APPENDIX

Section Ia

Supplementary Methods

Retrospective cohort study

Study design and population

Our retrospective cohort consisted of adult patients (age > 18 years) with drug-susceptible pulmonary TB, treated according to the American Thoracic Society guidelines[399], enrolled at the National Taiwan University Hospital (NTUH) in Taipei from 2000 to 2016[400]. All patients were culture positive at baseline by either MGIT-960 and Lowenstein–Jensen medium. There were no exclusion criteria. The institutional review boards at Johns Hopkins University and NTUH approved the study.

Baseline characteristics on age, sex, body mass index (BMI), smoking status, alcohol abuse, comorbidities, HIV co-infection, baseline sputum smear acid-fast bacilli (AFB) positivity, presence of cavity on chest radiography and history of prior treatment for TB were collected from the NTUH database at the time of TB diagnosis. The Charlson Comorbidity Index (CCI) was calculated from the parameters obtained from the database[401].

Systematic Review

Search strategy and study selection

The systematic review was conducted according to the PRISMA guidelines[402]. The literature searches were performed in PubMed, Embase, and Web of Science on August 15, 2020, using the search strategy detailed in the supplementary document (Section I), to capture eligible reports published in the last ten years. We included both research articles and letters in the English language. Only articles published in peer-reviewed academic journals were included; conference abstracts were not included.

Studies were required to report sex-disaggregated data on at least one of the following outcomes on adult tuberculosis patients treated with multidrug anti-TB therapy (ATT): all-cause mortality, mortality due to TB, sputum AFB smear or culture positivity during or at the end of TB treatment, or 'treatment success' according to the WHO definitions for reporting TB outcomes[403]. *Treatment success* is a ratio of *favorable outcome* comprising 'cure' or 'treatment completion' to *unfavorable outcome* comprising 'failure,' 'death,' 'default' or 'loss to follow up'[403]. We included prospective and retrospective cohort studies and case-control studies. We excluded case reports, case series, and cross-sectional studies. Efforts were made to avoid overlap of patients across studies by collecting information on the name of the hospital, study period, and the names of the investigators. We utilized the COVIDENCE platform for the systematic review[404]. After removing the duplicates, the titles and abstracts of the retrieved articles were screened by at least two authors (VC, NT, AK, or PN) independently and the disagreements were resolved by VC. At least two authors (VC, NT, AK, or MM) independently performed the full-text screening, and the conflicts were resolved by VC.

Data extraction and quality assessment

At least two authors extracted data from the articles (VC, NT, MM, RK, SA, EW, EA, SW, or AZ) in the Qualtrics platform[405], and discrepancies were resolved by VC. We used the data extraction form developed using the Qualtrics platform[405]. Data on the country of study, funding source, patient comorbidities, site of TB involvement, pattern of resistance to ATT, HIV-TB co-infection, duration of treatment, and time points for outcomes. Data on treatment outcomes were extracted either as raw data or as pre-calculated effect sizes, namely odds ratio (OR), relative risk (RR), or hazard ratio (HR), along with 95% confidence interval (CI), as reported in the studies. RR for mortality in males compared to females was reported only in 7 studies and were therefore converted to OR to facilitate pooling of the effect sizes[406]. We performed quality assessment using the New-Castle Ottawa scale for observational studies (NOS)[407].

Data analysis

For each of the outcomes, we performed a meta-analysis of the OR using the random-effects model. We pooled HR separately for each of the outcomes. We pooled the estimates for the effect sizes if they were adjusted for similar variables in the individual studies after documenting the variables adjusted for in the studies. We considered a two-sided probability of < 0.05 as significant. We performed the analysis of heterogeneity using the I^2 statistics. When the I^2 was $> 60\%$, we performed subgroup analyses and meta-regression with respect to the TB-HIV co-infection status, resistance to ATT, and extra-pulmonary involvement. We also performed subgroup analysis based on

characteristics of the study country such as income status classification according to World Bank[408], incidence of TB infection and incidence of TB-HIV co-infection[409]. We also performed meta-regression using data such as time point (in years) of assessment of mortality in each study, mean age, and the proportion of HIV and other comorbidities (diabetes, hypertension, cardiovascular diseases, chronic obstructive pulmonary disease (COPD), smoking, and alcohol use) in the study population. We assessed the impact of the difference in the log-odds of treatment completion, default, and lost to follow up between males and females using meta-regression. We performed sensitivity analyses by excluding studies that looked at mortality in patients in the intensive care unit. Publication bias was assessed by funnel plot, and Egger's test. We performed the analysis using STATA 16-1C. The study protocol is registered with PROSPERO (CRD42020219050).

Role of the funding source
The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

Section Ib

Search Strategy

(Studies restricted to the last 10 years)

PubMed

(("Tuberculosis"[Mesh] OR "Mycobacterium tuberculosis"[Mesh] OR "tuberculosis"[tiab] OR "TB"[tiab] OR "tuberculous"[tiab] OR "Tuberculosis, Multidrug-Resistant"[Mesh] OR "multi drug resistant tuberculosis"[tiab] OR "MDR TB"[tiab] OR "Extensively Drug-Resistant Tuberculosis"[Mesh] OR "extensively drug resistant tuberculosis"[tiab] OR "XDR TB"[tiab] OR "latent tuberculosis infection"[tiab] OR "LTBI"[tiab] OR "tuberculoses"[tiab]) AND ("Sex Characteristics"[Mesh] OR "Sex Factors"[Mesh] OR "Male"[Mesh] OR "Female"[Mesh] OR "Male"[tiab] OR "Female"[tiab] OR "males"[tiab] OR "females" OR "Sex"[tiab] OR "sexes"[tiab] OR "gender"[tiab] OR "genders"[tiab]) AND ("Disease-Free Survival"[Mesh] OR "Treatment Failure"[Mesh] OR "Fatal Outcome"[Mesh] OR "Survival Rate"[Mesh] OR "Mortality"[Mesh] OR "Recurrence"[Mesh] OR "relapse"[tiab] OR "relapsed"[tiab] OR "relapsing"[tiab] OR "survival"[tiab] OR "survived"[tiab] OR "death"[tiab] OR "deaths"[tiab] OR "mortality"[tiab] OR "Recurrence"[tiab] OR "recurrences"[tiab] OR (("Sputum"[Mesh] OR "sputum"[tiab] OR "sputums"[tiab]) AND (months*[tiab])) AND ("Clinical Study"[Publication Type:NoExp] OR "Clinical Trial"[Publication Type] OR "Observational Study"[Publication Type] OR "Controlled Clinical Trial"[Publication Type] OR "Retraction of Publication"[Publication Type] OR "Systematic Review"[Publication Type] OR "Epidemiologic Studies"[Mesh] OR "systematic review"[tiab] OR "meta-analysis"[tiab] OR "meta analysis"[tiab] OR "metaanalysis"[tiab] OR "systematic overview"[tiab] OR "scoping review"[tiab] OR "integrative review"[tiab] OR "quantitative review"[tiab] OR "quantitative overview"[tiab] OR "cohort"[tiab] OR "case control"[tiab] OR "case controlled"[tiab] OR "controlled trial"[tiab] OR "controlled trials"[tiab] OR "clinical trial"[tiab] OR "clinical trials"[tiab] OR "random"[tiab] OR "randomly"[tiab] OR "randomized"[tiab] OR "randomised"[tiab] OR "single blind"[tiab] OR "double blind"[tiab] OR "single blinding"[tiab] OR "double blinding"[tiab] OR "single blinded"[tiab] OR "double blinded"[tiab] OR (("retrospective"[tiab] OR "retrospectively"[tiab] OR "prospective"[tiab] OR "observational"[tiab] OR "longitudinal"[tiab] OR "longitudinally"[tiab] OR "follow up"[tiab]) AND ("study"[tiab] OR "studies"[tiab])) OR "clinical study"[tiab] OR "clinical studies"[tiab] OR "validation study"[tiab] OR ("study"[tiab] AND "participants"[tiab]))) NOT ("animals"[mh] NOT ("animals"[mh] AND "humans"[mh]))

Embase

('tuberculosis'/exp OR 'Mycobacterium tuberculosis'/exp OR 'tuberculosis':ti,ab OR 'TB':ti,ab OR 'tuberculous':ti,ab OR 'drug resistant tuberculosis'/exp OR 'extensively drug resistant tuberculosis'/exp OR 'multidrug resistant tuberculosis'/exp OR 'multi drug resistant tuberculosis':ti,ab OR 'MDR TB':ti,ab OR 'extensively drug resistant tuberculosis':ti,ab OR 'XDR TB':ti,ab OR 'latent tuberculosis infection':ti,ab OR 'LTBI':ti,ab OR 'tuberculoses':ti,ab) AND ('sex difference'/exp OR 'sexual characteristics'/exp OR 'sex factor'/exp OR 'male'/exp OR 'female'/exp OR 'Male':ti,ab OR 'Female':ti,ab OR 'males':ti,ab OR 'females':ti,ab OR 'Sex':ti,ab OR 'sexes':ti,ab OR 'gender':ti,ab OR 'genders':ti,ab) AND ('disease free survival'/exp OR 'treatment failure'/exp OR 'fatality'/exp OR 'mortality rate'/exp OR 'survival rate'/exp OR 'mortality'/exp OR 'recurrent disease'/exp OR 'relapse':ti,ab OR 'relapsed':ti,ab OR 'relapsing':ti,ab OR 'survival':ti,ab OR 'survived':ti,ab OR 'death':ti,ab OR 'deaths':ti,ab OR 'mortality':ti,ab OR

‘Recurrence’:ti,ab OR ‘recurrences’:ti,ab OR (('sputum'/exp OR ‘sputum’:ti,ab OR ‘sputums’:ti,ab) AND (‘months*’:ti,ab))) AND ('clinical study'/de OR 'case control study'/exp OR 'prospective study'/exp OR 'retrospective study'/exp OR 'major clinical study'/exp OR 'cross-sectional study'/exp OR 'cohort analysis'/exp OR 'clinical trial'/exp OR 'observational study'/exp OR 'controlled clinical trial'/exp OR 'retraction notice'/exp OR 'systematic review'/exp OR ‘systematic review’:ti,ab OR ‘meta-analysis’:ti,ab OR ‘meta analysis’:ti,ab OR ‘metaanalysis’:ti,ab OR ‘systematic overview’:ti,ab OR ‘scoping review’:ti,ab OR ‘integrative review’:ti,ab OR ‘quantitative review’:ti,ab OR ‘quantitative overview’:ti,ab OR ‘cohort’:ti,ab OR ‘case control’:ti,ab OR ‘case controlled’:ti,ab OR ‘controlled trial’:ti,ab OR ‘controlled trials’:ti,ab OR ‘clinical trial’:ti,ab OR ‘clinical trials’:ti,ab OR ‘random’:ti,ab OR ‘randomly’:ti,ab OR ‘randomized’:ti,ab OR ‘randomised’:ti,ab OR ‘single blind’:ti,ab OR ‘double blind’:ti,ab OR ‘single blinding’:ti,ab OR ‘double blinding’:ti,ab OR ‘single blinded’:ti,ab OR ‘double blinded’:ti,ab OR ((‘retrospective’:ti,ab OR ‘retrospectively’:ti,ab OR ‘prospective’:ti,ab OR ‘observational’:ti,ab OR ‘longitudinal’:ti,ab OR ‘longitudinally’:ti,ab OR ‘follow up’:ti,ab) AND (‘study’:ti,ab OR ‘studies’:ti,ab)) OR ‘clinical study’:ti,ab OR ‘clinical studies’:ti,ab OR ‘validation study’:ti,ab OR (‘study’:ti,ab AND ‘participants’:ti,ab)) NOT ('animal'/exp NOT ('animal'/exp AND 'human'/exp))

Web of Science

TS=("tuberculosis" OR "TB" OR "tuberculous" OR "multi drug resistant tuberculosis" OR "MDR TB" OR "extensively drug resistant tuberculosis" OR "XDR TB" OR "latent tuberculosis infection" OR "LTBI" OR “tuberculoses”) AND TS=("Male" OR "Female" OR "males" OR "females" OR "Sex" OR "sexes" OR "gender" OR "genders") AND TS=(“Treatment Failure” OR "Fatal Outcome” OR "relapse" OR "relapsed" OR "relapsing" OR “survival" OR "survived" OR "death" OR "deaths" OR "mortality" OR "Recurrence" OR "recurrences" OR (("sputum" OR "sputums") AND (month*))) AND TS=((retract* NEAR/3 publication*) OR "epidemiologic studies" OR “epidemiologic study” OR "epidemiological studies" OR “epidemiological study” OR "systematic review" OR "meta-analysis" OR "meta analysis" OR "metaanalysis" OR "systematic overview" OR "scoping review" OR "integrative review" OR "quantitative review" OR "quantitative overview" OR "cohort" OR "case control" OR "case controlled" OR "controlled trial" OR "controlled trials" OR "clinical trial" OR "clinical trials" OR "random" OR "randomly" OR "randomized" OR "randomised" OR "single blind" OR "double blind" OR "single blinding" OR "double blinding" OR "single blinded" OR "double blinded" OR (("retrospective" OR "retrospectively" OR "prospective" OR "observational" OR "longitudinal" OR "longitudinally" OR "follow up") AND ("study" OR "studies")) OR "clinical study" OR "clinical studies" OR "validation study" OR ("study" AND "participants"))

Section II

Supplementary Results

Cohort study

Baseline patient characteristics

In our cohort of 2894 patients with culture-confirmed, drug-susceptible pulmonary TB, 1975 (68.2%) were males, and 919 (31.8%) were females (Table 1). Males had a higher median age than females (68.9 years vs 58.2 years, p <0.001), higher median BMI (21.4 vs 21.0 kg/m2, p=0.049). A greater proportion of males had comorbidities (Diabetes mellitus, hypertension, cardiovascular diseases, COPD, cancer, liver cirrhosis) and HIV co-infection as shown in Table 1. Median Charlson comorbidity index was higher in males (4 vs 3, p <0.001) compared to females. Males had higher proportions of smoking history (884 (56.1%) vs 46(6.4%), p-value <0.001) and alcohol abuse (79 (4.0%) vs 2(0.2%), p-value <0.001) compared to females. Males had a greater proportion of cavitary disease (15.7% vs 11.1%; p<0.001) but had similar AFB smear positivity at diagnosis (Table 1).

All-cause and infection related mortality

Chi-square test and Kaplan- Meier analysis

During the first 9 months after TB treatment initiation, there was significantly higher all-cause mortality in males (427/1837 patients: 23.2%) than in females (117/830 patients; 14.1%; P < .001; Table 2). Similarly, 9 month-infection related mortality was significantly higher in males (231/1837 patients: 12.6%) than in females (72/830 patients; 8.7%; P < .001; Table 2). The log-rank test of the Kaplan-Meier analysis showed that males had significantly shorter survival compared to females both due to all-cause and infections (Figure 1A and 1B; P < .001).

Cox-regression analysis

In the univariable cox-regression analysis, male sex was associated with higher hazards of 9-month all-cause mortality (HR 1.75, 95%CI 1.42-.2.14) and infection-related mortality (HR 1.52, 95%CI 1.17-1.99). Infection-related causes accounted for 55.7% (303/544 patients) of all deaths in the first 9 months (Table 2). Male sex was found to be independently associated with higher hazards of all-cause and infection-related mortality in separate bivariable cox-regression after adjusting for parameters such as Age, BMI, smoking, baseline cavitary disease and baseline acid fast smear microscopy results, Additionally significant association was not found between all-cause or infection-related mortality for the multiplicative interaction terms obtained by multiplying sex with each of the above variables in individual analysis (Supplementary tables 1A-1E). In the multivariable cox-regression analysis obtained by simultaneously adjusting for the following parameters such as BMI, CCI, hypertension, transplant status, alcoholism, smoking, cavitary disease, and baseline acid-fast bacilli (Table 2 and supplementary table 1G), males had an adjusted HR of 1.53(95%CI 1.08-2.17) for all-cause mortality (Figure 1A) and an adjusted HR of 1.81 (95%CI 1.11-2.93) for infection-related mortality (Figure 1B). Though age is a component of CCI, sensitivity analyses by additionally adjusting for age in the multivariable regression analyses also yielded similar results (Supplementary section III, Supplementary table 1).

Microbiological outcomes

Chi-square test and Kaplan- Meier analysis

Males had significantly higher sputum-culture (18.4% vs 11.6%, p=0.003) and AFB smear (8.3% vs 5.0%, p=0.015) positivity at 2 months compared to females by χ^2 test, with a considerable difference primarily among individuals less than 50 years (Figure 2A and 2B).

Logistic-regression analysis

In the univariable logistic-regression analysis, male sex was associated with higher odds of 2-month sputum culture positivity (OR 1.72, 95%CI 1.27-.2.34) and sputum smear positivity (OR 1.70, 95%CI 1.09-2.63). Male sex was found to be independently associated with higher odds of sputum culture and smear positivity in separate bivariable cox-regression after adjusting for parameters such as Age, BMI, smoking, baseline cavitary disease and baseline acid fast smear microscopy results, Additionally significant association was not found between sputum culture and smear positivity for the multiplicative interaction terms obtained by multiplying sex with each of the above variables in individual analysis (Supplementary tables 1A-1E). In the multivariable logistic-regression analysis obtained by simultaneously adjusting for the following parameters such as BMI, CCI, hypertension, transplant status, alcoholism, smoking, cavitary disease, and baseline acid-fast bacilli (Table 2 and supplementary table 1G), males had an adjusted

OR of 1.67 (95%CI 1.06-2.63) for sputum culture positivity (Figure 1A) and an adjusted OR of 1.30 (95%CI 0.67-2.55) for sputum smear positivity (Figure 1B). Though age is a component of CCI, sensitivity analyses by additionally adjusting for age in the multivariable regression analyses also yielded similar results (Supplementary section III, Supplementary table 1).

Characteristics of included studies

These reports originated from 81 countries, with 56 studies from low-income, 235 from middle-income, and 94 from high-income countries, and 13 from multiple countries [20]. We included 230 studies and 228 studies from countries with high-TB and high HIV-TB burdens, respectively [21]. A total of 136 studies included only pulmonary TB (PTB), 20 included only extra-pulmonary TB (EPTB), and 242 included both PTB and EPTB patients. Among the included studies, 97 reported outcomes in patients with drug-susceptible TB, and another 100 reported outcomes in drug-resistant TB (60 included only MDR-TB patients, 5 reported only on XDR TB). The duration of ATT varied from 6 months to 24 months, depending on drug resistance profiles and site of TB involvement. HIV prevalence in the studies ranged from 0% to 100%. Forty-six studies included only patients with HIV-TB co-infection.

Among the included studies, 197 studies reported all-cause mortality, 12 reported death due to TB, 23 reported sputum culture positivity, 34 reported sputum AFB smear positivity after ATT initiation, and 130 reported TB treatment success (Supplementary table 2). There were 7 case-control, 75 prospective cohort, and 316 retrospective cohort studies. The cohorts were of varying duration, extending from 1981 to 2019. Among the included studies, 242 studies had data collected from hospital records, while 156 studies had programmatic data (from registries or administrative data) obtained from a centralized data source. There were 334 studies from countries that have implemented the DOTS (Directly Observed Treatment, Short-course) program and 51 from countries without the DOTS program.

Eighty-two of the 197 studies reporting all-cause mortality made adjustments for at least one confounding variable. Commonly adjusted confounding parameters included age, HIV co-infection, site of TB, and BMI (Supplementary Table 3).

Subgroup analysis based on the income status of the study country showed that high-income countries had a higher OR of mortality (OR 1.39, 95%CI 1.26-1.52) in males compared to females when compared to low-income (OR 1.19, 95%CI 1.03-1.38) and middle-income (OR 1.20, 95%CI 1.08-1.32) countries. Subgroup analysis based on the TB and TB-HIV burden showed that low-burden countries had a higher OR of mortality in males compared to females when compared to high-burden countries. Subgroup analysis based on the continent of study showed that all regions except South America consistently showed higher pooled effect sizes among males. Implementation of the DOTS program did not change the association between male sex and higher mortality. Both studies reporting on drug-resistant and those reporting on drug-susceptible TB consistently showed higher mortality in males. Studies focused exclusively on HIV-TB co-infected individuals failed to show a direction of association between mortality and sex. Subgroup analysis based on study design did not show a difference among the cohort and case-control studies, in the association between mortality and male sex.

Meta-regression analysis did not result in a statistically significant association between difference in rates of default, loss to follow up and treatment completion between males and females, and the OR for mortality in males (Supplementary table 4). However, an increase in the HIV proportion in females compared to males resulted in a decrease in the OR for overall mortality in males following meta-regression (Supplementary table 4).

