

# *Overview of recent research papers in childhood tuberculosis*

Child and Adolescent Tuberculosis Working Group  
14<sup>th</sup> November 2023

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Associate Professor, Stellenbosch University



**Child & Adolescent  
TB Working Group**



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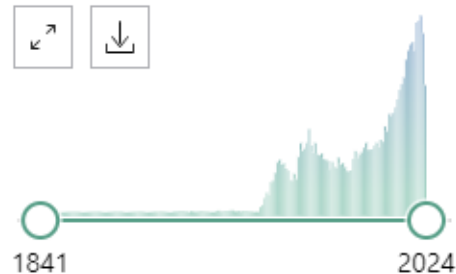
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RESULTS BY YEAR



1

Analysis of Drug-Resistant **Tuberculosis** in **Children** in Shenyang, China, 2017-2021.

Cite

Sun J, Fan L, Zhao Y, Wu H, Li R, Tian Y, Cheng M, Ma X, Ma Y, Yang X, Shen A, Yu Y, Chen Y.

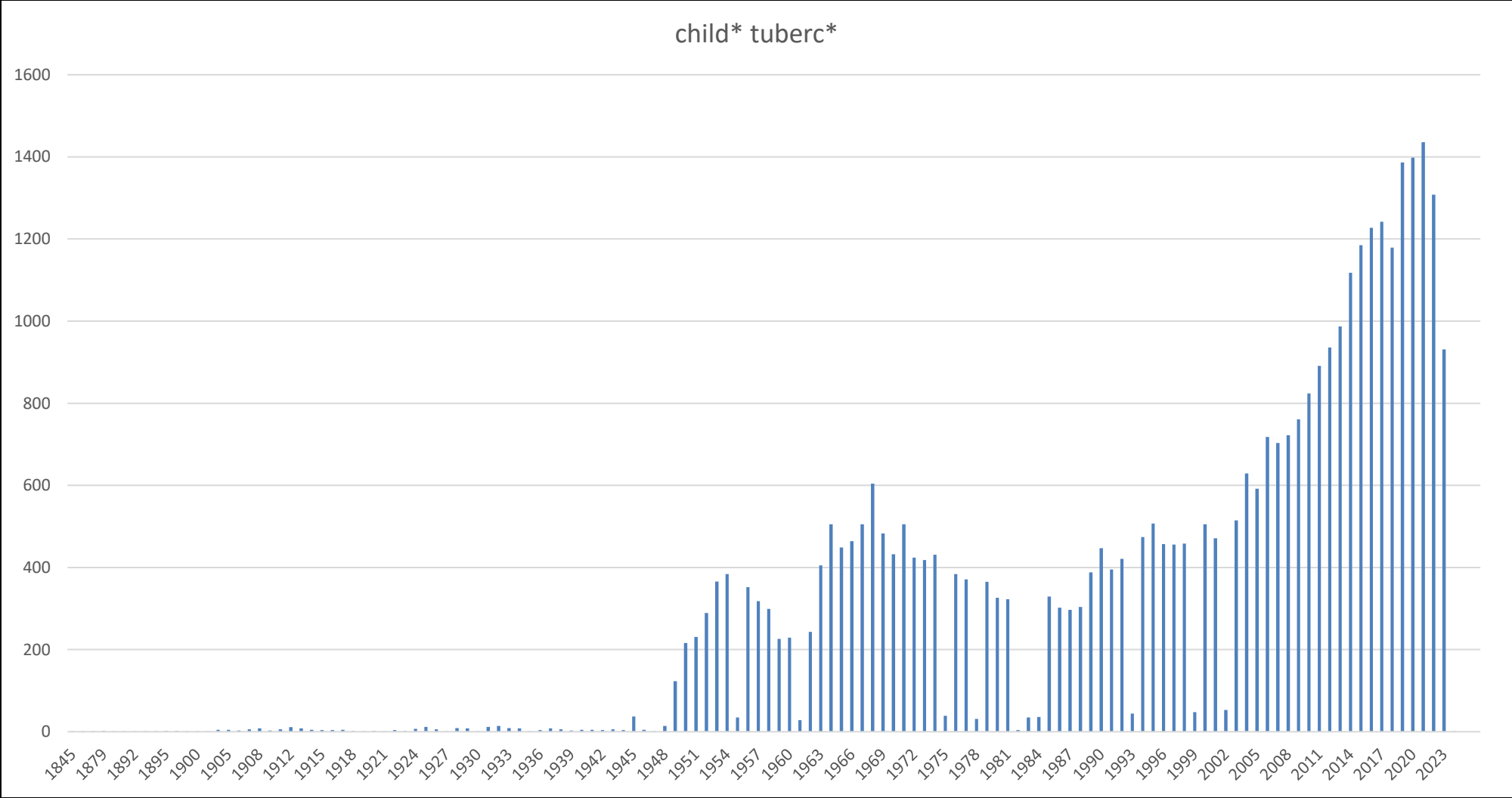
Infect Drug Resist. 2023 Nov 1;16:6983-6998. doi: 10.2147/IDR.S428720. eCollection 2023.

