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Prospective cohort study of the feasibility and yield of household child tuberculosis contact screening in Uganda

M. Bonnet,*† C. Kyakwera,‡ N. Kyomugasho,* D. Atwine,*‡ F. Mugabe,§ M. Nansumba,* Y. Boum II,*‡ J. Mwanga-Amumpaire,*‡ J. Kiwanuka‡

*Epicentre, Mbarara, Uganda; †Institut de Recherche pour le Développement, Unité Mixte Internationale 233 Translationnelles sur le VIH et les Maladies Infectieuses, Institut National de la Santé et de la Recherche Médicale Unité 1175, Montpellier, France; ‡Mbarara University of Science and Technology, Mbarara, §National Tuberculosis and Leprosy Program, Kampala, Uganda

SUMMARY

SETTING: Screening and isoniazid preventive therapy (IPT) of child contacts of tuberculosis (TB) patients is poorly implemented in resource-limited countries, in part due to difficulties in TB diagnosis in children.

OBJECTIVE: To assess the feasibility and yield of hospital-based screening and IPT in Uganda, and to evaluate the utility of symptom-based screening.

DESIGN: Household child (age <5 years) contacts of adults with pulmonary TB were assessed for TB or latent tuberculous infection (LTBI). Children classified as 'LTBI' or 'uninfected' were prescribed IPT and followed for 9 months. Screening algorithms based on combinations of symptoms associated with TB were constructed post hoc, and their performance evaluated against a radiological-based reference standard.

RESULTS: Of 281 contacts (median age 33 months), 44 (15.7%) started anti-tuberculosis treatment and 234 (83.3%) received IPT, 80.3% of whom completed a 6-month course. After adjustment for age and human immunodeficiency virus status, cough (aOR 4.10, 95%CI 1.39–12.11) and reduced playfulness (aOR 7.79, 95%CI 2.12–25.18) were associated with radiological TB. Screening based on cough or reduced playfulness had a sensitivity of 81.8% and a negative predictive value of 97.6%.

CONCLUSION: Hospital-based screening appears to be feasible, and confirms the potential utility of symptom-based screening to select children for IPT and those for further investigations.

KEY WORDS: childhood tuberculosis; symptom-based screening

ACCORDING TO the World Health Organization (WHO), there were 1 million new cases and 169 000 deaths due to tuberculosis (TB) disease in children in 2015.[1] These numbers are probably underestimated, as childhood TB remains underreported due to the difficulty in establishing a confident diagnosis.[2,3] Identifying TB exposure and infection is particularly urgent in young children, as they are at high risk of infection once exposed, and of progression to disease once infected.[4] Studies have shown that on average 35% of household child contacts aged <5 years will become infected, and 10% will develop TB.[5]

Contact tracing of children in high-burden settings can identify a large number of TB cases and potentially reduce TB-related mortality in children.[6,7] Despite the WHO recommendation to screen household contacts for TB and offer isoniazid (INH) preventive therapy (IPT) to children aged <5 years and all child contacts infected with the human immunodeficiency virus (HIV), this is rarely practised in high-burden, resource-limited countries.[8] Reasons for this include a lack of recognition of childhood TB as a public health problem, system and human resource constraints to performing screening, and challenges in establishing a TB diagnosis in children. Of particular concern is the inability to confidently exclude TB disease without use of chest X-rays (CXRs) which are generally not available in most resource-limited settings, to allow safe use of IPT.[9,10] Symptom-based screening has been shown to be safe and effective in selecting the small proportion of child TB contacts requiring further evaluation for TB disease, and allowing prompt initiation of IPT for the remainder.[11–14] However, this approach has been evaluated in very few prospective studies, and many countries remain reluctant to implement it.

As countries move toward the adoption of IPT for child TB contacts, we aimed to assess the feasibility and yield of child contact TB screening combined with IPT in a high-burden, resource-limited setting in Uganda, and to evaluate the performance of symptom-based screening.

