INT J TUBERC LUNG DIS 23(10):1107–1114

http://dx.doi.org/10.5588/ijtld.18.0611

Mobile community-based active case-finding for tuberculosis among older populations in rural Cambodia

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SUMMARY

OBJECTIVE: To systematically screen older rural populations in Cambodia for tuberculosis (TB) and develop an effective active case-finding (ACF) model for this TB high-risk group.

DESIGN: A retrospective study using routinely collected programmatic data on community-based ACF among people aged ≥55 years using TB symptoms and systematic chest radiography (CXR) screening, followed by Xpert® MTB/RIF testing for participants with positive screening results and TB culture for certain Xpert-negative specimens.

RESULTS: Of 22 101 participants included in the analysis, 7469 (33.8%) were screening-positive and 5960 (27.0%) underwent Xpert testing. Pulmonary TB was identified in 482 (2.2%) individuals: 288 (1.3%) were bacteriologically confirmed (253 using Xpert, 35 using culture) and 194 (0.9%) were clinically diagnosed. Eighty-seven people needed to be screened in order to diagnose one Xpert-positive case. Among the Xpert-positive cases, only 31.6% (80/253) reported cough ≥2 weeks, and 39.9% (101/253) were asymptomatic but had a CXR suggestive of active TB. Treatment uptake was 97.3% (469/482), and treatment success was 88.0% (424/482).

CONCLUSIONS: Community-based ACF was effective in detecting and successfully treating older TB patients, most of whom might otherwise have remained undiagnosed. Mobile CXR appears to be crucial in identifying a high number of asymptomatic, bacteriologically confirmed cases.

KEY WORDS: elderly; screening; chest X-ray; diagnosis; detection

IN THE LIGHT OF THE continuing gap between the number of estimated and notified tuberculosis (TB) cases, with about 36% of cases remaining undetected or unreported,[1] the World Health Organization (WHO) has recommended systematic active case-finding (ACF) for TB to increase case detection in subpopulations with a very high TB burden.[1,2]

At 326 per 100 000 population, TB incidence in Cambodia remains one of the highest in the world.[1] The 2011 National TB Prevalence Survey (NTPS) identified populations aged ≥55 years as a TB high-risk group, with a prevalence of 2.4% (2422/100 000). Furthermore, the survey revealed that most TB cases were smear-negative and asymptomatic and therefore less likely to seek medical care.[3] These findings, similar to those from other surveys in the region,[4] suggested that highly sensitive screening algorithms incorporating chest X-ray (CXR)[5] and diagnosis using Xpert® MTB/RIF (Cepheid, Sunnyvale, CA, USA) were necessary for effective TB case-finding targeting local communities.[6–8] It was recommended that Cambodia supplement passive case-finding by expanding ACF to the most at-risk groups, including older populations who are less likely to be diagnosed when attending health services.[3,9,10]

While high-income countries have acknowledged the challenges of TB in elderly populations (high prevalence, reactivation, delayed diagnosis), these challenges are not often taken into account in low-income countries,[11] where community-based ACF generally focuses on individuals already presenting with TB symptoms[12–15] or who are in contact with TB patients.[9] A recent study highlighted the benefits of systematic CXR screening on case detection in low-income communities in the Philippines.[16] Here, we present the effectiveness and feasibility of implementing a mobile community-based ACF model for rural older populations in Cambodia using systematic CXR screening, which is considered the most sensitive algorithm.[2]

METHODS

Study design and population

This is a retrospective study using routinely collected programmatic data on individuals aged ≥55 years,

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Article submitted 4 September 2018. Final version accepted 11 February 2019.