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OBJECTIVE: Drug-resistant **tuberculosis** (DR-TB) in **children** seriously threatens TB control. Information on the epidemiology and characteristics of DR-TB in **children** in China is limited. ...Among 376 patients who were positive for both methods, using the MGIT 9 ...

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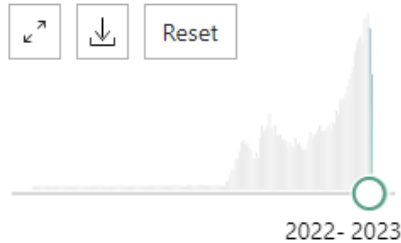
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RESULTS BY YEAR

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1 Analysis of Drug-Resistant **Tuberculosis** in **Children** in Shenyang, China, 2017-2021.

Cite Sun J, Fan L, Zhao Y, Wu H, Li R, Tian Y, Cheng M, Ma X, Ma Y, Yang X, Shen A, Yu Y, Chen Y. Infect Drug Resist. 2023 Nov 1;16:6983-6998. doi: 10.2147/IDR.S428720. eCollection 2023.

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TEXT AVAILABILITY

Abstract

# My biases

- 1095 studies identified on PubMed
- On review of title selected 145 that I thought looked interesting
- No narrative reviews or case reports
- Only given 15 minutes this year!!
- Review of abstracts brought down to 22
- PLEASE forgive me if I have not included your paper!!!
- PLEASE forgive me if I do a terrible job of summarising your work in <1 minute!



"A WORLD WITHOUT BIAS  
IS TOO HARD. WOULD YOU  
SETTLE FOR WORLD PEACE?"

# *Standards and Models of Care*

INT J TUBERC LUNG DIS 27(8):584–598  
© 2023 The Union  
<http://dx.doi.org/10.5588/ijtld.23.0085>

**CLINICAL STANDARDS FOR LUNG HEALTH**

## Clinical standards for drug-susceptible TB in children and adolescents

### **Tuberculosis care models for children and adolescents: a scoping review**

Courtney M Yuen,<sup>a</sup> Daria Szkwarko,<sup>b</sup> Melanie M Dubois,<sup>c</sup> Shumail Shahbaz,<sup>d</sup> Katharine A Yuengling,<sup>e</sup> Michael E Urbanowski,<sup>f</sup> Paul A Bain,<sup>g</sup> Annemieke Brands,<sup>h</sup> Tiziana Masini,<sup>h</sup> Sabine Verkuijl,<sup>h</sup> Kerri Viney,<sup>h</sup> Yael Hirsch-Moverman<sup>e</sup> & Hamidah Hussain<sup>i</sup>

# *Diagnostics*



# Two Clinical Prediction Tools to Inform Rapid Tuberculosis Treatment Decision-making in Children

Meredith B. Brooks,<sup>1,2</sup> Hamidah Hussain,<sup>3</sup> Sara Siddiqui,<sup>2,4</sup> Junaid F. Ahmed,<sup>4</sup> Maria Jaswal,<sup>3</sup> Farhana Amanullah,<sup>4</sup> Mercedes Becerra,<sup>2,\*</sup> and Aryn A. Malik<sup>3,5,\*</sup>



