

Supplementary Material

Title: Blood-based host biomarker diagnostics in active case finding for pulmonary tuberculosis: a diagnostic case-control study

Authors

Flora Martinez Figueira Moreira, MS,¹ Renu Verma, PhD,² Paulo Cesar Pereira dos Santos, BS,¹ Alessandra Leite, BS,¹ Andrea da Silva Santos, PhD,¹ Rafaele Carla Pivetta de Araujo, MS,¹ Bruna Oliveira da Silva, BS,¹ Júlio Henrique Ferreira de Sá Queiroz, MS,¹ David H. Persing, PhD,³ Erik Södersten, PhD,⁴ Devasena Gnanashanmugam, MD,⁵ Purvesh Khatri, PhD,² Julio Croda, PhD,^{4,5,6,*} Jason R. Andrews, MD^{2,*}

*Contributed equally

Contents

Table A1: Specificity at fixed sensitivity values, and sensitivity at fixed specificity values for CRP and Xpert-MTB-HR.

STARD Checklist

Study CRF (Portuguese)

Study CRF (English Translation)

Table A1. Specificity at fixed sensitivity values, and sensitivity at fixed specificity values for CRP and Xpert-MTB-HR.

Sensitivity	Specificity		Sensitivity		
	CRP	Xpert-MTB-HR	Specificity	CRP	Xpert-MTB-HR
0.70	0.74	0.80	0.70	0.73	0.81
0.75	0.67	0.78	0.75	0.69	0.78
0.80	0.56	0.73	0.80	0.65	0.70
0.85	0.42	0.62	0.85	0.61	0.64
0.90	0.28	0.53	0.90	0.58	0.57
0.95	0.14	0.36	0.95	0.51	0.48

CRP: C-reactive protein. Values were obtained from 5,000 bootstrap replicates.

Section & Topic	No	Item	Reported on page #
TITLE OR ABSTRACT			1
	1	Identification as a study of diagnostic accuracy using at least one measure of accuracy (such as sensitivity, specificity, predictive values, or AUC)	2
ABSTRACT			2
	2	Structured summary of study design, methods, results, and conclusions (for specific guidance, see STARD for Abstracts)	2
INTRODUCTION			3
	3	Scientific and clinical background, including the intended use and clinical role of the index test	3
	4	Study objectives and hypotheses	3
METHODS			4
<i>Study design</i>	5	Whether data collection was planned before the index test and reference standard were performed (prospective study) or after (retrospective study)	4
<i>Participants</i>	6	Eligibility criteria	4
	7	On what basis potentially eligible participants were identified (such as symptoms, results from previous tests, inclusion in registry)	4
	8	Where and when potentially eligible participants were identified (setting, location and dates)	4
	9	Whether participants formed a consecutive, random or convenience series	5
<i>Test methods</i>	10a	Index test, in sufficient detail to allow replication	4
	10b	Reference standard, in sufficient detail to allow replication	4
	11	Rationale for choosing the reference standard (if alternatives exist)	4
	12a	Definition of and rationale for test positivity cut-offs or result categories of the index test, distinguishing pre-specified from exploratory	4
	12b	Definition of and rationale for test positivity cut-offs or result categories of the reference standard, distinguishing pre-specified from exploratory	4
	13a	Whether clinical information and reference standard results were available to the performers/readers of the index test	4
	13b	Whether clinical information and index test results were available to the assessors of the reference standard	4
<i>Analysis</i>	14	Methods for estimating or comparing measures of diagnostic accuracy	4,5
	15	How indeterminate index test or reference standard results were handled	4,5
	16	How missing data on the index test and reference standard were handled	4,5
	17	Any analyses of variability in diagnostic accuracy, distinguishing pre-specified from exploratory	4,5
	18	Intended sample size and how it was determined	4
RESULTS			6
<i>Participants</i>	19	Flow of participants, using a diagram	16
	20	Baseline demographic and clinical characteristics of participants	6,14
	21a	Distribution of severity of disease in those with the target condition	6
	21b	Distribution of alternative diagnoses in those without the target condition	6
	22	Time interval and any clinical interventions between index test and reference standard	4,6
<i>Test results</i>	23	Cross tabulation of the index test results (or their distribution) by the results of the reference standard	6
	24	Estimates of diagnostic accuracy and their precision (such as 95% confidence intervals)	6
	25	Any adverse events from performing the index test or the reference standard	N/A (not clinical trial)
DISCUSSION			8
	26	Study limitations, including sources of potential bias, statistical uncertainty, and generalisability	9
	27	Implications for practice, including the intended use and clinical role of the index test	8
OTHER INFORMATION			
	28	Registration number and name of registry	N/A (not clinical trial)

29	Where the full study protocol can be accessed	N/A (not clinical trial)
30	Sources of funding and other support; role of funders	11

CRF I - Questionário

Record ID

Código do estudo: ISI

Toda amostra que for armazenada em em biorrepositório será identificada da seguinte forma:

ISI.record_id.codigo_do_tipo_de_amostra.aliquota

Data e hora da assinatura do TCLE

Data e hora da coleta de dados:

(Ex: 17-06-2017 08:45)

Qual seu nome completo?