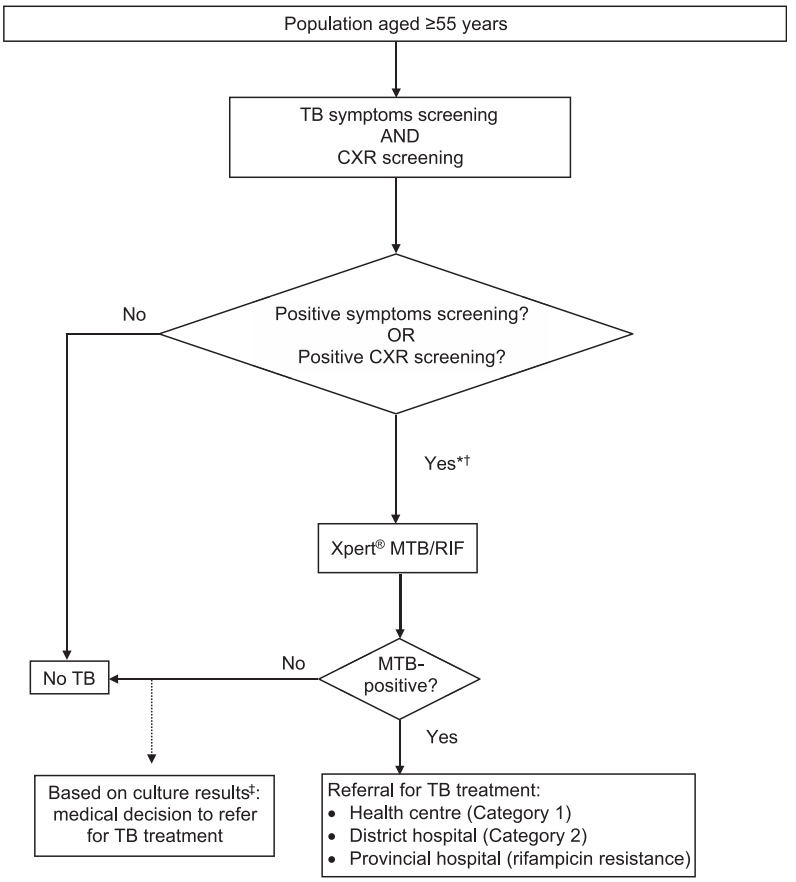

Figure 1 Screening and diagnostic algorithm used for active case finding among older rural population in Cambodia. * The algorithm was modified for the second district: individuals with positive symptom screening and normal CXR were not tested by Xpert. † Individuals with CXR suggestive of active TB were evaluated clinically by a physician for a TB treatment decision. ‡Pilot phase: cultures requested systematically for Xpert-negative specimens (up to 100 cultures/month). Subsequently, culture samples were requested for all screening-positive patients with previous history of TB, all Xpert-negative patients with CXR suggestive of active TB and all Xpert-negative patients referred for TB treatment. CXR = chest X-ray; MTB = *Mycobacterium tuberculosis*; TB = tuberculosis; Xpert = Xpert® MTB/RIF.

who were not undergoing TB treatment and were screened for TB between December 2013 and October 2015 in Tboung Khmum and Krouch Chmar, two rural health operational districts of Kampong Cham Province, Cambodia, with a combined population of 333 000. Based on national population data, we estimated the number of persons aged ≥55 years to be 11% (36,630) of the general population.[17,18]

During a pilot phase, individuals from the catchment area of six rural health centres were screened at a single site; thereafter, screening was decentralised to 17 different sites.

Screening process and algorithm

The screening and diagnostic algorithm is shown in Figure 1. All participants were interviewed by a trained nurse about their TB history and symptoms and then underwent CXR. For those with positive screening results, as defined below, one sputum specimen was collected on site for Xpert testing and another specimen was collected if the first contained only saliva.[19] Certain Xpert-negative specimens were tested further using *Mycobacterium tuberculosis* culture. Patients with CXR suggestive of active TB were evaluated clinically by a physician for a treatment decision. TB patients were referred for treatment initiation based on clinical or bacteriological results. Those who did not start or who interrupted treatment were traced and encouraged to initiate or complete treatment.

Free transportation to the screening site was provided. To maximise participation in the screening, awareness-raising sessions were organised in each village 1 week before the screening, and then reinforced with door-to-door information, community leaders' involvement and participants' feedback. Other mobilisation tools included banners, leaflets and loudspeaker announcements in villages. All participants received information on TB awareness.