## Development of treatment-decision algorithms for children evaluated for pulmonary tuberculosis: an individual participant data meta-analysis



Kenneth S Gunasekera, Olivier Marcy, Johanna Muñoz, Elisa Lopez-Varela, Moorine P Sekadde, Molly F Franke, Maryline Bonnet, Shakil Ahmed, Farhana Amanullah, Aliya Anwar, Orvalho Augusto, Rafaela Baroni Aurilio, Sayera Banu, Iraj Batool, Annemieke Brands, Kevin P Cain, Lucía Carratalá-Castro, Maxine Caws, Eleanor S Click, Lisa M Cranmer, Alberto L García-Basteiro, Anneke C Hesseling, Julie Huynh, Senjuti Kabir, Leonid Lecca, Anna Mandalakas, Farai Mavhunga, Aye Aye Myint, Kyaw Myo, Dorah Nampijja, Mark P Nicol, Patrick Orikiriza, Megan Palmer, Clemax Couto Sant'Anna, Sara Ahmed Siddiqui, Jonathan P Smith, Rinn Song, Nguyen Thuy Thuong Thuong, Vibol Ung, Marieke M van der Zalm, Sabine Verkuyl, Kerri Viney, Elisabetta G Walters, Joshua L Warren, Heather J Zar, Ben J Marais, Stephen M Graham, Thomas P A Debray, Ted Cohen, James A Seddon

## Oral Swab Specimens Tested With Xpert MTB/RIF Ultra Assay for Diagnosis of Pulmonary Tuberculosis in Children: A Diagnostic Accuracy Study

Helen Cox,<sup>1,2</sup> Lesley Workman,<sup>3</sup> Lindy Bateman,<sup>3</sup> Zoe Franckling-Smith,<sup>3</sup> Margaretha Prins,<sup>3</sup> Juaneta Luiz,<sup>3</sup> Judi Van Heerden,<sup>1</sup> Lemese Ah Tow Edries,<sup>1</sup> Samantha Africa,<sup>1</sup> Veronica Allen,<sup>1</sup> Cynthia Baard,<sup>3</sup> Widaad Zemanay,<sup>1</sup> Mark P. Nicol,<sup>1,4,a</sup> and Heather J. Zar<sup>3,a</sup>

## TRANSLATIONAL MEDICINE REPORTS

OPEN

## Monocyte, Lymphocyte and Neutrophil Ratios – Easy-to-Use Biomarkers for the Diagnosis of Pediatric Tuberculosis

Mirjam Kissling, BM,\* Nora Fritschi<sup>Ⓞ</sup>, MD,\*† Philipp Baumann, MD,‡§ Michael Buettcher, MD,¶||  
Jan Bonhoeffer, MD,† Vivek Naranbhai, MBChB, PhD, Dphil,\*\*††‡‡ and Nicole Ritz, MD, PhD,\*†¶§§  
for the ProPAED and CITRUS study team

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## Effect of systematic tuberculosis detection on mortality in young children with severe pneumonia in countries with high incidence of tuberculosis: a stepped-wedge cluster-randomised trial



*Olivier Marcy, Eric Wobudeya, H el ene Font, Aur elia Vessi ere, Chishala Chabala, Celso Khosa, Jean-Voisin Taguebue, Raoul Moh, Juliet Mwanga-Amumpaire, Manon Lounnas, Veronica Mulenga, Sandra Mavale, Josina Chilundo, Dalila Rego, Bwendo Nduna, Perfect Shankalala, Uzima Chirwa, Agathe De Lauzanne, Bunnet Dim, Emeline Tiogouo Ngouana, Madeleine Folquet Amorrissani, Lassina Cisse, Flore Amon Tanoh Dick, Eric A Komana, Sylvie Kwedi Nolna, Gerald Businge, Naome Natukunda, Saniata Cumbe, Prossy Mbekeka, Ang Kim, Chanrithea Kheang, Sokha Pol, Elizabeth Maleche-Obimbo, James A Seddon, Tan Eang Mao, Stephen M Graham, Christophe Delacourt, Laurence Borand, Maryline Bonnet, for the TB-Speed Pneumonia Study Group\**

