

Updates to tables and assay scheme from reference: Velusamy et al. (2020) Expanded sequential quadriplex real-time polymerase chain reaction (PCR) for identifying pneumococcal serotypes, penicillin susceptibility, and resistance markers. *Diagnostic Microbiology and Infectious Disease* 97(2): 115037. doi: 10.1016/j.diagmicrobio.2020.115037. Epub 2020 Mar 12.

Primer/Probe Name	Sequence (5'-3')	Conc. (nM)	Special Chemistry			Target gene (Accession No.)	Coordinates	Size (bp)	Reference
			5'-end (Dye)	Internal Chemistry	3'-end				
1-F	TTTCATCCCTATGTGTGGTATAG	300				wzy (CR931632)	9875-10035	161	Pimenta et al., (2013)
1-P	TGCCAAAGCCAGCCAT	100	FAM	LNA	BHQ1				
1-R	GCTTTAGAAGGTAGAGTTAACAAC	300							
2-F	TGTTATCCCATATAAGAACCGAGTGT	300				wzy (CR931633)	10342-10452	111	Pimenta et al (2013)
2-P	TTGCAATT"TT"CAATTTTTTTGCCCAATCTC	200	ROX	"T"=BHQ1	Spacer C6				
2-R	AAAATTACCCCAAAAGCTATCCAA	300							
3-F	CCACTAAAGCTTTGGCAAAGAAA	300				galU (CR931634)	8564-8648	85	Pimenta et al., (2013)
3-P	TTGTAGACCGCCCCACAA"TT"TCATTTTGT	200	HEX	"T"=BHQ1	Spacer C6				
3-R	CCCGAACGTAAAGCTTCTTCA	300							
4-F	GCTTCTGCTGTAAGTGTGTGC	300				wzy (CR931635)	10521-10734	214	Pimenta et al., (2013)
4-P	TTCACAAAAAGAAGAGCC"TT"ACAGGTAACCCCA	100	ROX	"T"=BHQ2"	Spacer C6				
4-R	CACCACCATAGTAACCAAAGTTCC	300							
5-F	CATGATTATGCCCTCTTGCAA	300				wzy (CR931637)	7001-7082	82	Pimenta et al., (2013)
5-P	TCTTCTTCTCA"TT"CGTTTCGCATGCTTTT	200	FAM	"T"=BHQ1	Spacer C6				
5-R	GACAGTATAAGAAAAAGCAAGGGCTAA	300							
6A/6B/6C/6D -F	GTTTGCACTAGAGTAGGGAAGG	200				wciP (CR931639)	8796-8923	128	Pimenta et al., (2013)
6A/6B/6C/6D -P	TGTTCTGCCCT"TT"GAGCACTGGTCTTGTATC	200	FAM	"T"=BHQ1	Spacer C6				
6A/6B/6C/6D -R	TAGCCTTTCTGAAACATTTAGCG	200							
6C/6D-F	TTGGGATGATTGGTCGTATTAG	200				wciNβ(EF538714)	7102-7250	149	Pimenta et al., (2013)
6C/6D-P	CCAGC <u>CAAT</u> ICGCCATC	100	ROX	LNA	BHQ2				
6C/6D-R	CTCTCAATTAGTTCTTCAGTTCG	200							
6B/6D-F	GCATTGCTAGAGATGGTTCCT	300				wciP (AB795236)	3322-3464	143	Velusamy et al., (2020)
6B/6D-P	<HEX>A<pdC><pdU>G<pdU><pdC><pdU><pdC>A<pdU>GA<pdU>A A<pdU><pdU>A<pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU><pdU>								