Section III

Supplementary Tables

Retrospective Cohort

Supplementary Table 1A: Bivariable analysis to assess the association of male sex with the outcomes adjusted for Age (Taiwan Cohort)

Characteristic	Estimate	Male sex (Univariable)			Male sex (Age adjusted)			β- coefficient for interaction		
		ES	95%CI	p-value	ES	95%CI	p-value	β	95%CI	p-value
All-cause mortality	HR	1.74	1.42-2.14	0.032	1.43	1.14-1.73	0.001	0.99	0.98-1.01	0.732
Infection related mortality	HR	1.52	1.17-1.99	0.002	1.21	0.93-1.57	0.163	1.01	0.99-1.02	0.596
2-month Sputum culture positivity	OR	1.73	1.27-2.35	<0.001	1.69	1.24-2.31	0.001	0.99	0.98-1.01	0.345
2-month Sputum smear AFB	OR	1.69	1.09-2.64	0.019	1.90	1.21-2.99	0.005	0.99	0.97-1.01	0.607

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.ES- effect size

Supplementary Table 1B: Bivariable analysis to assess the association of male sex with the outcomes adjusted for BMI (Taiwan Cohort)

Characteristic	Estimate	Male sex (Univariable)			Male sex (BMI adjusted)			β- coefficient for interaction		
		ES	95%CI	p-value	ES	95%CI	p-value	β	95%CI	p-value
All-cause mortality	HR	1.74	1.42-2.14	0.032	1.99	1.53-2.60	<0.001	0.81	0.57-1.13	0.214
Infection related mortality	HR	1.52	1.17-1.99	0.002	1.90	1.35-2.70	<0.001	0.73	0.46-1.16	0.182
2-month Sputum culture positivity	OR	1.73	1.27-2.35	<0.001	2.14	1.45-.3.08	<0.001	0.98	0.89-1.08	0.680
2-month Sputum smear AFB	OR	1.69	1.09-2.64	0.019	2.19	1.28-3.79	0.004	0.99	0.85-1.16	0.912

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.ES- effect size

Supplementary Table 1C: Bivariable analysis to assess the association of male sex with the outcomes adjusted for smoking status (Taiwan Cohort)

Characteristic	Estimate	Male sex (Univariable)			Male sex (Smoking adjusted)			β- coefficient for interaction		
		ES	95%CI	p-value	ES	95%CI	p-value	β	95%CI	p-value
All-cause mortality	HR	1.74	1.42-2.14	0.032	1.76	1.35-2.29	<0.001	0.68	0.32-1.45	0.317
Infection related mortality	HR	1.52	1.17-1.99	0.002	1.52	1.17-1.98	0.002	0.90	0.27-3.01	0.862
2-month Sputum culture positivity	OR	1.73	1.27-2.35	<0.001	1.54	1.05-2.25	0.026	0.59	0.22-1.62	0.308
2-month Sputum smear AFB	OR	1.69	1.09-2.64	0.019	1.22	0.69-2.14	0.487	0.52	0.15-1.18	0.310

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.ES- effect size

Supplementary Table 1D: Bivariable analysis to assess the association of male sex with the outcomes adjusted for cavitary disease (Taiwan Cohort)

Characteristic	Estimate	Male sex (Univariable)			Male sex Cavity adjusted)			β- coefficient for interaction		
		ES	95%CI	p-value	ES	95%CI	p-value	β	95%CI	p-value
All-cause mortality	HR	1.74	1.42-2.14	0.032	1.72	1.42-2.13	<0.001	1.54	0.77-3.09	0.223
Infection related mortality	HR	1.52	1.17-1.99	0.002	1.52	1.17-1.98	0.002	1.36	0.58-3.17	0.484
2-month Sputum culture positivity	OR	1.73	1.27-2.35	<0.001	1.66	1.22-2.27	0.001	1.05	0.51-2.15	0.892
2-month Sputum smear AFB	OR	1.69	1.09-2.64	0.019	1.57	0.99-2.48	0.053	0.66	0.26-1.66	0.379

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.ES- effect size

Supplementary Table 1E: Bivariable analysis to assess association of male sex with the outcomes adjusted for baseline acid fast smear status (Taiwan Cohort)

Characteristic	Estimate	Male sex (Univariable)			Male sex Cavity adjusted)			β- coefficient for interaction		
		ES	95%CI	p-value	ES	95%CI	p-value	β	95%CI	p-value
All-cause mortality	HR	1.74	1.42-2.14	0.032	1.79	1.45-2.21	<0.001	1.12	0.73-1.72	0.598
Infection related mortality	HR	1.52	1.17-1.99	0.002	1.52	1.15-1.99	0.003	1.21	0.66-1.72	0.514
2-month Sputum culture positivity	OR	1.73	1.27-2.35	<0.001	1.81	1.32-2.49	<0.001	0.75	0.35-1.62	0.471
2-month Sputum smear AFB	OR	1.69	1.09-2.64	0.019	1.69	1.07-2.68	0.023	0.24	0.03-1.95	0.183

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.ES- effect size

Supplementary Table 1F: Unadjusted and Adjusted Hazard Ratios, Based on Cox Regression Model, for 9-month all-cause and Infection-related Mortality after Initiation of Tuberculosis Treatment

Characersitics	All-cause mortality						Infection-related mortality					
	Unadjusted HR	(95%CI)	p-value	Adjusted HR[#]	95%CI	p-value	Unadjusted HR	(95%CI)	p-value	Adjusted HR[#]	95%CI	p-value
Male Sex	1.75	1.42 -2.14	**<0.001**	1.53	1.08-2.17	**0.016**	1.53	1.17–1.99	**0.001**	1.81	1.11-2.93	**0.017**
BMI	0.90	0.90-0.96	**<0.001**	0.89	0.86-0.93	**<0.001**	0.92	0.88–0.96	**<0.001**	0.89	0.85-0.94	**<0.001**
CCI	1.27	1.23-1.31	**<0.001**	1.28	1.22-1.35	**<0001**	1.28	1.23–1.33	**<0.001**	1.30	1.21-1.39	**<0.001**
Hypertension	2.15	1.81-2.54	**<0.001**	1.42	1.09-1.88	**0.008**	2.30	1.83–2.89	**<0.001**	1.57	1.08-2.28	**0.019**
Transplant status	1.47	0.70-3.09	0.344	1.42	0.53-3.83	0.488	1.88	0.78–4.55	0.204	2.78	1.02-7.59	**0.045**
Alcoholism	1.07	0.65-1.76	0.787	1.29	0.65-2.55	0.464	0.71	0.32-1.59	0.406	1.26	0.45-3.49	0.661
Smoking	1.38	1.14-1.68	**0.001**	1.04	0.79-1.36	0.797	1.16	0.89-1.52	0.259	0.78	0.54-1.13	0.196
Cavitary disease	1.09	0.87-1.38	0.456	1.44	1.04-1.99	**0.028**	1.12	0.82–1.52	0.496	1.54	0.98-2.42	0.057
Baseline Sputum AFB	1.03	0.97-1.10	0.294	1.25	0.97-1.61	0.088	1.07	0.98–1.16	0.122	1.41	0.99-2.01	0.059

Abbreviations: AFB, acid-fast bacilli; BMI, body mass index; CCI, Charlson comorbidity index; CI, confidence interval; HR, hazard ratio; HTN, hypertension.

Adjusted for all the variables in the table simultaneously.

The variables that are components of the CCI were not adjusted for separately

Supplementary Table 1G: Unadjusted and Adjusted Hazard Ratios, based on logistic regression model, for 2-month sputum culture and sputum smear positivity after Initiation of Tuberculosis Treatment

Characteristics	2-month Sputum Culture Positivity						2-month Sputum smear negativity					
	Unadjusted OR	(95%CI)	p-value	Adjusted OR[#]	95%CI	p-value	Unadjusted OR	(95%CI)	p-value	Adjusted OR[#]	95%CI	p-value
Male Sex	1.73	1.27-2.35	**<0.001**	1.67	1.06-2.63	**0.028**	1.69	1.09-2.64	**0.019**	1.30	0.67-2.55	0.442
BMI	0.99	0.97-1.03	0.990	0.99	0.96-1.04	0.996	0.99	0.93-1.04	0.647	1.11	0.95-1.07	0.749
CCI	1.02	0.97-1.07	0.402	1.02	0.95-1.10	0.614	0.95	0.88-1.02	0.165	0.96	0.86-1.08	0.503
Hypertension	0.99	0.76-1.31	0.980	1.32	0.89-1.96	0.162	0.74	0.49-1.10	0.135	1.21	0.68-2.17	0.508
Transplant status	1.04	0.30-3.61	0.953	2.60	0.66-10.21	0.172	0.76	0.10-5.74	0.787	2.01	0.22-18.3	0.537
Alcoholism	1.93	0.81-4.65	0.140	1.85	0.57-6.00	0.303	1.94	0.81-4.65	0.140	3.03	0.81-11.38	0.101
Smoking	1.70	1.27-2.27	**<0.001**	1.21	0.82-1.79	0.344	2.26	1.50-3.42	**<0.001**	1.44	0.81-2.58	0.216
Cavitary disease	3.76	2.77-5.11	**<0.001**	2.08	1.40-3.11	**<0.001**	6.90	4.67-10.21	**<0.001**	3.32	2.69-12.7	**<0.001**
Baseline Sputum AFB	4.45	3.27-6.05	**<0.001**	4.75	3.06-7.35	**<.0001**	8.82	4.99-15.58	**<0.001**	5.86	2.69-12.72	**<0.001**

Abbreviations: AFB, acid-fast bacilli; BMI, body mass index; CCI, Charlson comorbidity index; CI, confidence interval; HTN, hypertension; OR, Odds ratio.

Adjusted for all the variables in the table simultaneously.

The variables that are components of the CCI were not adjusted for separately

Supplementary Table 1H: Addition of age to the multivariable model Age-adjusted effect sizes for the association of male sex with the outcomes (Taiwan Cohort)

Characteristic	Estimate	Adjusted Effect size[#]	95%CI	p-value	Age adjusted effect size[&]	95%CI	p-value
All-cause mortality	HR	1.43	1.03-1.98	0.032	1.45	1.04-2.04	0.027
Infection related mortality	HR	1.70	1.09-2.64	0.009	1.69	1.09-2.63	0.020
2-month Sputum culture positivity	OR	1.56	1.05-2.33	0.028	1.59	1.02-2.43	0.043
2-month Sputum smear AFB	OR	1.27	0.71-2.27	0.42	1.43	0.75-2.77	0.290

AFB= Acid Fast Bacilli. CI= Confidence Interval. HR= Hazard ratio. OR= Odds Ratio.

Supplementary Table 2: Study characteristics for the studies included in our systematic review.

Name of the Author	Year of publication	Country of study	Study Period (From)	Study Period (To)	Outcomes					Type of study	Data collection	Drug resistance	TB-HIV co-infection (%)	EPTB (%)	Age (years) Mean / Median*	Number of Male	Number of Female	NOS (Score)
					All-cause mortality	Death due to TB	Sputum Culture	Sputum Smear	Treatment success									
Sariem[1]	2020	Nigeria	2001	2015					*	RC	Hosp	6	44.29	11.3	35.5	5904	4252	8
Vo[2]	2020	Vietnam	2014	NA					*	RC	Prog	6	11	25	41	3791	1711	8
Stosic[3]	2020	Serbia	2005	2015	*				*	RC	Prog	6	NA	12.6	46	1444	934	8
Izudi[4]	2020	Uganda	2010	2018					*	RC	Hosp	6	40.1	0	38.5	141	46	9
Ahmad[5]	2020	Pakistan	2011	2014					*	RC	Hosp	6	NA	35.2	..	120	132	8
Matambo[6]	2020	Zimbabwe	2010	2015					*	RC	Prog	1	77.7	0	34	230	241	7
Hodgkinson[7]	2020	Kenya	2004	2017	*					RC	Hosp	6	100	..	..	1129	2543	8
Wang[8]	2020	China	2006	2011	*					RC	Hosp	1	0	..	46.45	262	94	8
Liu[9]	2020	China	2018	2019	*					RC	Hosp	6	0	0	57.82	101	52	8
Geleso[10]	2020	Ethiopia	2016	2017	*					RC	Hosp	6	26.7	28.7	..	225	172	8
Washington[11]	2020	India	2018	2019	*				*	PC	Hosp	6	1.8	24.4	..	2952	1797	8
Khunthason[12]	2020	Thailand	2014	2017					*	RC	Prog	6	6	12.3	..	492	261	7
Arpagaus[13]	2020	Tanzania	2013	2017					*	PC	Hosp	6	100	30.48	36.5*	1111	2018	8
Zheng[14]	2020	China	2014	2015					*	PC	Hosp	2	NA	0	45.4	49	9	8
Du[15]	2019	China	2008	2010					*	PC	Hosp	0	NA	0	44	318	174	8
Ramos[16]	2020	Ethiopia	1998	2015	*					RC	Hosp	6	5.3	31.26	..	1172	1080	6
Van[17]	2020	Vietnam	2011	2015					*	RC	Hosp	2	9.6	3	43	1715	551	8

Singla[18]	2020	India	2017	2019	*					CC	Hosp	6	NA	0	··	150	80	8
Shao[19]	2020	China	2013	2018				*	*	RC	Hosp	3	NA	0	48*	47	16	8
Olayanju[20]	2019	South Africa	2014	2018					*	PC	Hosp	1	52.45	··	33*	74	48	8
Lee[21]	2020	South Korea	2012	2017			*			RC	Hosp	0	0	0	49*	48	19	8
Schwœbel[22]	2020	Multicountry	2013	2015					*	RC	Prog	2	19.8	··	··	668	338	7
Humphrey[23]	2020	Multicountry	2012	2014	*					RC	Prog	6	100	21	36*	1181	910	7
Piubello[24]	2019	Nigeria	2008	2016					*	RC	Hosp	2	0.04	68.2	32	206	43	8
Shi[25]	2020	China	2012	2015					*	PC	Hosp	2	NA	··	47.6*	161	81	8
Gao[26]	2020	China	2018	2019					*	RC	Hosp	1	0.6	··	40*	132	45	8
Rizvi[27]	2020	India	2012	2018	*					PC	Hosp	6	2.8	100	31.12	368	353	8
Charoensakulchai[28]	2020	Thailand	2019	2019					*	RC	Hosp	0	NA	0	52*	554	232	8
Lakoh[29]	2020	Sierra Leone	2017	2017	*				*	RC	Hosp	0	31.9	3.7	··	766	339	8
Alene[30]	2019	Multicountry	2010	2014	*				*	RC	Hosp	2	NA	0	38	211	114	6
Tok[31]	2020	Malaysia	2014	2017					*	RC	Prog	0	6.0	13.0	42.7	62660	34845	7
Lin[32]	2020	China	2015	2016					*	PC	Hosp	0	NA	··	53	215	91	8
Schmit[33]	2020	USA	2011	2016	*					RC	Prog	6	100	20.0	··	30408	18596	7
Gonah[34]	2020	Zimbabwe	2013	2016	*				*	RC	Prog	2	0.52	··	··	89	85	7
Tanue[35]	2019	Cameroon	2010	2017					*	RC	Hosp	6	100	0	37.07	450	591	8
Makhmudova[36]	2019	Tajikistan	2012	2013	*			*		RC	Hosp	1	2.5	0	32	342	259	8
Cheng[37]	2019	Taiwan	2006	2016	*					RC	Hosp	6	NA	46	53.2*	9	21	8
Pradipta[38]	2018	Netherlands	2005	2015					*	RC	Prog	0	4	46.9	··	3426	2248	7
Holden[39]	2019	Denmark	2009	2014					*	RC	Prog	0	3	0	44*	1082	599	7
Arroyo[40]	2019	Brazil	2006	2015	*					RC	Prog	2	13	2.5	··	564	238	7
Bhering[41]	2019	Brazil	2000	2016	*				*	RC	Prog	1	7.9	2.3	··	1466	803	7

Cohen[42]	2019	Malawi	2013	2014					*	PC	Hosp	0	82.9	16.5	37*	102	56	5
Bhering[43]	2019	Portugal	2000	2014	*				*	RC	Prog	2	39.8	9.4	39*	180	85	7
Komiya[44]	2020	Japan	2013	2015	*		*			RC	Hosp	6	NA	0	82*	94	91	8
Mahwire[45]	2019	South Africa	2012	2014				*		RC	Hosp	2	76.3	0	..	357	361	5
Shariff[46]	2019	Malaysia	2009	2013					*	RC	Hosp	1	0	2.4	..	303	100	5
Bouton[47]	2019	Ghana	2010	2016	*					RC	Hosp	6	24.0	30.4	41.8	264	130	5
Ogyiri[48]	2019	Ghana	2013	2015					*	RC	Hosp	0	20.3	24.2	..	344	182	6
Zürcher[49]	2019	Multicountry	2013	2016	*					PC	Hosp	6	43	..	33.2*	362	272	8
Pettit[50]	2019	Multicountry	2012	2013					*	RC	Hosp	0	100	24	..	1089	773	8
Zurcher[51]	2019	Multicountry	2012	2014	*					RC	Hosp	0	100	28	35.5*	1593	1102	8
Golub[52]	2019	South Korea	2001	2011		*				PC	Hosp	6	NA	..	46	819051	448513	8
Byashalira[53]	2020	Tanzania	2018	2018	*					PC	Hosp	0	100	..	40*	45	52	8
Min[54]	2019	South Korea	2014	2017	*					RC	Hosp	0	0.9	22.9	83.8	55	54	8
Batool[55]	2019	Pakistan	2008	2016					*	RC	Hosp	1	NA	0	29	99	94	8
Hamdouni[56]	2019	Morocco	2014	2016					*	RC	Hosp	1	NA	42.1	35.5*	72	79	8
Khan[57]	2019	Malaysia	2006	2008					*	RC	Hosp	6	15.38	100	..	778	444	8
Tola[58]	2019	Ethiopia	2012	2017					*	RC	Hosp	6	100	34.1	..	161	188	8
Musaazi[59]	2018	Uganda	2009	2015	*					RC	Hosp	6	100	41.6	..			8
Balaky[60]	2019	Iraq	2012	2019	*					RC	Hosp	6	NA	63.5	40.5	320	408	6
Aguilar[61]	2019	Brazil	2007	2015					*	CC	Hosp	6	NA	0	..	179	105	8
Ali[62]	2019	Sudan	2013	2017					*	PC	Hosp	2	1.9	2.6	..	117	39	8
Pedrazzoli[63]	2019	UK	2001	2014	*					RC	Prog	6	5	44.03	..	62628	49146	7
Dedefo[64]	2019	Ethiopia	2014	2017	*			*	*	RC	Hosp	6	32.9	..	37.91	103	96	5
Pradipta[65]	2019	Netherlands	2005	2015	*				*	RC	Prog	1	NA	48.1	..	295	250	7

Somsong[66]	2018	Thailand	2014	2015	*				*	RC	Prog	6	NA	0	..	13505	6636	7
Nguyen[67]	2018	USA	2010	2016	*					RC	Prog	6	6.3	14.2	..	5872	3130	7
Nandasena[68]	2018	Sri Lanka	2013	2013				*		PC	Prog	6	NA	29.75	..	451	218	7
Prudhivi[69]	2019	India	2014	2016	*				*	RC	Hosp	6	23	0	47.13	734	379	8
Zhang[70]	2018	China	2007	2017	*					RC	Prog	6	100	..	38.01	605	123	7
Rossetto[71]	2018	Brazil	2009	2013	*					RC	Prog	6	100	0	..	1588	831	7
Ohene[72]	2018	Ghana	2010	2013	*					RC	Prog	6	40.84	100	40.4	2090	1243	7
Khan[73]	2019	Pakistan	2012	2016					*	RC	Hosp	2	1	0	37.07	72	114	8
Holmberg[74]	2019	Finland	1998	2015	*					RC	Prog	6	100	..	..	451	218	7
Sadykova[75]	2019	Kazakhstan	2014	2016					*	RC	Hosp	0	3.4	11.2	..	22648	14278	8
Dangeti[76]	2017	India	2014	2015					*	CC	Hosp	6	0	100	..	28	12	8
Javaid[77]	2018	Pakistan	2012	2014			*			RC	Hosp	2	1	0	30.7	189	239	8
Ambaw[78]	2017	Ethiopia	2014	2016					*	PC	Hosp	0	11.4	42.8	30	348	300	8
Parmar[79]	2018	India	2007	2011			*		*	RC	Prog	2	1.6	0	35	2564	1148	7
Adane[80]	2018	Ethiopia	2010	2015					*	RC	Hosp	6	11	45	..	480	16	8
Worku[81]	2018	Ethiopia	2008	2016					*	RC	Hosp	6	24.2	36.9	..	516	469	8
Tafess[82]	2018	Ethiopia	2004	2014	*				*	RC	Hosp	6	16.4	36.1	25	248	232	4
Javaid[83]	2017	Pakistan	2012	2014					*	RC	Hosp	2	NA	1.3	..	235	300	8
Muyaya[84]	2018	Botswana	2013	2013	*					RC	Hosp	6	100	27	..	170	130	8
Ferreira[85]	2018	Brazil	2011	2014	*					RC	Hosp	6	71.6	52.5	37	84	36	5
Muluye[86]	2018	Ethiopia	2012	2016					*	RC	Hosp	6	6.8	43.1	..	586	409	5
Tshitenge[87]	2018	Botswana	2013	2015	*					RC	Hosp	6	36.1	18	..	608	478	5
Evans[88]	2018	South Africa	2011	2014	*				*	RC	Prog	6	26.1	..	36*	704	603	7
Adamu[89]	2018	Nigeria	2010	2014					*	RC	Hosp	6	39.8	32.19	..	596	785	8

