



GeneXpert MTB/RIF in the Diagnosis of Pulmonary TB Among Severely Malnourished Hospitalized Malawian Children

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Background

TB dx in children challenging

- Paucibacilliary/smear negative, issues w/ obtaining samples
- Clinical presentation often vague

Recent advances

- Xpert MTB/RIF in pediatric patients w/suspected TB
 - 75% sensitivity, 98-100% specificity compared to Cx

Limited data describing the accuracy of Xpert MTB/RIF in severely malnourished children

Nicol MP, et al. Accuracy of the Xpert MTB/RIF test for the diagnosis of pulmonary tuberculosis in children admitted to hospital in Cape Town, South Africa: a descriptive study. *Lancet Infect Dis.* 2011 Nov;11(11):819-24.

Rachow A, et al. Increased and expedited case detection by Xpert MTB/RIF assay in childhood tuberculosis: a prospective cohort study. *Clin Infect Dis.* 2012 May;54(10):1388-96.

Study Procedure

Hospitalized children 6 - 60 months with severe malnutrition*

CXR (read by 2 blinded reviewers)

TB exposure (TST > 5 mm, TB contact)

TB signs/symptoms

- Fever, Cough, Lethargy/Dec Playfulness

HIV status

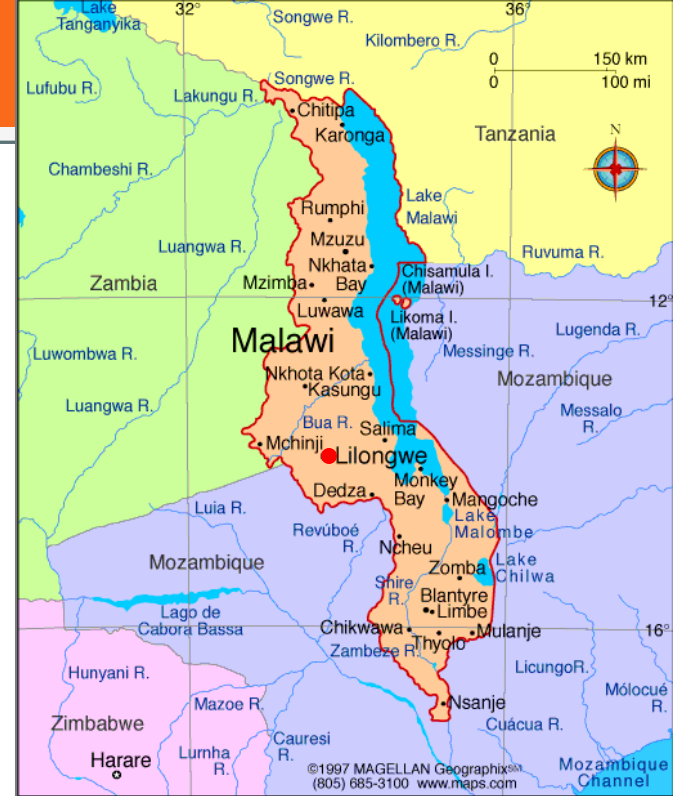
Induced sputum (2 per child)

- AFB smear/liquid culture
- Xpert MTB/RIF

Follow-up at 6 weeks

Assigned Case Definitions (Graham, et al. 2012)