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## Diagnostic accuracy of a three-gene *Mycobacterium tuberculosis* host response cartridge using fingerstick blood for childhood tuberculosis: a multicentre prospective study in low-income and middle-income countries








*Laura Olbrich\*, Valsan P Verghese\*, Zoe Franckling-Smith, Issa Sabi, Nyanda E Ntinginya, Alfred Mfinanga, Denise Banze, Sofia Viegas, Celso Khosa, Robina Semphere, Marriott Nliwasa, Timothy D McHugh, Leyla Larsson, Alia Razid, Rinn Song, Elizabeth L Corbett, Pamela Nabeta, Andre Trollip, Stephen M Graham, Michael Hoelscher, Christof Geldmacher, Heather J Zar, Joy Sarojini Michael\*, Norbert Heinrich\*, on behalf of the RaPaed-TB consortium†*



RESEARCH ARTICLE

# Optimising computer aided detection to identify intra-thoracic tuberculosis on chest x-ray in South African children

Megan Palmer <sup>1\*</sup>, James A. Seddon<sup>1,2</sup>, Marieke M. van der Zalm <sup>1</sup>, Anneke C. Hesselink<sup>1</sup>, Pierre Goussard<sup>3</sup>, H. Simon Schaaf<sup>1</sup>, Julie Morrison<sup>3</sup>, Bram van Ginneken <sup>4</sup>, Jaime Melendez<sup>4,5</sup>, Elisabetta Walters <sup>1,6</sup>, Keelin Murphy <sup>4</sup>

# Number Needed to Screen for Tuberculosis Disease Among Children: A Systematic Review

Katherine O. Robsky, PhD, MPH,<sup>a</sup> Lelia H. Chaisson, PhD,<sup>b</sup> Fahd Naufal, MD,<sup>c</sup> Pamela Delgado-Barroso, MD, MPH,<sup>g</sup> Hector S. Alvarez-Manzo, MD, MSc,<sup>d</sup> Jonathan E. Golub, PhD, MPH,<sup>a,c,e</sup> Adrienne E. Shapiro, MD, PhD,<sup>h</sup> Nicole Salazar-Austin, MD, ScM,<sup>f</sup>

*Post-TB*

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## Post-tuberculosis sequelae in children and adolescents: a systematic review

Vanessa Igbokwe, Lisa C Ruby, Ayten Sultanli, Sabine B elard

### Reduced lung function and health-related quality of life after treatment for pulmonary tuberculosis in Gambian children: a cross-sectional comparative study


Esin Nkereuwem ,<sup>1,2</sup> Schadrac Agbla,<sup>3,4</sup> Azeezat Sallahdeen,<sup>1</sup> Olumuyiwa Owolabi,<sup>1</sup>  
Abdou K Sillah,<sup>1</sup> Monica Genekah,<sup>1</sup> Abdoulie Tunkara,<sup>1</sup> Sheriff Kandeh,<sup>1</sup>  
Maryama Jawara,<sup>1</sup> Lamin Saidy,<sup>5</sup> Andrew Bush ,<sup>6,7</sup> Toyin Togun ,<sup>1,2,8</sup>  
Beate Kampmann ,<sup>1,2,9</sup>

 Check for updates

## ORIGINAL ARTICLE

### The Long-Term Impact of Early-Life Tuberculosis Disease on Child Health

A Prospective Birth Cohort Study

 Leonardo Martinez<sup>1</sup>, Diane M. Gray<sup>2,3</sup>, Maresa Botha<sup>2,3</sup>, Michael Nel<sup>2,3</sup>, Shaakira Chaya<sup>2,3</sup>, Carvern Jacobs<sup>2,3</sup>,  
Lesley Workman<sup>2,3</sup>, Mark P. Nicol<sup>3,4,5</sup>, and Heather J. Zar<sup>2,3</sup>