Correspondence to: Maryline Bonnet, Institut de Recherche pour le Developpement (IRD) UMI 233 TransVIHMI, 911 avenue Agropolis, BP 64501, 34394 Montpellier, France. e-mail: maryline.bonnet@epicentre.msf.org
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MATERIAL AND METHODS

Design and population

This was a prospective cohort study of child contacts at the Mbarara Regional Referral Hospital, Mbarara, South-Western Uganda. Contacts were children aged <5 years who had lived in the same household with newly diagnosed smear-positive and/or culture-positive index cases (age ⩾15 years) continuously for ⩾2 weeks within the 3-month period immediately preceding the diagnosis of TB in the index case. Children living outside a 2-h radius by car of Mbarara city and those receiving anti-tuberculosis treatment or who had received a full course of treatment within the previous 6 months were not included. The index case was requested to bring all eligible child contacts for assessment at the clinic. Parents or guardians were contacted by telephone in case they did not attend of their own accord. Tracing was not done at home.

Initial assessment and follow-up

Parents or guardians were questioned about the level of exposure, and each child underwent clinical assessment by a paediatrician. Bacille Calmette-Guérin (BCG) vaccination was documented if a BCG scar was observed or on reviewing the vaccination card. Nutritional status was assessed using weight-for-height *Z* score. The tuberculin skin test (TST) was performed by a trained nurse using an intradermal injection of 2 tuberculin units (1 ml) of purified protein derivative 23 (Statens Serum Institut, Copenhagen, Denmark). Results were read by the doctor after 48–72 h. For the risk assessment among children aged <5 years exposed to a household contact with confirmed TB, the cut-off for a positive test was ⩾5 mm.[15] Children who were TST-negative at baseline underwent a repeat TST after 3 months. Posteroanterior and lateral chest X-ray (CXR) digital images were obtained for all children and read by the paediatrician on site. Findings were recorded using pre-determined tick-sheets and classified according to a structured approach: 'normal X-ray', 'abnormal, suggestive of TB' or 'abnormal, non-suggestive of TB'. Children were offered HIV testing using a nationally approved testing algorithm.

Children with suspicion of TB disease were referred to the paediatric ward for mycobacterial culture and the Xpert® MTB/RIF assay (Cepheid, Sunnyvale, CA, USA) on induced sputum and other potential specimens. Children diagnosed with TB were treated with a three- or four-drug regimen for 6 months. All other child contacts were prescribed a 6-month regimen of INH (10 mg/kg/day) plus supplements of pyridoxine.[8] HIV-infected children were started on IPT on site and referred to the hospital HIV clinic for antiretroviral therapy.

Contacts receiving IPT were followed up every month for the first 6 months, with the final outcome recorded after 9 months. Children showing emergent symptoms of TB during follow-up were re-evaluated and treated accordingly. At initial assessment, an exposed child was classified as 'exposed uninfected' if he/she had a normal CXR and was TST-negative. A case with latent tuberculous infection (LTBI) was defined as a child with normal CXR and a positive TST at initial evaluation or at 3 months in those with a negative TST at baseline. A TB case was a child with clinical, microbiological or CXR features judged by the on-site clinician to warrant anti-tuberculosis treatment.

Tuberculosis reference standard

To assess the performance of symptom-based screening, child contacts were classified retrospectively as radiological or non-radiological TB cases at the end of the study using a CXR-based reference standard. In addition to the clinician's reading at initial assessment, digital CXR images were assessed by an external radiologist blinded to the child's clinical presentation, who classified CXRs as 'normal', 'abnormal, suggestive of TB' or 'abnormal, not suggestive of TB'. In case of discordance between the two readings, a third reading was taken by a senior paediatrician to make the final determination. Only the reading by the on-site clinician was available to guide treatment decision-making.

