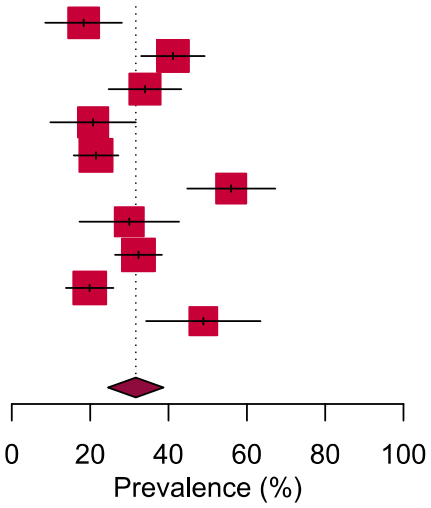
A

Study ID	Cases	Total	Prevalence	95% C.I.
Any streptomycin-resistance				
Abdul-Aziz 2013	11	60	18.3	[8.5; 28.1]
Adam 2016	58	141	41.1	[33.0; 49.3]
Hassan 2012	34	100	34.0	[24.7; 43.3]
Khalid 2015	11	53	20.8	[9.8; 31.7]
Nour 2015	43	200	21.5	[15.8; 27.2]
Sabeel 2017	42	75	56.0	[44.8; 67.2]
Sharaf Eldin 2002	15	50	30.0	[17.3; 42.7]
Sharaf Eldin 2011	76	235	32.3	[26.4; 38.3]
Shuaib 2020	33	166	19.9	[13.8; 26.0]
Zaki 2011	22	45	48.9	[34.3; 63.5]
Random effects model		**1125**	**31.7**	**[24.6; 38.8]**

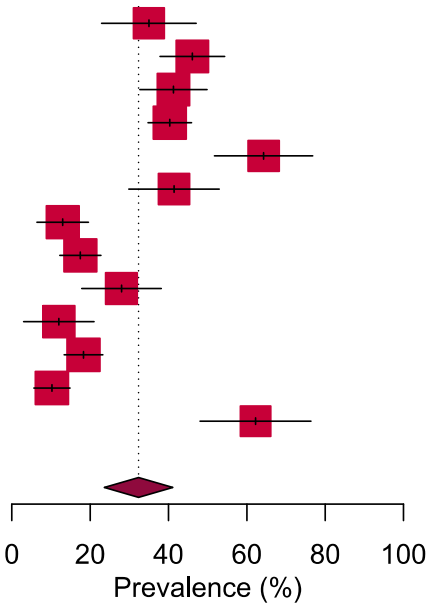
Heterogeneity: I^2 = 86%, τ^2 = 0.0107, χ^2_9 = 62.31 (p < 0.01)



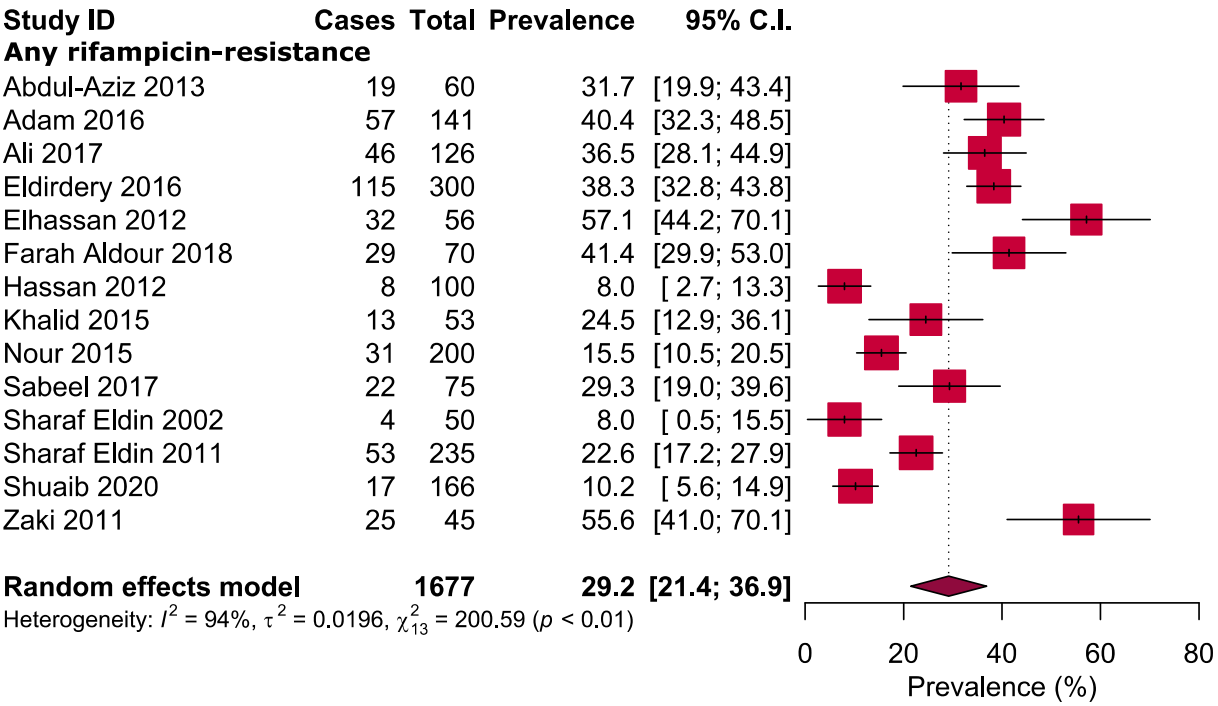
B

Study ID	Cases	Total	Prevalence	95% C.I.
Any isoniazid-resistance				
Abdul-Aziz 2013	21	60	35.0	[22.9; 47.1]
Adam 2016	65	141	46.1	[37.9; 54.3]
Ali 2017	52	126	41.3	[32.7; 49.9]
Eldirdery 2016	121	300	40.3	[34.8; 45.9]
Elhassan 2012	36	56	64.3	[51.7; 76.8]
Farah Aldour 2018	29	70	41.4	[29.9; 53.0]
Hassan 2012	13	100	13.0	[6.4; 19.6]
Nour 2015	35	200	17.5	[12.2; 22.8]
Sabeel 2017	21	75	28.0	[17.8; 38.2]
Sharaf Eldin 2002	6	50	12.0	[3.0; 21.0]
Sharaf Eldin 2011	43	235	18.3	[13.4; 23.2]
Shuaib 2020	17	166	10.2	[5.6; 14.9]
Zaki 2011	28	45	62.2	[48.1; 76.4]
Random effects model		**1624**	**32.3**	**[23.6; 41.1]**

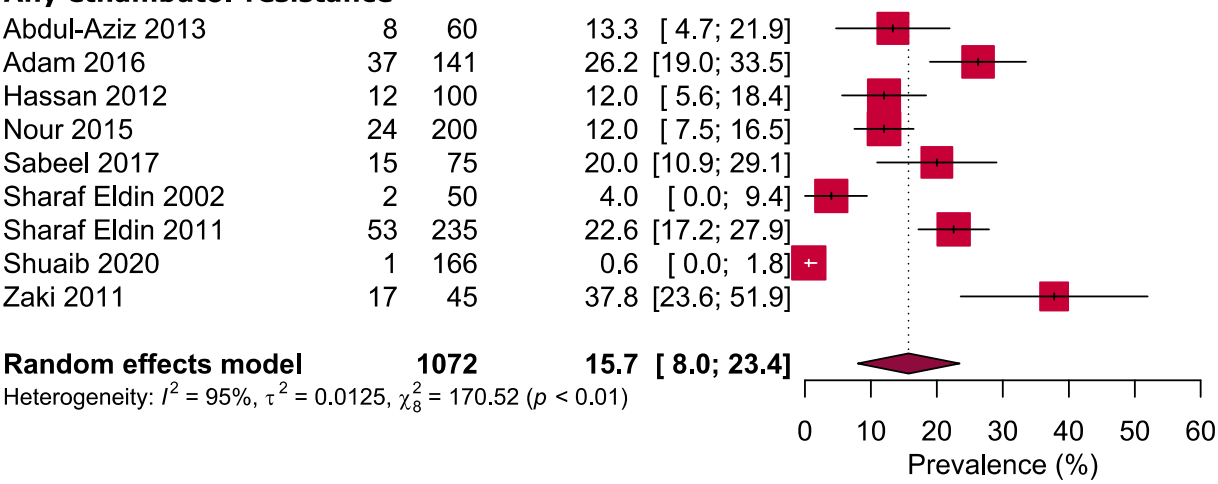
Heterogeneity: I^2 = 94%, τ^2 = 0.0238, χ^2_{12} = 218.18 (p < 0.01)



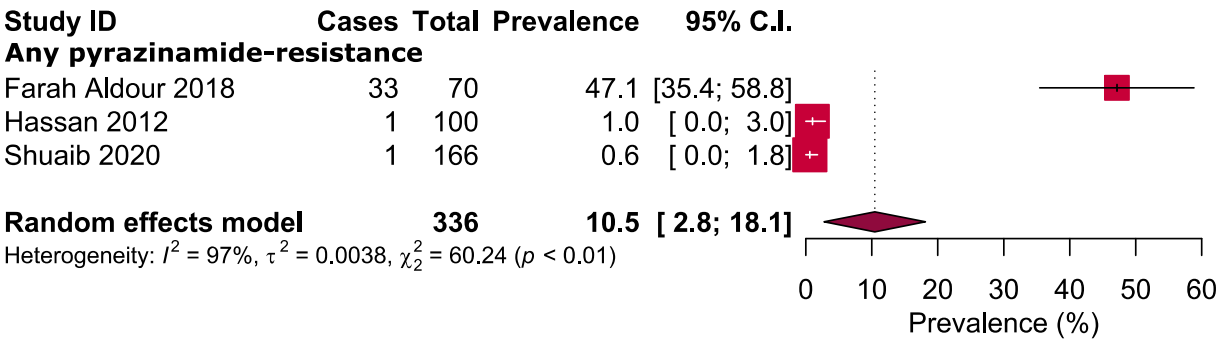
C


Study ID Cases Total Prevalence 95% C.I.
Any rifampicin-resistance
Abdul-Aziz 2013 19 60 31.7 [19.9; 43.4]
Adam 2016 57 141 40.4 [32.3; 48.5]
Ali 2017 46 126 36.5 [28.1; 44.9]
Eldirdery 2016 115 300 38.3 [32.8; 43.8]
Elhassan 2012 32 56 57.1 [44.2; 70.1]
Farah Aldour 2018 29 70 41.4 [29.9; 53.0]
Hassan 2012 8 100 8.0 [2.7; 13.3]
Khalid 2015 13 53 24.5 [12.9; 36.1]
Nour 2015 31 200 15.5 [10.5; 20.5]
Sabeel 2017 22 75 29.3 [19.0; 39.6]
Sharaf Eldin 2002 4 50 8.0 [0.5; 15.5]
Sharaf Eldin 2011 53 235 22.6 [17.2; 27.9]
Shuaib 2020 17 166 10.2 [5.6; 14.9]
Zaki 2011 25 45 55.6 [41.0; 70.1]
Random effects model 1677 29.2 [21.4; 36.9]
Heterogeneity: I^2 = 94%, τ^2 = 0.0196, χ^2_{13} = 200.59 (p < 0.01)
0 20 40 60 80
Prevalence (%)

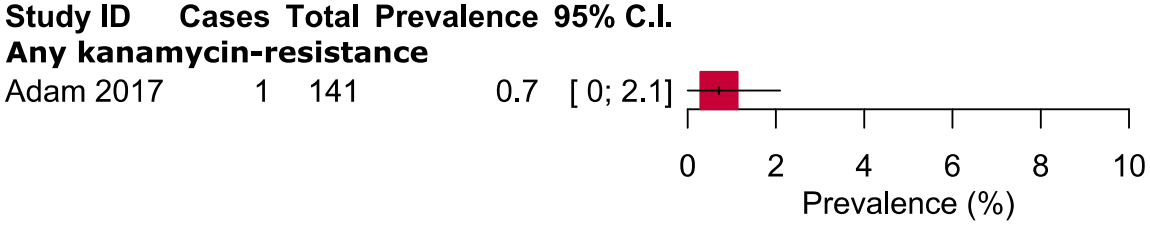
D


Study ID Cases Total Prevalence 95% C.I.
Any ethambutol-resistance
Abdul-Aziz 2013 8 60 13.3 [4.7; 21.9]
Adam 2016 37 141 26.2 [19.0; 33.5]
Hassan 2012 12 100 12.0 [5.6; 18.4]
Nour 2015 24 200 12.0 [7.5; 16.5]
Sabeel 2017 15 75 20.0 [10.9; 29.1]
Sharaf Eldin 2002 2 50 4.0 [0.0; 9.4]
Sharaf Eldin 2011 53 235 22.6 [17.2; 27.9]
Shuaib 2020 1 166 0.6 [0.0; 1.8]
Zaki 2011 17 45 37.8 [23.6; 51.9]
Random effects model 1072 15.7 [8.0; 23.4]
Heterogeneity: I^2 = 95%, τ^2 = 0.0125, χ^2_8 = 170.52 (p < 0.01)
0 10 20 30 40 50 60
Prevalence (%)