Kaplan[90]	2018	South Africa	2009	2013	*					RC	Hosp	6	50.8	20.5	··	35098	25384	8
Bulabula[91]	2019	Democratic Republic of Congo	2012	2017					*	RC	Prog	2	0.8	0	35*	9029	7330	7
Frank[92]	2019	Georgia	2011	2013	*				*	RC	Hosp	4	2.9	11.7	34	77	34	8
Garg[93]	2019	India	2017	2017					*	RC	Hosp	3	NA	0	··	35	17	6
Lee[94]	2019	South Korea	2005	2017					*	RC	Hosp	1	NA	··	39.7	79	50	8
Crabtree-Ram´ırez[95]	2018	Multicountry	2000	2015	*					RC	Hosp	6	100	53	35*	581	178	8
Han[96]	2017	South Korea	1996	2015	*					RC	Hosp	6	NA	··	61	44	52	8
Ejeta[97]	2018	Ethiopia	2008	2017					*	RC	Hosp	6	27.9	18.2	··	2306	1838	8
Diallo[98]	2018	Burkina Faso	2010	2014				*		CC	Hosp	6	8.9	0	··	428	258	8
Melese[99]	2018	Ethiopia	2008	2013	*			*	*	RC	Hosp	6	13.5	38.6	34.9	173	130	8
Viana[100]	2017	Brazil	2012	2013	*					RC	Prog	1	5.4	1.2	··	179	78	7
Wu[101]	2018	China	2011	2016	*					RC	Hosp	6	NA	16.7	45.1	39	9	8
Feng[102]	2018	Taiwan	2012	2015	*		*			PC	Hosp	6	NA	17.5	64	140	72	8
Sekaggya-Wiltshire[103]	2018	Switzerland	2013	2015			*		*	PC	Hosp	6	100	0	··	134	93	8
Khac Thai[104]	2018	Vietnam	2008	2011					*	RC	Hosp	3	0	0	··	177	62	8
Shimazaki[105]	2017	Phillipines	2011	2013	*					PC	Hosp	6	0	0	46.9	317	149	8
Nguyen[106]	2018	USA	2010	2014	*					RC	Prog	6	6	28	52*	5132	3329	7
Mishkin[107]	2018	Kazakhstan	2014	2015	*				*	RC	Prog	6	100	··	··	239	79	7
Azeez[108]	2018	South Africa	2010	2016					*	RC	Hosp	1	100	··	··	530	380	8
Velavan[109]	2018	India	2014	2015					*	RC	Hosp	6	1	7.98	··	319	73	8
Yu [110]	2018	Taiwan	2007	2012	*			*		RC	Hosp	2	NA	0	··	500	186	8
Lin[111]	2017	Taiwan	2007	2017					*	RC	Hosp	2	0	0	··	122	45	8
Lv[112]	2018	China	2011	2012					*	PC	Hosp	2	NA	0	··	33	59	8
Kuehne[113]	2018	Germany	2002	2014					*	RC	Prog	6	NA	0	··	1138	336	6

Hameed[114]	2019	Pakistan	2018	2019	*					RC	Hosp	0	1.8	0	..	92	78	5
Eugene Wickett[115]	2018	Liberia	2015	2017	*					RC	Hosp	6	NA	..	..	285	275	8
L. Zhang[116]	2017	China	2009	2013					*	PC	Hosp	2	NA	0	..	382	155	8
Jose Gabriel Cornejo Garcia[117]	2018	Peru	2012	2014	*		*			RC	Prog	3	4.3	0	..	652	295	7
Mok[118]	2018	South Korea	2014	2015	*				*	RC	Prog	0	NA	20.3	52.5	2765	1967	7
Tre´bucq[119]	2017	Multicountry	2013	2014					*	PC	Hosp	2	19.9	0	..	667	339	7
Fitsum Weldegebreal[120]	2018	Ethiopia	2008	2014	*			*	*	RC	Hosp	6	100	44.8	32.52	362	265	8
Ige[121]	2018	Nigeria	2010	2013					*	RC	Hosp	2	19.1	0	..	76	39	8
Chingonzoh[122]	2018	South Africa	2011	2013	*					RC	Prog	1	65	0	37*	1992	1737	7
Ji[123]	2018	China	2011	2015	*					RC	Hosp	6	100	0	39	325	34	5
Velayutham[124]	2018	India	NA	NA					*	PC	Hosp	6	0.9	0	..	1125	440	8
Obrego´n[125]	2018	Peru	2010	2013					*	RC	Prog	2	2.8	0	27*	940	490	7
Alarco´n[126]	2018	Peru	2011	2014					*	RC	Prog	1	4	0	..	415	195	7
Nguyen[127]	2016	USA	NA	NA	*					RC	Prog	0	100	..	..	346	104	7
Thao[128]	2017	Vietnam	2001	2015	*					RC	Hosp	6	44.025	100	..	1185	514	7
Fan[129]	2017	China	2011	2013					*	RC	Hosp	2	NA	0	..	127	52	7
Kibuule[130]	2018	Namibia	2004	2016					*	RC	Prog	6	47.9	19.2	..	44300	32556	7
Pizzol[131]	2018	Mozambique	2016	2016				*		PC	Hosp	6	43.5	0	31	203	98	7
Kirirabwa[132]	2018	Uganda	2014	2015					*	RC	Hosp	6	49.9	16.5	..	312	202	7
Wakamatsu[133]	2018	Japan	1994	2016	*					RC	Hosp	6	NA	100	83	18	50	8
Silva[134]	2018	Brazil	2007	2014	*					RC	Hosp	6	100	48.7	..	672	252	8
Aibana[135]	2019	Ukraine	2012	2015	*				*	RC	Hosp	0	16.2	0	40	351	111	6
Singhi[136]	2018	India	2015	2015					*	RC	Hosp	6	0.1	33	..	793	697	5
Wen[137]	2018	China	2005	2013					*	RC	Prog	6	NA	0	51*	16939	6059	7

Ratan Kumar[138]	2018	India	2012	2015	*			*	*	RC	Hosp	6	100	65.5	..	266	188	8
Engelbrecht[139]	2017	Malaysia	2009	2012					*	RC	Prog	6	6	23.3	..	5276	4715	7
Suryawanshi[140]	2017	india	2011	2012	*				*	RC	Hosp	2	5.6	2.55	..	2009	1401	8
Mattila[141]	2016	Finland	1978	1980	*					RC	Hosp	6	NA	0	..	3125	3576	8
Cardoso[142]	2017	Brazil	2010	2014	*			*		RC	Prog	6	25.3	32.25	40.32	114	108	7
Tatar[143]	2017	Turkey	2004	2010	*					RC	Hosp	6	NA	0	54	33	7	8
Alene[144]	2018	Ethiopia	2010	2011			*	*		RC	Hosp	2	NA	0	..	239	107	8
Nagu[145]	2017	Tanzania	2010	2011	*					PC	Hosp	6	100	0	..	1138	558	8
Nagu[146]	2017	Tanzania	2014	2015	*					RC	Hosp	6	30.6	7.6	48.4	168	85	8
Lee[147]	2017	South Korea	2006	2011					*	RC	Hosp	6	NA	0	35	39	37	8
Bastos[148]	2017	Brazil	2007	2013					*	RC	Prog	2	9	3	39.5	1310	662	7
Alene[149]	2017	Ethiopia	2010	2015					*	RC	Hosp	6	21.1	6.2	..	147	95	8
Ahmad[150]	2017	Pakistan	2011	2012					*	RC	Hosp	6	NA	22.7	..	259	234	8
Schechter[151]	2017	USA	2008	2015			*			RC	Hosp	6	37	0	47.6	182	54	8
Sinshaw[152]	2017	Ethiopia	2010	2016					*	RC	Hosp	6	100	28.8	..	175	133	6
Aibana[153]	2017	Ukraine	2012	2015	*			*	*	RC	Hosp	2	21.7	..	38.2*	292	86	7
Loh[154]	2017	Singapore	2005	2010	*					RC	Hosp	1	5.3	0	59.9	50	25	7
Nagu[155]	2016	Tanzania	2010	2011	*				*	PC	Hosp	6	29.1	..	..	579	282	7
Getnet[156]	2017	Ethiopia	2009	2014					*	RC	Hosp	6	4.6	25.8	..	814	564	7
Ko[157]	2017	Taiwan	2000	2010	*					RC	Prog	6	0.5	..	67.3	1878	860	7
Yen[158]	2017	Taiwan	2006	2014	*					RC	Hosp	6	NA	7.44	..	3712	1299	8
Raberahona,[159]	2017	Madagascar	2007	2014	*					RC	Hosp	6	4	100	..	42	33	8
Prado[160]	2016	Brazil	2001	2011	*	*				RC	Prog	6	100	30.8	..	26692	10745	7
Sam[161]	2018	Cambodia	2006	2016					*	RC	Hosp	2	20	3.7	45	369	213	8

Kuhlin[162]	2017	Uzbekistan	2003	2016					*	RC	Prog	2	NA	0	30.5*	1189	1257	8
Ndjeka[163]	2018	South Africa	2014	2016	*			*	*	PC	Hosp	1	67	0	27*	101	99	8
Christopher Martin Sauer[164]	2018	Multicountry	2000	2016					*	RC	Prog	6	NA	33.9	..	440	203	7
Diktanas[165]	2018	Lithuania	2015	2016			*			RC	Hosp	6	0	1.17	49.5	59	28	8
Nguyen[166]	2018	USA	2010	2016	*					RC	Prog	6	8	13.92	..	2191	1186	7
Mundra[167]	2017	India	2015	2016					*	CC	Hosp	6	5.4	20.36	..	171	104	8
Asres[168]	2018	Ethiopia	2015	2016					*	PC	Hosp	6	9.3	20.3	..	2943	1892	6
Gaborit[169]	2018	France	2002	2013				*		RC	Prog	2	8.9	12.2	..	100	34	7
Jackson[170]	2017	India	2012	2014					*	RC	Hosp	6	NA	35	..	4907	3508	8
Piparva[171]	2017	India	2013	2014					*	RC	Hosp	0	2.83	21.99	..	952	388	8
Wang[172]	2017	China	2009	2011					*	RC	Hosp	6	NA	0	43	300	95	8
Wondale[173]	2017	Ethiopia	2004	2014	*				*	RC	Hosp	6	14.6	25.9	30.1	707	465	7
Kefale[174]	2017	Ethiopia	2012	2015	*				*	RC	Hosp	6	100	14.36	30.55	97	91	8
Gunda[175]	2017	Tanzania	2016	2017				*		PC	Hosp	6	35.26	0	39	97	59	8
Nair[176]	2016	India	2009	2011					*	RC	Prog	2	2	..	..	535	252	7
Kapata[177]	2017	Zambia	2012	2014	*					RC	Prog	2	73.47	..	36*	41	26	7
Huerga[178]	2016	Kenya	2006	2012					*	RC	Hosp	2	25.6	..	..	93	76	8
Mehta[179]	2017	India	2002	2009	*					RC	Hosp	0	11.4	100	..	29	28	8
Mert[180]	2017	Turkey	1981	2015	*					RC	Hosp	0	6	100	..	142	121	8
Heijden[181]	2017	South Africa	2000	2012					*	RC	Hosp	6	79	5	..	11004	5864	8
Georghiou[182]	2017	USA	2012	2013	*					PC	Hosp	1	15	0	..	296	155	6
Seifert[183]	2017	Multicountry	2012	2013	*					PC	Hosp	6	11	..	..	542	292	7
Shin[184]	2017	Botswana	2006	2013	*				*	RC	Prog	2	44.4	7.1	36*	322	265	7
Thu[185]	2018	Myanmar	2012	2014					*	RC	Prog	2	10	..	38	1399	786	7

Janssen[186]	2016	South Africa	2014	2014	*					PC	Hosp	0	100	..	..	26	33	8
Teklu[187]	2017	Ethiopia	2005	NA	*					RC	Hosp	6	100	6.8	32*	1148	2441	8
Dale[188]	2017	Australia	2002	2015	*					RC	Prog	0	1.5	45	..	2655	2212	7
Ramachandran[189]	2017	India	2013	2015					*	PC	Hosp	6	1.0	35	..	1291	621	8
M[190]	2017	Nigeria	2010	2014	*				*	RC	Prog	6	20.6	3.7	..	553	410	7
El-Shabrawy[191]	2016	Egypt	2013	2014					*	RC	Hosp	0	0	11.5	35.7	290	190	8
Jaber[192]	2017	Yemen	2014	2015					*	PC	Hosp	0	NA	0	..	150	123	7
Masjedi[193]	2017	Iran	2012	2014					*	PC	Hosp	0	0	0	..	96	9	8
Heysell[194]	2016	Russia	2014	2014					*	PC	Hosp	2	100	..	34	62	34	8
Le[195]	2016	South Korea	2005	2012					*	RC	Hosp	3	NA	0	54	92	48	8
Parchure[196]	2016	India	2004	2013	*					RC	Hosp	6	100	67	..	549	220	6
Patel[197]	2016	India	2010	2013					*	PC	Hosp	2	1.4	0	..	102	40	8
Dovonou[198]	2017	Benin	2007	2011					*	RC	Hosp	0	8.71	0	38	179	85	8
Gebreegziabher[199]	2016	Ethiopia	2013	2015					*	PC	Hosp	0	11.7	0	..	423	283	8
Balabanova[200]	2016	Multicountry	2009	2012	*					PC	Hosp	1	3	0	..	581	156	8
Mlotshwa[201]	2016	South Africa	2007	2013				*		RC	Prog	0	22.17	0	36	11641	7556	7
Snyder[202]	2016	Brazil	2010	2010					*	RC	Prog	0	NA	18	37*	4284	2317	7
Ngahane[203]	2016	Cameroon	2007	2013	*					RC	Hosp	0	NA	19	33	5110	4136	5
Ade[204]	2016	Benin	2013	2013					*	RC	Prog	0	18.2	0	..	2063	1066	7
Cabrera-Gayta´n[205]	2016	Mexico	2006	2014					*	RC	Prog	0	4.2	0	49*	18415	12937	7
Yung-Feng Yen[206]	2016	Taiwan	2011	2012	*					RC	Prog	0	0.7	8	64.6	693	326	7
Nagai[207]	2016	Japan	2007	2015	*					RC	Hosp	0	0	0	72	211	134	8
Asres[208]	2016	Ethiopia	2008	2014					*	RC	Hosp	0	9.7	23	30.8	447	343	7
Zenebe[209]	2016	Ethiopia	2011	2013					*	RC	Hosp	0	16	0	..	238	142	8

Gebrezgabiher[210]	2016	Ethiopia	2008	2013					*	RC	Hosp	0	NA	11.5	··	942	595	8
Khazaei[211]	2016	Iran	2005	2013					*	RC	Prog	0	2.7	0	56.8	266	244	7
Scott[212]	2017	USA	2006	2013			*			RC	Prog	0	6	··	··	20477	10659	7
Gunda[213]	2016	Tanzania	2015	2015	*					RC	Hosp	0	51.07	··	38*	361	340	7
Mekonnen[214]	2016	Ethiopia	2011	2014					*	RC	Hosp	0	24	46.4	32.8	528	421	7
Boaz[215]	2016	Tanzania	2012	2013	*					PC	Hosp	0	100	100	39	19	41	7
Schnippel[216]	2015	South Africa	2009	2011	*				*	RC	Prog	1	53.2	1	35*	9207	8406	7
Kerkhoff[217]	2015	Taiwan	2002	2006	*					RC	Hosp	0	NA	0	33*	451	1070	8
Lettow[218]	2015	Malawi	2013	2013	*					PC	Hosp	0	55	··	40*	165	183	8
Ejeta[219]	2015	Ethiopia	2009	2013					*	RC	Hosp	0	17.1	··	29.91	637	537	7
Mpagama[220]	2015	Tanzania	2009	2013					*	RC	Hosp	0	20.4	··	43.4	162	23	8
Pepper[221]	2015	South Africa	2007	2009	*					RC	Prog	6	24.76	21.9	33*	2633	1380	7
Trajman[222]	2015	Brazil	2012	2012					*	RC	Prog	0	9.8	0	··	1190	666	7
Wejse[223]	2015	Guinea-Bissau	2003	2013	*					PC	Prog	6	28.9	0	··	813	499	7
Nglazi[224]	2015	South Africa	2009	2011	*					RC	Prog	0	55	24.8	33*	389	408	7
a-Villaordun˜ a[225]	2015	Uganda	1997	2003	*					RC	Prog	6	38.5	··	39.2	195	89	7
Jung[226]	2016	South Korea	2005	2015					*	RC	Hosp	0	0	100	··	40	47	8
Bastos[227]	2016	Portugul	2007	2013	*					RC	Hosp	6	19	16.6	47*	501	180	8
García-Basteiro[228]	2016	Mozambique	2011	2012	*					RC	Prog	0	71.79	16.6	36.4	1096	856	7
Dale[229]	2016	Australia	2002	2013	*	*				RC	Prog	6	1.1	60	··	2125	1831	7
Shuldiner[230]	2016	Isreal	2000	2010	*					RC	Prog	6	4.1	18	··	1551	1265	7
Ba´ez-Saldaña[231]	2016	Mexico	1995	2010	*	*			*	PC	Hosp	6	2.4	0	46	462	342	8
Kaplan[232]	2016	South Africa	2010	2014					*	RC	Hosp	0	100	··	··	12781	10429	7
Gebremariam[233]	2016	Ethiopia	2008	2014	*					RC	Hosp	0	10	26.9	28.5	886	763	8

Lee[234]	2016	South Korea	2012	2013	*					RC	Hosp	6	0.5	18	61	141	53	8
Ranzani[235]	2016	Brazil	2009	2013					*	RC	Prog	0	8.7	0	··	44572	17245	7
Mhimbira[236]	2016	Tanzania	2010	2013	*				*	RC	Prog	0	39.9	17.7	35*	2943	1892	7
Mohammadzadeh[237]	2016	Iran	2012	2013					*	RC	Hosp	0	NA	0	··	79	88	8
Yang[238]	2016	South Korea	1989	2014	*					RC	Hosp	0	0	0	62	79	45	8
Berhanu[239]	2016	South Africa	2013	2014	*					PC	Hosp	2	83.2	24.8	36*	104	110	8
Feltrin[240]	2016	Brazil	1996	2004	*					RC	Prog	0	NA	20.5	··	3169	1278	7
Junior[241]	2016	Brazil	2012	2012					*	RC	Prog	6	NA	··	··	2559	1495	7
Behnaz[242]	2015	Iran	2007	2012				*	*	RC	Hosp	0	1.9	0	52.93	114	97	
Milanov[243]	2015	Bulgaria	2009	2010					*	RC	Prog	1	0	··	42.8	35	15	7
Shahrezaei[244]	2015	Iran	2006	2011	*					RC	Prog	0	0.3	32	··	737	655	7
Bigna[245]	2015	Cameroon	2006	2013	*					RC	Hosp	0	100	39	39.5	52	47	7
Yu-Shiuan Lin[246]	2015	Taiwan	2006	2011	*					RC	Prog	6	NA	0	79.9	1968	608	7
Djouma[247]	2015	Cameroon	2013	2013				*		RC	Prog	0	22.1	0	36.7	269	356	7
N. Kwak[248]	2015	South Korea	2006	2010					*	RC	Hosp	1	NA	20.3	37*	69	54	8
Calligaro[249]	2015	South Africa	2010	2013	*					PC	Hosp	6	NA	··	··	197	144	7
Igari[250]	2015	Japan	2007	2012	*					RC	Hosp	0	0.26	0	62.1	548	211	7
Meressa[251]	2015	Ethiopia	2009	2014					*	PC	Hosp	2	21.7	7.0	27*	325	287	8
Hang[252]	2015	Japan	2007	2009					*	PC	Hosp	6	5.1	0	··	341	89	7
Ukwaja[253]	2015	Nigeria	NA	NA					*	RC	Hosp	0	16.29	0	··	660	368	8
ZHANG[254]	2015	China	2011	2014					*	PC	Hosp	2	NA	0	47.4	119	41	7
Huyen[255]	2016	Vietnam	2011	2013					*	RC	Prog	0	100	29.1	··	900	210	7
Park[256]	2016	South Korea	2005	2010			*			RC	Hosp	2	NA	0	41.7	164	54	7
Nabukenya-Mudiope[257]	2015	Uganda	2010	2010					*	RC	Prog	0	58.1	5.6	··	523	207	7

Umanah[258]	2015	South Africa	2007	2010	*					RC	Hosp	2	100	20.7	··	457	490	8
Chien[259]	2014	Taiwan	2004	2011					*	RC	Hosp	3	NA	0	64*	299	96	8
Yamana[260]	2015	Japan	2010	2013	*					RC	Prog	0	0.1	0	74.5	566	311	7
Dobler[261]	2015	Mongolia	2010	2011					*	RC	Prog	0	NA	0	··	974	794	7
Sawadogo[262]	2015	Burkina Faso	2009	2009					*	CC	Prog	0	NA	0	39.5*	129	71	7
Oshi[263]	2014	Nigeria	2011	2012					*	RC	Prog	0	20.50	5.6	··	963	705	7
Chiang[264]	2015	Taiwan	2005	2010					*	RC	Hosp	0	0.3	0	··	1094	379	8
Kosgei[265]	2015	Kenya	2013	2013					*	RC	Prog	0	31.12	0	··	9947	6109	7
Yilmaz[266]	2015	Turkey	2005	2011		*				RC	Prog	6	NA	39.4	32.15	1339	1111	7
Sengul[267]	2015	Turkey	2005	2011					*	RC	Hosp	6	NA	0	··	480	258	8
Delgado-Sánchez[268]	2015	Mexico	2000	2012					*	RC	Prog	6	NA	··	46*	115189	66189	7
Sun[269]	2015	China	2001	2002	*					RC	Prog	6	0	··	49*	171	63	7
Wu[270]	2015	Taiwan	2006	2008		*				RC	Prog	0	NA	··	49*	4165	1419	7
Balkema[271]	2014	South Africa	2012	2013	*					PC	Hosp	0	53	44.6	36.5	38	45	8
Lanoix[272]	2014	France	2000	2009	*					RC	Hosp	0	41	··	47.4	77	20	8
Dangisso[273]	2014	Uganda	2003	2012					*	RC	Prog	6	66.67	17.44	29	20193	16867	7
Marais[274]	2014	South Africa	2004	2007	*					RC	Prog	2	62.7	··	··	170	154	7
Lucenko[275]	2014	Latvia	2006	2010					*	RC	Prog	0	7	6	42*	1704	772	7
Jain[276]	2013	India	2009	2009					*	PC	Prog	2	NA	··	31.42	81	49	7
Atif[277]	2014	Malaysia	2010	2011	*				*	RC	Hosp	0	NA	0	49.11	236	100	8
Pusch[278]	2014	USA	2000	2005	*					RC	Prog	0	21	100	49	224	214	7
Aung[279]	2014	Bangladesh	2005	2011					*	PC	Prog	2	NA	··	··	364	151	7
Han[280]	2013	Multicountry	NA	NA	*					RC	Prog	0	100	23	34*	609	159	7
Oshi[281]	2014	Nigeria	2011	2012					*	RC	Prog	0	22.5	5.6	··	963	705	7