(Tudo em letra maiúscula, não colocar acento.
Ex: JOAO SILVA CARVALHO)

Qual a sua data de nascimento?

(Ex: 24-05-1987)

Idade:

Qual o seu peso?

(Ex: 70, 80, 95)

Qual sua altura?

(Colocar em cm. Ex: 168, 176, 184)

Presidio da coleta de dados:

PED EPJFC IPCG
 CT
(Estabelecimento penal)

Se PED, qual bloco você está?

- Raio 1
- Raio 2A
- Raio 2B
- Raio 3A
- Raio 3B
- Raio 4
- Linear 1A
- Linear 2A
- Linear 3A
- Linear 4A
- Linear A - CD
- Linear 1B
- Linear 2B
- Linear 3B
- Linear 4B
- CD
- ADM

Se EPJFC, qual bloco você está?

- P1
- P1 (Disciplinar)
- P2
- P2 (Disciplinar)
- P3
- P4
- P6 (RDD)

Se IPCG, qual bloco você está?

- 1A - Solário 1A
- 1A - Solário 2A
- 1A - Solário 3A
- 1B - Solário 1B
- 1B - Solário 2B
- 1B - Solário 3B
- 2A - Solário 1A
- 2A - Solário 2A
- 2A - Solário 3A
- 2B - Solário 1B
- 2B - Solário 2B
- 2B - Solário 3B
- 2B - Solário G
- 2B - CD

Se CT, qual bloco você está?

- P1
- P1 disciplinar
- P2

Qual o número da sua cela?

(Ex: 2, 23, 47)

Está na mesma cela há mais de 2 semanas?

- Sim Não

Se não, qual o seu pavilhão, bloco e cela anterior?

Data da prisão

Você já foi preso outras vezes?

- Yes No

Se sim, quantas vezes foi preso, incluindo esta vez?

Qual sua raça?

- branca preta parda
 amarela indígena

Até que série escolar você estudou?

- Sem escolaridade
 1-4 série do ensino fundamental incompleto
 1-4 série do ensino fundamental completo
 5-8 série do ensino fundamental incompleto
 5-8 série do ensino fundamental completo
 Ensino médio incompleto
 Ensino médio completo
 Ensino superior incompleto
 Ensino superior completo

Você fuma?

- Yes No

Quantos cigarros você fuma por dia?

(Ex: 1, 2, 10)

Você já fumou?

- Yes No

Com que frequência você toma bebidas alcoólicas?

- Nunca bebi
 Não bebo mais
 Uma vez por mês ou menos
 Duas a quatro vezes por mês
 Duas a três vezes por semana
 Quatro ou mais vezes por semana

Você usou maconha no último ano?

- Yes No

Você usou cocaína no último ano?

- Yes No

Você usou crack no último ano?

- Yes No

Você usou heroína no último ano?

- Yes No

Você cheirou cola e/ou outros solventes no último ano?

- Yes No

Você usou pasta base no último ano?

- Yes No

Você usou haxixe no último ano?

- Yes No

Você usou droga injetável no último ano?

- Yes No

Você já teve tuberculose?

- Yes No

Você está em tratamento de tuberculose?

- Yes No

Você conhece ou já conheceu alguém com tuberculose?

- Yes No

Se sim, como é ou era o contato com essa pessoa?

- Não tive contato
 Menos de 1 vez/semana
 1-2 vezes/semana
 Mais de 2 vezes/semana
 Todos os dias

Você tem a marca da vacina BCG no braço direito?
Posso ver?

- Yes No
(Visualizar a marca.)

Tem pessoas na sua cela com tosse, febre, ou emagrecendo?

- Yes No

Você está com tosse?

- Yes No

Se sim, há quantas semanas?

(Ex: 1, 2, 3, 4)

Você tem expectoração?

- Yes No

Se sim, quantas semanas?

(Ex: 1, 2, 3)

Se sim, sua expectoração tem sangue?

- Yes No

Você está com febre?

- Yes No

Se sim, há quantas semanas?

(Ex: 1, 2, 3, 4)

Você está sem apetite?

- Yes No

Se sim, há quantas semanas?

Você está emagrecendo?

- Yes No

Se sim, quantos quilos?

(Ex, 1, 2, 3)

Você tem sudorese noturna?

- Yes No

Se sim, há quantas semanas?