E



F



G

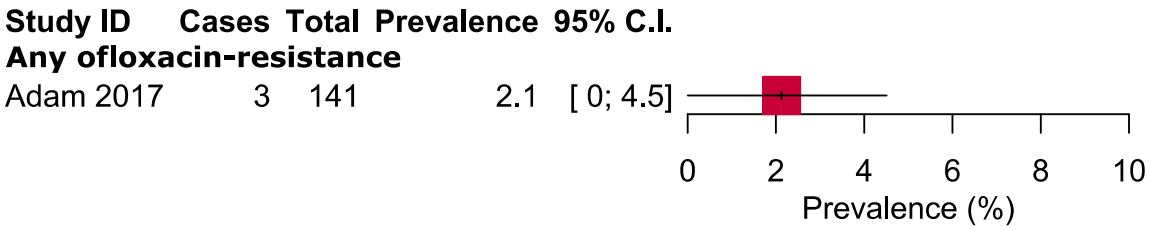
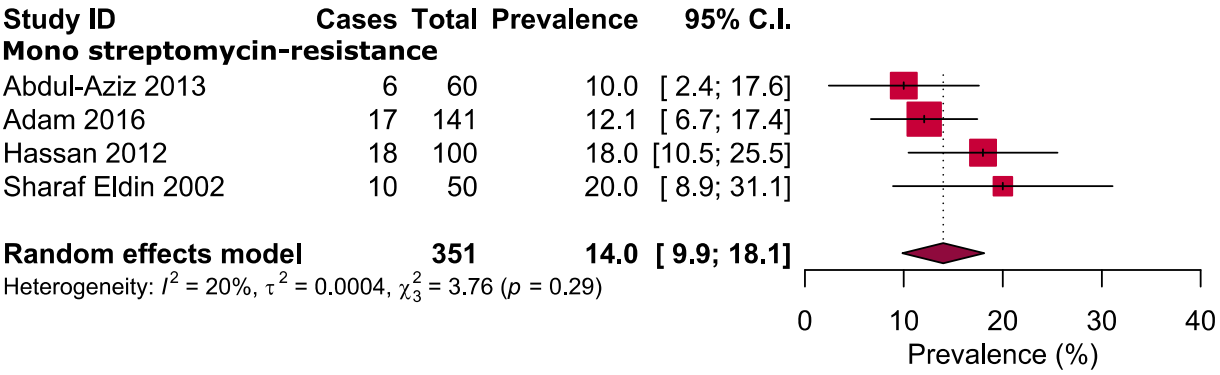
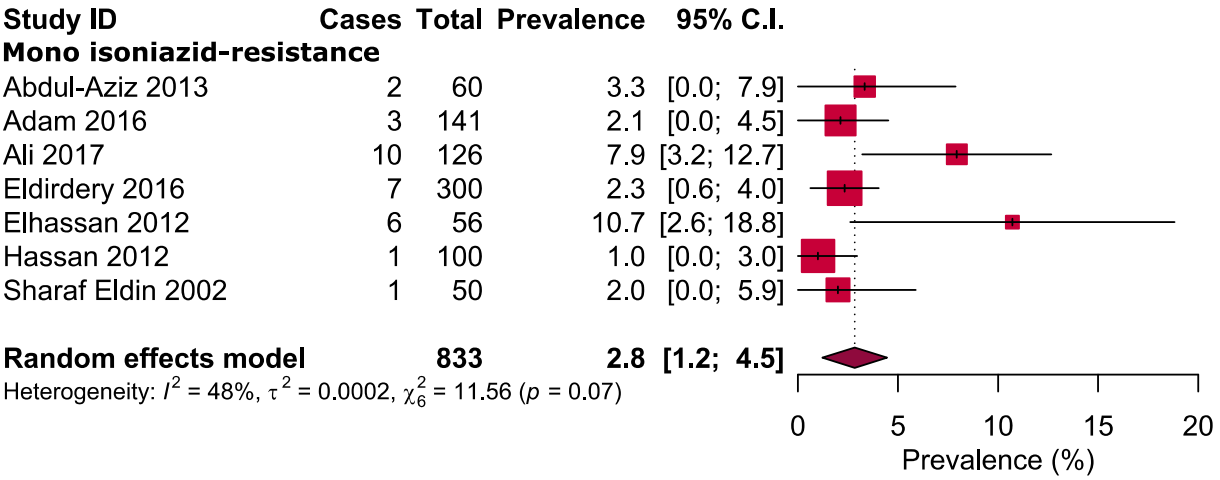


Figure S1. Any resistance to first- and second-line anti-TB drugs: A) streptomycin, B) isoniazid, C) rifampicin, D) ethambutol, E) pyrazinamide, F) kanamycin, and G) ofloxacin.

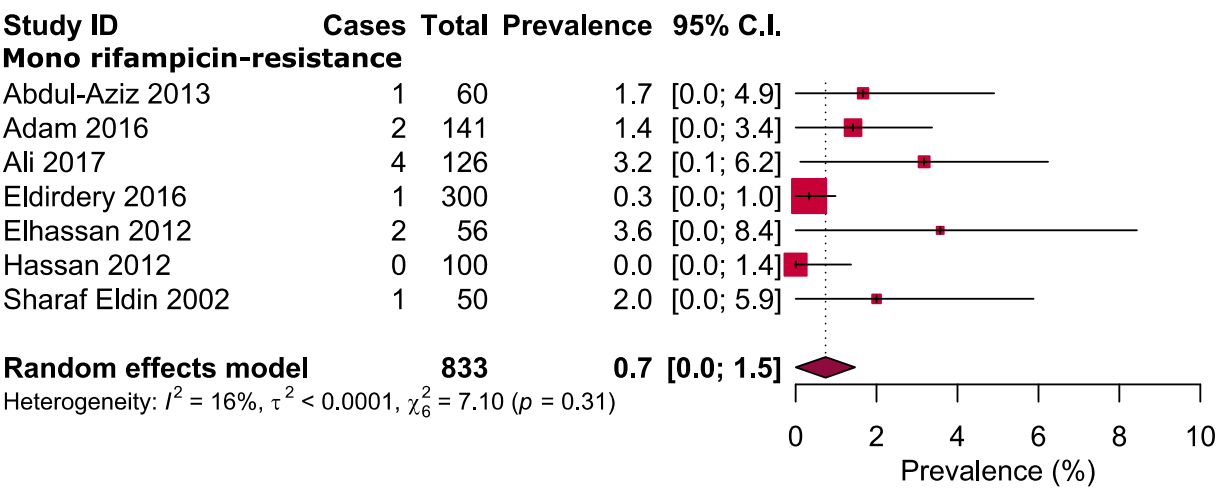
A


Study ID Cases Total Prevalence 95% C.I.
Mono streptomycin-resistance
Abdul-Aziz 2013 6 60 10.0 [2.4; 17.6]
Adam 2016 17 141 12.1 [6.7; 17.4]
Hassan 2012 18 100 18.0 [10.5; 25.5]
Sharaf Eldin 2002 10 50 20.0 [8.9; 31.1]
Random effects model 351 14.0 [9.9; 18.1]
Heterogeneity: I^2 = 20%, τ^2 = 0.0004, χ^2_3 = 3.76 (p = 0.29)
0 10 20 30 40
Prevalence (%)

B


Study ID Cases Total Prevalence 95% C.I.
Mono isoniazid-resistance
Abdul-Aziz 2013 2 60 3.3 [0.0; 7.9]
Adam 2016 3 141 2.1 [0.0; 4.5]
Ali 2017 10 126 7.9 [3.2; 12.7]
Eldirdery 2016 7 300 2.3 [0.6; 4.0]
Elhassan 2012 6 56 10.7 [2.6; 18.8]
Hassan 2012 1 100 1.0 [0.0; 3.0]
Sharaf Eldin 2002 1 50 2.0 [0.0; 5.9]
Random effects model 833 2.8 [1.2; 4.5]
Heterogeneity: I^2 = 48%, τ^2 = 0.0002, χ^2_6 = 11.56 (p = 0.07)
0 5 10 15 20
Prevalence (%)

C


Study ID Cases Total Prevalence 95% C.I.
Mono rifampicin-resistance
Abdul-Aziz 2013 1 60 1.7 [0.0; 4.9]
Adam 2016 2 141 1.4 [0.0; 3.4]
Ali 2017 4 126 3.2 [0.1; 6.2]
Eldirdery 2016 1 300 0.3 [0.0; 1.0]
Elhassan 2012 2 56 3.6 [0.0; 8.4]
Hassan 2012 0 100 0.0 [0.0; 1.4]
Sharaf Eldin 2002 1 50 2.0 [0.0; 5.9]
Random effects model 833 0.7 [0.0; 1.5]
Heterogeneity: I^2 = 16%, τ^2 < 0.0001, χ^2_6 = 7.10 (p = 0.31)
0 2 4 6 8 10
Prevalence (%)

D

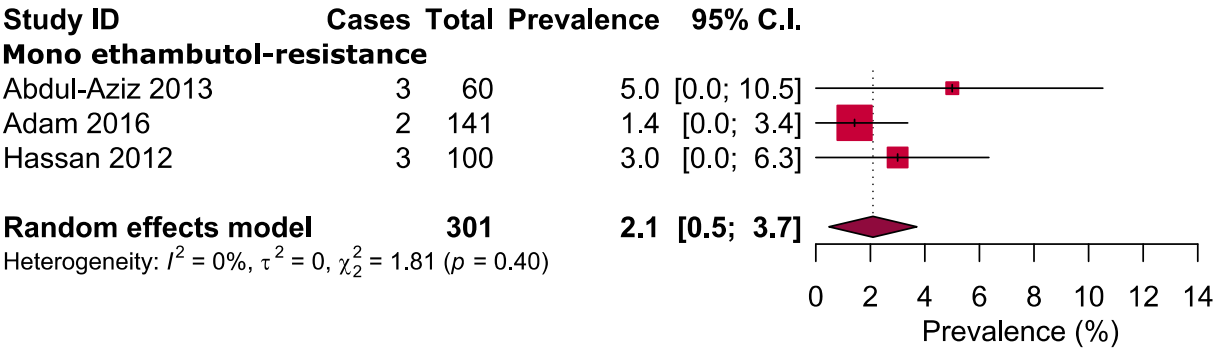
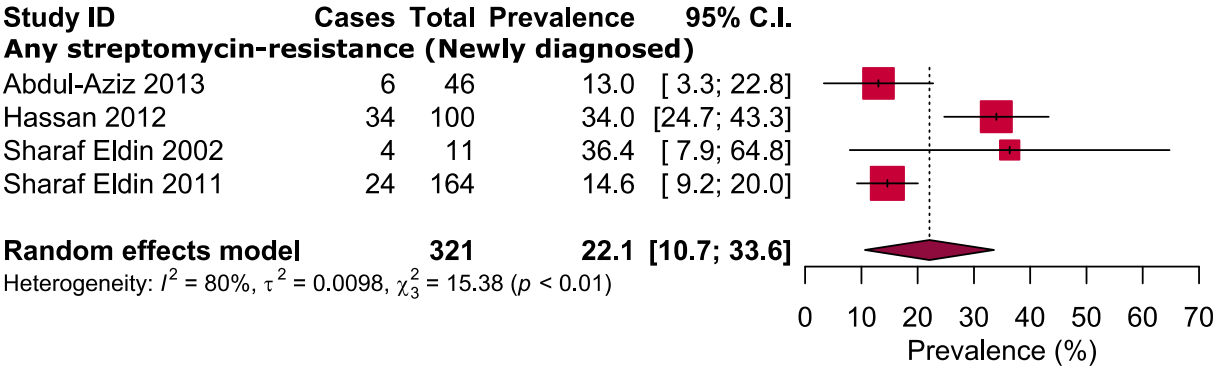
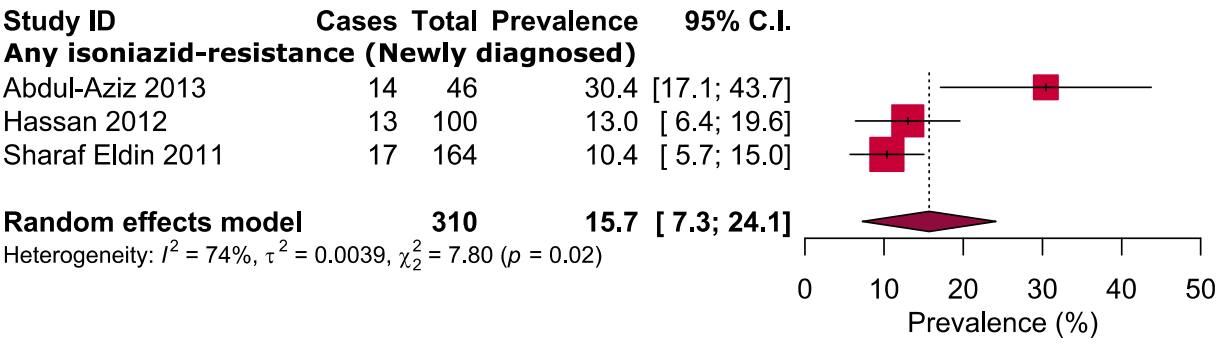


Figure S2. Mono resistance to anti-TB drugs: A) streptomycin, B) isoniazid, C) rifampicin, and D) ethambutol.