- Confirmed, Probable, Possible, or Unlikely TB disease



*WHO guidelines: W/H < - 3 SD, MUAC < 115 mm, or Bilateral edema

Results

Characteristics of Study Participants

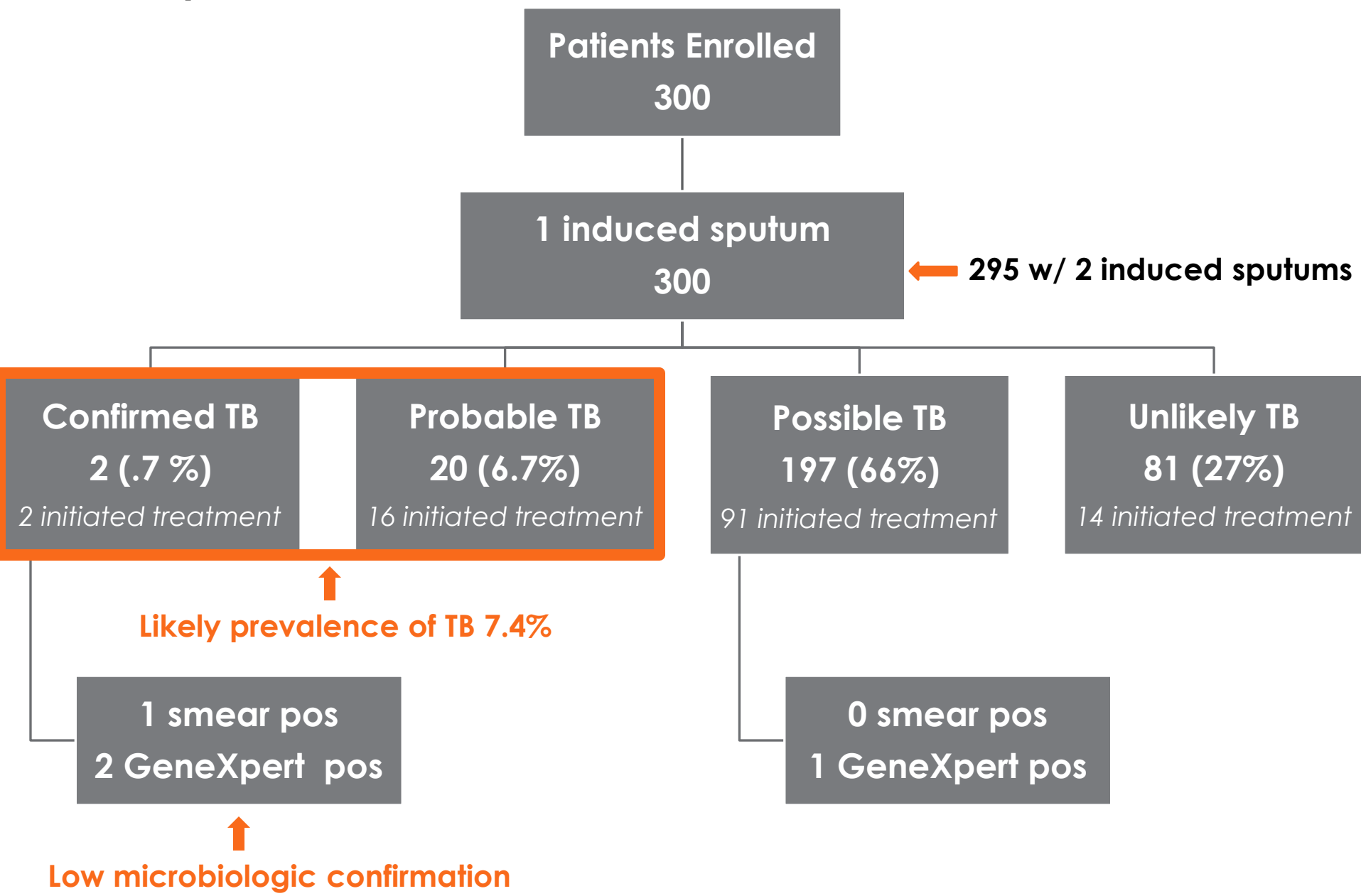
	N= 300	(%)
Age in months, mean (SD)	20.7	(+/- 10.9)
Female	145	(51.3)
WFH Z , mean (SD)	- 3.0	(+/- 1.2)
HIV Infected	47	(15.7)
TB Exposure	43	(14.3)
TST >= 5 mm	40	(13.9)
CXR (certain TB)	48	(16.1)
TB tx initiated	132	(44.0)
Death	28	(9.3)

← 17 (36%) New Dx HIV

← Only 1 was offered IPT

← 19% in HIV Infected

Study Profile



Discussion

- Low microbiologic confirmation of TB
- Prevalence of TB likely closer to 7.4%
(Confirmed + Probable TB)
- 25% HIV + prevalence in children with Probable TB
- Improved HIV screening and TB prevention services needed
 - 36% w/ HIV were new diagnoses
 - 98% w/ TB contacts were not offered IPT
- Need for better TB diagnostics in severely malnourished children



Additional Slides

Clinical Case Definitions

Confirmed TB disease

- ≥ 1 sign/symptom suggestive of TB* disease AND
- microbiological confirmation (MTB Culture)

* *Cough > 2 weeks
(not responding to abx)
Fever > 1 weeks
Lethargy/decreased playfulness
Weight loss*

Probable TB disease

- ≥ 1 sign/symptom suggestive of TB disease AND
- + CXR AND
- + exposure or +TST or clinical response to anti-TB tx

Possible TB disease

- ≥ 1 sign/symptom suggestive of TB disease AND
- EITHER
 - CXR but + exposure or + TST or clinical response to anti-TB tx
- OR + CXR, but no exposure and - TST

Unlikely TB disease

- Symptomatic but not fitting the other definitions and no alternative diagnosis established

TB Symptoms by Clinical Case Definitions