# *Pharmacokinetics*

**MAJOR ARTICLE**

**Twice-daily dosing of dolutegravir in infants on rifampicin treatment: a pharmacokinetic substudy of the EMPIRICAL trial**

Tom G. Jacobs<sup>1\*</sup>, Vivian Mumbiro<sup>2\*</sup>, Uneisse Cassia<sup>3</sup>, Kevin Zimba<sup>4</sup>, Damalie Nalwanga<sup>5</sup>, Alvaro Ballesteros<sup>6</sup>, Sara Domínguez-Rodríguez<sup>6</sup>, Alfredo Tagarro<sup>6,7,8</sup>, Lola Madrid<sup>6,9</sup>, Constantine Mutata<sup>2</sup>, Moses Chitsamatanga<sup>2</sup>, Mutsa Bwakura-Dangarembizi<sup>2</sup>, Alfeu Passanduca<sup>3</sup>, W. Chris Buck<sup>3,10</sup>, Bwendo Nduna<sup>11</sup>, Chishala Chabala<sup>4,12,13</sup>, Elizabeth Najjingo<sup>14</sup>, Victor Musiime<sup>5, 15</sup>, Cinta Moraleta<sup>6,16</sup>, Angela Colbers<sup>1</sup>, Hilda A. Mujuru<sup>2#</sup>, Pablo Rojo<sup>6,16,17#</sup>, David M. Burger<sup>1#</sup>, on behalf of the EMPIRICAL clinical trial group

**Rifampin urinary excretion to predict serum targets in children with tuberculosis: a prospective diagnostic accuracy study**

Tania A Thomas,<sup>1</sup> Saning' o Lukumay,<sup>2</sup> Sijia Yu,<sup>3</sup> Prakruti Rao,<sup>1</sup> Anna Siemiątkowska ,<sup>3,4</sup> Leonid Kagan,<sup>3</sup> Domitila Augustino,<sup>2</sup> Paulo Mejan,<sup>2</sup> Restituta Moshia,<sup>2</sup> Deborah Handler,<sup>5</sup> Kristen Petros de Guex,<sup>1</sup> Blandina Mmbaga,<sup>6</sup> Herman Pfaeffle,<sup>7</sup> Robert Reiss,<sup>5</sup> Charles A Peloquin,<sup>8</sup> Christopher Vinnard,<sup>5</sup> Estomih Mduma,<sup>2</sup> Yingda L Xie,<sup>5</sup> Scott K Heysell <sup>1</sup>



*Pregnancy*

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# Effect of pregnancy versus postpartum maternal isoniazid preventive therapy on infant growth in HIV-exposed uninfected infants: a post-hoc analysis of the TB APPRISE trial




Ashenafi S. Cherkos,<sup>a,\*</sup> Sylvia M. LaCourse,<sup>b,c,d</sup> Daniel A. Enquobahrie,<sup>b</sup> Barbra A. Richardson,<sup>d,e</sup> Sarah Bradford,<sup>f</sup> Grace Montepiedra,<sup>g,h</sup> Blandina T. Mmbaga,<sup>i</sup> Tapiwa Mbengeranwa,<sup>j</sup> Gaerolwe Masheto,<sup>k</sup> Patrick Jean-Phillippe,<sup>l</sup> Nahida Chakhtoura,<sup>m</sup> Gerhard Theron,<sup>n</sup> Adriana Weinberg,<sup>o</sup> Haseena Cassim,<sup>p</sup> Mpho S. Raesi,<sup>k</sup> Elsie Jean,<sup>q</sup> Deo Wabwire,<sup>r</sup> Teacler Nematadzira,<sup>s</sup> Lynda Stranix-Chibanda,<sup>t</sup> Anneke C. Hesselink,<sup>u</sup> Linda Aurrpibul,<sup>v</sup> Amita Gupta,<sup>w,y</sup> and Grace John-Stewart,<sup>b,c,d,x,y</sup> for the IMPAACT P1078 TB APPRISE Study Team



*Treatment*

# Treatment outcomes and risk factors of death in childhood tuberculous meningitis in Kandahar, Afghanistan: a prospective observational cohort study

