New treatment decision algorithms including TB testing and clinical-radiological scores are accurate tools to help diagnose TB in children

#92

Diagnostic Accuracy of New Treatment Decision Algorithms for TB in Children: A Multi-Country Diagnostic study.

Background: Pulmonary tuberculosis (TB) may be challenging to diagnose in children: symptoms resemble other common childhood diseases; children cannot produce sputum for laboratory testing and have low bacterial loads leading to GeneXpert being often negative.

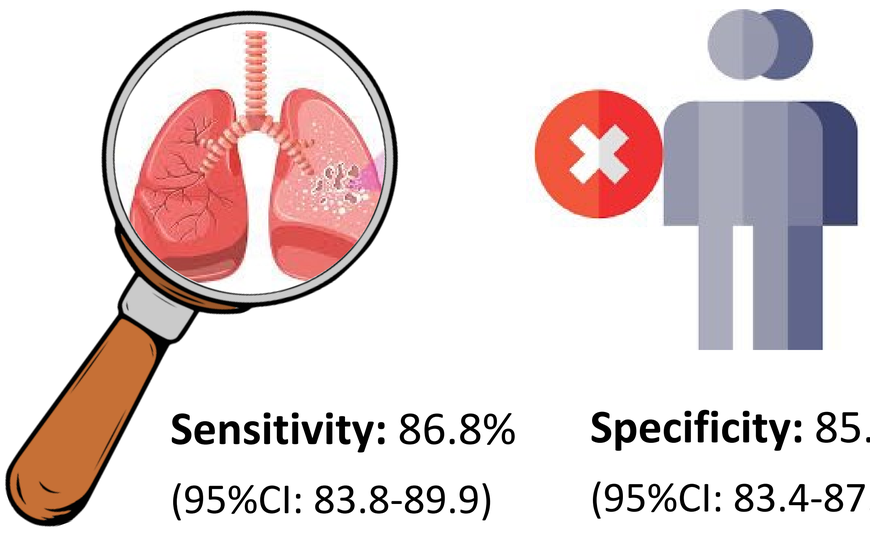
The WHO has recommended 2 new treatment decision algorithms for pulmonary TB in children including, in addition to laboratory testing, a score based on clinical, and where available, chest X-ray features.

Scan this QR to download and view the WHO algorithms!

Study Results

N=1846 children with signs and symptoms of TB recruited

The diagnostic accuracy of the algorithms is high

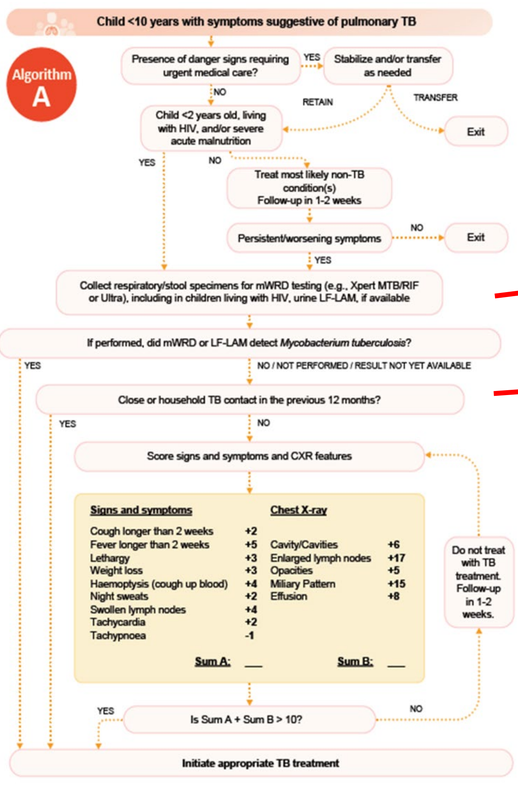


Sensitivity: 86.8% (95%CI: 83.8-89.9)

Specificity: 85.3% (95%CI: 83.4-87.2)

- Sensitivity and specificity of the TDAs versus a reference standard based on the International Consensus NIH Definitions for Intrathoracic TB in children (Graham et al. CID 2015)

Algorithm clinical or clinical-radiological score along with history of TB contact were the main reasons for TB treatment decision.



TB Treatment N=500 (27%)

- **Positive GeneXpert 6%**
- **Positive TB LAM 6%**
- **TB Contact 19%**
- **Clinical or clinical-radiological score 64%**

Clinical suspicion or unknown reason: 5%

Frequent reasons for TB treatment decision in specific populations:

- Among severely malnourished children: clinical and clinical-radiological score (72%)
- Among children living with LHIV: positive TB-LAM result (22%)
- Among children neither severely malnourished nor living with HIV: contact person with TB (42%)

Methods & Additional Results

Multi-country prospective diagnostic accuracy study in Niger, Nigeria, Guinea, South Sudan, and Uganda

- Inpatients and outpatients
- Primary health care facilities
- District and referral hospitals
- Nutritional centres
- HIV services

The study enrolled children under 10 years with signs or symptoms of TB

Clinical, laboratory, and radiological information collected, and algorithm score calculated if indicated

Median age : 1.7 years (IQR: 0.8-3.0),

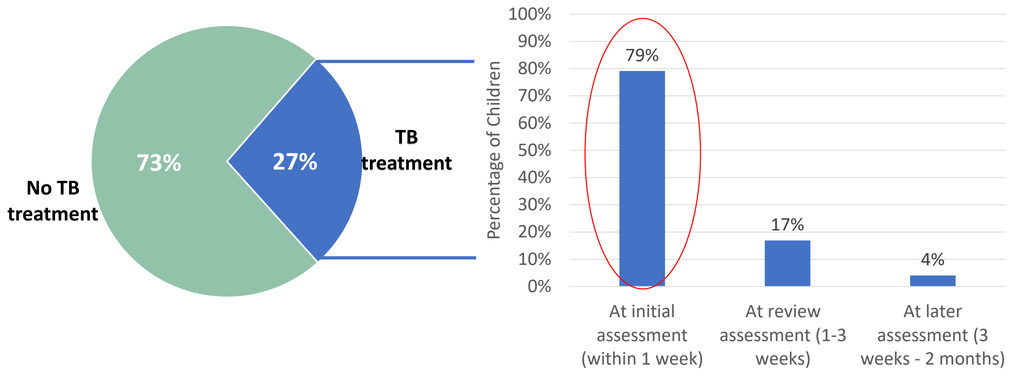
Female: 856 (46%)

Hospitalized: 1262 (68%)

Severely malnourished: 1152 (62%)

Living with HIV: 210 (11%)

27% of children in the study, were started on TB treatment, the majority of them (79%) within the first week after assessment



Limitation: In the absence of a gold standard, classification of true TB status remains a challenge in assessing any pediatric TB diagnostic tool.

Future research may include specific aspects of using the algorithms such as in children living with HIV and settings with high prevalence of malnutrition.

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