Sample size and statistical analyses

With an estimated proportion of TB of 20%, a precision of 5%, a 95% confidence interval (CI), a 1.5 cluster effect to reflect which contacts of each case were clustered and an increase by 10% to account for potential dropouts, a minimum of 274 child contacts was required for assessment of yield and feasibility.[16]

Data were entered using Voozanoo (Epiconcept, Paris, France) and were analysed using Stata® v13 software (StataCorp, College Station, TX, USA). Patient characteristics were summarised using frequencies and percentages for categorical variables, and medians and interquartile ranges (IQRs) for continuous variables. Both age and HIV status were categorised in three groups: <12 months, 12–24 months and >24 months for age, and 'negative', 'positive' and 'unknown' if parents refused HIV testing of their children. The feasibility and yield of child contact screening, as well as uptake and retention on IPT, were assessed by calculating the proportion of identified child contacts who were screened, started and maintained on IPT. Uni- and multivariate analyses using logistic regression were performed to identify symptoms and signs (weight stagnation, malnutrition, cough, fever in the last 2 weeks, loss of appetite, night sweats, reduced playfulness, wheezing and measured fever) associated with radiological TB. Covariates with $P < 0.4$ in univariate analysis were included in the initial

Table 1 Baseline characteristics of included children

Characteristics ($n = 281$)	n (%)
Sex, female	149 (53.0)
Age, months	
<12	46 (16.4)
⩾12–<24	44 (15.7)
⩾24–60	191 (68.0)
HIV-positive*	12/268 (4.5)
BGC-vaccinated	210/278 (75.5)
Exposed during breastfeeding	11 (3.9)
Sharing room with index case during night	163/279 (58.4)
Sharing bed with index case	69 (24.6)
Number of household members, median [IQR]	6 [5–8]
Relationship to the index case	
Child	178 (63.3)
Grandchild	30 (10.7)
Other†	73(26.0)
Symptoms and signs	
Any symptom	146 (52.0)
Any current cough	112 (39.9)
Duration of cough, weeks median [IQR]	14 [7–30]
Reported fever in the last 2 weeks	41 (14.6)
Night sweats	38 (13.5)
Reported weight stagnation	29 (10.3)
Reported loss of appetite	19 (6.8)
Reduced playfulness‡	13 (4.6)
Nutrition status: weight/height, Z score	
Mild malnutrition to normal: >−2 SD	272/279 (96.8)
Moderate malnutrition: ⩽−2 to −3 SD	4/279 (1.4)
Severe malnutrition: <−3 SD	3/279 (1.1)
Measured body temperature ⩾37.5°C	13 (4.6)
Wheezing	6 (2.1)
Chest X-ray suggestive of tuberculosis	45 (16.1)

* Parents refused HIV testing.
† Siblings ($n = 6$), uncles/aunt ($n = 63$), not family ($n = 4$).
‡ Based on the mother's interview regarding level of activity of the child or activity during breastfeeding in the case of young children.
HIV = human immunodeficiency virus; BCG = bacille Calmette-Guérin; IQR = interquartile range; SD = standard deviation.

multivariate model. We used a manual backward stepwise approach to test the deletion of each variable using the likelihood ratio test to remove each variable from the model, starting with the least significant variable. Then, the final multivariate model was obtained when no further variables could be removed from the model without a statistically significant loss of fit. However, due to its high clinical relevance, the final model was systematically adjusted on age and HIV status. Missing information was excluded from this analysis. Statistical significance ($P < 0.05$) was assessed with the likelihood-ratio test. Sensitivity and the negative predictive value (NPV) of various combinations of symptoms/signs independently associated with radiological TB were analysed for their usefulness in ruling out active TB against the reference standard. Sensitivity, specificity, predictive and likelihood ratio were calculated with their 95%CIs. Sensitivity analysis was performed by including symptoms/signs associated with active TB from previous studies.[12]

Ethics

The study protocol was approved by the Mbarara University Research Ethics Committee, Mbarara; the Uganda National Council for Science and Technology, Kampala, Uganda; and the Comité de Protection des Personnes of Ile de France XI, Saint-Germain en Laye, France. Written informed consent was provided by the parent or legal guardian. Separate consent was given for HIV testing, but refusal did not preclude inclusion of the child.