Table 1 Definitions of the chest X-ray grading system used during active case finding among older rural populations in Cambodia

Grade	Definition
Grade 1: abnormal, active TB unlikely	Definitive findings of healed TB with no findings of active TB: calcified nodule, calcified lymph node, minimal fibrosis, minimal apical pleural thickening Other pulmonary or non-pulmonary diagnosis: bronchiectasis, COPD, bronchitis, emphysema, bacterial pneumonia, cardiac failure, chest wall anomaly, etc.
Grade 2: abnormal, possibly active TB	Pilot phase: abnormal, but not Grade 1 or Grade 3; findings of TB, but unsure if active TB Subsequently: same as pilot; lower lobe infiltrate, non-calcified nodule in the upper lobes, minor pleural effusion(s)
Grade 3: abnormal, active TB likely	Upper lobe infiltrate, hilar or mediastinal lymph nodes, cavitation, miliary pattern, major pleural effusion

TB = tuberculosis; COPD = chronic obstructive pulmonary disease.

Definitions

The symptoms assessed for possible TB were cough, sputum production, haemoptysis, unintended weight loss, fever, night sweats, appetite loss, and swollen lymph nodes.

The CXR grading system used was normal; abnormal, unlikely active TB (Grade 1); abnormal, possible active TB (Grade 2); and abnormal, likely active TB (Grade 3) (Table 1).

Positive screening was defined by the presence of any of the following: 1) cough lasting $\geq$2 weeks; 2) cough lasting $<$2 weeks plus another TB symptom; 3) haemoptysis; 4) sputum production without cough; and 5) abnormal Grade 2 or Grade 3 CXR. Based on the results from the first district, the algorithm was changed in the second district so that participants with normal CXR were not Xpert tested.

A bacteriologically confirmed TB case was defined as *M. tuberculosis* detected on Xpert (Xpert-positive) or culture (culture-positive). A clinically diagnosed TB case (unconfirmed TB) was defined by the physician's decision to initiate TB treatment based on CXR and clinical findings.[20] An Xpert-negative result was defined as *M. tuberculosis* not detected or an invalid result.

The time to treatment initiation was defined as the interval between screening and the start of treatment. Treatment outcomes from the TB registers were reported according to the WHO definitions. Patients who did not start treatment were considered lost to follow-up (LTFU).[20]

The number needed to screen (NNS) was calculated as the number of persons screened divided by the number of persons diagnosed with TB.[2]

Procedures

We used a portable mobile X-ray unit, model TW110 (Samil X-ray, Gyeonggi-do, South Korea), located inside a tent or community building.[21] A digital imaging receptor system, the Agfa CR10X (Agfa HealthCare NV, Mortsel, Belgium) replaced the X-ray films after the pilot phase to improve image quality. A trained nurse performed the CXRs, which were read by physicians trained by a radiologist. Radiological findings were classified using a structured approach.[22] External quality control was performed remotely by an independent radiologist on a systematic random CXR sample (5%, every 20th image), and for all Grade 3 results.

Xpert, located at the screening site during the pilot phase and later at the provincial laboratory, was performed per the manufacturer's instructions, with invalid results repeated once. BACTEC™ MGIT™ 960 (BD, Franklin Lakes, NJ, USA) was used to perform liquid culture at the provincial laboratory. The results were reported as negative if no growth was observed after 6 weeks; contaminated cultures were repeat tested. *M. tuberculosis* was identified using SD Bioline TB Ag MPT64 (Rapid-Alere, Standard Diagnostics, Gyeonggi-do, South Korea). The TB laboratory passed the manufacturers' validation test for Xpert and participated in external quality assurance for *M. tuberculosis* culture through the supranational reference laboratory.

Statistical analyses

Data were collected on standard forms and recorded using EpiData (EpiData Association, Odense, Denmark). Missing and discordant data were verified monthly.

Patient characteristics were summarised using frequencies and percentages for categorical variables, and median and interquartile ranges [IQRs] for continuous variables. Analyses were performed using EpiInfo 7 (Centers for Disease Control, Atlanta, GA, USA). We performed univariate risk factor analyses for bacteriologically confirmed TB; odd ratios (ORs) with 95% confidence intervals (CIs) were estimated.

Effectiveness was measured by the proportion of the target population screened, the proportion of Xpert-positive results among screening-positive participants and the NNS to identify one Xpert-positive case.

Ethics considerations

Our activity was implemented with support from the Cambodian National TB Programme (NTP), which has recommended ACF among older populations,[3] and local health authorities. Participation in the screening was voluntary; participants did not provide informed consent.

