Implementation and feasibility of digital chest X-ray coupled to computer-aided detection (CAD) in active TB case finding in Tondo (Manila), Philippines

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Background

The World Health Organization recommends the use of computer-aided detection (CAD) in conjunction with chest X-rays (CXR) for tuberculosis (TB) screening and triaging in individuals aged 15 and above. This study assessed the feasibility of implementing CAD for TB active case finding (ACF) in Tondo, Manila, Philippines, including a crucial calibration process to determine the appropriate threshold for referring individuals for TB confirmatory testing.

Methods

We conducted a prospective description of programmatic activities, TB ACF of individuals aged 15 years and above using CAD, and a mixed-methods feasibility and acceptability study in the catchment area of four health centres in Tondo. The calibration process employed an informal mixed methods approach to define, and reactively adjust, a threshold based on the Xpert MTB/Rif positivity rate, Xpert capacity, radiologists' sensitivity and user acceptability. Patients with a CAD score above the defined threshold were directed for sputum collection and Xpert testing.

Results

The initial threshold, set at 25, resulted in a 35% referral rate for Xpert testing, which was subsequently increased to 28 (34% referral) to align with Xpert system capacity. 4,853 patients were included, with 13% testing positive on the symptom screening. The Xpert positivity rate was 5% among individuals screened, 13% among individuals tested, and 15% among individuals with a CAD score of 28 or higher. Users found CAD4TB® both feasible and acceptable, provided there were dedicated human resources with technical capacity for CAD implementation and the project design accounted for CAD limitations. The use of CAD increased screening capacity and supported decision-making.

Conclusion

The ACF conducted in Tondo revealed a remarkably high positivity rate among the screened individuals. CAD enables the rapid screening of patients in the community with reduced turnaround times. If the implementation accounts for the limitations identified, CAD can be a powerful tool for TB screening.

CAD4TB® implementation in Tondo, Manila, was assessed for TB screening feasibility. Promising results indicate increased capacity and support for decision-making, emphasizing potential as a powerful tool