

Annex 1: PICO Elements

PICO Aspect	Description	Key Terms
Population	Individuals eligible for drug-resistant TB testing and treatment	(multi-drug resistant tuberculosis or drug resistant tuberculosis or tuberculosis or pulmonary tuberculosis or Mycobacterium tuberculosis or MDR or MDRTB or DRTB or DR-TB)
Intervention	Any studies on the factors influencing diagnosis or treatment for DR-TB	(Health seeking or care-seeking or health care delivery or case detection or case finding or diagnosis or treatment initiation or patient cost* or transport cost* or socio-demograph* or socio-economic* or place of residence or rural or distance or age or sex or knowledge or perception or gender or presentation)
Comparator	Not applicable or as defined in the included studies, where applicable	
Outcome	Delay or missed opportunities in diagnosis and or treatment for DR-TB.	(provider barriers or patient barriers or health system barriers or missed diagnosis or untreated or diagnostic delay or late diagnosis or delay in diagnosis or access to diagnosis or diagnostic errors or undiagnosed or case diagnosis or early diagnosis or late presentation)
Setting	Sub-Saharan African countries	(Africa or SSA or sub-saharan Africa or Algeria or Angola or Benin or Botswana or Burkina Faso or Burundi or Cabo Verde or Cameroon or Central African Republic or Chad or Comoros or Democratic Republic of the Congo or Republic of the Congo or Cote d'Ivoire or Djibouti or Egypt or Equatorial Guinea or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or Guinea-Bissau or Kenya or Lesotho or Liberia or Libya or Madagascar or Malawi or Mali or Mauritania or Mauritius or Morocco or Mozambique or Namibia or Niger or Nigeria or Rwanda or Sao Tome or Senegal or Seychelles or Sierra Leone or Somalia or South Africa or South Sudan or Sudan or Swaziland or Tanzania or Togo or Tunisia or Uganda or Zambia or Zimbabwe)
Study design	Original, primary quantitative, qualitative and mixed studies	
Time period	Between January 2006 and July 2019	

Annex 2: Quality Assessment Results

References	Item																																T		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32			
Qualitative Studies																																			
1. Bieh 2017	1	0	0	1	0	1	1	1	0	1	1	1	1	1	0	0	1	0	1	0	1	0	0	1	0	1	1	0	1	1	1	1	1	20	B
2. Naidoo 2015	1	0	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	0	0	1	1	1	1	1	23	A
Quantitative Studies																																			
3. Cox 2015	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	0	0	0	1	0	0	1	1	0	1	1	1	1	1	19	B		
4. Cox 2017	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	26	A			
5. Dlamini-Mvelase 2014	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	0	0	1	1	1	1	1	1	1	1	0	24	A		
6. Ebonwu 2013	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	22	A		
7. Evans 2018	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	25	A		
8. Hanrahan 2012	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	24	A		
9. Hanrahan 2013	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	24	A		
10. Iruedo 2017	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	26	A		
11. Jacobson 2012	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	0	1	1	0	1	0	1	1	1	1	1	0	0	1	22	A			
12. Jacobson 2017	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	26	A			
13. Jokwiro 2018	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	0	0	1	1	1	1	1	1	1	22	A			
14. Kweza 2018	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	27	A			
15. McLaren 2017	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	18	B		
16. Metcalfe	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	24	A			
17. Mohr 2017	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	24	A			
18. Moyo	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	1	1	22	A			
19. Naidoo 2014	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	1	1	1	0	1	1	0	1	1	1	1	1	23	A			
20. Nkosi 2013	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	1	0	0	1	1	1	1	1	1	1	1	0	21	A			
21. Oga-Omenka 2019	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	26	A			
22. Oliwa 2018	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	0	1	1	0	1	1	1	1	1	1	0	22	A			
23. Timire 2019	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	0	1	1	1	1	1	1	1	1	24	A			
24 Van Den Handel 2015	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	1	0	0	1	0	0	1	1	1	1	1	1	23	A			

References	Item																																T																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																			
Mixed Methods Studies																																																			
25. Doulla 2019	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1																			15	A														
26. Mpagama 2019	0	1	0	1	1	0	0	1	1	1	0	1	1	1	1	0	1																			11	B														
27. Mnyambwa 2018	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0																			13	A														
28. Weshuizen 2017	1	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	1																			13	A														
29. Zimri	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0																			15	A														

Grade	0=Unclear; 1=Clear
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Annex 3: Weighted Ranking of Access Factors

BARRIERS						
Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Provider factors						
Guidelines non-availability	21	3	2	3.0	6	Stated in results and table 2
	1	3				
Infrastructure and equipment: coverage and coverage	23	3	5	3.0	15	
	27	3				
	26	3				
	27	3				Mentioned separately in qualitative part of mixed methods
	2	3				
Decentralization	20	3	2	2.5	5	
	26	2				
Laboratory operational issues	13	3	9	2.4	22	
	24	3				
	26	3				
	27	1				25% and 18% affected by this barrier
	28	3				
	29	2				Reasons for this delay not given
	3	3				
	26	3				
	27	1				Mentioned separately in qualitative part of mixed methods
Clinic operational issues: waiting times	3	3	2	2.5	5	
	29	2				

Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Provider factors						
Clinic operational issues: patient tracking and follow up	21	3	3	2.7	8	Odds ratio in Table 3 and mentioned in results
	3	3				
	27	2				
Level of care- higher level	7	3	2	2.0	4	Odds ratio in Table 3 and mentioned in results
	23	1				
Private sector care: low index of suspicion, poor linkage	23	3	3	3.0	9	
	29	3				
	3	3				
Rural location: differences in testing, capacity and referral	13	3	5	2.4	12	
	16	2				
	24	2				
	27	3				
	26	2				
Inadequate staff strength	2	3	3	2.3	7	
	26	3				
	27	1				
Non-adherence to care guidelines	5	3	7	2.4	17.0	
	13	2				
	18	3				
	21	3				
	23	2				
	24	2				
	3	2				
Inadequate HCW knowledge, training and experience	6	2	7	2.4	17.0	
	27	3				
	29	3				
	1	2				
	3	2				
	26	3				
	30	2				

Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Provider factors						
Poor HCW attitude, motivation including stigma and discrimination	2	3	2	2.5	5	
	27	2				
Poor data management	18	2	5	2.2	11	
	22	2				
	28	3				
	26	3				
	27	1				
Older diagnostics and timeliness	10	3	3	3.0	9	
	20	3				
	26	3				
Inadequate impact of newer diagnostics on rates of diagnosis or treatment	4	2	4	2.8	11	Table 2 and discussion
	25	3				
	5	3				
	20	3				
Inadequate availability to testing or testing materials	29	2	2	2.5	5	
	27	3				
Inadequate access to second line drugs	1	3	1	3	3	
Initial negative or invalid tests	3	3	1	3	3	
Inadequate availability to testing or testing materials	1	2	2	2.5	5	
	29	3				
Patient factors						
Female gender*	15	3	4	2.5	10	
	11	2				
	13	2				
	30	3				
Younger patient age*	5	2	3	2.3	7	
	13	2				
	23	3				
Pregnancy	3	3	1	3	3	
HIV negative status or fear of HIV diagnosis*	10	3	3	3.0	9	
	3	3				
	23	3				
Fewer presenting symptoms**	13	3	2	3	6	
	15	3				

Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Patient factors						
Lifestyle: cigarette smoking	30	3	1	3	3	
Ethnicity	30	3	1	3	3	
Negative patient perception	30	3	3	3.0	9	
	3	3				
	28	3				
Self denial and non-disclosure	2	3	2	3	6	
	3	3				
Family, school or work commitments	29	2	4	2.3	9	
	3	3				
	29	2				
	30	2				
Loss to follow-up or death	7	3	5	2.6	13	
	21	3				
	28	2				
	19	2				
	28	3				
Less urban or informal residence and certain regions	7	3	3	2.7	8	
	12	3				
	22	2				
Transportation difficulty	30	3	3	2.3	7	
	3	2				
	29	2				
High costs of care	1	2	2	2	4	
	29	2				
Treatment refusal	19	2	1	2	2	
Use of alternative care	27	2	3	1.3	4	
	3	1				
	27	1				

FACILITATORS						
Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Provider factors						
Guideline availability, inclusion and awareness campaigns	16	1	2	2.0	4	
	9	3				
Infrastructure and equipment: technology improving communication	28	2	1	2	2	
Decentralization	4	3	7	2.9	20	In the discussion
	10	3				
	8	3				
	19	3				
	24	3				
	25	3				
	3	2				Listed in Table 1
	26	2				1
Level of care- lower level , TB clinic or in-patient care	5	3	4	2.8	11	
	19	3				
	22	2				
	16	3				
Public sector care	23	3	2	3.0	6	
	3	3				
Urban location: differences in testing, capacity and referral	5	2	4	2.8	11	
	13	3				
	14	3				
	24	3				

Factor	Study #	Score	Number of studies with factor	Average scores	Final Rank	Comment if result not obvious or mixed methods
Provider factors						
HCW knowledge, training and experience	27	3	3	2.7	8	
	3	2				Listed in Table 1
	26	3				
HCW motivation and attitude	3	3	1	3	3	
Newer diagnostics and timeliness to diagnosis and treatment	10	3	7	3.0	21	
	4	3				
	5	3				
	9	3				
	11	3				
	12	3				
	20	3				
Newer diagnostics on rates of diagnosis or treatment	8	3	1	3	3	
Increased access to testing	8	3	1	3	3	
Patient factors						
Older patient age*	15	3	2	3.0	6	
	23	3				
HIV positive status*	10	3	3	3.0	9	
	23	3				
	3	3				
More presenting symptoms**	15	3	3	2.7	8	
	23	3				
	3	2				
Patient agency and knowledge	3	3	1	3	3	
Family support	3	2	1	2	2	
City or semi-urban residence	7	2	2	2.5	5	
	22	3				