Peltzer[282]	2014	South Africa	NA	NA					*	PC	Prog	0	54.3	..	..	873	302	7
Choi[283]	2014	South Korea	2005	2012					*	PC	Hosp	0	NA	0	44	563	106	7
Khaliaukin[284]	2014	Belarus	2009	2010					*	RC	Prog	2	15	..	45*	367	72	7
Kuksa[285]	2014	Latvia	2000	2010					*	RC	Prog	4	12	7	39	1333	446	7
Shuldiner[286]	2014	Isreal	2000	2010		*				RC	Prog	6	8.9	18	..	2612	1925	7
Pietersen[287]	2014	South Africa	2008	2012	*		*			RC	Prog	4	42.72	..	33*	58	49	7
Babalik[288]	2014	Turkey	2006	2010					*	RC	Prog	6	NA	..	..	14402	9443	7
Uyei[289]	2014	South Africa	2007	2008	*				*	RC	Prog	0	100	..	..	588	749	7
Velásquez[290]	2014	Russia	2000	2004					*	RC	Prog	6	0.8	8.5	35.9	531	107	7
Baghaei[291]	2014	Iran	2004	2011	*					RC	Hosp	0	1.2	..	65.92	96	124	8
Djibuti[292]	2014	Georgia	2004	2004					*	PC	Hosp	0	NA	..	35*	149	44	8
Bastard[293]	2015	Armenia	2008	2010					*	RC	Prog	6	NA	..	38*	338	65	7
Hamusse[294]	2014	Ethiopia	1997	2011					*	RC	Prog	0	7.9	0	..	7734	6487	7
Wingfield[295]	2014	Peru	2002	2009					*	PC	Prog	6	NA	..	31	517	359	7
Putri[296]	2014	Indonesia	2009	2011			*			RC	Hosp	1	0	0	37	115	98	7
Esmael[297]	2014	Ethiopia	2008	2013					*	RC	Hosp	0	44.76	25.2	30.6	371	346	8
Alobu[298]	2014	Nigeria	2011	2012	*					RC	Prog	0	79.5	5.6	..	963	705	7
Kwon[299]	2014	South Korea	2009	2010	*					RC	Hosp	0	0	0	50*	1410	1071	7
Alobu[300]	2014	Nigeria	2011	2012					*	CC	Hosp	0	13.6	0	..	602	383	7
Pefura-Yone[301]	2014	Cameroon	2009	2012			*			PC	Hosp	6	27.9	0	33*	126	46	8
Ershova[302]	2014	USA	1993	2008	*					RC	Prog	6	NA	..	..	19048	12178	7
Thomas Iype[303]	2014	India	2010	2011	*					PC	Hosp	6	NA	100	..	22	21	7
Viswanathan[304]	2014	India	2011	2012				*		PC	Hosp	6	NA	12.9	..	159	50	7
Alo[305]	2014	Fiji	2010	2012					*	RC	Hosp	6	NA	16.96	..	224	168	8

Przybylski[306]	2014	Poland	2001	2010					*	RC	Hosp	6	0.3	6.7	51.5	1343	662	8
O'Donnell[307]	2013	South Africa	2006	2007			*			RC	Prog	4	71.9	9.7	35*	49	65	7
Getahun[308]	2013	Ethiopia	2004	2009	*			*	*	RC	Hosp	6	NA	40.5	30.1	3017	3433	8
Anderson[309]	2013	UK	2004	2012					*	PC	Hosp	2	12.56	29.9	··	103	101	8
Manda[310]	2013	South Africa	2000	2004	*					RC	Prog	2	39.2	··	··	1290	786	7
Babalik[311]	2012	Turkey	2006	2009	*			*	*	RC	Prog	6	NA	0	··	8019	3167	7
Patra[312]	2013	India	2005	2010					*	RC	Hosp	6	0.2	29.2	··	1343	1093	8
Horita[313]	2013	Japan	2008	2011	*					RC	Hosp	6	0	0	64.9	297	135	8
Blöndal[314]	2013	Estonia	2002	2011	*				*	RC	Prog	6	5.9	··	··	1777	674	7
Schwartz[315]	2013	Botswana	2005	2010	*					RC	Hosp	6	100	0	35.5*	187	152	8
Abouzeid[316]	2013	South Africa	2001	2010	*					RC	Prog	6	2.8	··	··	19738	13929	7
Kabali[317]	2013	Tanzania	2001	2008	*					PC	Hosp	6	NA	··	··	92	287	8
Deepa[318]	2013	India	2011	2011					*	RC	Prog	6	5.8	0	··	1440	507	7
Kang[319]	2013	South Korea	2000	2002	*				*	RC	Hosp	2	1.5	3.8	··	1039	368	8
Sulaiman[320]	2013	Malaysia	2006	2007					*	RC	Hosp	6	0	17.6	··	916	351	8
Reed[321]	2013	South Korea	NA	NA	*	*				PC	Hosp	6	NA	0	··	551	106	8
Nakanwagi-Mukwaya[322]	2013	Uganda	2009	2010	*			*	*	RC	Prog	6	64.164	··	36	224	107	7
Uchimura[323]	2013	Japan	2007	2010	*			*	*	RC	Prog	6	0.2	21.4	··	61107	35582	7
Hoa[324]	2012	Vietnam	2008	2008					*	RC	Prog	6	NA	13.6	··	1721	792	7
Ugarte-Gil[325]	2013	Peru	2010	2011					*	PC	Hosp	6	NA	0	28*	160	131	8
Mitnick[326]	2013	Peru	1999	2002	*					RC	Prog	2	1.5	9	31.4	408	261	7
Gler[327]	2013	Phillipines	2005	2008					*	PC	Hosp	2	NA	··	··	271	168	8
Kenangalem[328]	2013	Papua New Guinea	2008	2009			*			PC	Hosp	6	12.5	··	··	127	59	8
Macedo[329]	2013	Brazil	2007	2011		*				RC	Prog	6	22.1	8.96	··	13489	1385	7

Antoine[330]	2013	France	2009	2009					*	RC	Prog	6	NA	0	··	1232	778	7
Tang[331]	2013	China	2006	2011					*	RC	Hosp	1	0	··	··	395	191	8
Ananthakrishnan[332]	2013	India	2011	2011	*				*	RC	Prog	6	2	24.49	··	1193	292	7
Pazarli[333]	2013	Turkey	2000	2005					*	RC	Hosp	2	0	0	40.5	81	22	8
Tweya[334]	2013	Malawi	2008	2010	*			*	*	RC	Hosp	6	56	0	31	1460	901	8
Yen[335]	2013	Taiwan	2006	2010	*	*				RC	Prog	6	NA	0	64.2	2454	1033	7
Mpagama[336]	2013	Tanzania	2009	2011	*					RC	Hosp	2	15	0	36*	39	19	8
Ismail[337]	2013	Malaysia	2010	2010					*	PC	Prog	6	100	··	··	194	25	7
Wang[338]	2013	China	2004	2008	*	*				RC	Prog	6	NA	0	54.5	601	107	7
Shaweno[339]	2012	Ethiopia	2006	2010	*					RC	Hosp	6	100	18.1	30*	417	323	8
Limmahakhun[340]	2012	Thailand	2000	2009	*					RC	Hosp	6	100	57.9	38.8	100	69	8
Takarinda[341]	2012	Zimbabwe	2009	2009	*				*	RC	Prog	6	84.9	··	··	135	90	7
Hoa[342]	2012	Multicountry	2003	2005	*			*	*	RC	Prog	6	NA	6.3	··	22833	10469	7
Cavanaugh[343]	2012	Russia	2002	2005					*	RC	Prog	2	0	··	42	165	35	7
Bloss[344]	2012	Taiwan	2007	2008					*	PC	Prog	0	NA	0	··	8248	3280	7
Kassa[345]	2012	Ethiopia	2005	2009	*					RC	Hosp	6	100	30.7	35*	1737	2473	8
Girardi[346]	2012	Italy	NA	NA	*				*	PC	Prog	6	100	19.91	··	199	47	7
Palacios[347]	2012	Peru	1996	2005	*					RC	Prog	2	100	48.1	30.5*	40	12	7
Feng[348]	2012	Taiwan	2007	2009	*		*	*		PC	Hosp	6	3.1	0	64.7	819	240	8
Mukherjee[349]	2012	India	1999	2005	*			*	*	RC	Prog	6	NA	9.29	··	2498	1107	7
Chirwa[350]	2013	Malawi	2007	2008					*	RC	Hosp	6	65.1	0	36	302	222	8
Mnisi[351]	2013	South Africa	2007	2009					*	RC	Prog	6	54	0	33.7	198	2	7
Riou[352]	2012	South Africa	2000	2001			*			RC	Hosp	0	52	0	··	17	3	8
Janols[353]	2012	Ethiopia	2007	2009	*			*	*	PC	Hosp	6	53.6	0	··	133	117	8

Koh[354]	2012	South Korea	2007	2009					*	RC	Hosp	1	NA	0	33*	26	25	8
Yee[355]	2012	Canada	1990	2000					*	RC	Prog	6	NA	17.63	..	184	94	7
Kattan[356]	2012	USA	2007	2009	*					RC	Prog	6	5.04	48.48	..	163	137	7
Valade[357]	2012	France	2000	2009	*					RC	Hosp	6	23	28	41*	40	13	8
Tabarsi[358]	2012	Iran	2004	2007	*					RC	Hosp	6	100	7.2	38	107	4	8
Van'tHoog[359]	2012	Kenya	2006	2008	*				*	RC	Prog	6	56	20.12	..	5064	5811	7
Gegia[360]	2012	Georgia	2007	2009					*	RC	Prog	3	NA	0	35*	711	198	7
Baghaei[361]	2012	Peru	2000	2006					*	RC	Hosp	6	1.522	16.09	31.6	255	205	8
Belo[362]	2011	Brazil	2005	2008	*			*	*	PC	Hosp	6	NA	..	37.7*	303	157	8
Srinath[363]	2011	India	2008	2008					*	RC	Prog	6	5.5	16	..	674	334	7
Takarinda[364]	2011	Zimbabwe	2009	2009	*				*	RC	Prog	6	80	12	36*	866	934	7
Jeon[365]	2011	South Korea	2004	2004	*				*	RC	Hosp	2	NA	6.4	44.8	156	46	8
Jonnalagada[366]	2011	India	1994	2007	*					PC	Prog	6	22	..	36	231262	255079	7
Dooley[367]	2011	Morocco	2007	2008					*	RC	Prog	6	1	0	37	240	106	7
Farley[368]	2011	South Africa	2000	2004	*					PC	Prog	2	37.913	2	36.5	448	309	7
Bendayan[369]	2011	Israel	2000	2005	*					RC	Hosp	2	6.1	..	42.7	102	30	8
Christensen[370]	2011	Denmark	1972	2008	*					RC	Prog	6	0.661	100	39.5*	27	28	7
Visser[371]	2012	South Africa	2005	2008			*			RC	Hosp	0	10.5	0	30	79	34	8
Arentz[372]	2011	Kenya	2008	2009					*	RC	Hosp	6	40.96	22	..	104	79	8
Nahid[373]	2011	USA	1990	2001	*					RC	Prog	0	36	0	..	452	113	7
Burton[374]	2011	Ghana	2009	2009	*					RC	Hosp	6	35.4	37.2	42	370	229	8
Blanc[375]	2011	Cambodia	2006	2009	*					RC	Hosp	6	100	..	35*	425	236	8
Jung[376]	2010	USA	1990	2006	*					RC	Prog	6	15.1	..	..	32966	20539	7
Kim[377]	2010	South Korea	2000	2002	*					RC	Prog	2	1.5	3.8	42.9	53	22	7

Vasankari[378]	2010	Finland	1995	1996	*				*	RC	Prog	6	NA	100	70.1*	94	137	7
Misra[379]	2010	India	2005	2008	*					PC	Hosp	6	NA	100	30*	51	48	8
Wen[380]	2010	Taiwan	1994	2007		*				PC	Prog	6	NA	0	..	231262	255079	7
Hsu[381]	2010	Taiwan	2000	2006	*					RC	Hosp	6	NA	100	54.9	71	37	8
Sassaki[382]	2010	Brazil	2001	2004					*	RC	Prog	6	NA	0	..	3150	1600	7
Ferrer[383]	2010	USA	1994	2007					*	RC	Prog	6	0	0	..	23	12	7
Buu[384]	2010	Vietnam	2005	2007					*	PC	Hosp	6	NA	0	..	843	263	8
Silva[385]	2010	Brazil	2005	2007	*					RC	Hosp	6	68.7	64.1	43.2	30	37	8
Shaw[386]	2010	USA	2000	2005	*					RC	Prog	6	19.52	100	..	127	83	7
Vinnard[387]	2010	USA	1993	2005	*					RC	Prog	3	40.84	100	..	1150	746	7
Uwizeye[388]	2011	Rwanda	2006	2006	*			*		RC	Prog	6	45.85	27.7	..	1012	661	7
Jacobson[389]	2011	South Africa	2000	2009					*	RC	Hosp	3	21	0	38.2	101	25	8
Joseph[390]	2011	India	2008	2009				*		RC	Prog	6	NA	0	38.78	224	62	7
Fawibe[391]	2011	Nigeria	1999	2008	*					RC	Hosp	6	12.1	0	36	45	29	8
Marais[392]	2011	South Africa	2009	2009	*					RC	Hosp	6	88.3	100	..	60	60	8
Horne[393]	2010	USA	1993	2005	*					RC	Prog	6	4.8	23.2	45	2102	1349	7
Silva[394]	2010	Brazil	2005	2007	*					RC	Hosp	6	70.8	65.7	..	202	109	8
Leimane[395]	2010	Latvia	2000	2004					*	RC	Prog	1	3.1	0	..	780	247	7
Dheda[396]	2010	South Africa	2002	2008	*		*			RC	Hosp	4	49	..	33	85	89	8
Senkoro[397]	2010	Tanzania	2008	2008			*			PC	Hosp	6	33.7	0	35.7	345	153	8
Chidambaram[398]	2020	Taiwan	2000	2016	*		*	*		RC	Hosp	0	2.3	0	66.6	1975	919	8

***Outcome reported.**

CC=Case control. PC=Prospective cohort. RC=Retrospective cohort. EPTB=Extrapulmonary Tuberculosis.
Hosp= Hospital Data. Prog=Programmatic data. NOS= Newcastle Ottawa Score.

Drug resistance,

0=Drug sensitive
1=Drug resistant (not defined)
2=Only MDR
3=Only mono-resistant
4=Only XDR
6=Drug sensitivity characteristics not available

Supplementary Table 3: Parameters adjusted for with respect to the outcomes in the individual studies.

Study	Age	HIV	Type	BMI	Smoking	Education	Diabetes	Alcohol	Race	SES	Cavity	Hb	Hypertension	Bacteria
Shimazaki[105]	*			*	*			*				*		*
Chidambaram[398]	*	*		*	*		*	*			*		*	
Nagu[146]	*	*		*	*	*					*		*	
Ko[157]	*	*	*										*	
Umanah[258]	*		*	*							*	*		
Ferreira[85]	*	*	*		*			*				*		
Bigna[245]	*		*			*						*		
Gunda[213]	*	*			*							*		
Han[96]	*			*								*		
Balabanova[200]	*	*	*		*			*		*	*			
Atif[277]	*				*		*	*			*			
Kang[319]	*			*			*				*			
Nahid[373]	*	*									*			
Shaw[386]	*	*					*		*	*				
Aibana[135]	*	*						*		*				
Pradipta[65]	*						*			*				
Girardi[346]	*	*	*			*				*				
Nagu[145]	*	*								*				
Uyei[289]	*									*				
Sun[269]	*									*				
Pedrazzoli[63]	*		*						*					
Jung[376]	*								*					

Christensen[370]	*								*					
Rossetto[71]	*								*					
Arroyo[40]	*	*			*	*	*	*						
Reed[321]	*				*	*	*	*						
Jonnalagada[366]	*			*		*	*	*						
Washington[11]		*	*			*	*	*						
Wakamatsu[133]	*				*		*	*						
Ba´ez-Saldaña[231]	*	*					*	*						
Georghiou[182]	*	*		*	*		*							
Yamana[260]	*			*	*		*							
Seifert[183]	*	*		*			*							
Mehta[179]	*						*							
Nagu[155]	*	*		*	*	*								
Mattila[141]	*			*	*	*								
Yung-Feng Yen[206]	*			*		*								
Stosic[3]	*		*			*								
Kwon[299]	*				*									
Frank[92]	*				*									
Min[54]	*				*									
Mitnick[326]	*	*	*	*										
Humphrey[23]	*		*	*										
Zurcher[51]	*		*	*										
Gonah[34]	*	*		*										
Wejse[223]	*	*		*										

Shaweno[339]	*	*	*											
Ershova[302]	*	*	*											
Han[280]	*	*	*											
Pepper[221]	*	*	*											
Alobu[298]	*	*	*											
Pusch[278]	*	*	*											
Mhimbira[236]	*	*	*											
Gebremariam[233]	*	*	*											
García-Basteiro[228]	*	*	*											
Nglazi[224]	*	*	*											
Lakoh[29]	*	*	*											
Ramos[16]		*	*											
Hoa[342]	*		*											
Mok[118]	*		*											
Kaplan[90]	*		*											
Balaky[60]	*		*											
Musaazi[59]	*		*											
Crabtree-Ramʹırez[95]	*		*											
Janols[353]	*	*												
Manda[310]	*	*												
Shuldiner[230]	*	*												
Shin[184]	*	*												
Evans[88]	*	*												
Ohene[72]	*	*												

Schnippel[216]	*	*												
Ngahane[203]	*	*												
Zürcher[49]	*	*												
Bhering[43]		*												
Vasankari[378]	*													
Kassa[345]	*													
Babalik[311]	*													
Somsong[66]	*													
Makhmudova[36]	*													
Marais[274]	*													
Igari[250]	*													
Lettow[218]	*													
Teklu[187]	*													

*Parameter adjusted for in the study

HIV= Human Immunodeficiency Virus. BMI= Body Mass Index. SES=Socio-economic status. Hb= Hemoglobin.

Supplementary Table 4: Meta-regression analysis to assess the impact of the difference in Default, loss to follow up, treatment completion and HIV status on the association of male sex with all-cause mortality.

Characteristic	Increase in log-odds in males compared to females	Number of studies	Difference in log-odds between males and females	p-value
Default	1	21	0.16[-0.21 to 0.55]	0.384
Loss to follow up	1	17	0.12[-0.32 to 0.56]	0.588
Treatment completion	1	18	0.05[-0.30 to 0.41]	0.781
HIV	1	15	0.39[0.14 to 0.66]	0.002

HIV = Human Immuno-deficiency virus.

Supplementary Table 5: Association of male sex with treatment success in patients with Tuberculosis

Outcome	Estimate	No. of studies	Unadjusted Effect size	I^2	No. of studies	Adjusted Effect size	I^2
Success	OR	130	0.74[0.70-0.80]	90.54	40	0.87[0.81-0.92]	45.2
	HR	35	0.72[0.62-0.82]	75.25	20	0.82[0.73-0.92]	25.6

HR=Hazard ratio. OR=Odds ratio.

Supplementary Table 6: Meta-regression analysis to assess the impact of comorbidities of the study participants on the association of male sex with tuberculosis treatment outcomes.