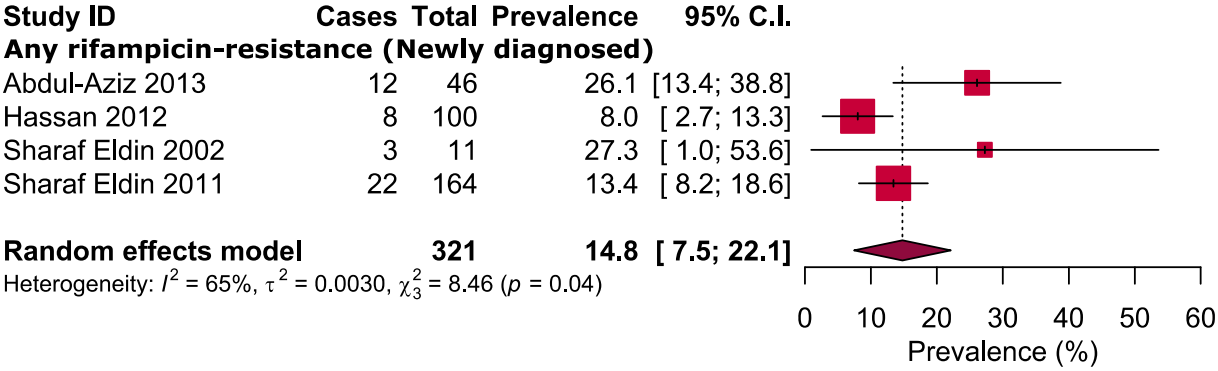
A



B



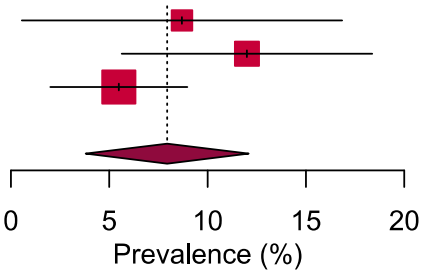
C



D

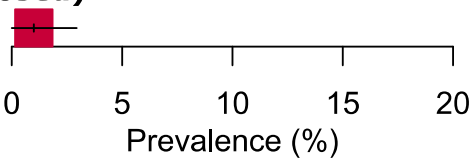
Study ID	Cases	Total	Prevalence	95% C.I.
Any ethambutol-resistance (Newly diagnosed)				
Abdul-Aziz 2013	4	46	8.7	[0.6; 16.8]
Hassan 2012	12	100	12.0	[5.6; 18.4]
Sharaf Eldin 2011	9	164	5.5	[2.0; 9.0]
Random effects model		**310**	**7.9**	**[3.8; 12.1]**

Heterogeneity: I^2 = 38%, τ^2 = 0.0005, χ^2_2 = 3.24 (p = 0.20)



E

Study ID	Cases	Total	Prevalence	95% C.I.
Any pyrazinamide-resistance (Newly diagnosed)				
Hassan 2012	1	100	1.0	[0; 3]

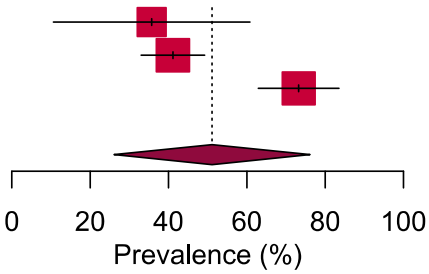


F

F

Study ID	Cases	Total	Prevalence	95% C.I.
Any streptomycin-resistance (Previously treated)				
Abdul-Aziz 2013	5	14	35.7	[10.6; 60.8]
Adam 2016	58	141	41.1	[33.0; 49.3]
Sharaf Eldin 2011	52	71	73.2	[62.9; 83.5]
Random effects model		**226**	**51.1**	**[26.1; 76.1]**

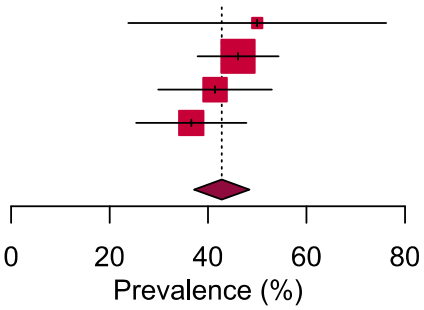
Heterogeneity: I^2 = 92%, τ^2 = 0.0427, χ^2_2 = 24.82 (p < 0.01)



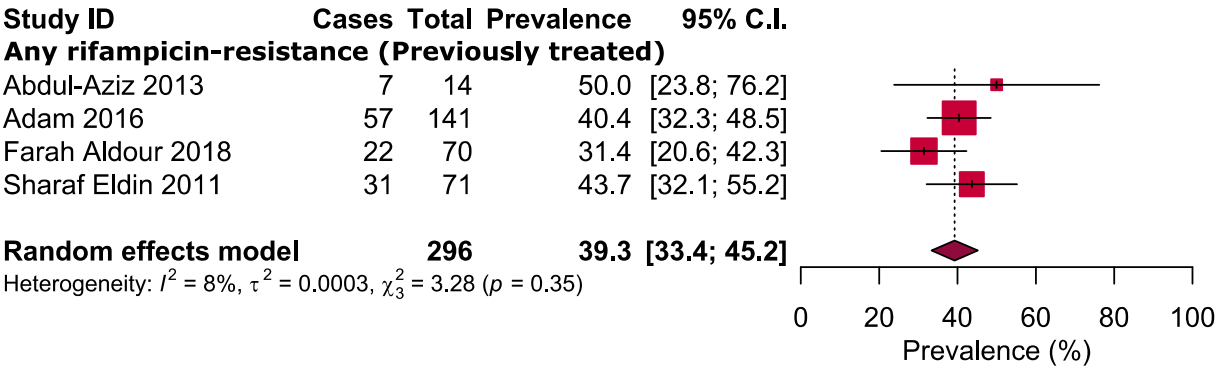
G

Study ID	Cases	Total	Prevalence	95% C.I.
Any isoniazid-resistance (Previously treated)				
Abdul-Aziz 2013	7	14	50.0	[23.8; 76.2]
Adam 2016	65	141	46.1	[37.9; 54.3]
Farah Aldour 2018	29	70	41.4	[29.9; 53.0]
Sharaf Eldin 2011	26	71	36.6	[25.4; 47.8]
Random effects model		**296**	**42.8**	**[37.2; 48.4]**

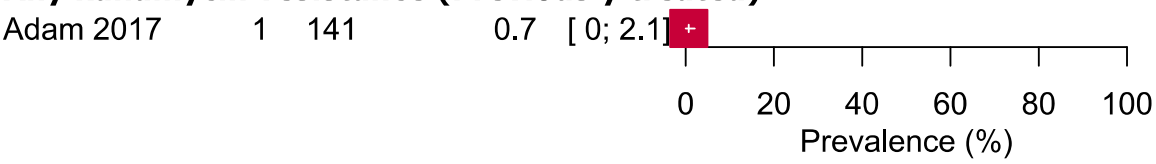
Heterogeneity: I^2 = 0%, τ^2 = 0, χ^2_3 = 2.13 (p = 0.55)



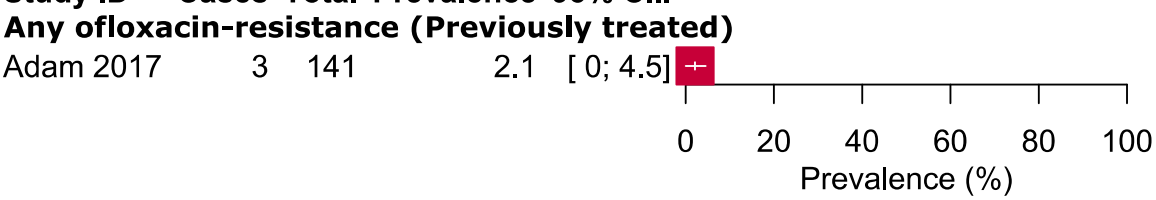
H



I



J



K

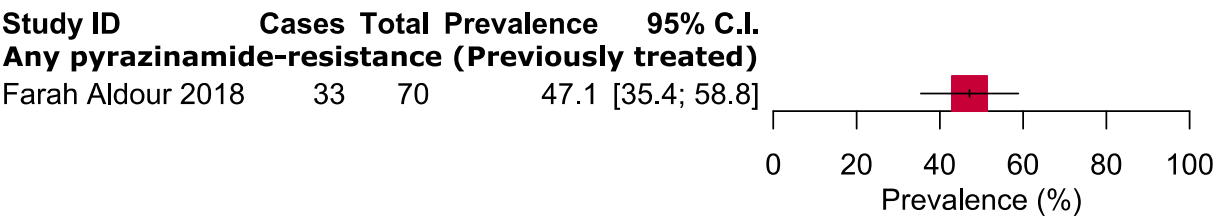
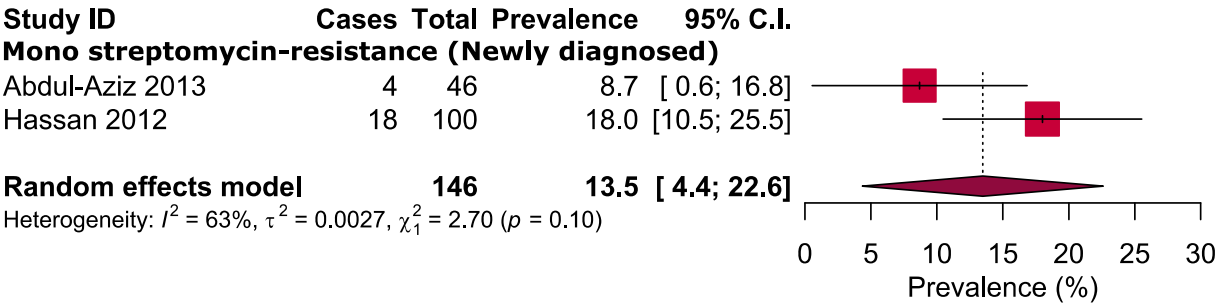
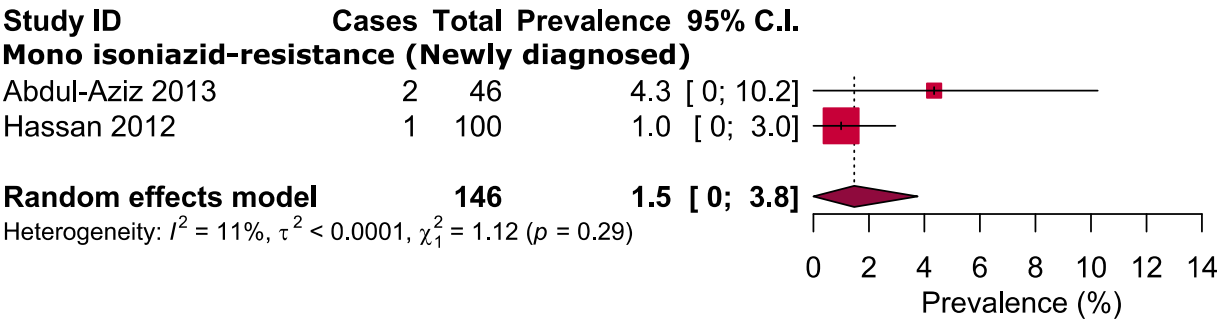


Figure S3. Any resistance to anti-TB drugs in newly diagnosed patients: A) streptomycin B) isoniazid, C) rifampicin, D) ethambutol, and E) pyrazinamide, and any resistance to anti-TB drugs in previously treated patients: F) streptomycin, G) isoniazid, H) rifampicin, I) kanamycin, J) ofloxacin, and K) pyrazinamide.