As data presented here were collected as part of routine programmatic work and were anonymised, the present study was approved by NTP and Médecins Sans Frontières (MSF) as fulfilling the

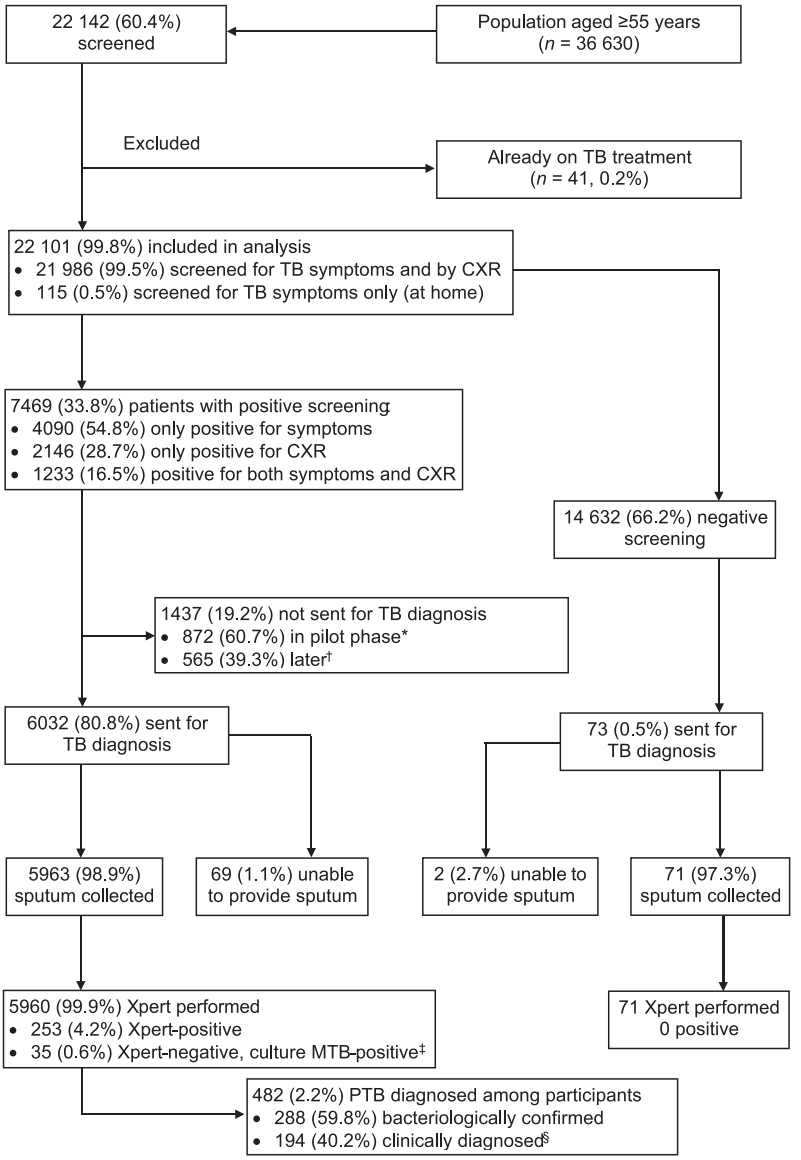

Figure 2 Screening and diagnosis flow during active case finding among older rural populations in Cambodia. * The main reasons were the incorrect application of the algorithm in the pilot phase and the late addition of another positive screening criterion (sputum production without cough). † The algorithm was modified for the second district: individuals with positive symptom screening and normal chest X-ray were not tested by Xpert. ‡ Cultures performed for 1880 Xpert-negative specimens. § One clinical PTB had no sputum examination performed. TB = tuberculosis; CXR = chest X-ray; MTB = *Mycobacterium tuberculosis*; Xpert = Xpert® MTB/RIF; PTB = pulmonary tuberculosis.

exemption criteria set by the national and MSF Ethics Review Boards for retrospective analyses of routinely collected data.

RESULTS

Screening uptake and effectiveness

The main results are presented in Figure 2. A total of 22 101 individuals aged ≥55 years and not undergoing TB treatment were screened, representing 60.3% (22 101/36 630) of the target population. This figure increased from 43.0% (4095/9520) in the pilot phase up to 77.3% (8659/11 198) in the second district. Among the participants, 35.2% (7784/22 101) were male, the median age was 63 years (IQR 57–71) and 6.4% (1419/22 101) had a history of TB treatment.