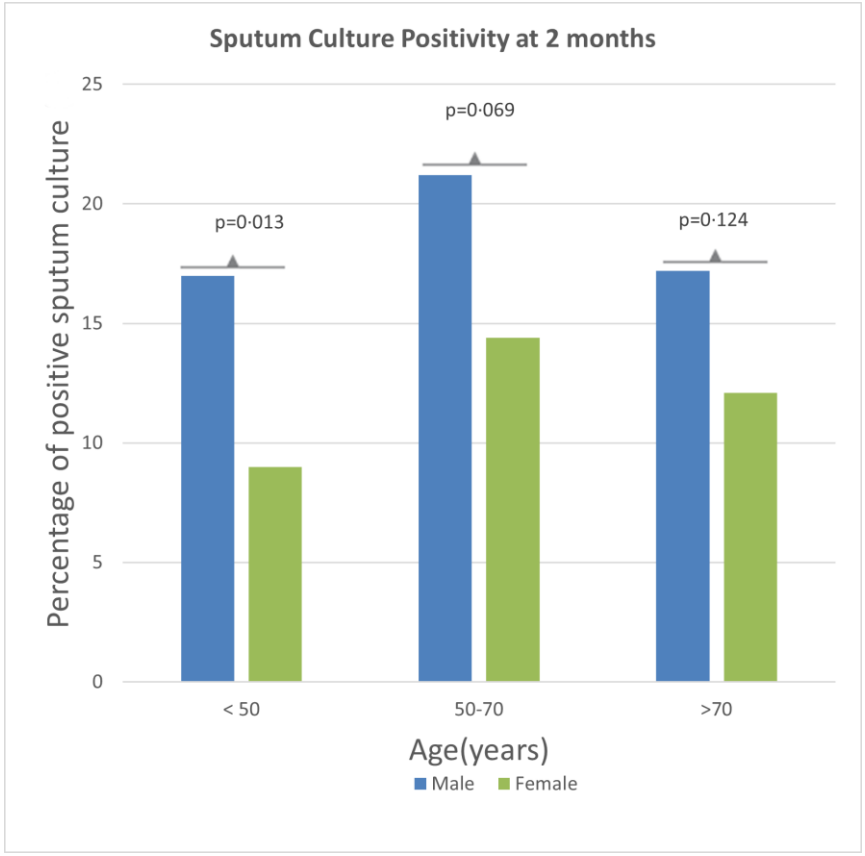
Characteristics in the study population	Increase in the variable	All-cause mortality			Treatment Success			Sputum Smear positivity			Sputum Culture positivity		
		No. of studies	Change in log odds	p-value	No. of studies	Change in log odds	p-value	No. of studies	Change in log odds	p-value	No. of studies	Change in log odds	p-value
Age	10 years	75	0.03[-0.02 to 0.09]	0.299	48	-0.05[-0.16 to 0.05]	0.295	20	0.14[0 to 0.29]	0.051	10	0.14[0 to 0.29]	0.05
Diabetes	10%	40	0[-0.012 to 0.012]	0.995	37	0.03[-0.11 to 0.16]	0.680	9	-	-	7	-	-
Hypertension	10%	10	0.06[-0.14 to 0.26]	0.533	5	-0.05[-0.23 to 0.13]	0.571	3	-	-	-	-	-
Alcohol	10%	28	0[-0.09 to 0.09]	0.865	18	-0.03[-0.15 to 0.08]	0.587	6	-	-	4	-	-
Smoking	10%	26	0.05[0 to 0.11]	0.050	26	-0.07[-0.13 to 0.11]	0.897	5	-	-	6	-	-
Cardiovascular diseases	10%	10	-0.26[-0.68 to 0.16]	0.217	4	-0.16[-0.37 to 0.05]	0.133	2	-	-	2	-	-
COPD	10%	12	-0.06[-0.17 to 0.07]	0.444	7	-0.05[-0.94 to 0.85]	0.912	3	-	-	4	-	-
HIV	10%	108	-0.02[-0.05 to -0.01]	0.003	89	0.01[-0.02 to 0.03]	0.679	20	-0.01[-0.05 to 0.05]	0.873	9	-	-

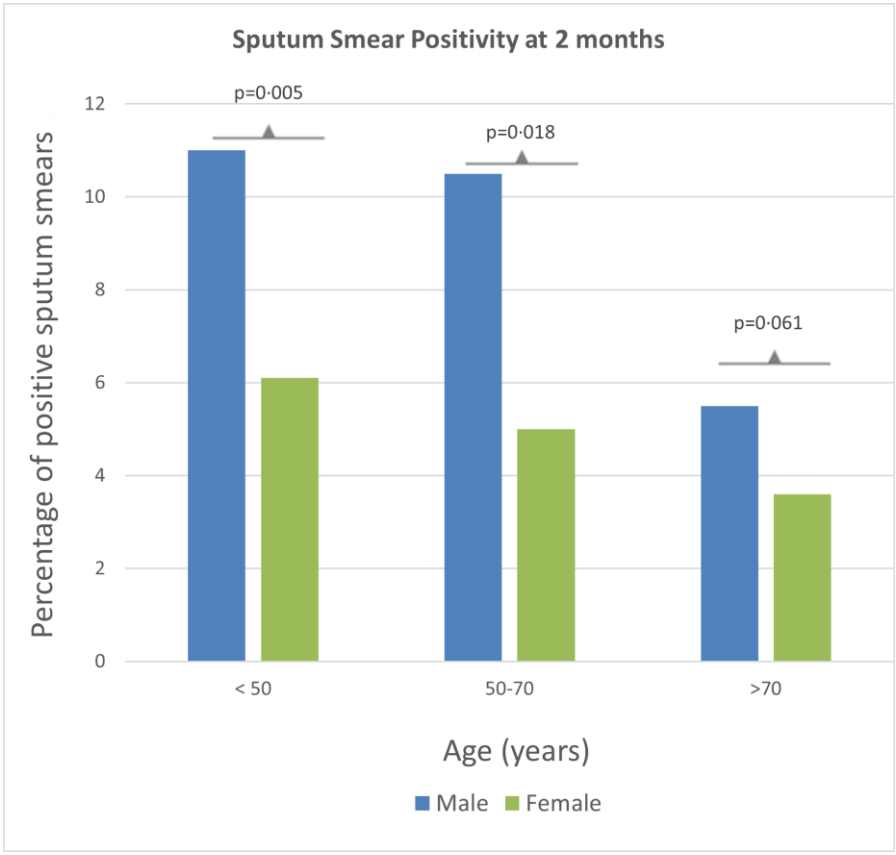
COPD=Chronic obstructive Pulmonary disease. HIV=Human Immunodeficiency Virus.

Section-IV

Supplementary figures

eFigure A. Microbiological outcomes after two months of tuberculosis treatment in the retrospective cohort. i) Sputum culture positivity. ii) Sputum AFB smear positivity at 2 months since treatment initiation

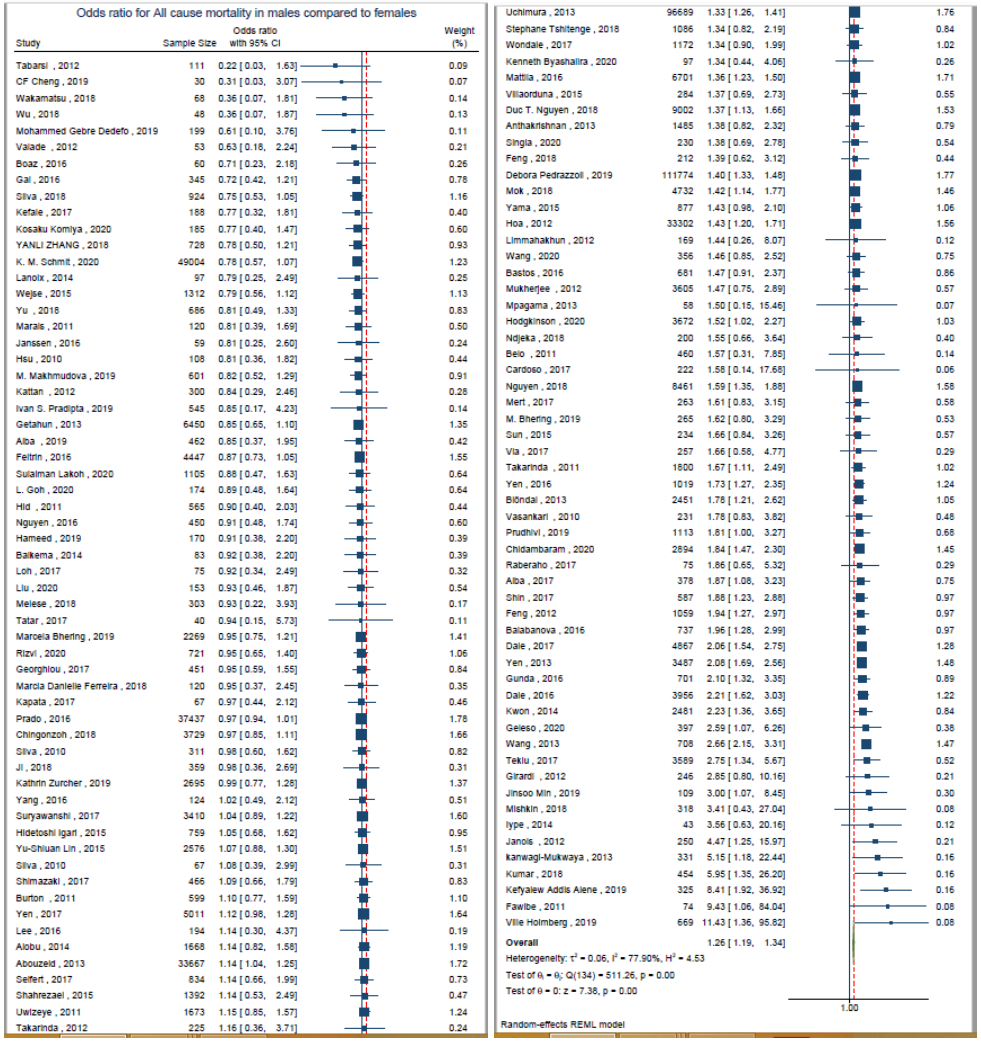




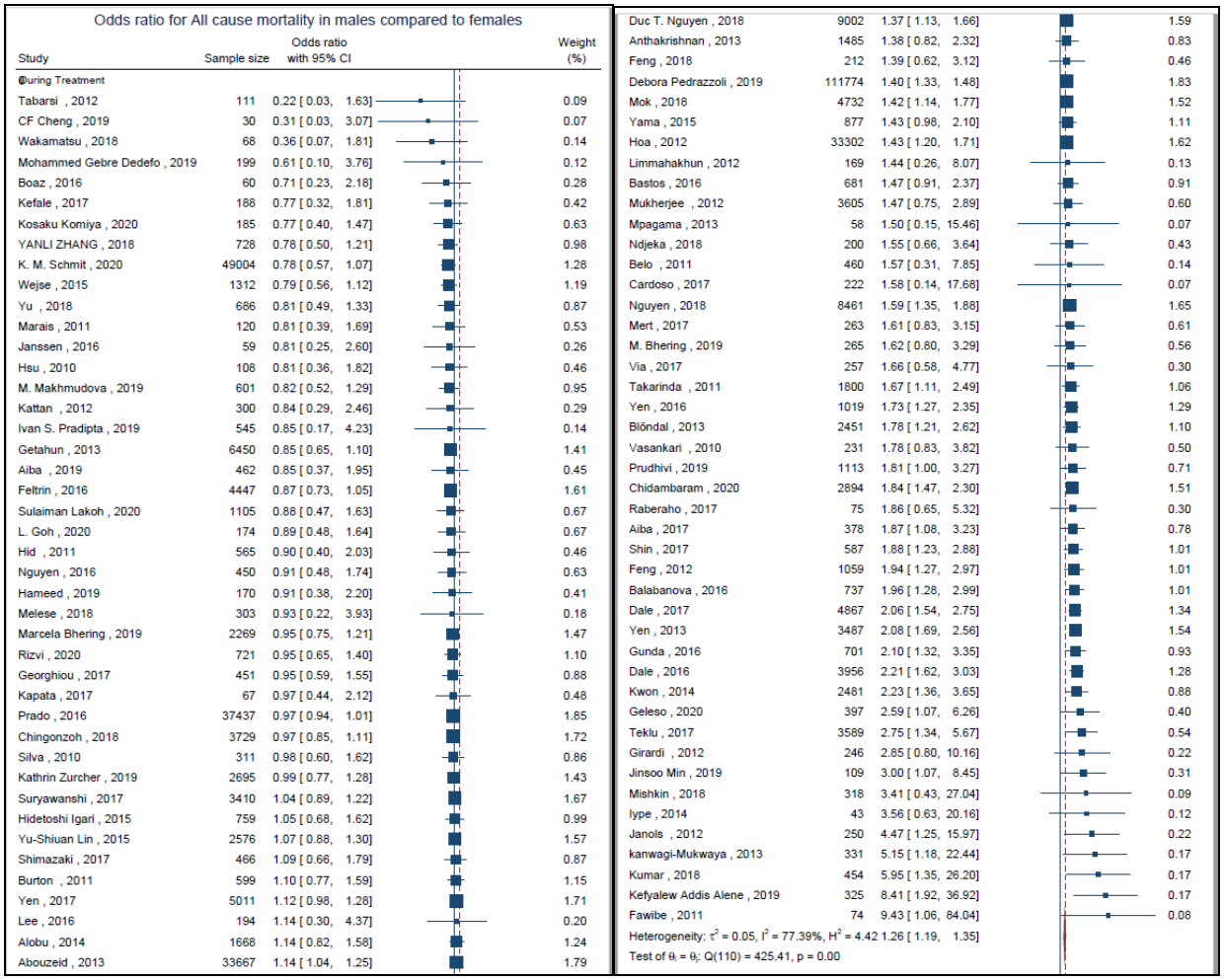
Forest charts, funnel plots and Bubble plots

eFigure 1. Pooled odds ratio for all-cause mortality in male patients compared to female patients. (Unadjusted)

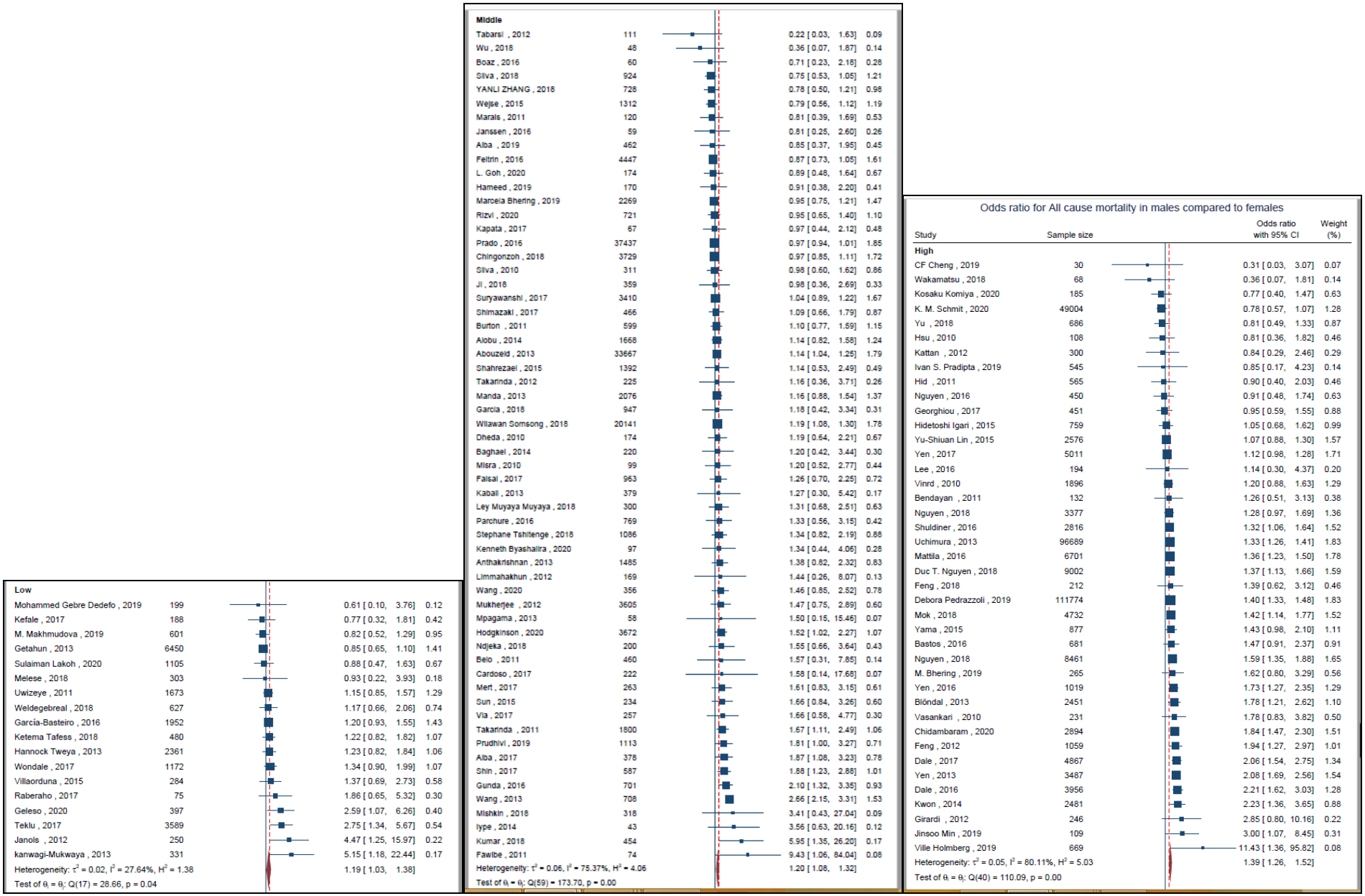
1a) Forest plot



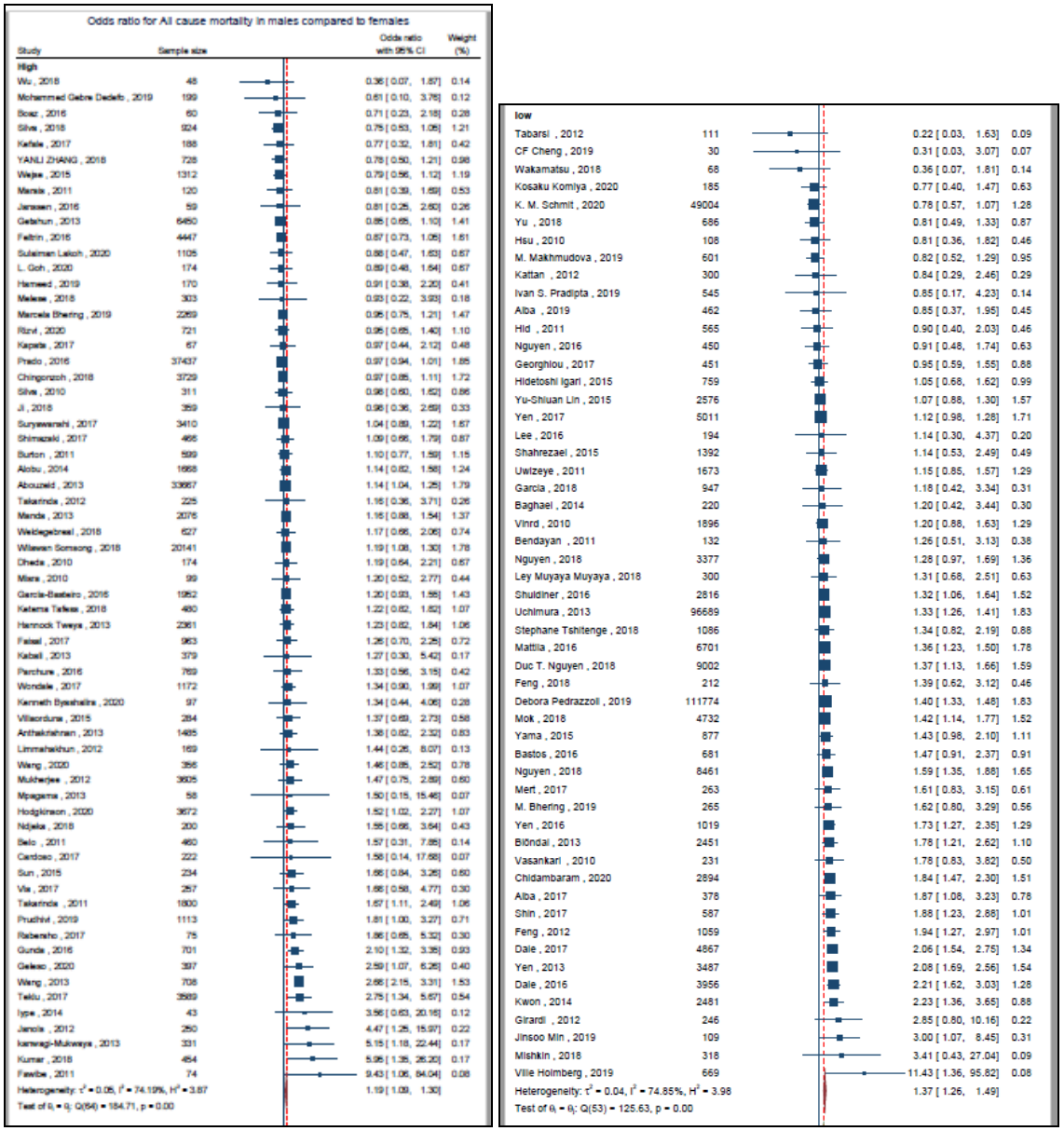
1b) Subgroup analysis based on the time of outcome assessment. (During Treatment and During Follow up)



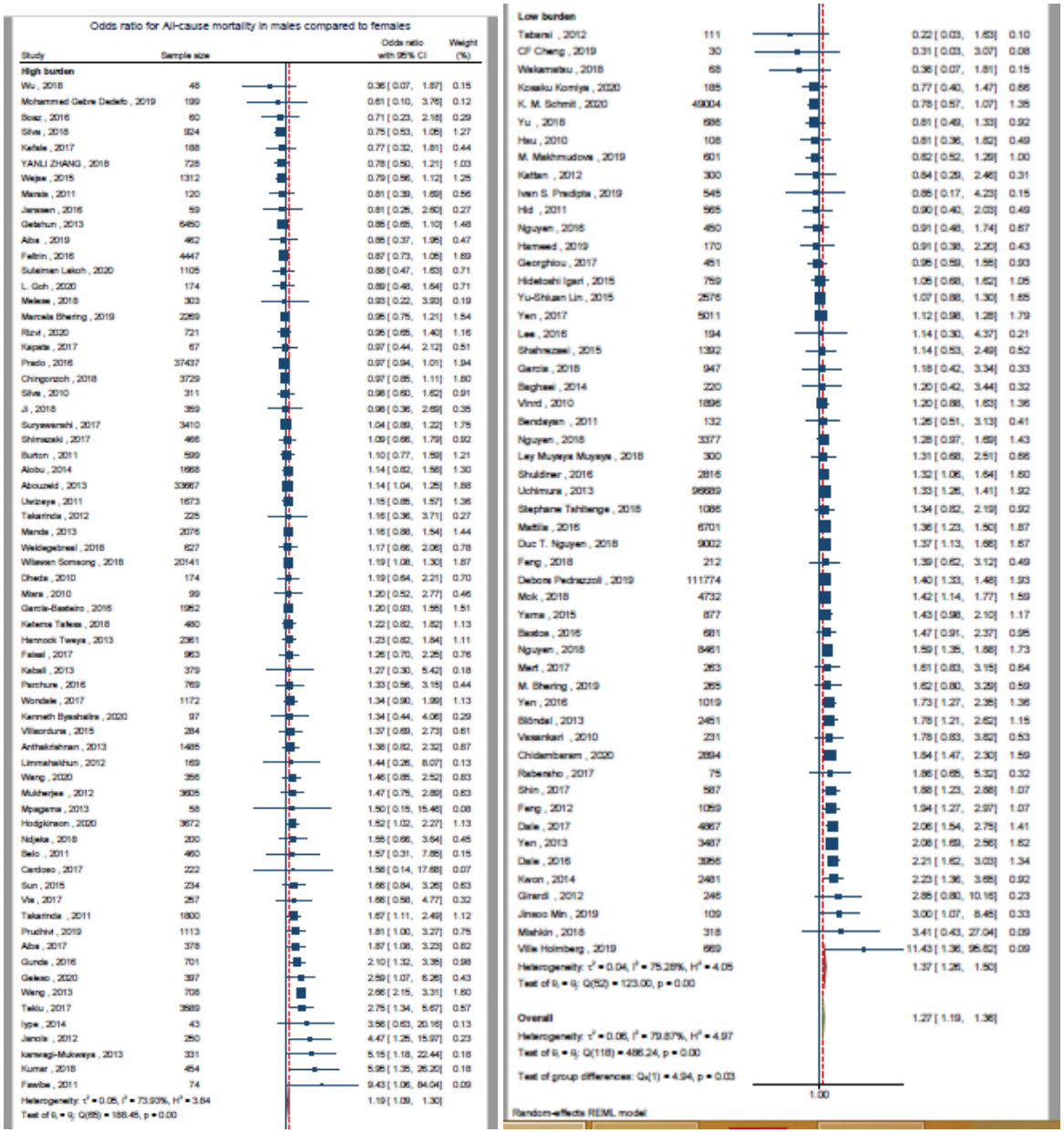
1c) Subgroup analysis based on the World Bank income status classification.