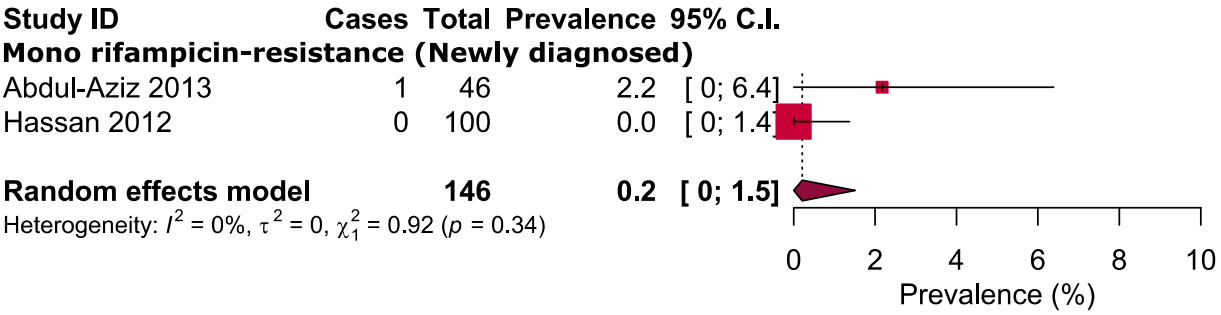
A


Study ID Cases Total Prevalence 95% C.I.
Mono streptomycin-resistance (Newly diagnosed)
Abdul-Aziz 2013 4 46 8.7 [0.6; 16.8]
Hassan 2012 18 100 18.0 [10.5; 25.5]
Random effects model 146 13.5 [4.4; 22.6]
Heterogeneity: I^2 = 63%, τ^2 = 0.0027, χ^2_1 = 2.70 (p = 0.10)
0 5 10 15 20 25 30
Prevalence (%)

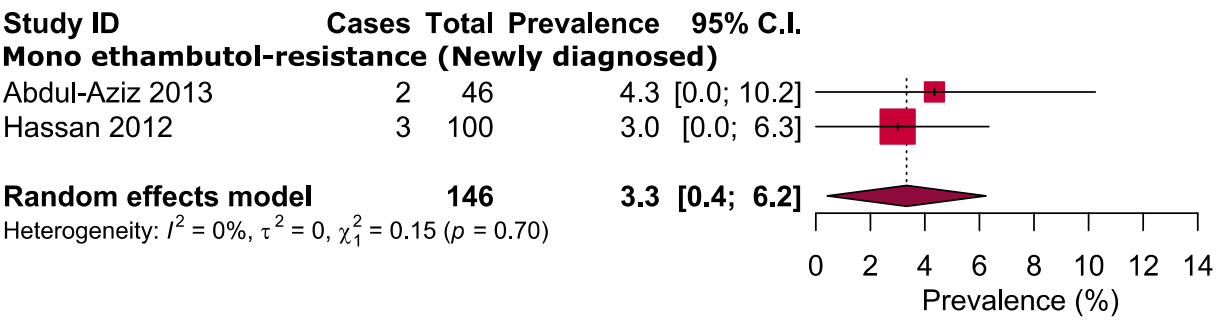
B


Study ID Cases Total Prevalence 95% C.I.
Mono isoniazid-resistance (Newly diagnosed)
Abdul-Aziz 2013 2 46 4.3 [0; 10.2]
Hassan 2012 1 100 1.0 [0; 3.0]
Random effects model 146 1.5 [0; 3.8]
Heterogeneity: I^2 = 11%, τ^2 < 0.0001, χ^2_1 = 1.12 (p = 0.29)
0 2 4 6 8 10 12 14
Prevalence (%)

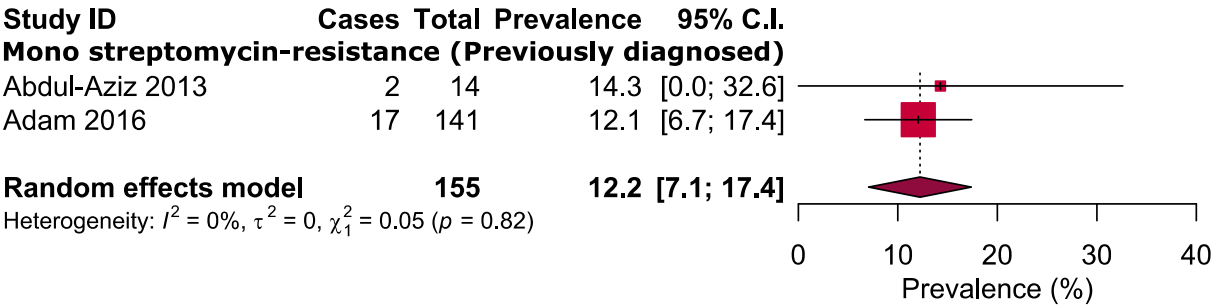
C


Study ID Cases Total Prevalence 95% C.I.
Mono rifampicin-resistance (Newly diagnosed)
Abdul-Aziz 2013 1 46 2.2 [0; 6.4]
Hassan 2012 0 100 0.0 [0; 1.4]
Random effects model 146 0.2 [0; 1.5]
Heterogeneity: I^2 = 0%, τ^2 = 0, χ^2_1 = 0.92 (p = 0.34)
0 2 4 6 8 10
Prevalence (%)

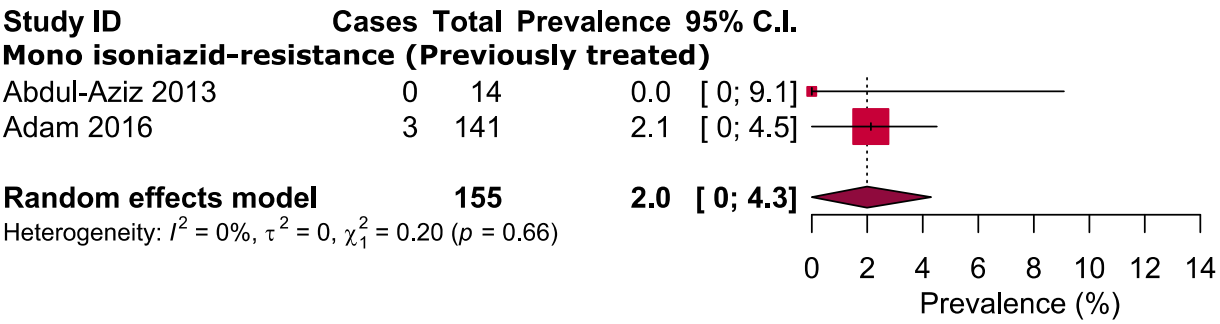
D


Study ID Cases Total Prevalence 95% C.I.
Mono ethambutol-resistance (Newly diagnosed)
Abdul-Aziz 2013 2 46 4.3 [0.0; 10.2]
Hassan 2012 3 100 3.0 [0.0; 6.3]
Random effects model 146 3.3 [0.4; 6.2]
Heterogeneity: I^2 = 0%, τ^2 = 0, χ^2_1 = 0.15 (p = 0.70)
0 2 4 6 8 10 12 14
Prevalence (%)

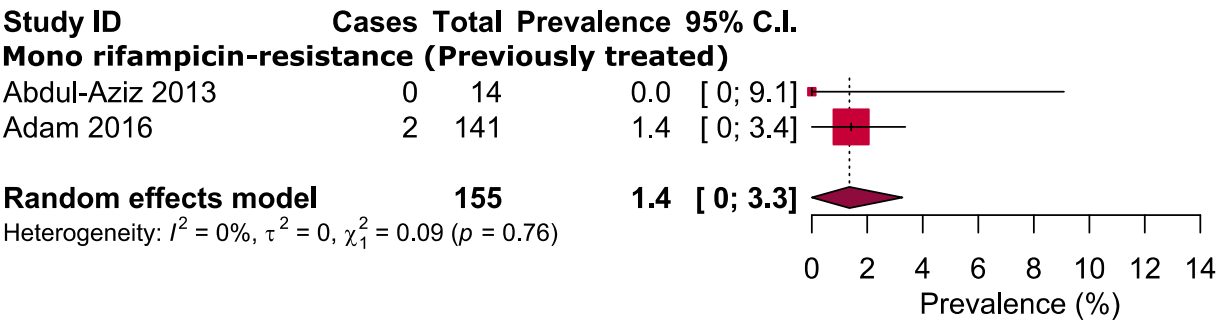
E



F



G



H

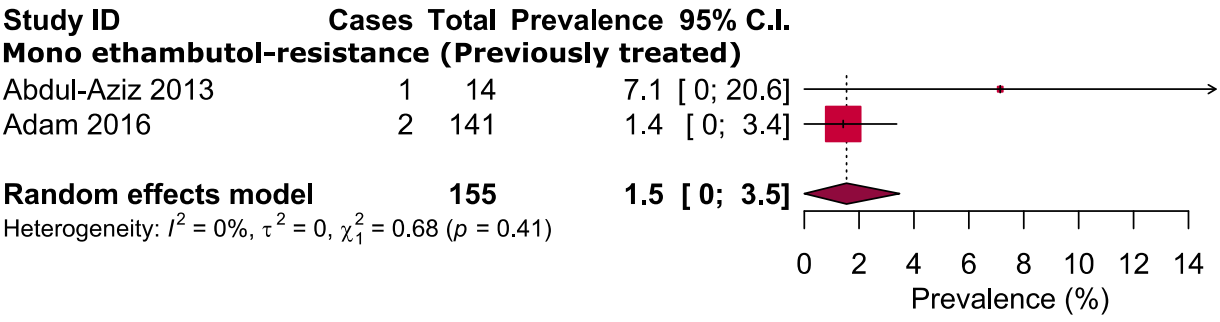
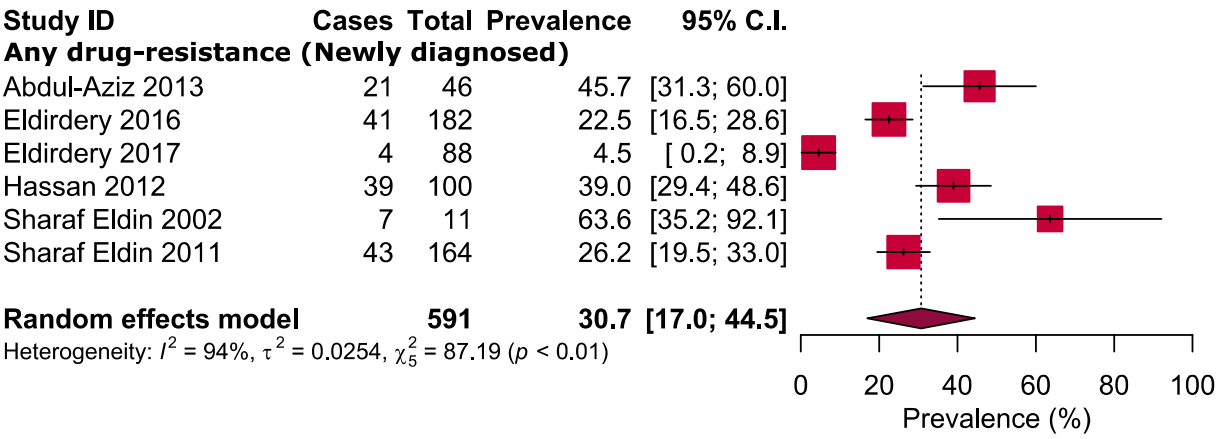


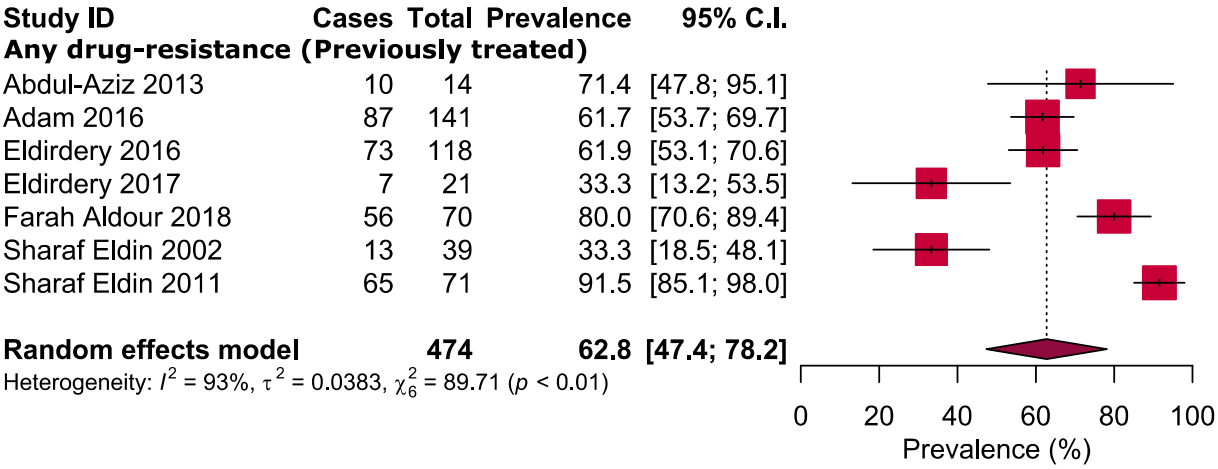
Figure S4. Mono resistance to anti-TB drugs in newly diagnosed patients: A) streptomycin, B) isoniazid, C) rifampicin, and D) ethambutol and mono resistance to anti-

TB drugs in previously treated patients: E) streptomycin, F) isoniazid, G) rifampicin, and H) ethambutol.