Você está com dor torácica?

- Yes No

Se sim, há quantas semanas?

Você está sentindo dificuldade para respirar?

- Yes No

Se sim, há quantas semanas?

Coletou primeira amostra de escarro?

Yes No

Data e hora da coleta de escarro:

(Ex: 11-08-2017 14:15)

Realizou RaioX?

Yes No

Data e hora do RaioX

CRF 1 - Questionnaire

Strategies for tuberculosis control in prisons

Page 1

Record ID

Study code: ISI

Any sample that is stored in a biorepository will be identified as follows:

ISI.record_id.codigo_do_type_de_sample.aliquot

Consent signature date and time

Date and time of data collection:

(Ex: 17-06-2017 08:45)

What is your full name?

(All in capital letters, do not put an accent.
Ex: JOAO SILVA CARVALHO)

What is your date of birth?

(Ex: May 24, 1987)

Age:

What is your weight?

(Ex: 70, 80, 95)

What's your height?

(Put in cm. Ex: 168, 176, 184)

Presidency of data collection:

PED EPJFC IPCG
CT
(Penal establishment)

If PED, which block are you in?

Radius 1
Radius 2A
Radius 2B
Radius 3A
Radius 3B
Radius 4
Linear 1A
Linear 2A
Linear 3A
Linear 4A
Linear A - CD
Linear 1B
Linear 2B
Linear 3B
Linear 4B
CD
ADM

If EPJFC, which block are you on?

P1
P1 (Disciplinary)
P2
P2 (Disciplinary)
P3
P4
P6 (RDD)

If IPCG, which block are you in?

1A - Solarium 1A
1A - Solarium 2A
1A - Solarium 3A
1B - Solarium 1B
1B - Solarium 2B
1B - Solarium 3B
2A - Solarium 1A
2A - Solarium 2A
2A - Solarium 3A
2B - Solarium 1B
2B - Solarium 2B
2B - Solarium 3B
2B - Solarium G
2B - CD

If CT, which block are you in?

P1
Disciplinary P1
P2

What is your cell number?

(Ex: 2, 23, 47)

Have you been in the same cell for more than 2 weeks?

Yes No

If not, what is your pavilion, block and previous cell?

Date of arrest

Have you ever been arrested before?

Yes No

Page 3

If so, how many times have you been arrested, including this time?

What is your race?

white black brown
Yellow indigenous

Up to which grade did you study?

No schooling
1-4 grade of elementary school incomplete
1-4 grade of elementary school complete
5-8 grade of elementary school incomplete
5-8 grade of complete elementary school
Incomplete high school
Complete high school
Incomplete higher education
Complete higher education

You smoke?

Yes No

How many cigarettes do you smoke per day?

(Ex: 1, 2, 10)

Have you ever smoked?

Yes No

How often do you drink alcohol?

Never drank
I don't drink anymore
Once a month or less
Two to four times a month
Two to three times a week

Four or more times a week

Have you used marijuana in the last year?	Yes	No
Have you used cocaine in the last year?	Yes	No
Did you use crack in the last year?	Yes	No
Have you used heroin in the last year?	Yes	No
Did you smell glue and / or other solvents in the last year?	Yes	No
Have you used base paste in the last year?	Yes	No
Have you used hashish in the last year?	Yes	No
Have you used injecting drugs in the last year?	Yes	No
Have you ever had tuberculosis?	Yes	No
Are you under treatment for tuberculosis?	Yes	No
Do you know or have you ever met someone with tuberculosis?	Yes	No

Page 4

If so, how is or was the contact with that person?	I had no contact Less than 1 time / week 1-2 times / week More than 2 times / week Every day	
Do you have the BCG vaccine mark on your right arm? May I see?	Yes	No (View the brand.)
Do people in your cell have a cough, fever, or losing weight?	Yes	No
Are you coughing?	Yes	No
If so, how many weeks ago?	<hr/> (Ex: 1, 2, 3, 4)	
Do you have sputum?	Yes	No

If so, how many weeks?

(Ex: 1, 2, 3)

If so, does your sputum have blood?

Yes No

Do you have a fever?

Yes No

If so, how many weeks ago?

(Ex: 1, 2, 3, 4)

Do you have loss of appetite?

Yes No

If so, for how many weeks?

Are you losing weight?

Yes No

If so, how many kilos?

(Ex, 1, 2, 3)

Do you have night sweats?

Yes No

If so, for how many weeks?

Are you having chest pain?

Yes No

If so, for how many weeks?

Are you having trouble breathing?

Yes No

Page 5

If so, for how many weeks?

Did you collect the first sputum sample?

Yes No

Sputum collection date and time:

(Ex: 11-08-2017 14:15)

Did you perform X-ray?

Yes No

X-ray date and time