One third of the participants (7469/22 101, 33.8%) were screening-positive. Among these, 54.8% (4090/7469) had only symptom criteria, 28.7% (2146/7469) had only CXR criteria and 16.5% (1233/7469) had both symptom and CXR criteria. Overall, 24.1% (5323/22 101) had symptoms criteria and 15.3% (3379/22 101) had CXR criteria (Table 2). Of 7469 participants with screening-positive results, 5960 (79.8%) received Xpert

Table 2 Overall screening results of active TB case finding among older rural populations in Cambodia

Symptoms screening results	Chest X-ray screening results*					
	Not performed†	Negative		Positive		
	n	Normal *n*	Grade 1 *n*	Grade 2 *n*	Grade 3 *n*	Total *n* (%)
Positive						
Cough ≥2 weeks	10	773	624	472	108	1 987 (9.0)
Cough <2 weeks + another TB symptom‡	1	1 243	753	458	78	2 533 (11.5)
Sputum or haemoptysis, no cough	2	397	287	98	19	803 (3.6)
Total positive	13	2 413	1 664	1 028	205	5 323 (24.1)
Negative	102	10 404	4 126	1 995	151	16 778 (75.9)
Total, *n* (%)	115 (0.5)	12 817 (58.0)	5 790 (26.2)	3 023 (13.7)	356 (1.6)	22 101

* Grade 1 = abnormal, unlikely active TB; Grade 2 = abnormal, possibly active TB; Grade 3 = abnormal, likely active TB.
† Screened at home (symptoms screening only).
‡ TB symptoms: sputum, haemoptysis, fever, weight loss, loss of appetite, night sweats, enlarged lymph nodes.
TB = tuberculosis.

testing. Some Xpert-negative specimens (1880/5707, 32.9%) were tested using culture.

Tuberculosis cases and treatment outcomes

Among the participants tested, 4.2% (253/5960) were Xpert-positive, including four (1.6%, 4/253) with rifampicin resistance. All participants with TB symptoms and normal CXR tested using Xpert (1237/2413, 51.3%) were Xpert-negative. *M. tuberculosis* grew in 1.9% (35/1880) of Xpert-negative culture specimens, and non-tuberculosis mycobacteria grew in 8.8% (165/1880) (Table 3).

In total, we diagnosed 288 bacteriologically confirmed pulmonary TB (PTB) cases. Another 194 were clinically diagnosed, resulting in a total of 482 PTB cases. Xpert-positive PTB, Xpert-negative but culture-positive PTB and unconfirmed PTB accounted for respectively 52.5%, 7.3% and 40.2% of all PTB cases. Xpert-positive PTB was identified in 1.1% (253/22 101) of the participants. The NNS was 87 for each Xpert-positive case diagnosed and 46 for any PTB case (bacteriologically confirmed or unconfirmed).

Among the Xpert-positive patients, only 31.6% (80/253) reported a cough of ≥2 weeks, while 39.9% (101/253) were asymptomatic and were identified because of abnormal CXR. Moreover, nearly all of the Xpert-positive patients (241/253, 95.3%) were also CXR-positive; only 4.3% (11/253) had a negative CXR screening. One patient did not undergo CXR (Table 4).

Bacteriologically confirmed PTB was significantly more frequent in males (2.3%) than in females (0.8%), and increased with age (0.9% among individuals aged 55–64 years, 1.5% among individuals aged 65–74 years and 2.2% among those aged >74 years) (Table 5).

Of the 482 PTB cases diagnosed, 469 (97.3%) started treatment (1 died, 4 refused treatment and 8 were LTFU). The median time to treatment initiation was 7 days (IQR 2–16.5). The treatment success rate was 88.0% (424/482); 10 (2.1%) patients died and 43 (8.9%) were LTFU.

Table 3 Number and percentage of GeneXpert® and culture results during active case finding among older rural populations in Cambodia

Results	*n* (%)
Xpert assays performed, *n*	5960
Total Xpert MTB detected	253 (4.2)
Xpert MTB detected/RIF resistance not detected	237 (93.7)
Xpert MTB detected/RIF resistance detected	4 (1.6)
Xpert MTB detected/RIF resistance indeterminate	12 (4.7)
Xpert MTB not detected	5590 (93.8)
Xpert invalid	117 (2.0)
Cultures performed among Xpert MTB not detected/invalid	1880 (32.9)
Culture MTB-positive	35 (1.9)
Culture NTM-positive	165 (8.8)

MTB = *Mycobacterium tuberculosis*; RIF = rifampicin; NTM = non-tuberculosis mycobacteria.