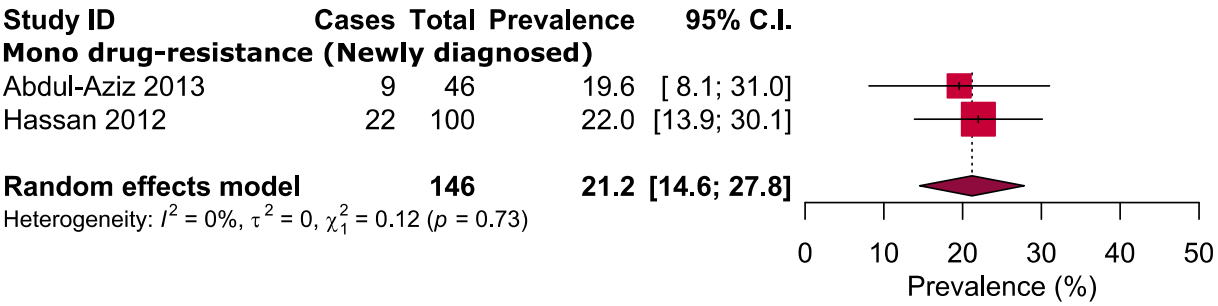
A



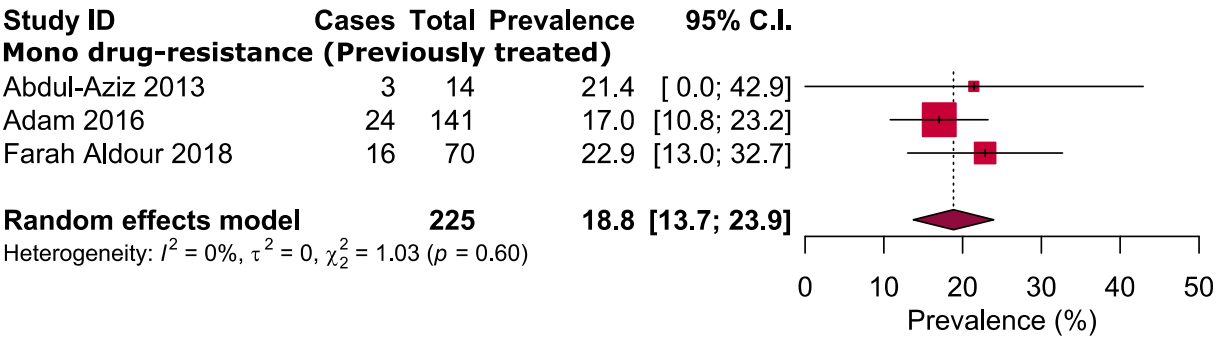
B



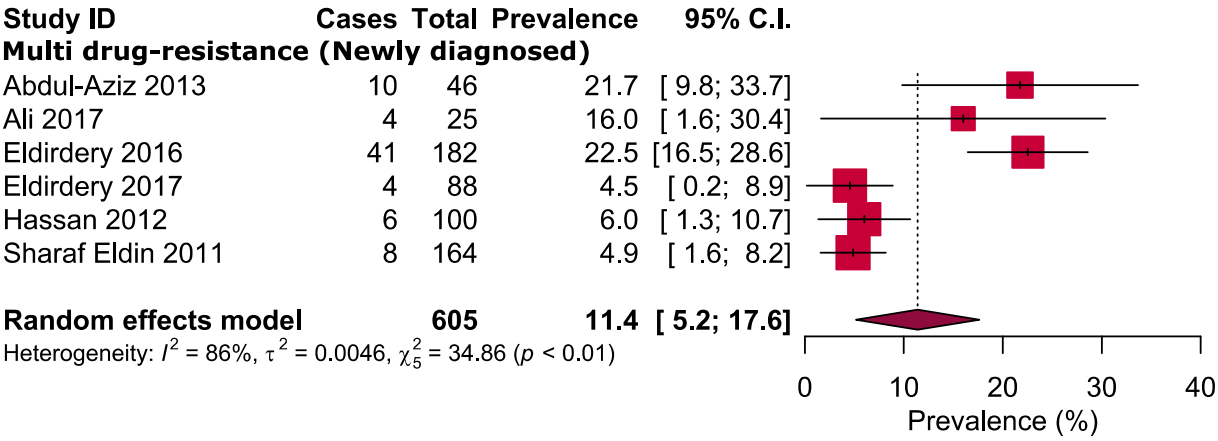
C



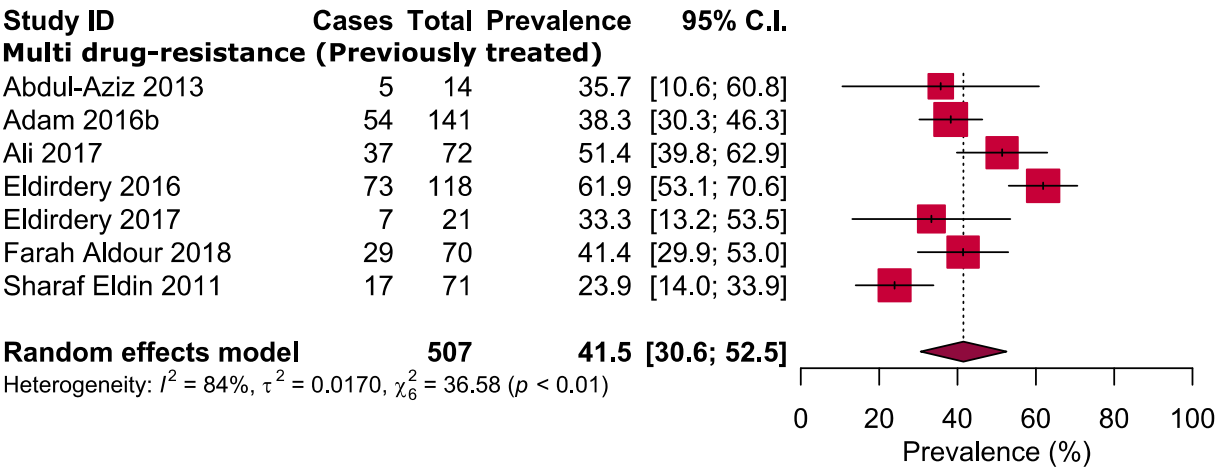
D


Study ID Cases Total Prevalence 95% C.I.
Mono drug-resistance (Previously treated)
Abdul-Aziz 2013 3 14 21.4 [0.0; 42.9]
Adam 2016 24 141 17.0 [10.8; 23.2]
Farah Aldour 2018 16 70 22.9 [13.0; 32.7]
Random effects model 225 18.8 [13.7; 23.9]
Heterogeneity: I^2 = 0%, τ^2 = 0, χ^2_2 = 1.03 (p = 0.60)
0 10 20 30 40 50
Prevalence (%)

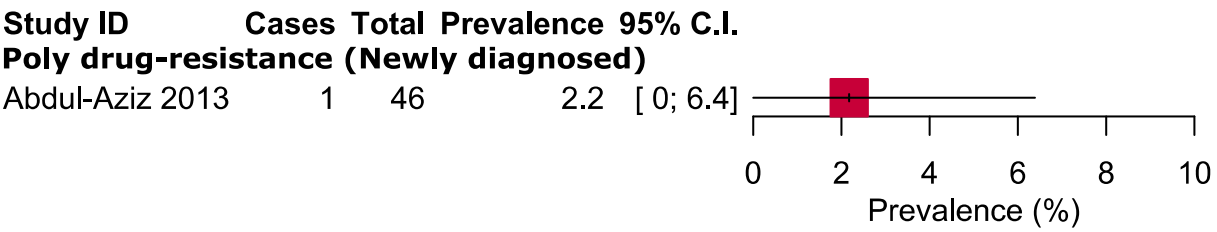
E


Study ID Cases Total Prevalence 95% C.I.
Multi drug-resistance (Newly diagnosed)
Abdul-Aziz 2013 10 46 21.7 [9.8; 33.7]
Ali 2017 4 25 16.0 [1.6; 30.4]
Eldirdery 2016 41 182 22.5 [16.5; 28.6]
Eldirdery 2017 4 88 4.5 [0.2; 8.9]
Hassan 2012 6 100 6.0 [1.3; 10.7]
Sharaf Eldin 2011 8 164 4.9 [1.6; 8.2]
Random effects model 605 11.4 [5.2; 17.6]
Heterogeneity: I^2 = 86%, τ^2 = 0.0046, χ^2_5 = 34.86 (p < 0.01)
0 10 20 30 40
Prevalence (%)

F


Study ID Cases Total Prevalence 95% C.I.
Multi drug-resistance (Previously treated)
Abdul-Aziz 2013 5 14 35.7 [10.6; 60.8]
Adam 2016b 54 141 38.3 [30.3; 46.3]
Ali 2017 37 72 51.4 [39.8; 62.9]
Eldirdery 2016 73 118 61.9 [53.1; 70.6]
Eldirdery 2017 7 21 33.3 [13.2; 53.5]
Farah Aldour 2018 29 70 41.4 [29.9; 53.0]
Sharaf Eldin 2011 17 71 23.9 [14.0; 33.9]
Random effects model 507 41.5 [30.6; 52.5]
Heterogeneity: I^2 = 84%, τ^2 = 0.0170, χ^2_6 = 36.58 (p < 0.01)
0 20 40 60 80 100
Prevalence (%)

G



H

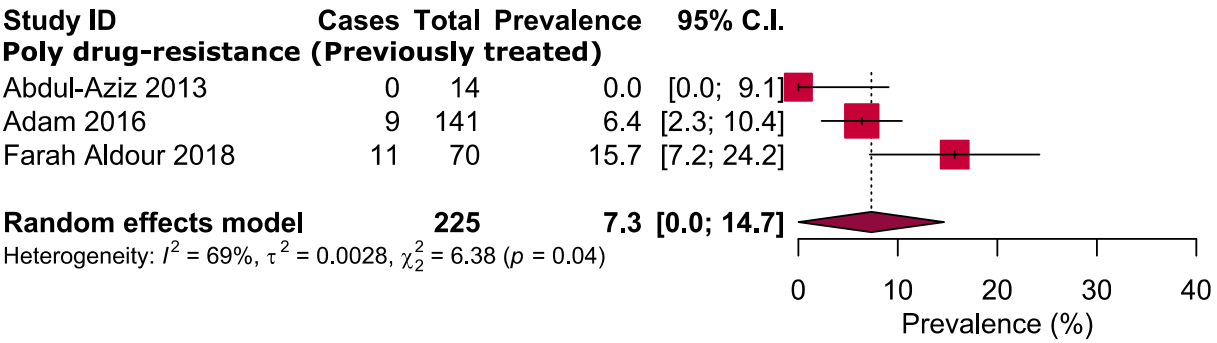
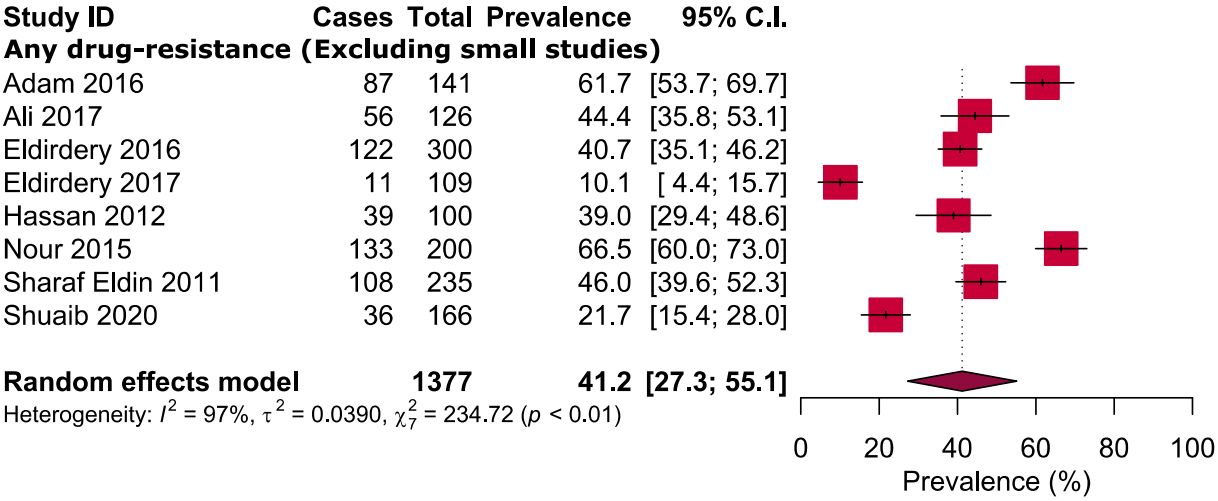
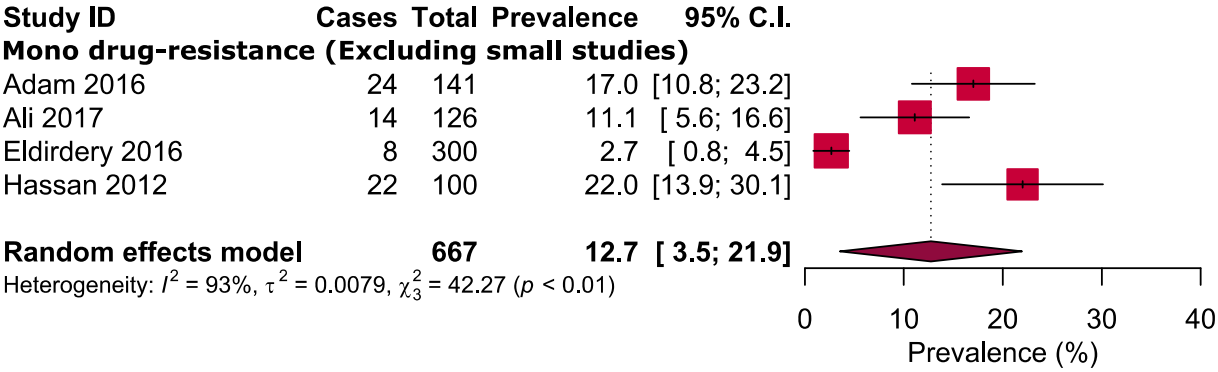


Figure S5. Overall drug resistance (DR) in newly diagnosed and previously treated TB patients. A) Any-DR in newly diagnosed patients, B) any-DR in previously treated patients, C) mono-DR in newly diagnosed patients, D) mono-DR in previously treated patients, E) multi-DR in newly diagnosed patients, F) multi-DR in previously treated patients, G) poly-DR in newly diagnosed patients, and H) poly-DR in previously treated patients.

