

Emergence and Spread of Extensively and Totally Drug-Resistant Tuberculosis, South Africa

Technical Appendix

Technical Appendix Table. Geographic distribution of atypical Beijing genotype isolates and their mutation patterns, South Africa, 2008–2009*

Number of isolates harboring a defined mutation in genes known to confer drug resistance

<i>katG</i>	<i>rrs</i>	<i>inhA</i> promoter	<i>embB</i>	<i>pncA</i>	<i>rpoB</i>	<i>rrs</i>	<i>gyrA</i>	MP†	DR‡	District municipality			
315ACC	513CAC	G-17A	306ATA	WT	516GTC	A1401G	WT*	1	Pre-XDR	OT			
216	209	162	161	1	1	1	1	2	MDR	AM, NMB			
				Ins172G	516GTC	WT	WT	3	6	3	Pre-XDR	NMB, CC	
				159	149	143	62	94GGC					2
								94GCC					4
								1	5	Pre-XDR	AM, NMB, CC, OT		
								A1401G				WT	
				62	6	XDR§	AM, NMB, CC, CH						
				94GGC				47					
				94AAC	7	XDR	AM, NMB						
				10	8	XDR	AM, NMB						
				94CAC				12					
				94GCC				9	XDR	NMB			
				2	10	XDR	AM, NMB						
				94TAC				4					
				90GTG				11	XDR	AM			
				2	12–16	XDR	AM, NMB						
				Unique mutations				5					
516TCC	WT	WT	17	MDR	AM, CH								

Number of isolates harboring a defined mutation in genes known to confer drug resistance

<i>katG</i>	<i>rrs</i>	<i>inhA</i> promoter	<i>embB</i>	<i>pncA</i>	<i>rpoB</i>	<i>rrs</i>	<i>gyrA</i>	MP†	DR‡	District municipality
					10	4	4	18	Pre- XDR	AM, OT
						A1401G	WT*			
					6	2	Unique mutations	19– 22	XDR	NMB
				14CGC	516TCC	WT	WT	23	MDR	AM
				1	1	1	1			
			306ATC	Ins172G	516TCC	A1401G	94GGC	24	XDR	NMB
			1	1	1	1	1			

(315ACC 216)	(513CAC 209)	-15	306ATC	14CGC	531TTG	WT	WT*	25	MDR	AM				
		20	17	17	17	1	1				A1401G	WT		
								16	5	90GTG			11	
						306GTG	31AGC				531TTG	WT		90GTG
						WT	14CGC				531TTG	WT		WT
								1	WT	3			A1401G	
		1	1	1	1									
						WT	WT	14CGC	531TTG	WT	WT	30	MDR	NMB
		27	25	22	21	1	1	1	1					
										306ATA	14CGC	531TTG	WT	WT
						1	1	1	1					
										306ATC	WT	526TAC	WT	WT
						3	3	3	3					
										14CGC	516GTC	WT	88TGC	
						1	1	1	1					
										531TTG	WT	WT		
						12	91CCG	3	Unique mutations				2	
36– 37	Pre- XDR									AM,NMB				
		A1401G	WT	4	2									
38	Pre- XDR					AM, NMB								

							Unique mutations				
							2				
									39–40	XDR	AM, NMB
	WT	WT	WT	WT	516TAC	WT	WT				
	7	6	4	4	2	1	1		41	MDR	NMB
A1401G						94GCC					
1					1		42	XDR	NMB		
MIX					MIX	94GCC					
1			1	1		43	XDR	CC			
531TTG			WT	WT							
1			1	1		44	MDR	NMB			
306ATA			34TAG	516TAC	WT	MIX					
2			2	2	1	1		45	pre-XDR	CC	
					A1401G	WT					
1	1					46	Pre-XDR	AM			
		-15	WT	WT	531TTG	A1401G	94GCC		47	XDR	AM
		1	1	1	1	1	1				
WT	WT	-15	WT	NR	531TTG	WT	WT		48	MDR	NMB
1	1	1	1	1	1	1	1				

*MP, mutation pattern; DR, drug resistance; WT, wild type; pre-XDR, pre-extensively drug resistant; OT, OR Tambo; Am, Amathole; NMB, Nelson Mandela Ba7; MDR, multidrug resistant; CC, Cacadu; CH, Chris Hani; An, Alfred Nzo.

Technical Appendix Figure 1. IS6110 DNA fingerprint patterns of a subset (63/85) of atypical Beijing pre-extensively drug-resistant tuberculosis isolates and their geographic origin, South Africa, 2008–2009.

