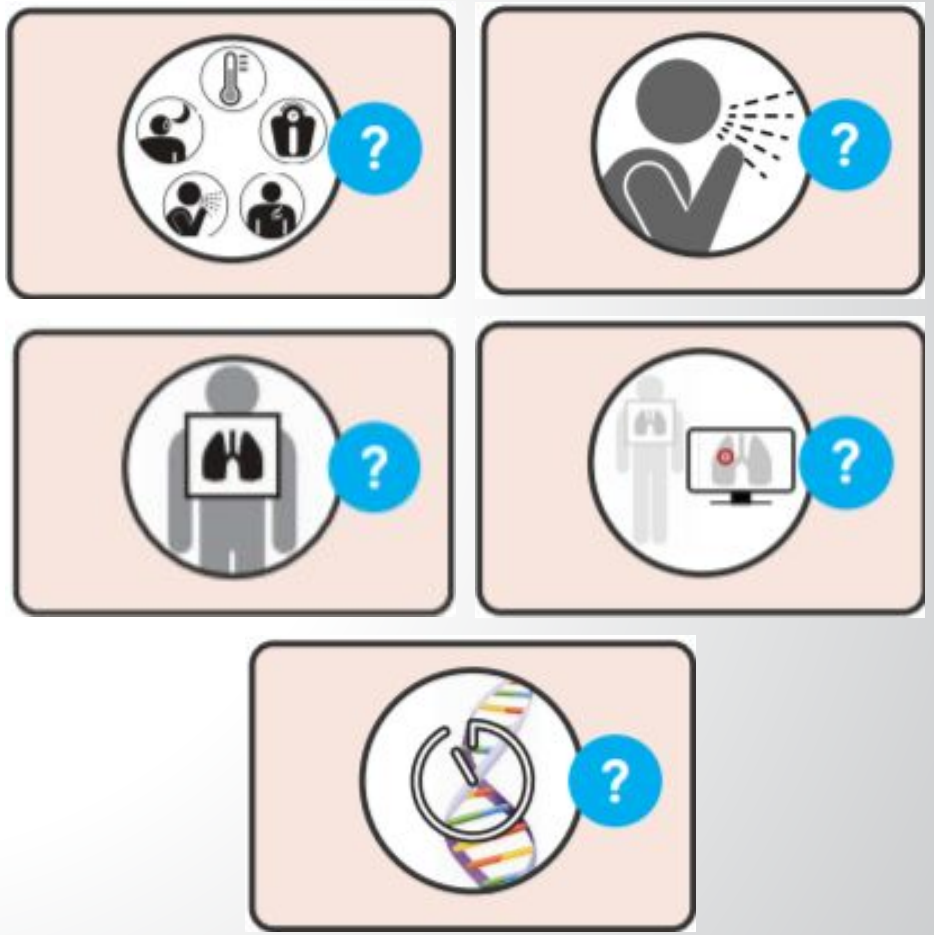
By the end of this module, participants should be able to:

- 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.

Reminder: WHO guidelines on Systematic Screening

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



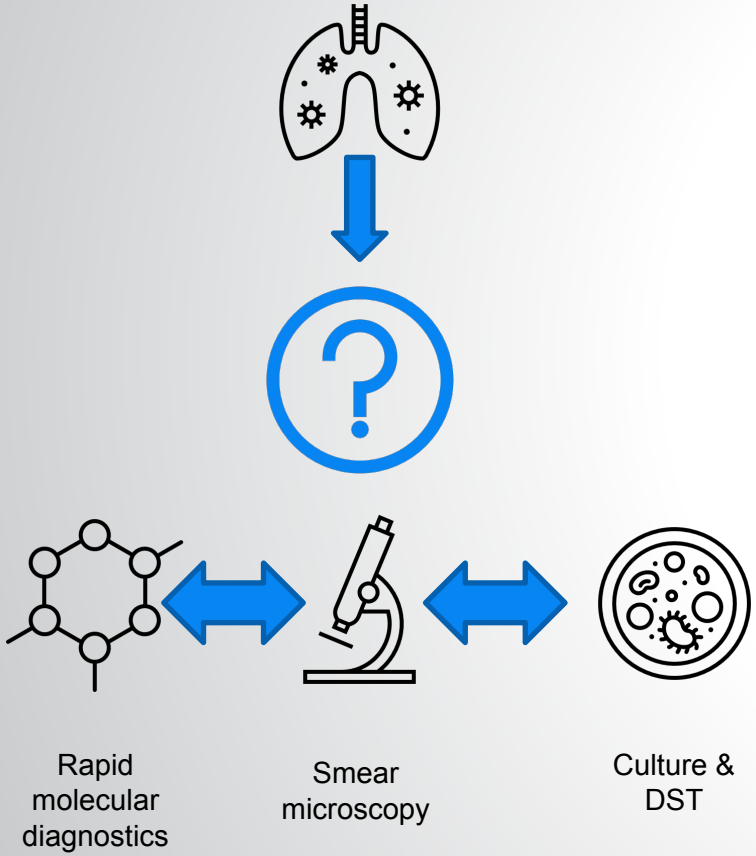
CONNECTING CAD-ENABLED X-RAY TO CONFIRMATORY DIAGNOSIS

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