RESULTS

Patient characteristics at inclusion

Of the 339 child contacts identified between April 2012 and April 2014, 281 (82.9%) were screened. The majority (68.0%) of the children were aged between 24 and 60 months, 12/268 (4.5%) were HIV-infected and 146 (52.0%) were symptomatic. In terms of the level of TB exposure, 58.4% of the children had slept in the same room as the index case and 24.6% had shared the same bed (Table 1).

Feasibility and yield of child contact TB screening combined with IPT

Of 278 children with a TST result, 144 (51.8%) were positive, with a median induration size of 18 mm (IQR 15–20.5); 129/144 (89.6%) children had an induration size of >10 mm. There was no significant difference in TST positivity rate according to HIV infection status (8/12, 66.7% in HIV-positive vs. 129/255, 50.6% in HIV-negative, $P = 0.379$), age (46/89, 51.7% in children aged <24 months vs. 98/189, 51.8% in children aged 24–60 months, $P = 0.979$) or BCG vaccination status (111/207, 53.6% in vaccinated children vs. 31/68, 45.5% in non-vaccinated children, $P = 0.266$).

After initial screening, 44 (15.7%) children were started on anti-tuberculosis treatment (Figure): 5 (11.4%) with confirmed TB, 27 (61.4%) with clinical and radiological results suggestive of TB, 9 with radiological results suggestive of TB (20.4%) and 3 (6.2%) with clinical and immunological results suggestive of TB (2 with fever, wheezing and night sweats and TST induration of 18 and 24 mm, respectively, and 1 asymptomatic with an induration of 22 mm). Of the 234 children started on IPT, 222 had a normal CXR (125 asymptomatic and 97 symptomatic); 11 had an abnormal CXR (6 asymptomatic with parahilar adenopathy, 1 symptomatic with alveolar condensation suggestive of pneumonia and 4 asymptomatic with non-specific bronchopneumonic patterns). None of the children started on IPT despite an abnormal CXR developed active disease during the 9 months of follow-up. Of the 234 children, 188 (80.3%) completed the 6-month course, one was secondarily started on anti-tuberculosis treatment and 45 (19.2%) were lost to follow-up. The proportion of children who completed IPT was not significantly different between children with

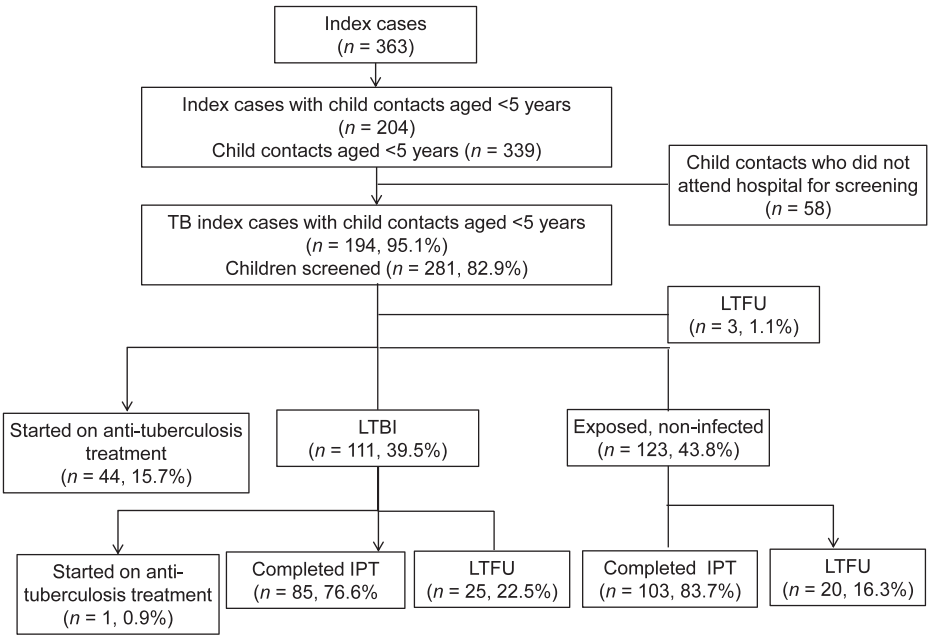

Figure Study profile. TB = tuberculosis; LTFU = lost to follow-up; LTBI = latent tuberculous infection; IPT = isoniazid preventive therapy.