Feasibility

On average, 100 persons were screened daily. The median time between registration and departure from the screening site was 42 min (IQR 30–58). Xpert turnaround time was 1–2 working days. Digital imaging greatly improved CXR image quality, generating 95.9% (347/362) good or acceptable images vs. 61.6% (61/99) good or acceptable images with films during the pilot phase. Of 341 digital images sent for quality control, agreement between the onsite and external readings was 89.7% (306/341), resulting in a κ coefficient of 0.75.

DISCUSSION

Findings from the 2011 NTPS and recommendations from several other studies indicate that reinforced screening and diagnosis are key to further reducing the extremely high TB burden in Cambodia.[2,3,7,8]

Our study describes a new ACF model for Cambodia using systematic CXR screening targeting high-risk older populations, without the preliminary

Table 4 Proportion of Xpert-positive results within screening results categories during active case finding among older rural populations in Cambodia

Symptoms screening results	Chest X-ray screening results*					
	Not performed† *n/N* (%)	Negative		Positive		Total *n/N* (%)
		Normal *n/N*	Grade 1 *n/N* (%)	Grade 2 *n/N* (%)	Grade 3 *n/N* (%)	
Positive						
Cough ≥2 weeks	1/9 (11.1)	0/490	4/532 (0.8)	28/466 (6.0)	47/108 (43.1)	80/1605 (5.0)
Cough <2 weeks + another TB symptom‡	—	0/605	6/665 (0.9)	18/454 (4.0)	33/77 (42.9)	57/1801 (3.2)
Sputum or haemoptysis, no cough	0/1	0/142	1/183 (0.5)	6/96 (6.3)	8/19 (42.1)	15/441 (3.4)
Negative	—	0/6	0/65	71/1962 (3.6)	30/151 (19.9)	101/2184 (4.6)
Total	1/10 (10.0)	0/1243	11/1445 (0.8)	123/2978 (4.1)	118/355 (33.2)	253/6031 (4.2)

* Grade 1 = abnormal, unlikely active TB; Grade 2 = abnormal, possibly active TB; Grade 3 = abnormal, likely active TB.
† Screened at home (symptoms screening only).
‡ TB symptoms: sputum, haemoptysis, fever, weight loss, loss of appetite, night sweats, enlarged lymph nodes.
TB = tuberculosis.

symptom-based selection generally used in this context.

The prevalence of bacteriologically confirmed TB among participants was high (1.3%), although less than that reported in the 2011 NTPS (2.4%).[3] This might be explained by the lower sensitivity of Xpert compared to culture (systematically used in the NTPS), or by geographical variations of TB prevalence. Repeat Xpert testing on the same sample might have increased sensitivity, as was shown in another setting in Cambodia.[23]

Given the different ACF model used in our study, it is challenging to directly compare the results with other community-based ACF interventions in Cambodia.[9,15,24,25] In 2013–2014, the Cambodia Anti-Tuberculosis Association implemented ACF among symptomatic older populations and other vulnerable groups (symptom screening details not available), with mobile CXR, followed by Xpert. They reported a 3.4% prevalence of bacteriologically confirmed PTB among symptomatic individuals screened, compared with 4.0% among participants reporting a cough of ≥2 weeks in our study.[24]

Our approach appears to have greatly increased the number of cases detected among people aged ≥55 years: for example, 110 PTB patients were registered during the 3-month ACF pilot phase compared to only 28 patients registered by passive case-finding in the same catchment area during the 12 previous months (National Programme TB registers 2013). It was shown previously in Cambodia that ACF detected a higher proportion of older patients than passive case-finding.[9]

Table 5 Factors associated with bacteriologically confirmed PTB during active case finding among older rural populations in Cambodia

Factors	Bacteriologically confirmed TB *n/N* (%)	OR(95%CI)	*P* value
Sex			
Female	111/14 317 (0.8)	1	
Male	177/7 784 (2.3)	3.0 (2.3–3.8)	<0.001
Age, years			
55–64	110/12 011 (0.9)	1	
65–74	97/6 981 (1.5)	1.5 (1.2–2.0)	0.0026
≥75	81/3 709 (2.2)	2.4 (1.8–3.2)	<0.001
History of TB treatment			
No	256/20 682 (1.2)	1	
Yes	32/1 419 (2.3)	1.8 (1.3–2.7)	0.0013

PTB = pulmonary TB; TB = tuberculosis; OR = odds ratio; CI = confidence interval.