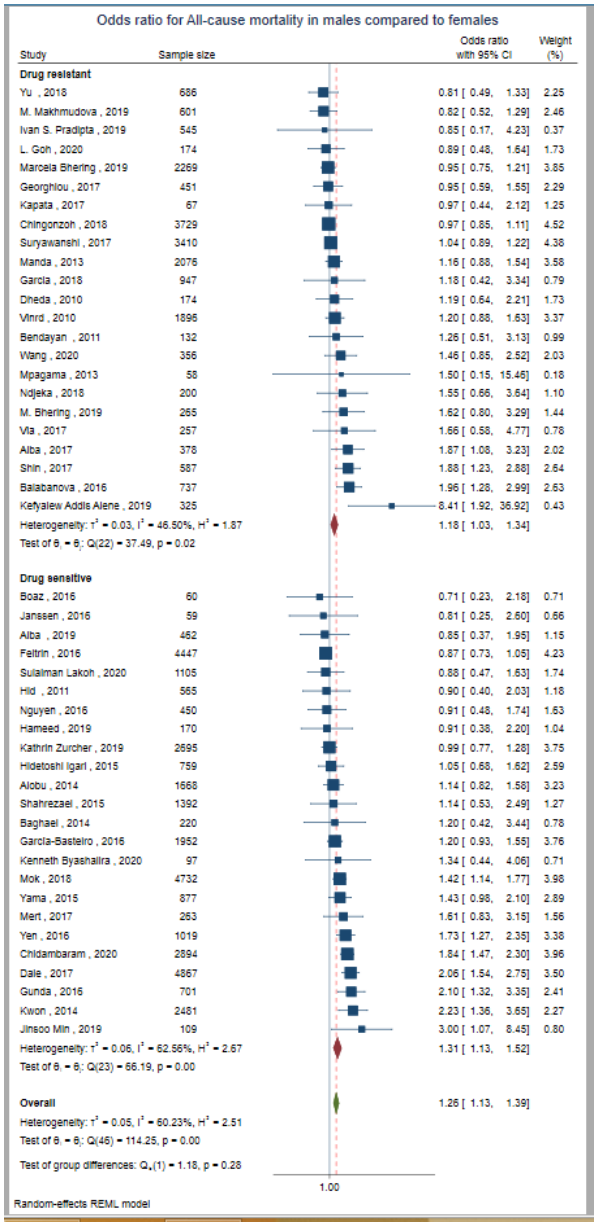
1d) Subgroup analysis based on the TB incidence of the study country.



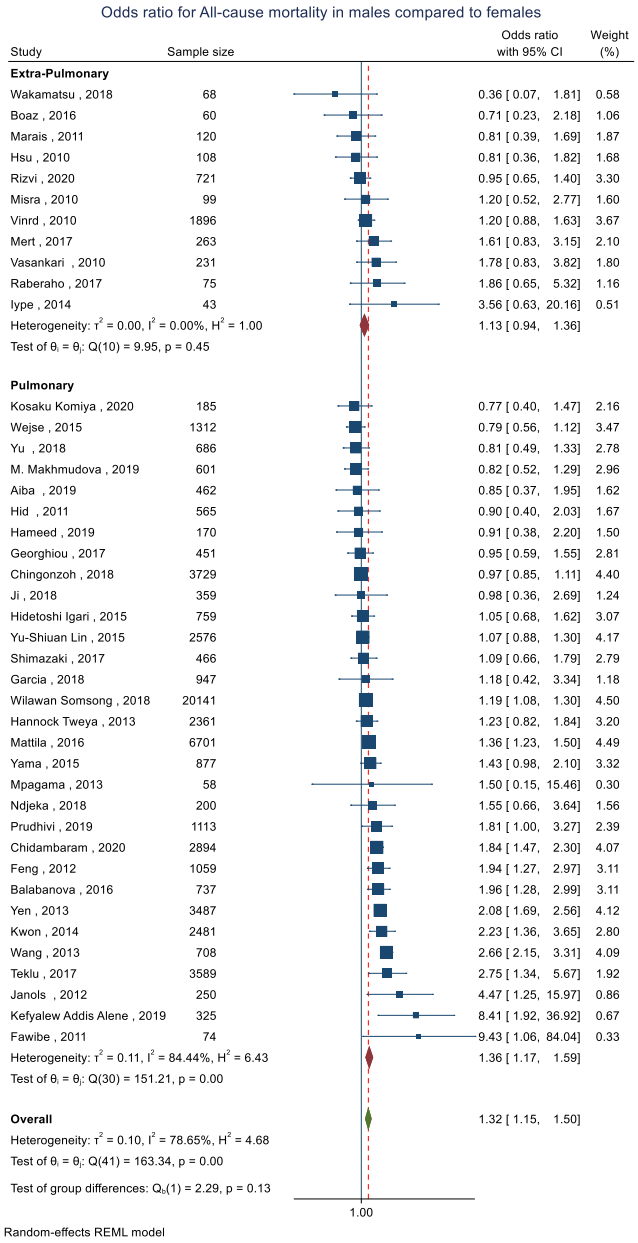
1e) Subgroup analysis based on the TB-HIV coinfection incidence of the study country.



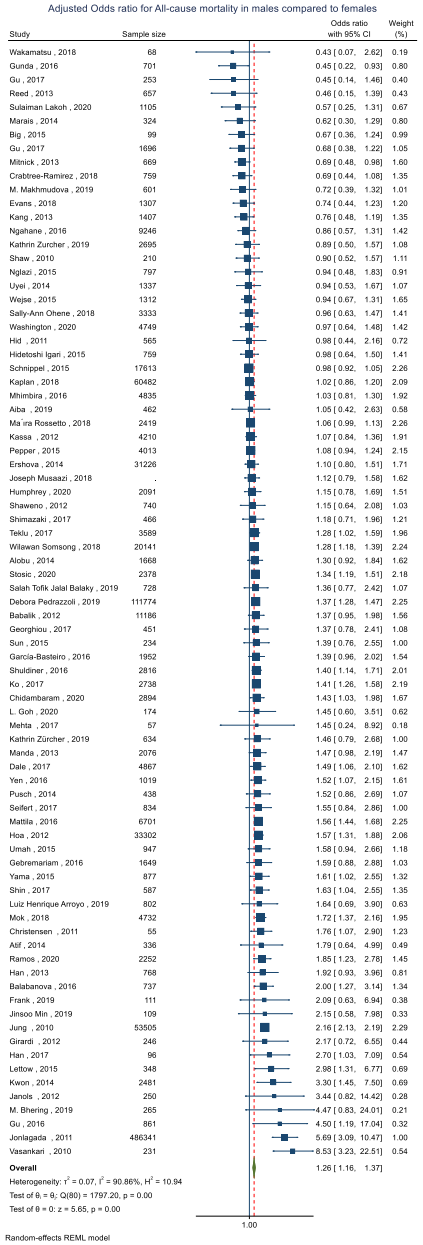
1f) Subgroup analysis based on the drug sensitivity of the study participants.



1g) Subgroup analysis based on the site of TB.

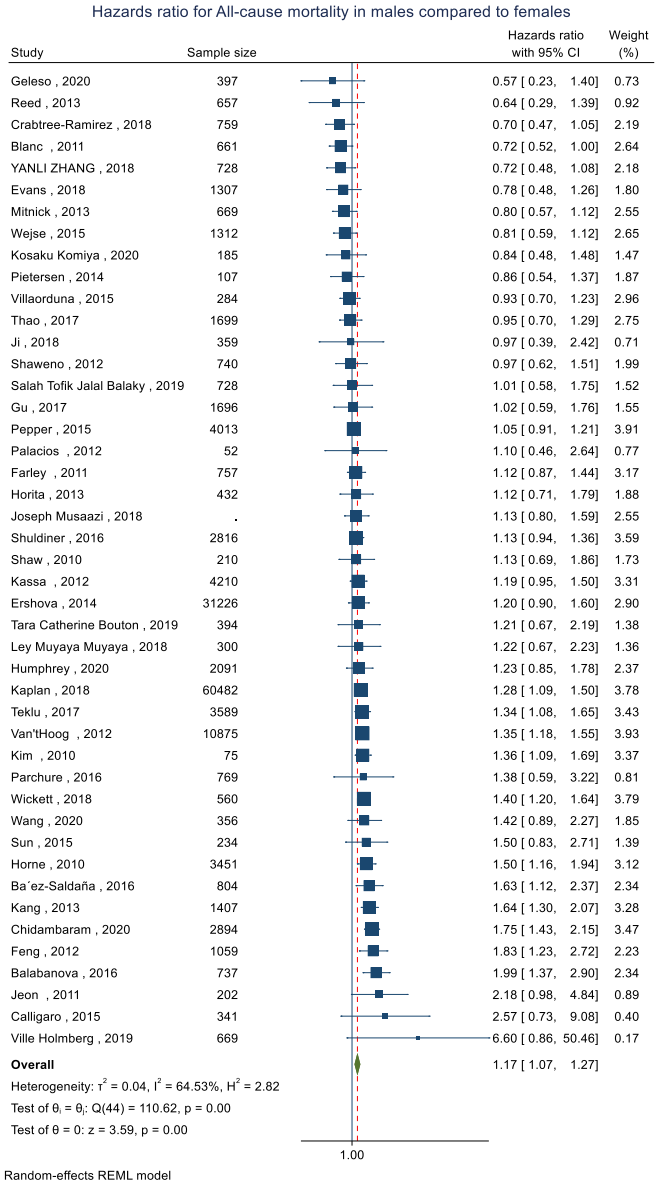


eFigure 2. Pooled odds ratio for all-cause mortality in male patients compared to female patients. (Adjusted)

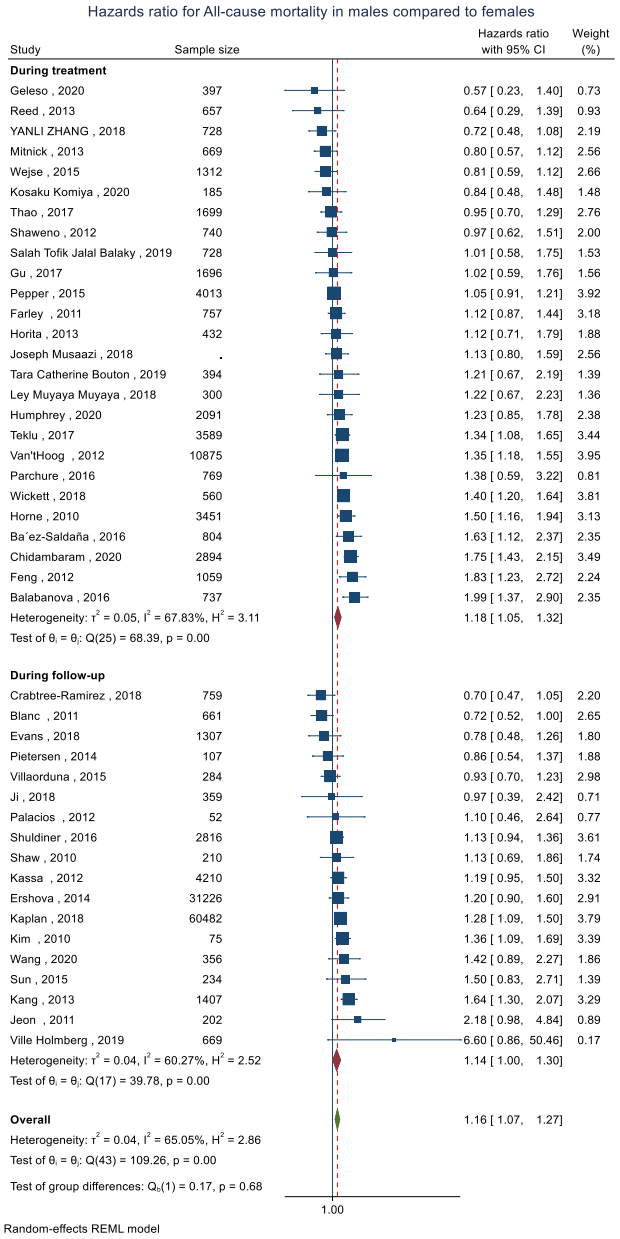


eFigure 3. Pooled hazard ratio for all-cause mortality in male patients compared to female patients. (Unadjusted)

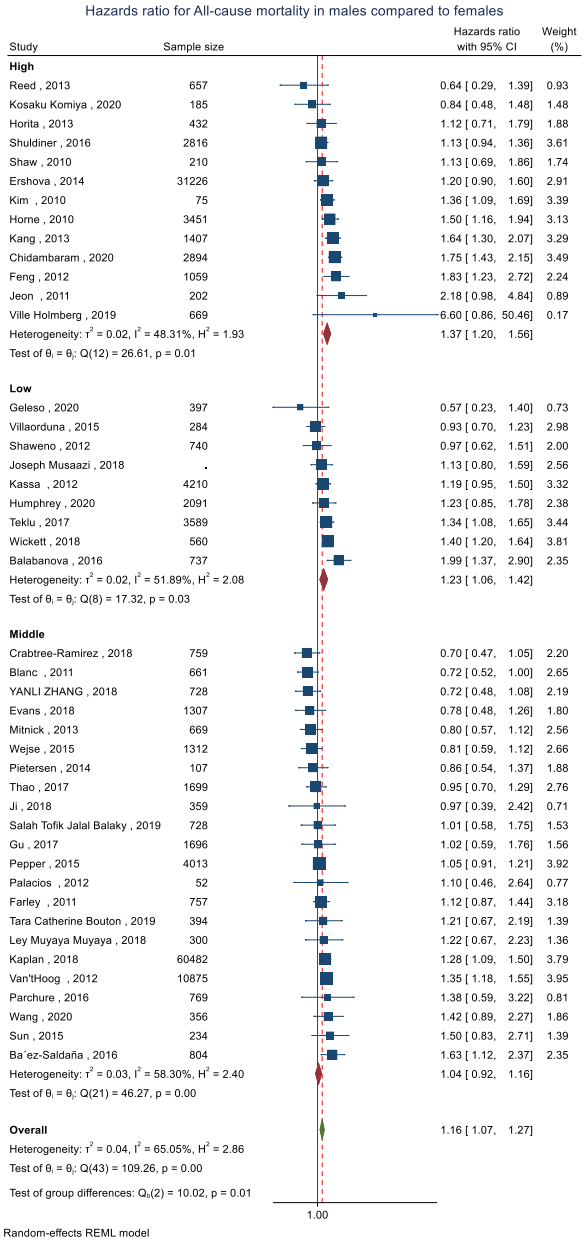
3a) Forest plot



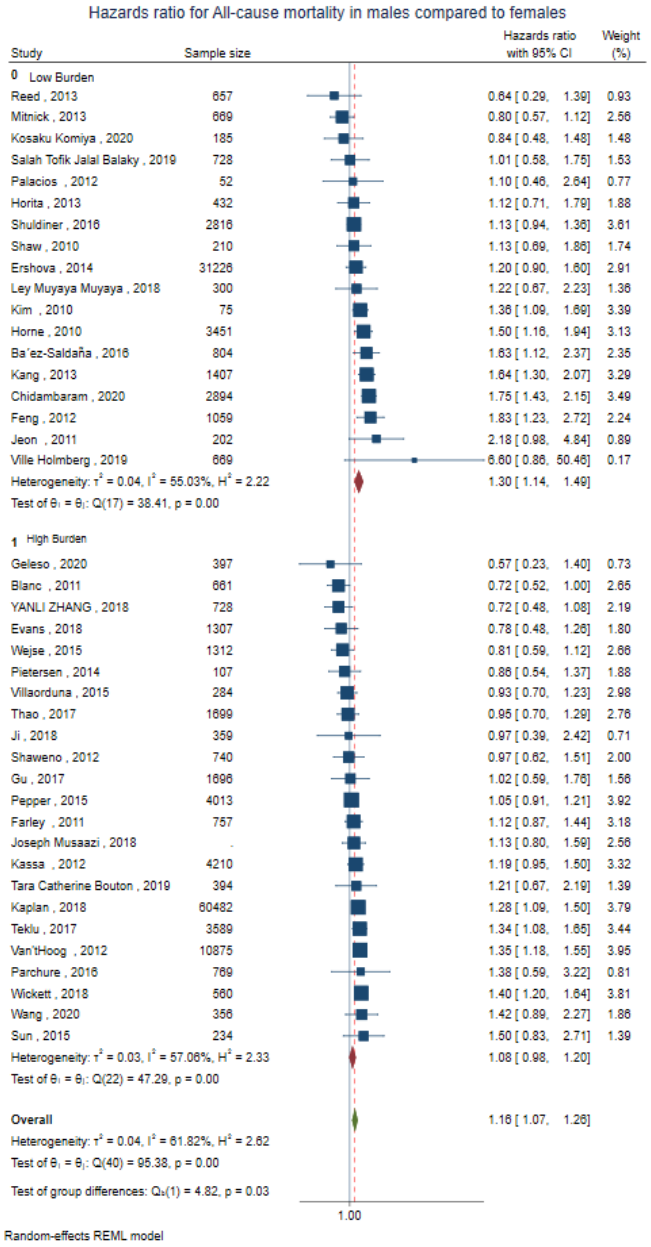
3b) Subgroup analysis based on the time of outcome assessment.



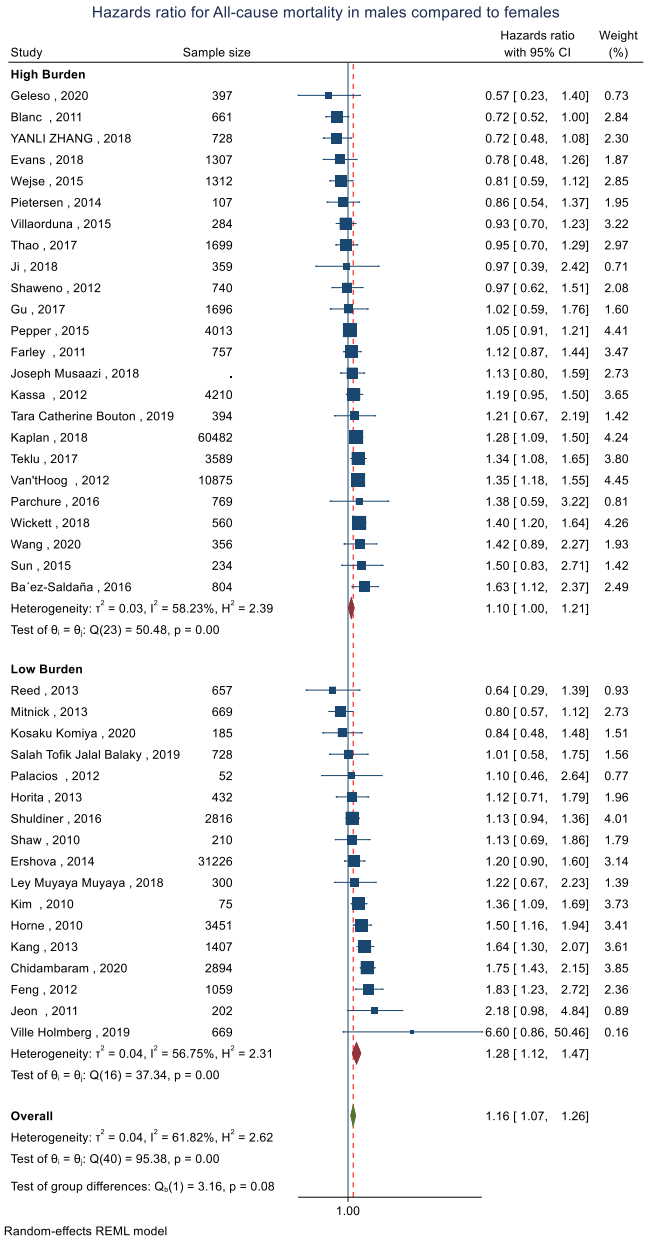
3c) Subgroup analysis based on the World Bank income status classification.