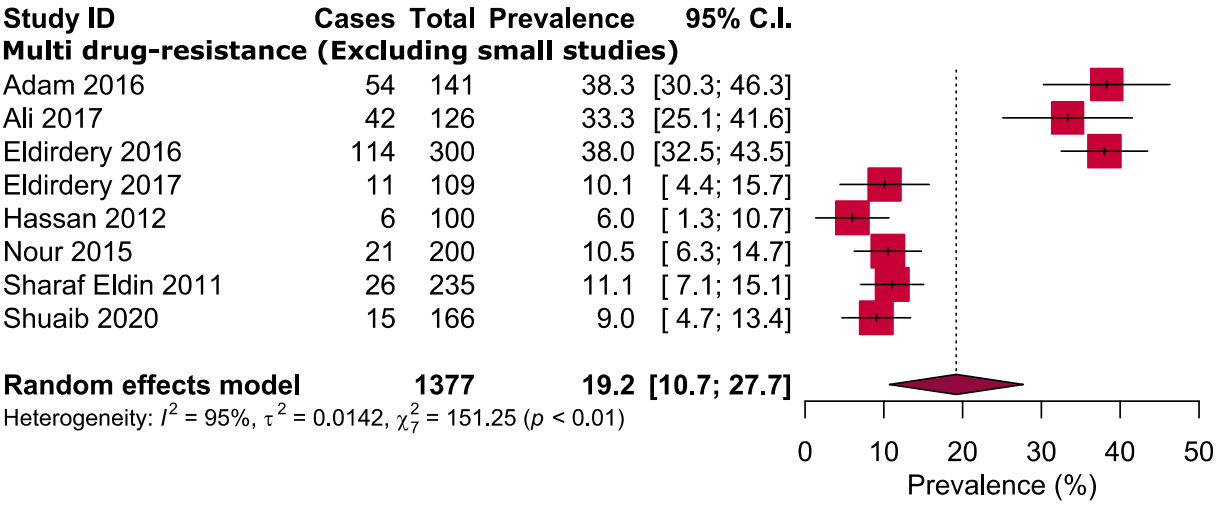
A


Study ID Cases Total Prevalence 95% C.I.
Any drug-resistance (Excluding small studies)
Adam 2016 87 141 61.7 [53.7; 69.7]
Ali 2017 56 126 44.4 [35.8; 53.1]
Eldirdery 2016 122 300 40.7 [35.1; 46.2]
Eldirdery 2017 11 109 10.1 [4.4; 15.7]
Hassan 2012 39 100 39.0 [29.4; 48.6]
Nour 2015 133 200 66.5 [60.0; 73.0]
Sharaf Eldin 2011 108 235 46.0 [39.6; 52.3]
Shuaib 2020 36 166 21.7 [15.4; 28.0]
Random effects model 1377 41.2 [27.3; 55.1]
Heterogeneity: I^2 = 97%, τ^2 = 0.0390, χ^2_7 = 234.72 (p < 0.01)
0 20 40 60 80 100
Prevalence (%)

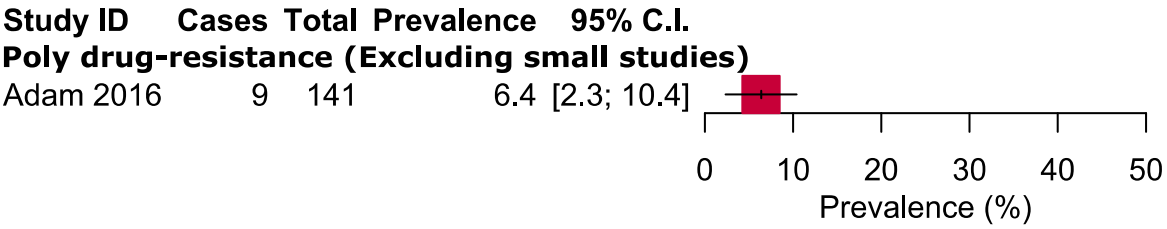
B


Study ID Cases Total Prevalence 95% C.I.
Mono drug-resistance (Excluding small studies)
Adam 2016 24 141 17.0 [10.8; 23.2]
Ali 2017 14 126 11.1 [5.6; 16.6]
Eldirdery 2016 8 300 2.7 [0.8; 4.5]
Hassan 2012 22 100 22.0 [13.9; 30.1]
Random effects model 667 12.7 [3.5; 21.9]
Heterogeneity: I^2 = 93%, τ^2 = 0.0079, χ^2_3 = 42.27 (p < 0.01)
0 10 20 30 40
Prevalence (%)

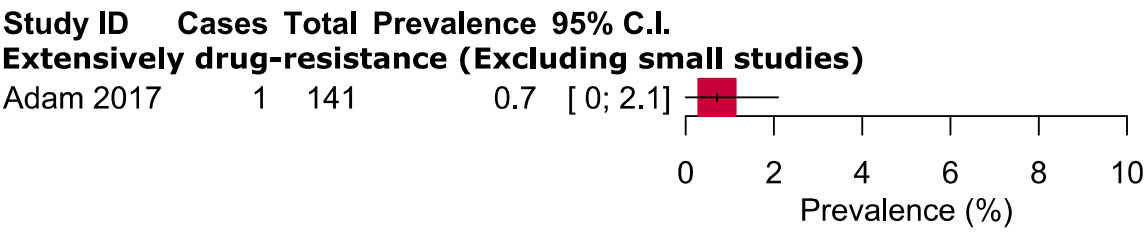
C


Study ID Cases Total Prevalence 95% C.I.
Multi drug-resistance (Excluding small studies)
Adam 2016 54 141 38.3 [30.3; 46.3]
Ali 2017 42 126 33.3 [25.1; 41.6]
Eldirdery 2016 114 300 38.0 [32.5; 43.5]
Eldirdery 2017 11 109 10.1 [4.4; 15.7]
Hassan 2012 6 100 6.0 [1.3; 10.7]
Nour 2015 21 200 10.5 [6.3; 14.7]
Sharaf Eldin 2011 26 235 11.1 [7.1; 15.1]
Shuaib 2020 15 166 9.0 [4.7; 13.4]
Random effects model 1377 19.2 [10.7; 27.7]
Heterogeneity: I^2 = 95%, τ^2 = 0.0142, χ^2_7 = 151.25 (p < 0.01)
0 10 20 30 40 50
Prevalence (%)

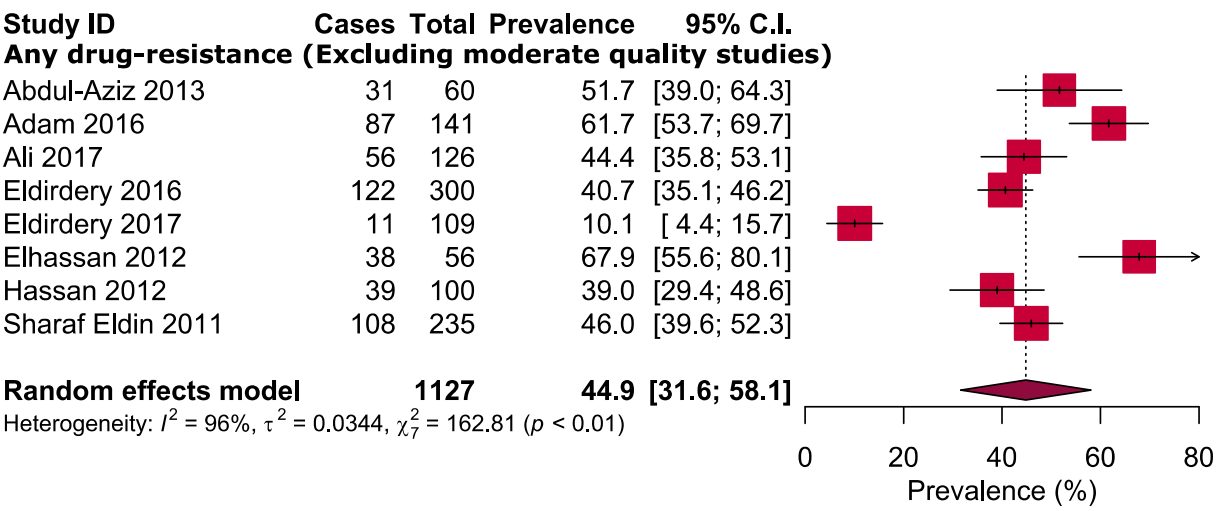
D


Study ID Cases Total Prevalence 95% C.I.
Poly drug-resistance (Excluding small studies)
Adam 2016 9 141 6.4 [2.3; 10.4]
0 10 20 30 40 50
Prevalence (%)

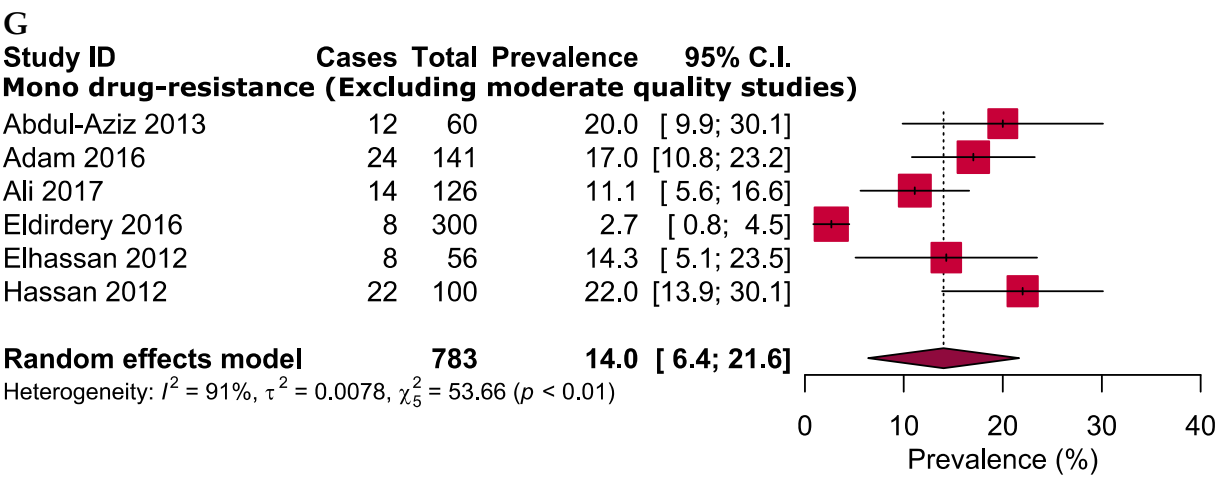
E


Study ID Cases Total Prevalence 95% C.I.
Extensively drug-resistance (Excluding small studies)
Adam 2017 1 141 0.7 [0; 2.1]
0 2 4 6 8 10
Prevalence (%)