Treatment uptake among ACF-diagnosed patients was high (97.3%), and treatment outcomes were successful (88.0%). These results are consistent with other outcomes reported in Cambodia for ACF among household contacts (91.4%) and in poor urban settings (81.4%) (using the same definition for LTFU).[9,15]

Community mobilisation and community-based screening were key to increasing the ACF uptake. The lower proportion of the target population screened during the pilot phase (43.0%) possibly reflected the remoteness of some villages from the centralised screening site. This proportion increased in the second district (77.6%) after reinforcing the mobilisation strategy and adapting the screening schedule (an earlier start and a longer presence at each site).

CXR was clearly the most effective component of our screening algorithm for identifying Xpert-positive cases. A number of Xpert-positive cases (39.9%) had abnormal CXR but were asymptomatic. If cough of ≥2 weeks had been used as the only positive screening criterion, the majority (68.4%) of Xpert-positive cases would have been missed. Conversely, CXR screening without symptom screening would have missed a few (4.7%) of the Xpert-positive cases. These results confirm previously reported findings,[3,4,16] and suggest that CXR should replace symptom-based screening as the primary screening tool for ACF among older populations in similar settings. While this would require screening more individuals with CXR, it could save significant

laboratory resources compared to symptom-based screening, as all individuals with TB symptoms and normal CXR tested by Xpert had negative results.

A screening algorithm based on initial CXR, followed by Xpert testing for individuals with CXR images suggestive of active TB, and by symptom screening for those with other abnormal images should be further evaluated. As the use of computer-aided digital X-ray reading could help with the implementation of such an algorithm by reducing associated reader labour costs and limiting the problem of inter-reader poor reliability, this merits further evaluation.[26,27]

This systematic mobile ACF strategy proved feasible, although relatively resource-intensive: human resources (up to 19 persons), free transportation for the majority of participants, significant investment in radiography (equipment, training, external quality control), daily sample transport and extended laboratory operating hours (environmental temperature issues and limited processing capacity noted during the pilot phase led to Xpert testing being centralised). However, the light mobile CXR set-up facilitated access to remote communities and represented a lower initial investment than X-ray buses used elsewhere.[9,16]

Although we did not have the capacity to perform culture for all Xpert-negative samples, our data (1.9% of culture-positive) suggest that such a strategy might significantly increase case detection. However, cultures require significant additional resources (laboratory capacity, proper sample shipping and community-based mechanisms ensuring TB treatment initiation for culture-positive patients), which are often not available in resource-limited settings.

A limitation of this analysis is that it draws on field experience that was not initially designed as operational research, and therefore relies on pooled data collected through differently applied screening algorithms. During the pilot phase, 48.6% (872/1794) of the screening-positive participants did not undergo sputum testing for two reasons: first, the algorithm was incorrectly applied for several weeks (symptomatic participants with negative CXR screening); and second, the positive screening criterion of 'sputum production without cough' was added later to the algorithm. In subsequent screening, 98% of screening-positive participants were tested according to the algorithm.

Few studies have evaluated the cost-effectiveness of ACF with different models. ACF among TB contacts in Cambodia was found to be cost-effective,[25] and community-wide ACF could be cost-effective in settings with high TB incidence.[28] One limitation of this study is the absence of a cost-effectiveness analysis, which is necessary before recommending wide-scale implementation of this model.

In conclusion, mobile community-based ACF using systematic CXR screening, followed by Xpert testing was effective in identifying and successfully treating many TB cases among older people in rural Cambodia, thereby reducing morbidity and possibly TB transmission. This is in line with evidence that CXR is the most effective component of the screening algorithm, and suggests that it should be used as the front-line tool in Cambodia and similar settings for TB screening in older populations, instead of symptom-based screening.