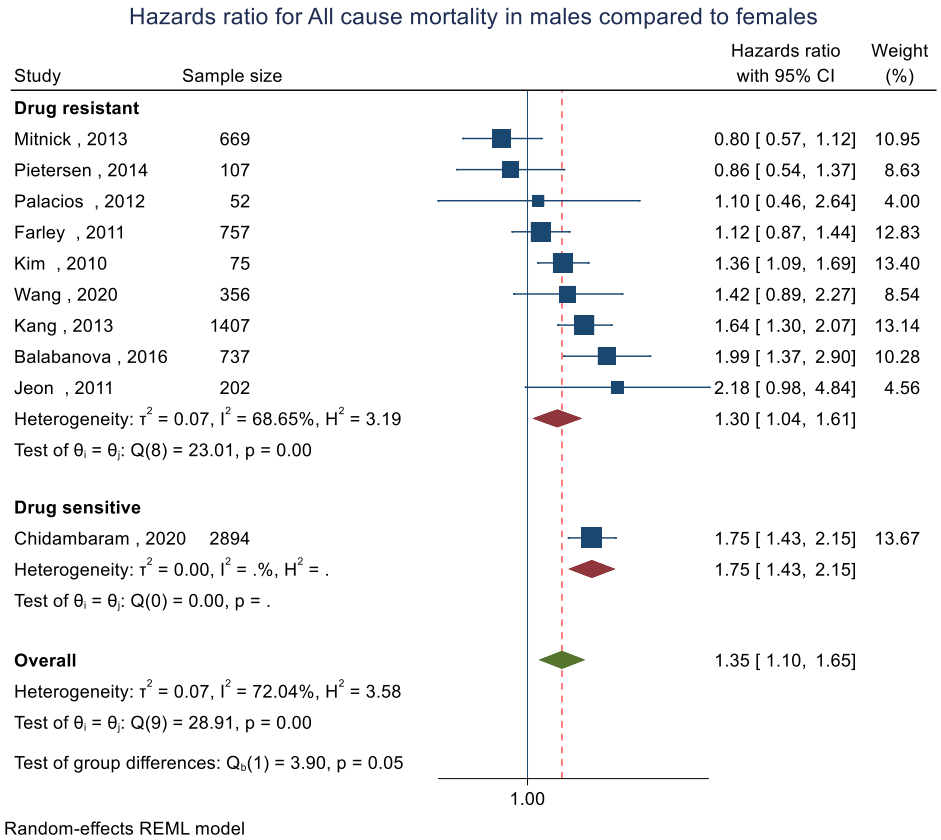
3d) Subgroup analysis based on the TB incidence of the study country.



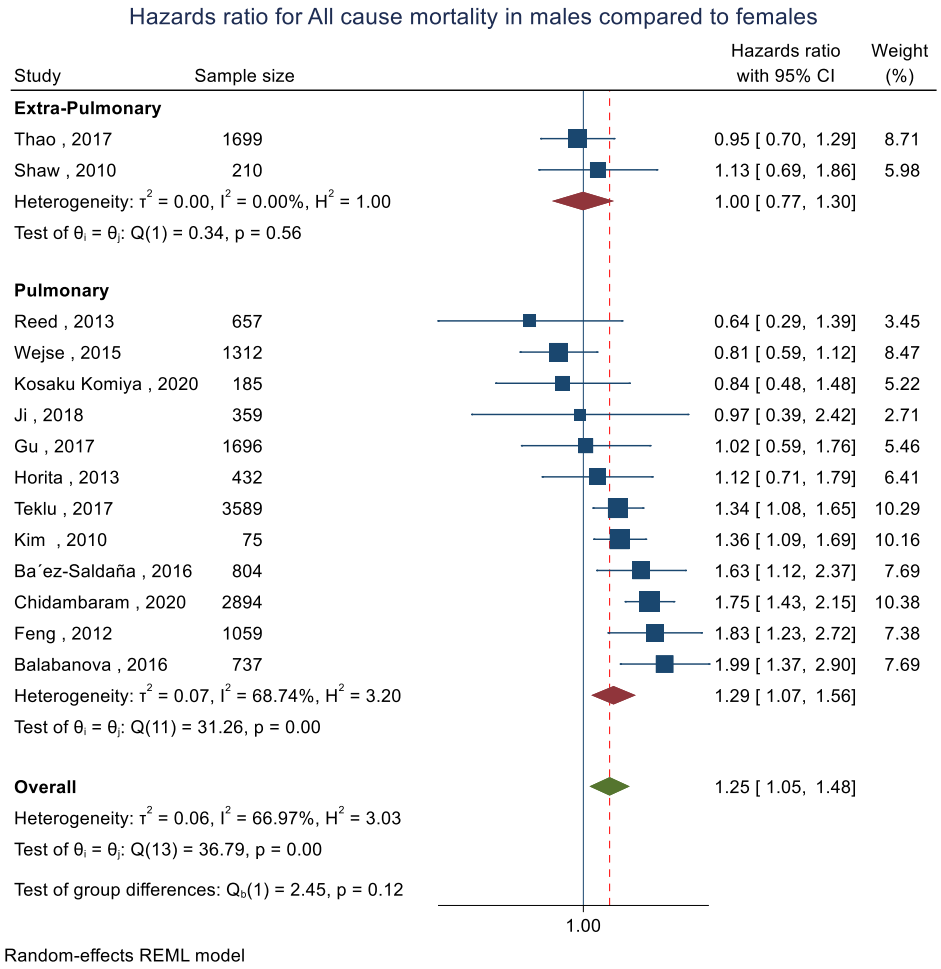
3e) Subgroup analysis based on the TB-HIV coinfection incidence of the study country.



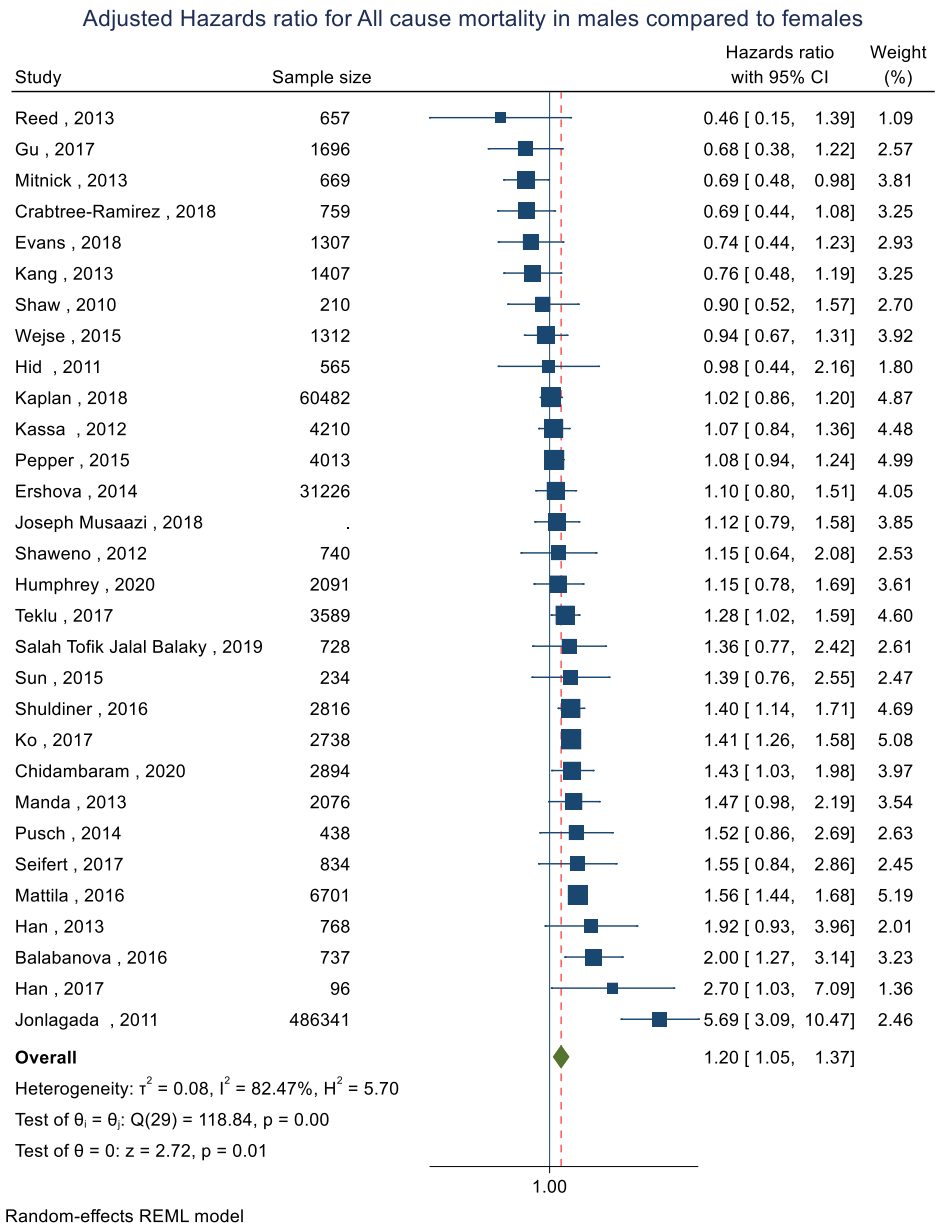
3f) Subgroup analysis based on the drug sensitivity of the study participants.



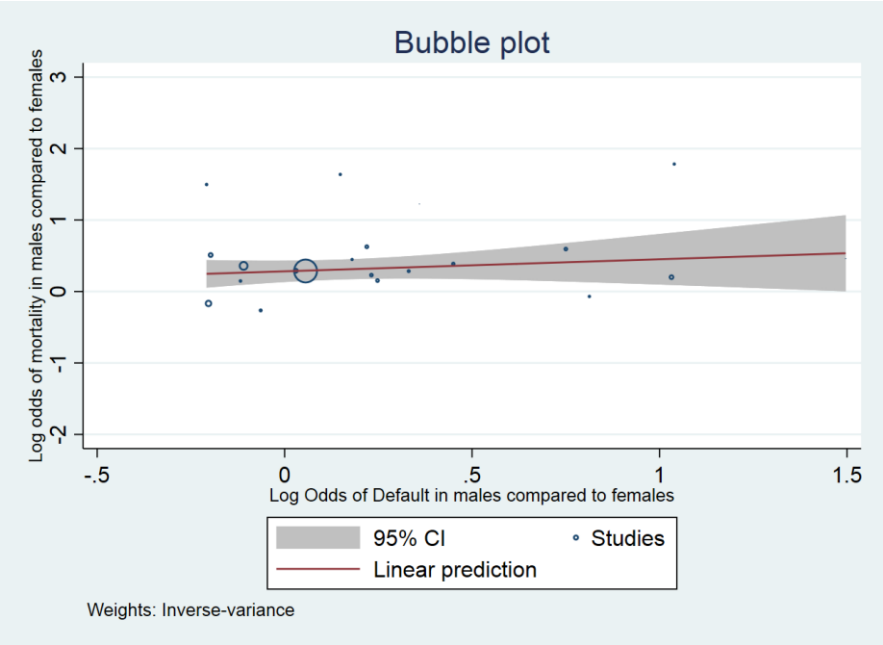
3g) Subgroup analysis based on the site of TB



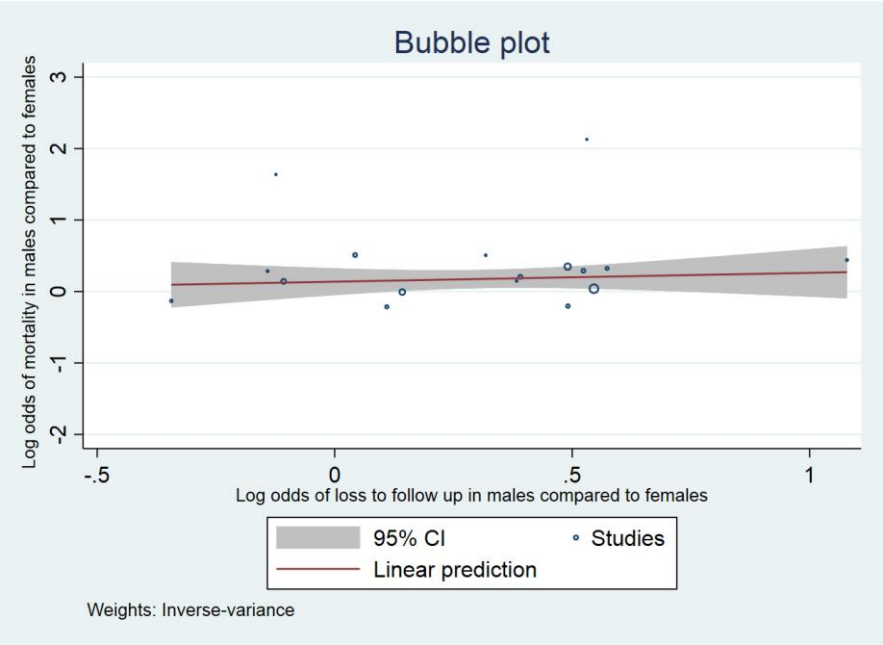
eFigure 4. Pooled hazard ratio for all-cause mortality in male patients compared to female patients. (Adjusted)



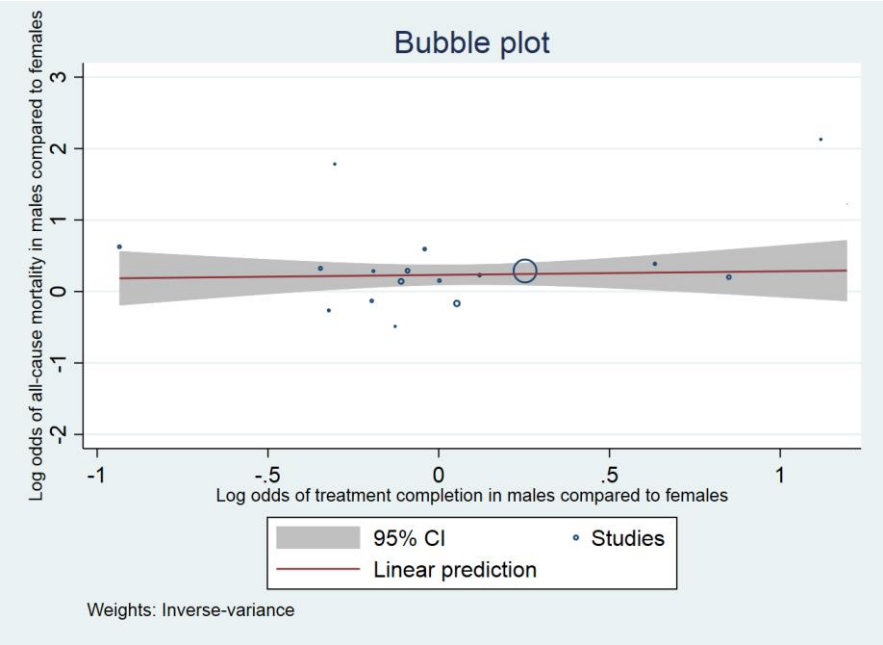
eFigure 5 Change in log-odds for mortality in males compared to females with change in default between males and females.



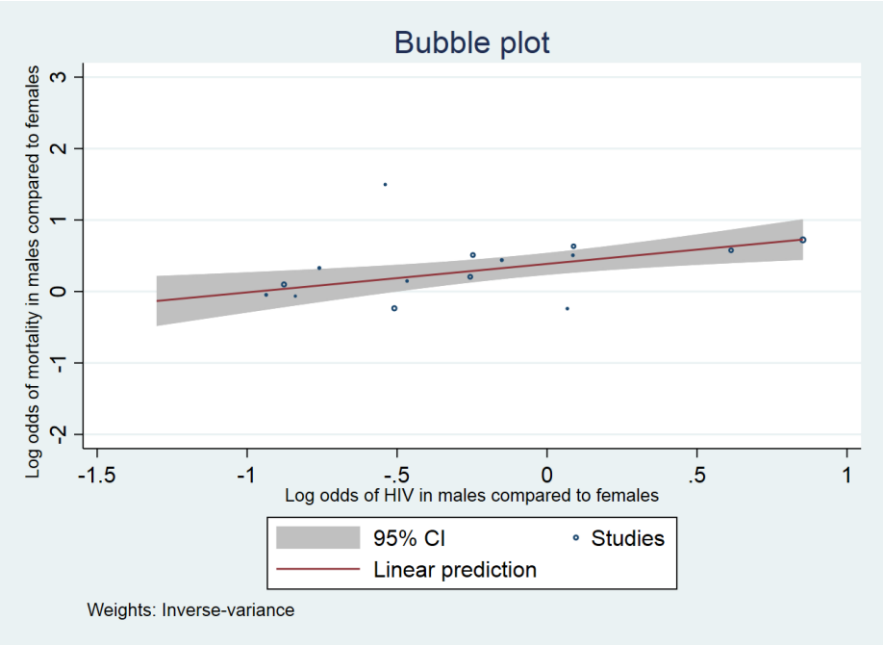
eFigure 6 Change in log-odds for mortality in males compared to females with change in LTFU between males and females.



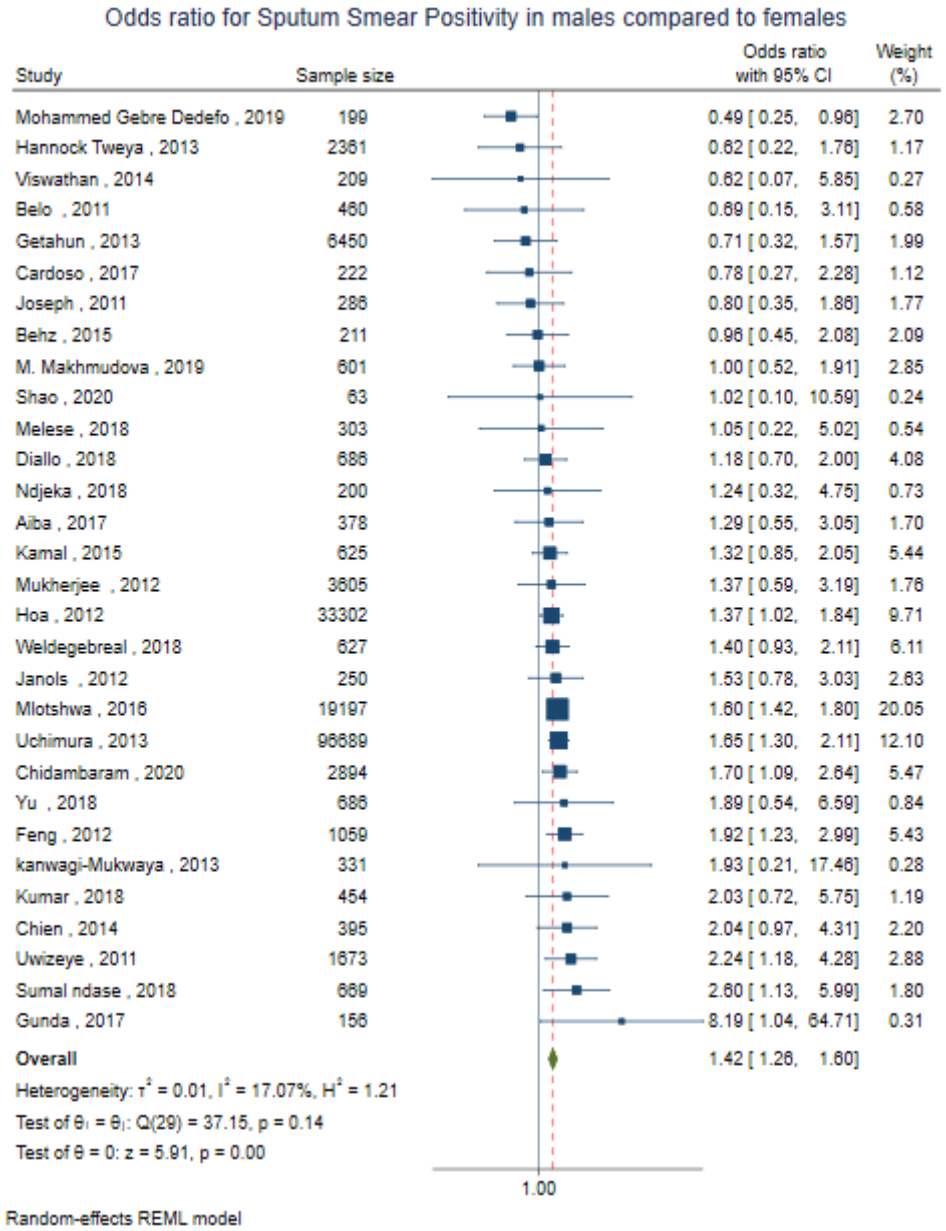
eFigure 7. Change in log-odds for mortality in males compared to females with change in treatment completion between males and females.