LTBI and exposed non-infected children (103/123, 83.7% vs. 85/111, 76.6%; $P = 0.168$). IPT was not interrupted due to adverse events. None of the asymptomatic child TB contacts with a CXR read as suggestive of TB by the clinician was secondarily diagnosed with active TB.

Performance of symptom-based TB screening algorithms

After consensus opinion on CXR readings, 22 (7.6%) children were identified as radiological TB cases (Table 2). On univariate analysis, any current cough, reported fever in the last 2 weeks, reported weight stagnation, night sweats, reduced playfulness, loss of appetite, body temperature $\geqslant$37.5°C, moderate-to-severe malnutrition and wheezing were all significantly associated with radiological TB (Table 3). After multivariate analysis and adjustment for age and HIV infection status, only any current cough (adjusted odds ratio [aOR] 4.10, 95%CI 1.39–12.11) and reduced playfulness (aOR 7.79, 95%CI 2.12–25.18) remained independently associated.

Screening based on the presence of either cough or reduced playfulness had a sensitivity and NPV of respectively 81.8% and 97.6%. There was a slight increase in sensitivity (86.4%) upon addition of weight stagnation (Table 4).

Among the 18 children correctly classified (true-positive) as radiological TB by screening based on cough or reduced playfulness (option 1 in Table 4), 1 was lost to follow-up during investigation, 15 were started on anti-tuberculosis treatment and 2 were started on IPT (1 as LTBI and 1 as exposed, non-infected). Both completed the 6-month IPT and 3-month post-treatment follow-up with no suggestion of progression to disease. The four children missed by the same algorithm were started on anti-tuberculosis treatment: 1 due to clinical suspicion and positive TST, 2 due to upper lobar consolidation and positive TST and 1 with upper lobar infiltrate and positive TST. Using screening based on cough or reduced playfulness, 40.1% (112/279) of the household child contacts cohort would be referred for further investigation to confirm or exclude TB and 59.9% (167/279) would be immediately started on IPT.

Table 2 Radiological findings for patients defined as tuberculosis cases based on the radiological reference standard

X-ray findings ($n = 22$)	*n* (%)
Infiltrate	7 (31.8)
Consolidation	5 (22.7)
Adenopathy	5 (22.7)
Infiltrate + adenopathy	3 (13.6)
Cavity + adenopathy	1 (4.5)
Consolidation + adenopathy	1 (4.5)

DISCUSSION

This prospective study demonstrated good feasibility and acceptability of hospital-based screening and IPT of household child contacts, with >80% of identified contacts successfully evaluated, and >80% of those initiating IPT completing a 6-month course. Similar results under programmatic conditions were observed in Guinea Bissau, with IPT completion at 79%.[17] Contact assessment yielded a significant proportion of children with likely TB disease, emphasising the

Table 3 Association between symptoms and signs and a chest X-ray suggestive of TB at screening