Acknowledgements

The authors thank J-L Lambert, I Chikwanha, and C Biteau for their support; K Federici and A-E Bury for their involvement in the data acquisition and analysis; J Min for supporting chest radiography reading and quality control; P Kahn for her support in editing the manuscript; the Médecins Sans Frontières (MSF; Paris, France) active-case finding and laboratory teams in Cambodia; Tboung Khmum and Krouch Chmar District Health Departments; and the National Center for Tuberculosis and Leprosy Control, Phnom Penh, Cambodia for their support.

The activity was funded by MSF.

Conflicts of interest: none declared.

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RESUME

OBJECTIF : Dépister systématiquement la tuberculose (TB) parmi les populations rurales âgées du Cambodge et développer un modèle efficace de recherche active de cas (ACF) pour ce groupe à haut risque de TB.

CONCEPTION : Étude rétrospective, utilisant des données programmatiques collectées de routine, sur une ACF dans la communauté parmi les personnes âgées de ≥55 ans, basée sur un dépistage par les symptômes de TB et la radiographie thoracique (CXR) systématique, suivis d'un test Xpert® MTB/RIF pour les participants avec dépistage positif, et d'une culture pour certains spécimens Xpert-négatifs.

RÉSULTATS : Parmi les 22 101 participants inclus dans l'analyse, 7469 (33,8%) avaient un dépistage positif, et 5960 (27,0%) furent testés par Xpert. Une TB pulmonaire fut identifiée chez 482 (2,2%) individus : confirmée bactériologiquement chez 288 (1,3%) (253 par Xpert, 35 par culture), et diagnostiquée cliniquement chez 194 (0,9%). Quatre-vingt-sept personnes durent être dépistées pour diagnostiquer un cas Xpert-positif. Parmi les cas Xpert-positifs, seuls 31,6% (80/253) rapportaient une toux ≥2 semaines, et 39,9% (101/253) étaient asymptomatiques mais présentaient une CXR évoquant une TB active. La mise sous traitement fut de 97,3% (469/482) et le succès thérapeutique de 88,0% (424/482).

CONCLUSION : L'ACF dans la communauté fut efficace pour identifier et traiter avec succès des patients tuberculeux âgés, dont la plupart auraient sinon pu rester non diagnostiqués. La CXR mobile apparait essentielle pour l'identification de nombreux cas confirmés bactériologiquement, mais asymptomatiques.

RESUMEN

OBJETIVO: Practicar la detección sistemática de la tuberculosis (TB) en la población anciana en un entorno rural de Camboya y elaborar un modelo eficaz de búsqueda activa de casos (ACF) en este grupo de la población con alto riesgo de contraer la TB.

MÉTODO: Se llevó a cabo un estudio retrospectivo de los datos programáticos corrientes sobre la ACF en la comunidad, en las personas de edad de ≥55 años, mediante la detección por síntomas indicativos de TB y la radiografía de tórax (CXR) sistemática, seguidos por la prueba Xpert® MTB/RIF en los participantes con una detección positiva y cultivo de algunas muestras con resultado negativo de la prueba Xpert.

RESULTADOS: De los 22 101 participantes incluidos en el análisis, 7469 obtuvieron un resultado positivo de la detección sistemática (33,8%) y en 5960 se practicó la prueba Xpert (27,0%). Se detectó la TB pulmonar en 482 personas (2,2%), a saber: 288 con confirmación bacteriológica (1,3%; 253 por Xpert y 35 por cultivo) y 194 mediante diagnóstico clínico (0,9%). Fue necesario examinar 87 personas a fin de diagnosticar un caso con resultado Xpert positivo. De los casos con resultado Xpert positivo, solo el 31,6% (80/253) refería tos de duración de ≥2 semanas y el 39,9% (101/253) era asintomático, pero su CXR insinuaba una TB activa. La aceptación del tratamiento fue del 97,3% (469/482) y el tratamiento fue exitoso en el 88,0% de los casos (424/482).

CONCLUSIÓN: La ACF en la comunidad fue eficaz para detectar y tratar con éxito a los pacientes ancianos con TB, cuyo diagnóstico en la mayoría de los casos habría pasado desapercibido sin la intervención. La práctica de la CXR con equipos móviles parece primordial en la detección de un alto número de casos asintomáticos con confirmación bacteriológica.