Bilal Ahmad Rahimi <sup>a,\*</sup>, Najeebullah Niazi<sup>b</sup>, Ahmad Farshad Rahimi<sup>c</sup>, Muhammad Ishaque Faizee<sup>d</sup>,  
Mohammad Sidiq Khan<sup>e</sup>, and Walter R. Taylor<sup>f,g</sup>




*Tropical Medicine and  
Infectious Disease*



*Article*

## Drug-Resistant Tuberculosis Treatment Outcomes among Children and Adolescents in Karachi, Pakistan

Aamir J. Khan<sup>1,4,5</sup>, Salman Khan<sup>6</sup>, Hamidah Hussain<sup>1</sup>  and Farhana Amanullah<sup>3</sup>

*Mortality*

# Mortality and Cause of Death in Children With Presumptive Disseminated Tuberculosis

Maryline Bonnet, MD, PhD,<sup>a,b</sup> Anne-Christine Nordholm, MD,<sup>a,c</sup> Bob Ssekyanzi, MD,<sup>b</sup> Onesmus Byamukama, MD,<sup>b,d</sup>  
Patrick Orikiriza, MSc, PhD,<sup>b,f</sup> Tobias Tusabe, MMED,<sup>e</sup> Dan Nyehangane, MSc,<sup>b</sup> Ivan Mugisha Taremwa, MSc,<sup>b</sup>  
Esther Turyashemererwa, BSc,<sup>b</sup> Eric Wobudeya, MD, MSc,<sup>g,h</sup> Juliet Mwanga-Amumpaire, MEED,<sup>b,d</sup>  
Ben J Marais, MBChB, MMed, PhD,<sup>i</sup> Dorah Nampijja, MEED<sup>b,d</sup>

# *ACF and TPT*

# Systematic review with network meta-analysis on the treatments for latent tuberculosis infection in children and adolescents

Josiane M. Santos<sup>a</sup>, Mariana M. Fachi<sup>a</sup>, Francisco Beraldi-Magalhães<sup>b</sup>, Beatriz Böger<sup>a</sup>, Allan M. Junker<sup>a</sup>, Eric L. Domingos<sup>a</sup>, Priscila Imazu<sup>a</sup>, Fernando Fernandez-Llimos<sup>c</sup>, Fernanda S. Tonin<sup>a,d,\*</sup>, Roberto Pontarolo<sup>e</sup>

## PLOS MEDICINE

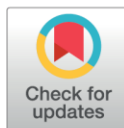
RESEARCH ARTICLE

### Cost-effectiveness analysis of interventions to improve diagnosis and preventive therapy for paediatric tuberculosis in 9 sub-Saharan African countries: A modelling study

Nyashadzaishé Mafirakureva<sup>1</sup>, Sushant Mukherjee<sup>2</sup>, Mikhael de Souza<sup>2</sup>, Cassandra Kelly-Cirino<sup>2</sup>, Mario J. P. Songane<sup>2</sup>, Jennifer Cohn<sup>3</sup>, Jean-François Lemaire<sup>2</sup>, Martina Casenghi<sup>2</sup>, Peter J. Dodd<sup>1\*</sup>

**1** Sheffield Centre for Health and Related Research, University of Sheffield, Sheffield, United Kingdom,  
**2** Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), Washington, DC, United States of America,  
**3** Division of Infectious Diseases, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania, United States of America



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*Vaccines*

# Non-restrictive open vial policy combined with the home visit vaccinations for improving BCG coverage in a high-incidence outreach region: A model-based cost-effectiveness analysis for Indonesia

Afifah Machlaurin<sup>1,2</sup> ,  
Jos Luttjeboer<sup>3</sup> ,  
Didik Setiawan<sup>4</sup> ,  
Tjipke Sytse van der Werf<sup>5†</sup> ,  
Maarten J. Postma<sup>1,3,6,7,8†</sup> 

# Conclusions

- Number of publications increasing, many of high quality
- Lots of papers on ultrasound, stool, post-TB
- Lots of papers coming from big projects – TB-Speed, CAP-TB, Benefit-Kids, RaPaed etc.
- But also lots of other studies
- Good geographical variation