Risk factors	Suggestive of TB	Not suggestive of TB	OR (95%CI)	aOR (95%CI)
Age of child, months				
<24	10 (11.1)	80	1.84 (0.76–4.44)	1.38 (0.51–3.73)
⩾24	12 (6.3)	177	1	1
Sex of child				
Male	14 (10.7)	117	2.09 (0.85–5.16)	
Female	8 (5.4)	140	1	
HIV status of child				
Negative	18 (7.1)	237	1	1
Positive	3 (27.3)	8	4.94 (1.20–20.24)	1.73 (0.24–12.17)
Unknown	1 (7.7)	12	1.10 (0.13–8.90)	1.00 (0.11–8.82)
BCG				
Vaccinated	15 (7.2)	194	1	
Not vaccinated	7 (10.4)	60	1.51 (0.59–3.87)	
Weight stagnation				
No	14 (5.6)	236	1	
Yes	8 (27.6)	21	6.42 (2.42–17.01)	
Malnutrition				
No or mild	19 (7.0)	251	1	
Moderate or severe	3 (42.9)	4	9.91 (2.07–47.5)	
Cough				
No	5 (3.0)	164	1	1
Yes	17 (15.4)	93	6.00 (2.14–16.78)	4.10 (1.39–12.11)
Fever in last 2 weeks				
No	15 (6.2)	225	1	
Yes	7 (17.9)	32	3.28 (1.24–8.66)	
Loss of appetite				
No	17 (6.5)	243	1	
Yes	5 (26.3)	14	5.10 (1.64–15.86)	
Night sweats				
No	13 (5.4)	228	1	
Yes	9 (23.7)	29	5.44 (2.14–13.84)	
Reduced playfulness				
No	16 (6.0)	250	1	1
Yes	6 (46.1)	7	13.39 (4.03–44.55	7.79 (2.12–28.54)
Wheezing				
No	19 (7.0)	253	1	
Yes	2 (33.3)	4	6.66 (1.14–38.71)	
Body temperature				
<37.5°C	18 (6.7)	249	1	
⩾37.5°C	4 (33.3)	8	6.92 (1.90–25.18)	

TB = tuberculosis; OR = odds ratio; CI = confidence interval; aOR = adjusted OR; HIV = human immunodeficiency virus; BCG = bacille Calmette-Guérin.

effectiveness of this approach in the early identification of cases. The proportion of LTBI (39.9%) and cases treated for TB disease (15.7%) was in the range expected (30.3–41.1% and 5.0–18.9%) for such a target population in low-to-middle-income countries.[5] The effectiveness of IPT in preventing progression of primary infection to disease was supported by the fact that only one child initiating IPT was diagnosed with TB disease during follow-up. However, the post-IPT follow-up was too short (3 months) to assess the effectiveness of IPT in our study. In another study in Guinea Bissau, the authors reported an effect of IPT on mortality among TB-exposed children compared with children not on IPT.[18]

Challenges in excluding TB disease in child contacts partly underlie the limited application of recommendations to use IPT in most resource-limited settings. A good contact screening algorithm should be able to identify children requiring further evaluation for TB as well as those who can safely receive IPT. CXR and TSTs are often unavailable in areas where the risk of tuberculous infection is highest. The present study has demonstrated the good potential utility of a simple screening algorithm based on only two easily detectable symptoms of any current cough and reduced playfulness. It should be noted that as our main concern was the identification of children with possible TB disease, and therefore avoiding inappropriate use of INH monotherapy, our priority was NPV in this type of screening. A screening algorithm based on only these two symptoms would have been remarkably effective (NPV = 98%) in correctly classifying children unlikely to have TB disease. In the present study, iterations to include

Table 4 Accuracy of symptom-based screening algorithms against radiological reference standard

Screening algorithms	CXR Positive *n*	CXR Negative *n*	Sensitivity % (95%CI)	Specificity % (95%CI)	PPV % (95%CI)	NPV % (95%CI)	LLR+	LLR−
1*			81.8 (64.3–99.3)	63.4 (57.5–69.3)	16.1 (9.2–23.0)	97.6 (95.3–99.9)	2.2	0.3
Positive (any symptom)	18	94						
Negative (no symptoms)	4	163						
2†			81.8 (64.3–99.3)	62.6 (56.7–68.6)	15.8 (9.0–22.6)	97.6 (95.2–99.9)	2.2	0.3
Positive	18	96						
Negative	4	161						
3‡			81.8 (64.3–99.3)	59.1 (53.1–65.2)	14.6 (8.3–21.0)	97.4 (95.0–99.9)	2.0	0.3
Positive	18	105						
Negative	4	152						
4§			86.4 (70.8–100.0)	58.7 (52.7–64.8)	15.2 (8.8–21.6)	98.0 (95.8–100.0)	2.1	0.2
Positive	19	106						
Negative	3	151						
5¶			86.4 (70.8–100.0)	60.7 (54.7–66.7)	15.8 (9.2–22.4)	98.1 (96.0–100.0)	2.2	0.2
Positive	19	101						
Negative	3	156						