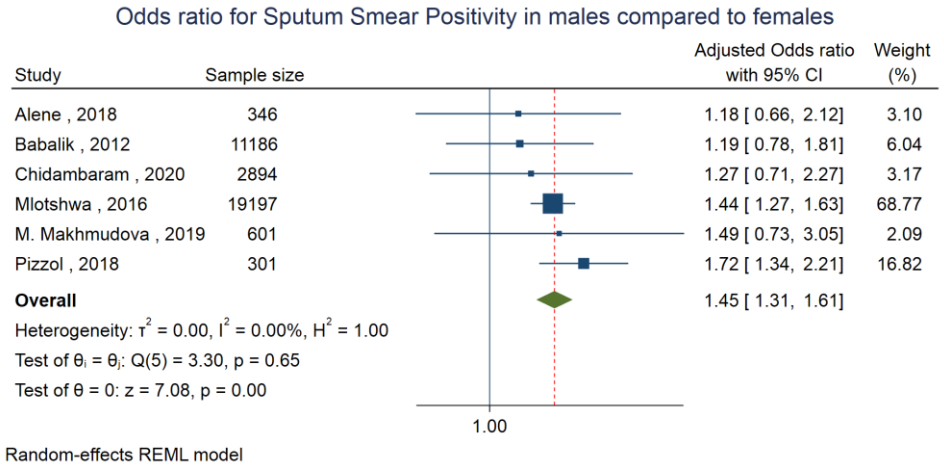
eFigure 8. Change in log-odds for mortality in males compared to females with change in HIV between males and females.



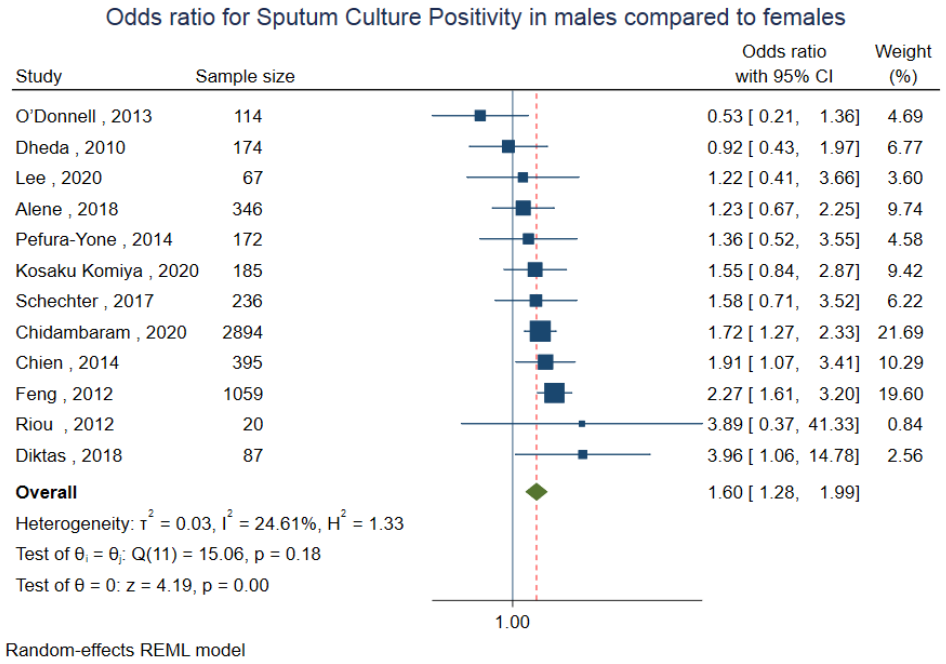
eFigure 9. Pooled odds ratio for sputum smear AFB positivity after treatment initiation in male patients compared to female patients. (Unadjusted)



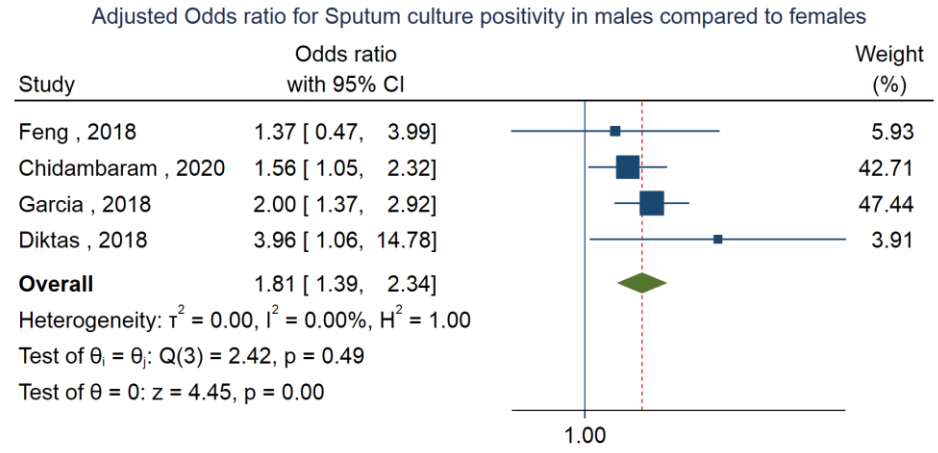
eFigure 10. Pooled odds ratio for sputum smear AFB positivity after treatment initiation in male patients compared to female patients. (Adjusted)



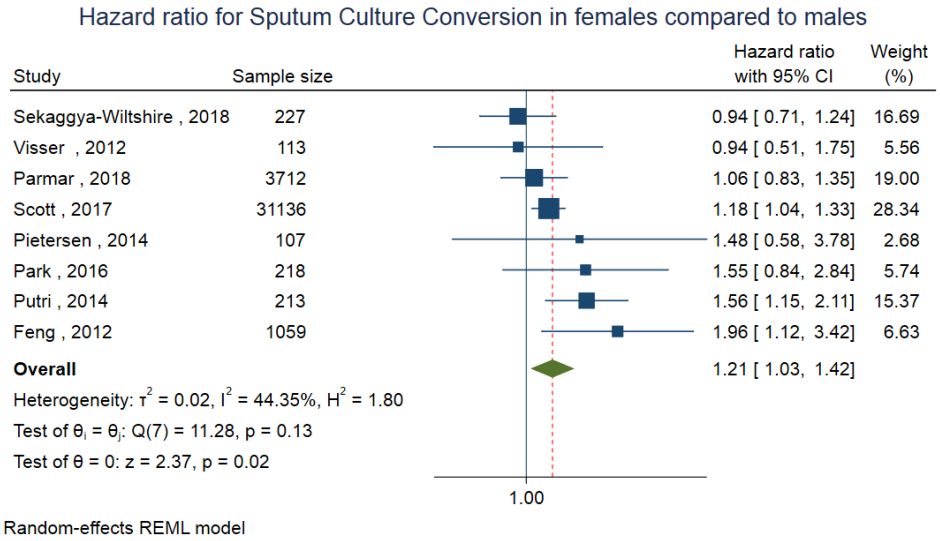
eFigure 11. Pooled odds ratio for sputum culture positivity after treatment initiation in male patients compared to female patients. (Unadjusted)



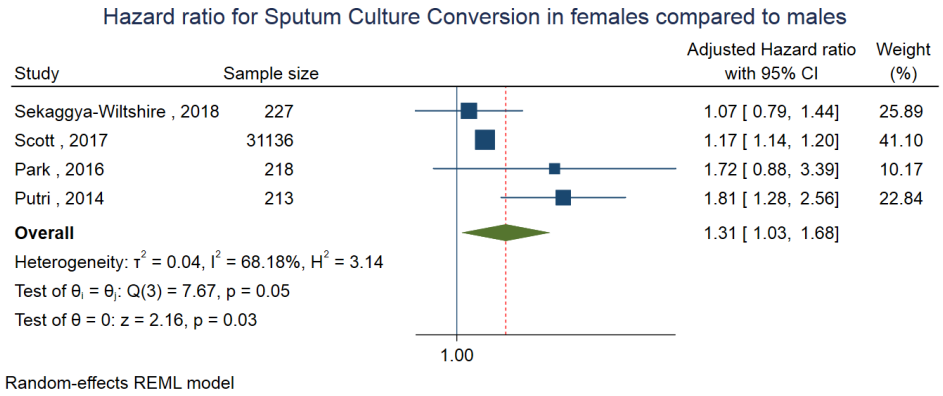
eFigure 12. Pooled odds ratio for sputum culture positivity after treatment initiation in male patients compared to female patients. (Adjusted)



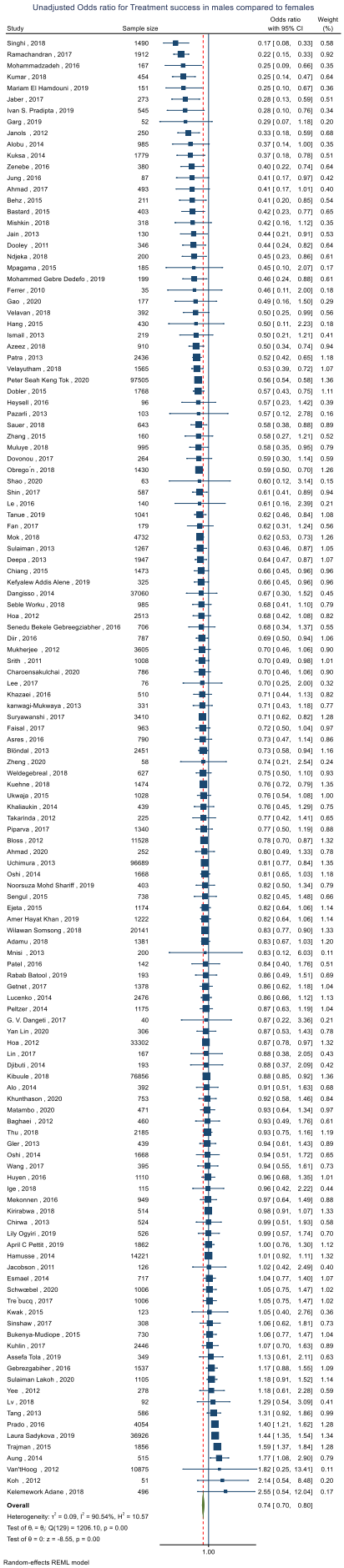
eFigure 13. Pooled hazard ratio for sputum culture positivity after treatment initiation in male patients compared to female patients. (Unadjusted)



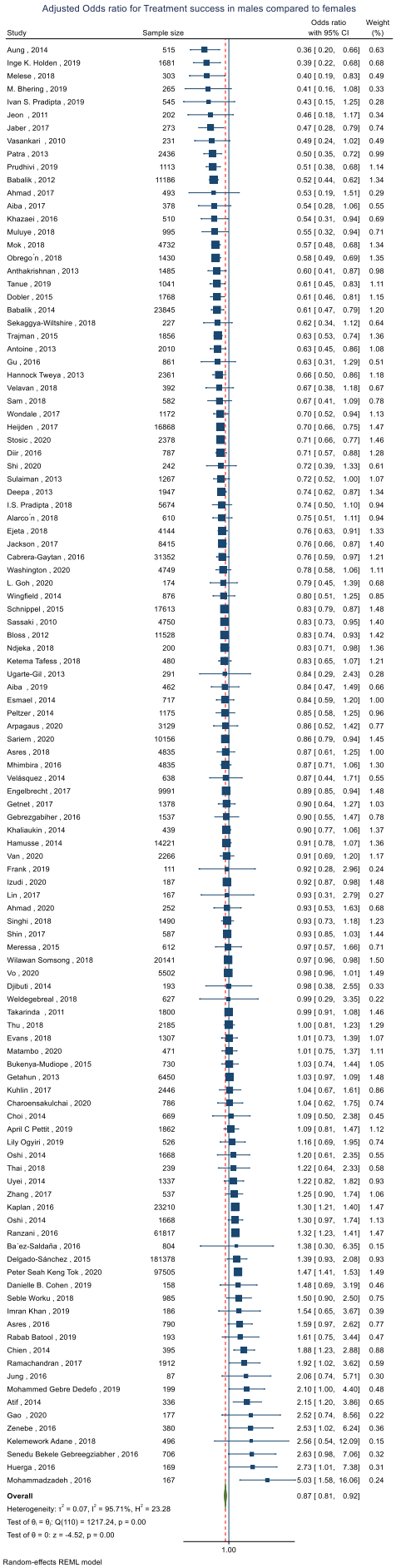
eFigure 14. Pooled hazard ratio for sputum culture positivity after treatment initiation in male patients compared to female patients. (Adjusted)



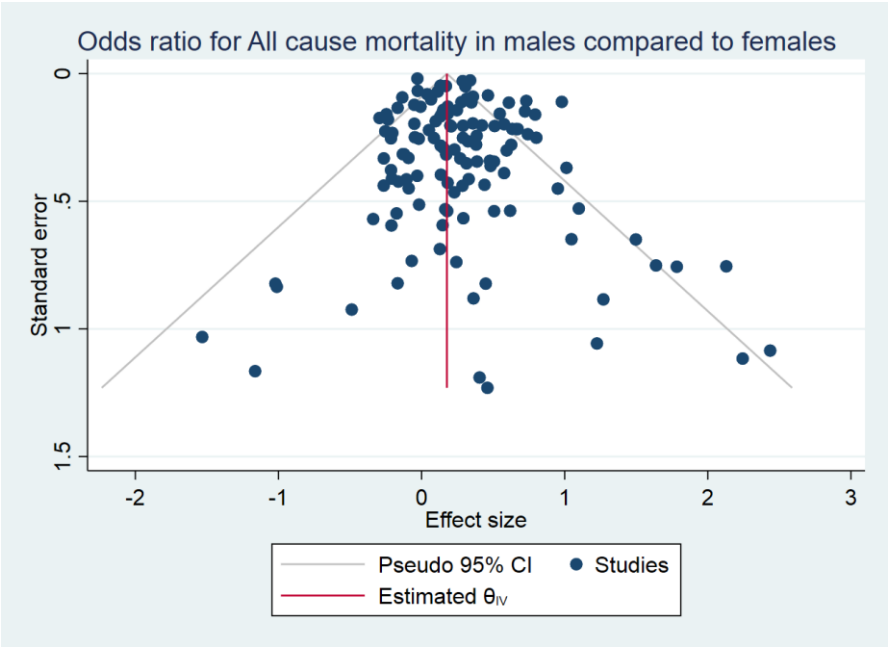
eFigure 15. Pooled odds ratio for treatment success positivity after treatment initiation in male patients compared to female patients. (Unadjusted)

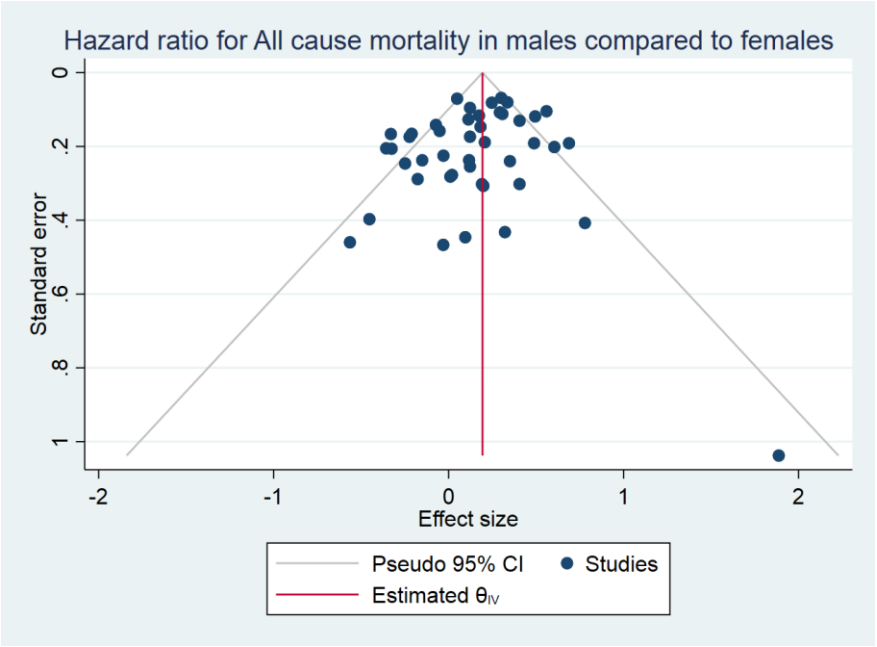


eFigure 16. Pooled odds ratio for treatment success positivity after treatment initiation in male patients compared to female patients. (Adjusted)

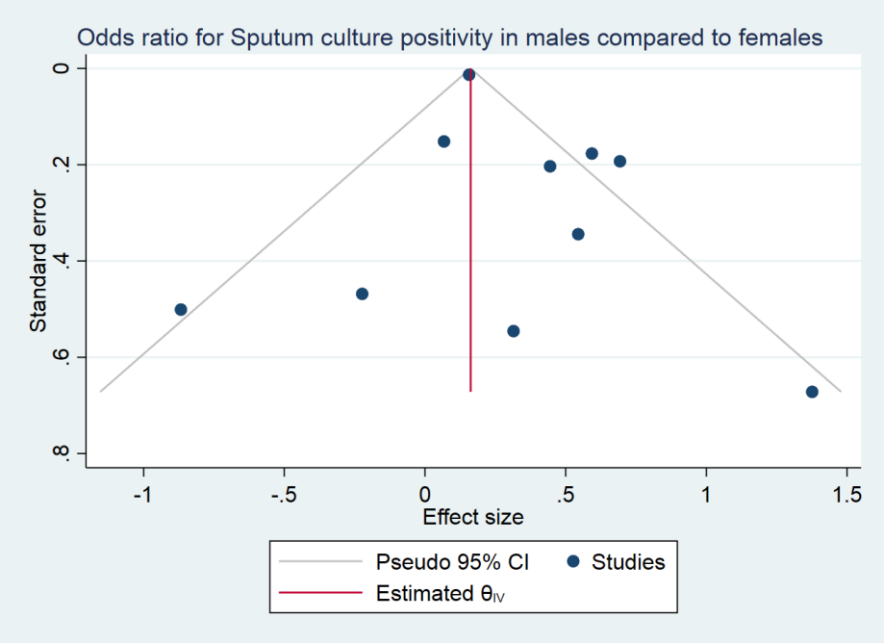


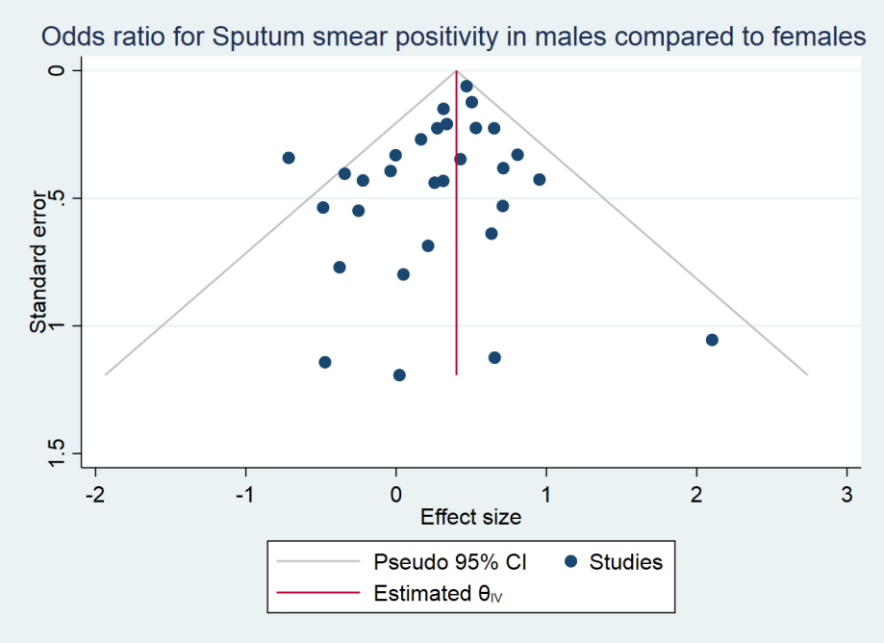
eFigure 17. Funnel Plot for all-cause mortality a) Odds ratio b) Hazard ratio



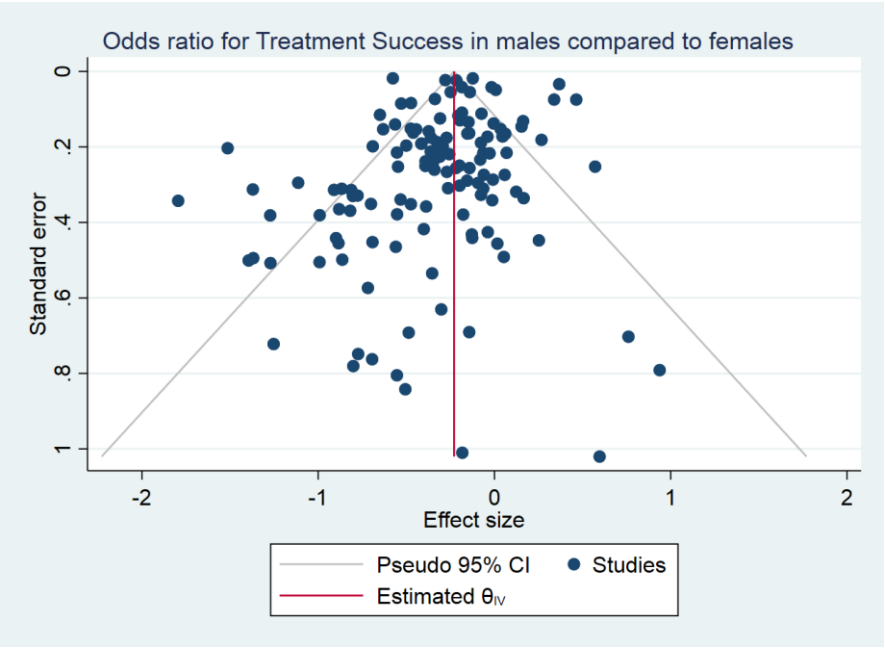


eFigure 18. Funnel Plot for a) Sputum culture Positivity b) Sputum smear positivity





eFigure 19. Funnel Plot for treatment success



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