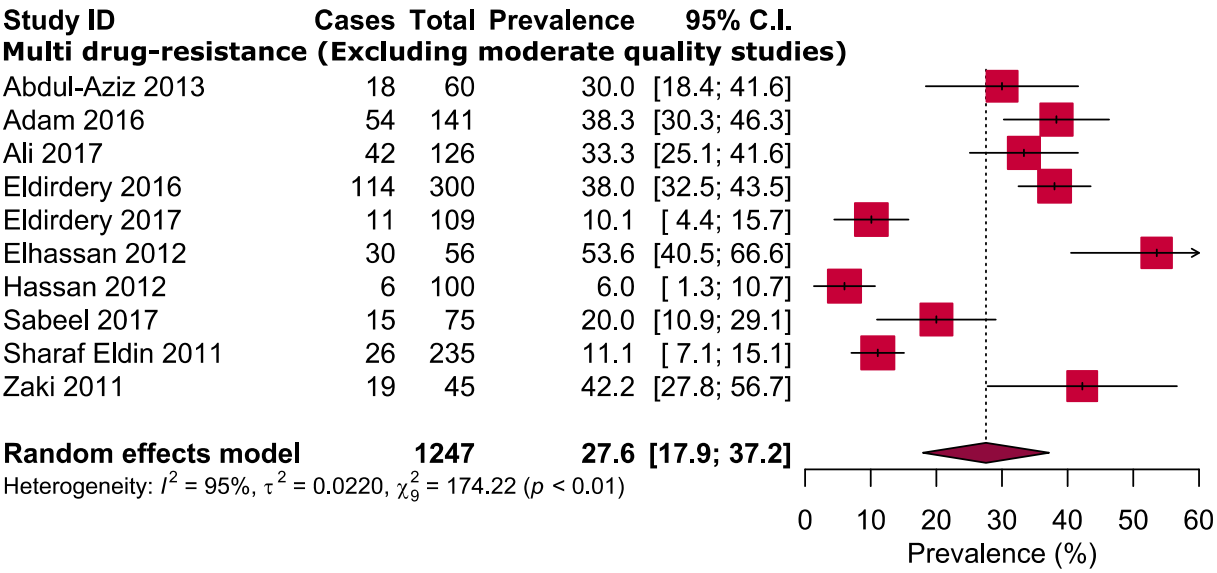
F


Study ID Cases Total Prevalence 95% C.I.
Any drug-resistance (Excluding moderate quality studies)
Abdul-Aziz 2013 31 60 51.7 [39.0; 64.3]
Adam 2016 87 141 61.7 [53.7; 69.7]
Ali 2017 56 126 44.4 [35.8; 53.1]
Eldirdery 2016 122 300 40.7 [35.1; 46.2]
Eldirdery 2017 11 109 10.1 [4.4; 15.7]
Elhassan 2012 38 56 67.9 [55.6; 80.1]
Hassan 2012 39 100 39.0 [29.4; 48.6]
Sharaf Eldin 2011 108 235 46.0 [39.6; 52.3]
Random effects model 1127 44.9 [31.6; 58.1]
Heterogeneity: I^2 = 96%, τ^2 = 0.0344, χ^2_7 = 162.81 (p < 0.01)
0 20 40 60 80
Prevalence (%)

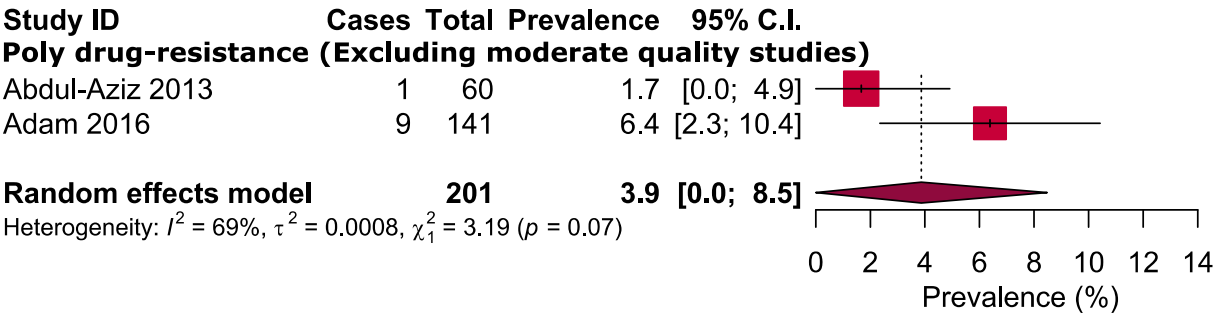
G


Study ID Cases Total Prevalence 95% C.I.
Mono drug-resistance (Excluding moderate quality studies)
Abdul-Aziz 2013 12 60 20.0 [9.9; 30.1]
Adam 2016 24 141 17.0 [10.8; 23.2]
Ali 2017 14 126 11.1 [5.6; 16.6]
Eldirdery 2016 8 300 2.7 [0.8; 4.5]
Elhassan 2012 8 56 14.3 [5.1; 23.5]
Hassan 2012 22 100 22.0 [13.9; 30.1]
Random effects model 783 14.0 [6.4; 21.6]
Heterogeneity: I^2 = 91%, τ^2 = 0.0078, χ^2_5 = 53.66 (p < 0.01)
0 10 20 30 40
Prevalence (%)

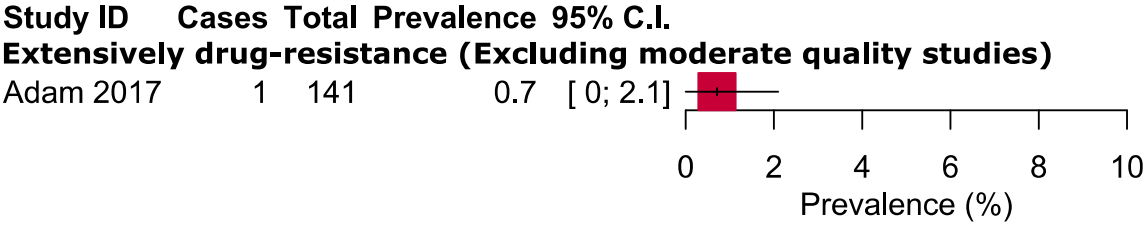
H


Study ID Cases Total Prevalence 95% C.I.
Multi drug-resistance (Excluding moderate quality studies)
Abdul-Aziz 2013 18 60 30.0 [18.4; 41.6]
Adam 2016 54 141 38.3 [30.3; 46.3]
Ali 2017 42 126 33.3 [25.1; 41.6]
Eldirdery 2016 114 300 38.0 [32.5; 43.5]
Eldirdery 2017 11 109 10.1 [4.4; 15.7]
Elhassan 2012 30 56 53.6 [40.5; 66.6]
Hassan 2012 6 100 6.0 [1.3; 10.7]
Sabeel 2017 15 75 20.0 [10.9; 29.1]
Sharaf Eldin 2011 26 235 11.1 [7.1; 15.1]
Zaki 2011 19 45 42.2 [27.8; 56.7]
Random effects model 1247 27.6 [17.9; 37.2]
Heterogeneity: I^2 = 95%, τ^2 = 0.0220, χ^2_9 = 174.22 (p < 0.01)
0 10 20 30 40 50 60
Prevalence (%)

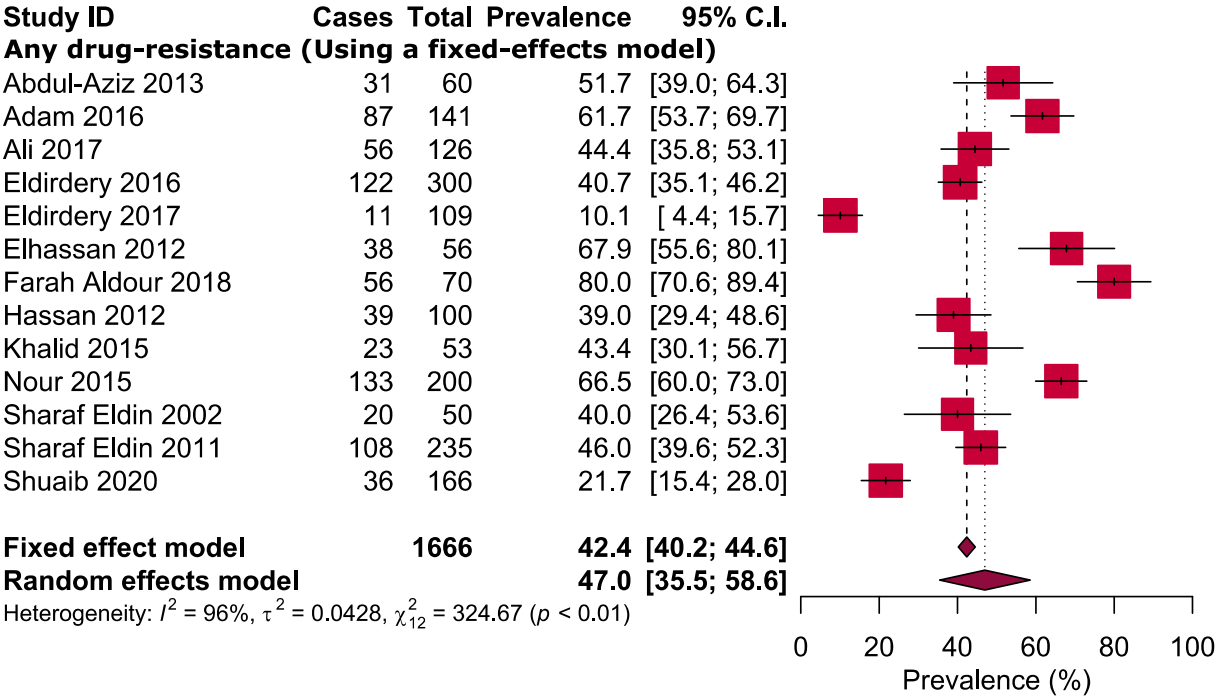
I


Study ID Cases Total Prevalence 95% C.I.
Poly drug-resistance (Excluding moderate quality studies)
Abdul-Aziz 2013 1 60 1.7 [0.0; 4.9]
Adam 2016 9 141 6.4 [2.3; 10.4]
Random effects model 201 3.9 [0.0; 8.5]
Heterogeneity: I^2 = 69%, τ^2 = 0.0008, χ^2_1 = 3.19 (p = 0.07)
0 2 4 6 8 10 12 14
Prevalence (%)

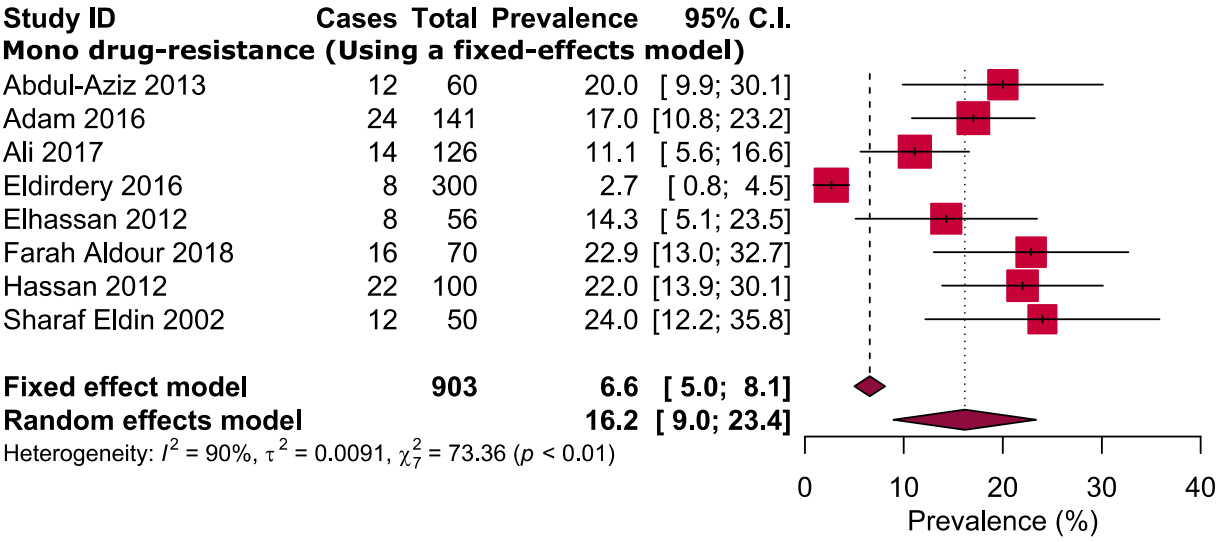
J


Study ID Cases Total Prevalence 95% C.I.
Extensively drug-resistance (Excluding moderate quality studies)
Adam 2017 1 141 0.7 [0; 2.1]
0 2 4 6 8 10
Prevalence (%)