* Cough or reduced playfulness.
† Cough or reduced playfulness or weight stagnation.
‡ Cough, fever, weight stagnation or reduced playfulness.
§ Cough, reduced playfulness or loss of appetite.
¶ Cough, reduced playfulness, night sweats or loss of appetite.
CXR = chest X-ray; CI = confidence interval; PPV = positive predictive value; NPV = negative predictive value; LLR = likelihood ratio; + = positive: − = negative.

additional features resulted in only minor improvements in NPV.

Previous studies have proposed similar symptom-based tools that included more than these two symptoms.[11–14] The added value of the present study was its longitudinal design under routine conditions: it allowed for a realistic appreciation of the likely feasibility of hospital-based screening and retention of children in a 6-month preventive regimen. Although not specifically designed for it, the study also supported the efficacy of IPT among HIV-infected children.

There are advantages to using symptom-based screening at the community level, where only symptomatic contacts are referred to hospital for further evaluation and asymptomatic ones are commenced on IPT in the community.[10,11] Barriers to access and cost as well as workload at the facility level are expected to be reduced. Use of short rifamycin-based regimens could also improve the acceptability of preventive therapy.[19] Cost-effectiveness modelling of different screening and preventive treatment strategies at the community level is needed.[20] This is particularly important for helping to support countries in achieving the new WHO End TB Strategy target of 90% for LTBI treatment coverage of household child contacts by 2025.[1]

As with all studies on screening and diagnostic approaches for childhood TB, a limitation is the lack of an adequate reference standard for the diagnosis of TB.[21] CXRs were deliberately chosen as the reference standard as the yield from microbiological confirmation was predicted to be very low, and because CXRs are amenable to independent review by readers blinded to the clinical features of the patient.[2] For this reason, the standard case definitions for the classification of intrathoracic TB in children, which include symptoms, could not be used as the reference standard.[22] However, its inadequacy was evident, with frequent discrepancies between the different readers' interpretations, inconsistent quality and co-existence of multiple comorbidities such as viral respiratory infections and possible reactive airways disease.[2,9,21] The discordance between a CXR classified first by the attending clinician as 'suggestive of TB' and reclassified after consensus as either 'normal' or 'abnormal, but not suggestive of TB' was most likely because the clinician's assessment was clouded by awareness of the high risk of TB among young contacts with symptoms. Another limitation of CXRs being used as the reference standard is the classification of cases with extra-pulmonary TB and a normal CXR as non-TB cases, which led to an underestimation of specificity.[23]

Conversely, if a clinician misses the important CXR features of TB disease because of an absence of significant symptoms, the child could be inappropriately treated with INH monotherapy. However, the risk of antimicrobial resistance is small in children with paucibacillary disease and essentially non-existent in children who are completely asymptomatic.[24] In the present study, two children with CXRs later classified as suggestive of TB were treated with IPT (one LTBI and one exposed, non-infected). Neither progressed to TB disease during the 9-month follow-up period.

The present study had three main limitations: 1) the choice of the study population was limited to child contacts aged <5 years; although we acknowledge that any household contact should be screened and

started on IPT if eligible, we selected this population of young children on the basis of the risk of having or developing active TB or for the potential consequences of the disease;[19,25] 2) the study was not able to provide information on IPT adherence and could only present data on the number of children who completed IPT based on study visit attendance; and 3) contacts were limited to children sharing the same household and not the same house as the index case. The latter might have resulted in a higher yield of children for contact screening.

In conclusion, our study showed the feasibility of hospital-based TB screening of household child contacts and confirmed the potential utility of a simple symptom-based screening in a high TB burden setting. External validation of this symptom-based screening is required. Further assessment at the community level to improve access and avoid unnecessary referrals of healthy children to health facilities is desirable.

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RESUME

CONTEXTE : Le dépistage et le traitement antituberculeux préventif des enfants contact ne sont pas mis en place dans beaucoup de pays à ressources limitées en raison des difficultés du diagnostic de la tuberculose (TB) pédiatrique.

OBJECTIF : Evaluer la faisabilité du dépistage et traitement préventif de la TB chez les enfants à l'hôpital en Ouganda, et évaluer l'utilité d'un dépistage symptomatique.

MÉTHODE : Les enfants (âge <5 ans) vivant dans le même foyer que des patients tuberculeux adultes ont été examinés pour le diagnostic de TB active ou infection latente tuberculeuse (LTBI). Les enfants exposés avec ou sans LTBI ont reçu un traitement isoniazide préventif (IPT) de 6 mois avec un suivi de 9 mois. Les performances d'algorithmes de dépistage basés sur la combinaison de symptômes associés avec la TB ont été évaluées contre un diagnostic radiologique de TB active.

RÉSULTATS : Sur 281 enfants contacts (âge médian 33 mois), 44 (15,7%) ont débuté un traitement de TB active et 234 (83,3%) un traitement IPT. Parmi ces derniers, 80,3% ont achevé les 6 mois de traitement. Apres ajustement sur l'âge et le statut pour le virus de l'immunodéficience humaine, la toux (OR ajusté [ORa] 4,10 ; IC95% 1,39–12,11) et la perte d'activité ludique (ORa 7,79 ; IC95% 2,12–25,18) étaient associés avec une TB radiologique. Un dépistage basé sur la présence de toux ou d'une réduction d'activité ludique avait une sensibilité de 81,8% et une valeur prédictive négative de 97,6%.

CONCLUSION : Les résultats montrent une bonne faisabilité du dépistage et traitement IPT de la TB, et semblent confirmer l'utilité d'un dépistage symptomatique pour identifier les enfants pouvant bénéficier d'un traitement IPT et ceux nécessitant des investigations complémentaires.

RESUMEN

MARCO DE REFERENCIA: La detección sistemática de la tuberculosis (TB) y el tratamiento preventivo con isoniazida (IPT) en los niños que son contacto de un caso de TB son medidas cuya aplicación es deficiente en los países con recursos limitados, en parte debido a la dificultad del diagnóstico de la TB en los niños.

OBJETIVO: Examinar la viabilidad y el rendimiento de la detección sistemática de la TB y el IPT en medio hospitalario en Uganda y evaluar la utilidad de una detección orientada por los síntomas.

MÉTODO: Se investigó en los niños (menores de 5 años) que eran contactos domiciliarios de adultos con diagnóstico de TB la presencia de TB activa o de infección tuberculosa latente (LTBI). En los niños clasificados con LTBI o sin infección se administró el IPT y se practicó un seguimiento durante 9 meses. Los algoritmos de detección orientados por combinaciones de síntomas indicativos de TB se construyeron a posteriori y se evaluó su rendimiento con respecto a un patrón de referencia radiológico.

RESULTADOS: De los 281 contactos (mediana de la edad 33 meses), 44 iniciaron el tratamiento antituberculoso (15,7%) y 234 recibieron el IPT (83,3%), de los cuales el 80% completó los 6 meses previstos. Tras ajustar con respecto a la edad y la situación frente al virus de la inmunodeficiencia humana, los factores que se asociaron con las características radiográficas de la TB fueron la tos (OR ajustado [ORa] 4,10; IC95% de 1,39 a 12,11) y la disminución de la actividad lúdica (ORa 7,79; IC95% de 2,12 a 25,18). La detección sistemática basada en la tos y la hipoactividad ofreció una sensibilidad de 81,8% y un valor diagnóstico de un resultado negativo de 97,6%.

CONCLUSIÓN: Los resultados del presente estudio revelan la viabilidad de una detección sistemática en medio hospitalario y confirman la utilidad de una selección orientada por los síntomas de los niños que deben recibir el IPT y los que precisan investigaciones complementarias.