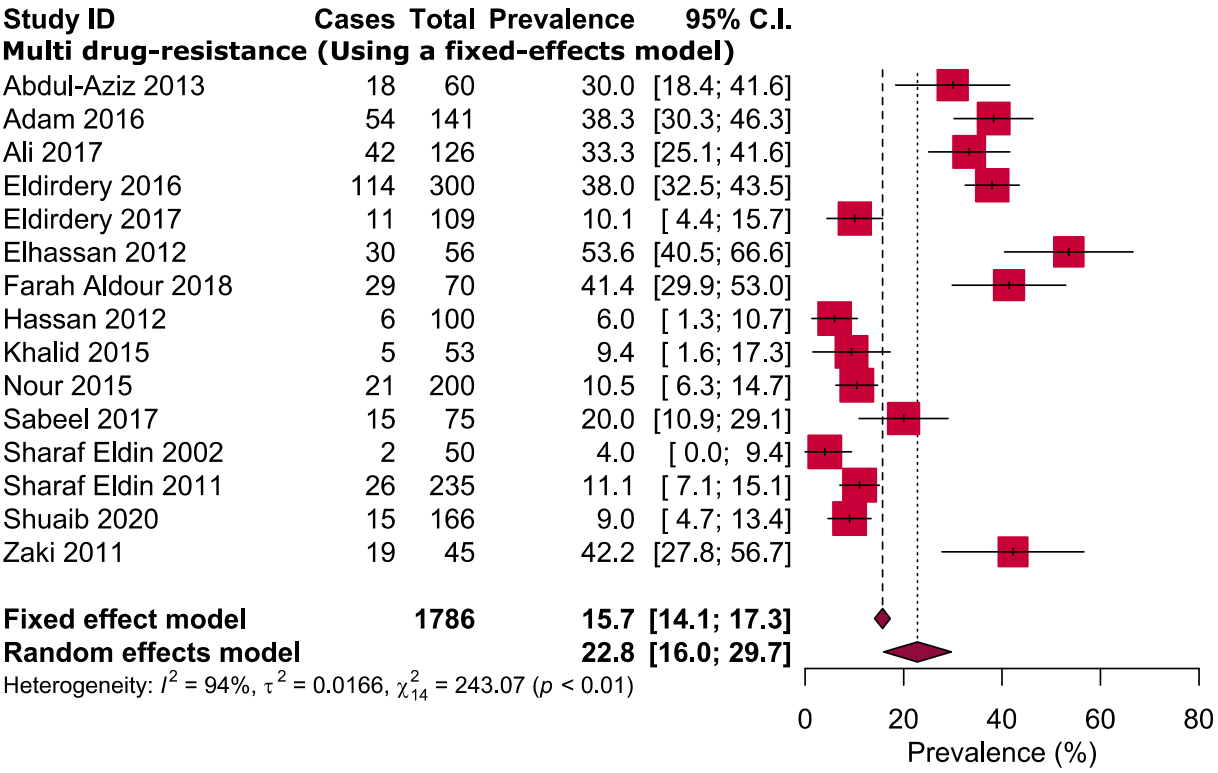
K


Study ID Cases Total Prevalence 95% C.I.
Any drug-resistance (Using a fixed-effects model)
Abdul-Aziz 2013 31 60 51.7 [39.0; 64.3]
Adam 2016 87 141 61.7 [53.7; 69.7]
Ali 2017 56 126 44.4 [35.8; 53.1]
Eldirdery 2016 122 300 40.7 [35.1; 46.2]
Eldirdery 2017 11 109 10.1 [4.4; 15.7]
Elhassan 2012 38 56 67.9 [55.6; 80.1]
Farah Aldour 2018 56 70 80.0 [70.6; 89.4]
Hassan 2012 39 100 39.0 [29.4; 48.6]
Khalid 2015 23 53 43.4 [30.1; 56.7]
Nour 2015 133 200 66.5 [60.0; 73.0]
Sharaf Eldin 2002 20 50 40.0 [26.4; 53.6]
Sharaf Eldin 2011 108 235 46.0 [39.6; 52.3]
Shuaib 2020 36 166 21.7 [15.4; 28.0]
Fixed effect model 1666 42.4 [40.2; 44.6]
Random effects model 47.0 [35.5; 58.6]
Heterogeneity: I^2 = 96%, τ^2 = 0.0428, χ^2_{12} = 324.67 (p < 0.01)
0 20 40 60 80 100
Prevalence (%)

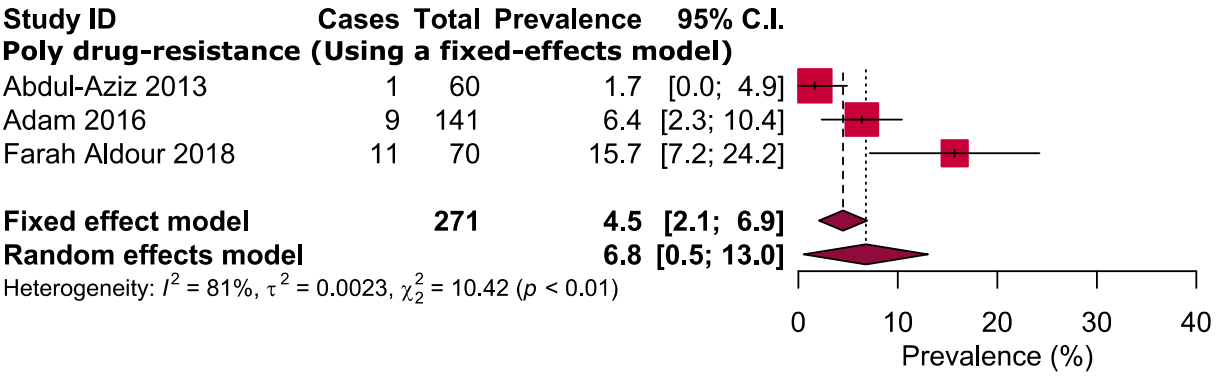
L


Study ID Cases Total Prevalence 95% C.I.
Mono drug-resistance (Using a fixed-effects model)
Abdul-Aziz 2013 12 60 20.0 [9.9; 30.1]
Adam 2016 24 141 17.0 [10.8; 23.2]
Ali 2017 14 126 11.1 [5.6; 16.6]
Eldirdery 2016 8 300 2.7 [0.8; 4.5]
Elhassan 2012 8 56 14.3 [5.1; 23.5]
Farah Aldour 2018 16 70 22.9 [13.0; 32.7]
Hassan 2012 22 100 22.0 [13.9; 30.1]
Sharaf Eldin 2002 12 50 24.0 [12.2; 35.8]
Fixed effect model 903 6.6 [5.0; 8.1]
Random effects model 16.2 [9.0; 23.4]
Heterogeneity: I^2 = 90%, τ^2 = 0.0091, χ^2_7 = 73.36 (p < 0.01)
0 10 20 30 40
Prevalence (%)

M



N



O

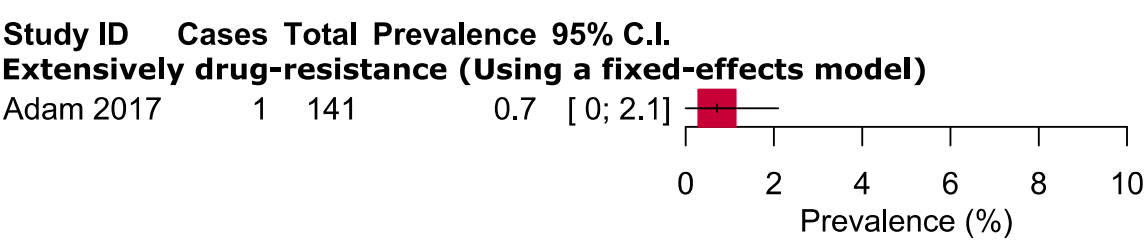


Figure S6. Sensitivity analyses: excluding small studies (n<100) from A to E; excluding moderate-quality studies from F to J and using a fixed-effects model from K to O.

Table S1. Quality assessment of the included cross-sectional studies.

No.	Study ID	Questions assessing included cross-sectional studies								Yes (%)
		1	2	3	4	5	6	7	8	
1	Abdul-Aziz 2013	Y	Y	Y	Y	N	N	Y	Y	75.0
2	Adam 2017	Y	Y	Y	Y	N	N	Y	Y	75.0
3	Adam 2016	Y	Y	Y	Y	N	N	Y	Y	75.0
4	Ali 2017	Y	Y	Y	Y	N	N	Y	Y	75.0
5	Eldirdery 2017	Y	Y	Y	Y	Y	N	Y	Y	87.5
6	Eldirdery 2016	Y	Y	Y	Y	N	N	Y	Y	75.0
7	Farah Aldour 2018	Y	Y	Y	U	N	N	Y	Y	62.5
8	Elhassan 2012	Y	Y	Y	Y	N	N	Y	Y	75.0
9	Hassan 2012	Y	Y	Y	Y	N	N	Y	Y	75.0
10	Khalid 2015	Y	Y	Y	Y	N	N	Y	N	62.5
11	Nour 2015	Y	Y	Y	Y	N	N	Y	N	62.5
12	Sabeel 2017	Y	Y	Y	Y	N	N	Y	Y	75.0
13	Sharaf Eldin 2011	Y	Y	Y	Y	Y	U	Y	Y	87.5
14	Sharaf Eldin 2002	Y	Y	Y	Y	N	N	Y	N	62.5
15	Shuaib 2020	Y	Y	Y	Y	N	N	N	N	50.0
16	Zaki 2011	Y	Y	Y	Y	Y	N	Y	N	75.0

1. Were the criteria for inclusion in the sample clearly defined? 2. Were the study subjects and the setting described in detail? 3. Was the exposure measured in a valid and reliable way? 4. Were objective, standard criteria used for measurement of the condition? 5. Were confounding factors identified? 6. Were strategies to deal with confounding factors stated? 7. Were the outcomes measured in a valid and reliable way? 8. Was appropriate statistical analysis used? Y=Yes; N=No; U=Unclear.

Table S2: Search strategy

Databases	Search strategy
PubMed	((TB OR tuberculosis OR "Mycobacterium tuberculosis" OR anti-tuberculosis OR anti-TB OR anti-tubercular) AND (isoniazid OR rifampicin OR ethambutol OR pyrazinamide OR streptomycin OR amikacin OR kanamycin OR capreomycin OR viomycin OR enviomycin OR ciprofloxacin OR levofloxacin OR moxifloxacin OR ethionamide OR prothionamide OR seromycin OR terizidone OR rifabutin

	OR clarithromycin OR linezolid OR thioacetazone OR bedaquiline OR clofazimine OR rifapentine OR resistance OR resistant OR susceptibility OR sensitivity OR drug-resistant OR drug resistance OR multidrug-resistant tuberculosis)) AND (Sudan OR Khartoum OR Kordofan OR Kassala OR Blue Nile OR Darfur OR Gezira OR White Nile OR River Nile OR Red Sea OR Al Qadarif OR Sennar)
Scopus	TITLE-ABS-KEY(TB OR tuberculosis OR "Mycobacterium tuberculosis" OR anti-tuberculosis OR anti-TB OR anti-tubercular) AND TITLE-ABS-KEY(isoniazid OR rifampicin OR ethambutol OR pyrazinamide OR streptomycin OR amikacin OR kanamycin OR capreomycin OR viomycin OR enviomycin OR ciprofloxacin OR levofloxacin OR moxifloxacin OR ethionamide OR prothionamide OR seromycin OR terizidone OR rifabutin OR clarithromycin OR linezolid OR thioacetazone OR Bedaquiline OR clofazimine OR rifapentine OR resistance OR resistant OR susceptibility OR sensitivity OR drug-resistant OR drug resistance OR multidrug-resistant tuberculosis) AND AFFIL(Sudan OR Khartoum OR Kordofan OR Kassala OR "Blue Nile" OR Darfur OR Gezira OR "White Nile" OR "River Nile" OR "Red Sea" OR "Al Qadarif" OR Sennar)
Web of Science	ALL=(TB OR tuberculosis OR "Mycobacterium tuberculosis" OR anti-tuberculosis OR anti-TB OR anti-tubercular) AND ALL=(isoniazid OR rifampicin OR ethambutol OR pyrazinamide OR streptomycin OR amikacin OR kanamycin OR capreomycin OR viomycin OR enviomycin OR ciprofloxacin OR levofloxacin OR moxifloxacin OR ethionamide OR prothionamide OR seromycin OR terizidone OR rifabutin OR clarithromycin OR linezolid OR thioacetazone OR bedaquiline OR clofazimine OR rifapentine OR resistance OR resistant OR susceptibility OR sensitivity OR drug-resistant OR drug resistance OR multidrug-resistant tuberculosis) AND ALL=(Sudan OR Khartoum OR Kordofan OR Kassala OR Blue Nile OR Darfur OR Gezira OR White Nile OR River Nile OR Red Sea OR Al Qadarif OR Sennar)
Google Scholar	allintitle:(TB OR tuberculosis OR "Mycobacterium tuberculosis" OR anti-tuberculosis OR anti-TB OR anti-tubercular) (Sudan OR Khartoum OR Kordofan

	OR Kassala OR "Blue Nile" OR Darfur OR Gezira OR "White Nile" OR "River Nile" OR "Red Sea" OR "Al Qadarif" OR Sennar)