7F/7A-R	ATTCTCGCCATCAATTGCATATTC	200							Pimenta et al., (2013)
8-F	ATTCTAATTACTACATTACTGCTTTATACTA	200				wzy (CR931644)	10982-11083	109	Velusamy et al., (2020)
8-P	ATGTTTACTTTACGAG"TT"TG GTTTATGTTGATT	300	FAM	"T"=BHQ1"	Spacer C6				
8-R	TCTTCTTAAATCATAATGAATCGTACC	200							
9L/9N-F	CGTGGAATTTTCTATACTGCAATAGG	200				wzy (CR931647)	11762-11876	115	Velusamy et al., (2020)
9L/9N-P	CAGCAATTCT"TT"AGCCGGATTCTCTCAC	100	CY5	"T"=BHQ2	Spacer C6				
9L/9N-R	CTACTGCTACGATACCATTCTACAG	200							
9V/9A-F	AGGTATCTATATACTGCTTTAGG	300				wzx (CR931648)	11767-11920	154	Pimenta et al., (2013)
9V/9A-P	ACACATTGACAACCGCT	100	HEX	LNA	BHQ1				
9V/9A-R	CGAATCTGCCAATATCTGAAAG	300							
10A-F	TAGTGTCCGCAGACAAATTAT	400				wcrG (CR931649)	12439-12546	108	Velusamy et al., (2020)
10A-P	TTGAGCATGG"TT"CTCTGATGAGATTT	200	CY5	"T"=BHQ2	Spacer C6				
10A-R	CAGCTCATACACTTTATTTGA	400							
10F-F	ATAAATTATGATGTTAATCCTAATGTGAC	200				wcrC (CR931652)	8881-9026	146	Velusamy et al., (2020)
10F-P	TAAAATTAACGGAGAGAA"TT"TAAGGGATTATATTAAGA GAA	200	ROX	"T"=BHQ2	Spacer C6				
10F-R	GGGGTTATAGAAAAATCACTTTAATTT	200							
11A/11D/11E-F	AAATGGTTTGGATATGGTTTGTGG	300				wzy (CR931653)	12015-12121	107	Pimenta et al., (2013)
11A/11D/11E-P	ATTGCAACTC"TT"CCCAATTTCTGCCACGG	100	ROX	"T"=BHQ2	Spacer C6				
11A/11D/11E-R	AGTGCTAACTGTAAACTTGATTATGAG	300							
11B/11C-F	CCGCTATCAAATTTGGCGTATTG	100				wzy (CR931655)	12516-12653	111	Velusamy et al., (2020)
11B/11C-P	TCCGTGGCAAGA"TT"CTGGTGCTAA	100	HEX	"T"=BHQ1	Spacer C6				
11B/11C-R	AGCTGATTATGAGCATAGTTGATCC	100							
12F/44-F	TTCCGAGGGTCCGATTATATTT	200				wciI (CR931660)	5218-5366	149	Velusamy et al., (2020)
12F/44-P	AAATGTAGC"TT"CCACGGAACCTGGA	200	CY5	"T"=BHQ2	Spacer C6				
12F/44-R	CTTTGGTAATCCACTGTTCTGG	200							
13-F	AGACTACCATTTTTGATCAGTTAGATT	200				wzy (CR931661)	13163-13298	136	Velusamy et al., (2020)
13-P	AAGCAGCACT"TT"CCAAGTCGTAATCTACC	100	FAM	"T"=BHQ1	Spacer C6				
13-R	CAGAAAACATATTTTGTTCATAAATCCATC	200							
14-F	AGAGTGATGAGGAATCC	300				wzy (CR931662)	7920-8007	88	Pimenta et al., (2013)
14-P	CGCCAAGTAACA"TT"TTCCATTCCATT	200	HEX	"T"=BHQ1	Spacer C6				
14-R	ATATATCTACTGTAGAGGGAAT	300							
15A/15F-F	AATTGCCTATAAACTCATTGAGATAG	200				wzy (CR931663)	7839-7968	130	Pimenta et al., (2013)
15A/15F-P	CCCGCCAACTCTGTCCT	100	FAM	LNA	BHQ1				
15A/15F-R	CCATAGGAAGGAAATAGTATTTGTTC	200							
15B/15C-F	CATAGTATTTGTAGTAATGGTTCAGATT	200				wzy (CR931664)	7761-7847	87	Velusamy et al., (2020)
15B/15C-P	ACTTCAATTAA"TT" AAGCGGATGATTGTAGCGT	200	FAM	"T"=BHQ1	Spacer C6				
15B/15C-R	AGCAATATAAGAGGTATAGTTGGATAA	200							
16F-F	TAATGTTATGACCTTGGTAATCTTCCC	300				wzy (CR931668)	12016-12214	199	Pimenta et al., (2013)
16F-P	AGCCATAAGTCT"TT"CCAAATGCTTAACCGCT	100	HEX	"T"=BHQ1	Spacer C6				
16F-R	TCCCAAAGGATAATCAATAACTTTTGAAG	300							
17F-F	CGGAATATCATGGAGCCTATTA	200				wciP (CR931670)	10574-10703	130	Velusamy et al., (2020)
17F-P	TGTTTGCTGA"TT" CAGGATGATATCTGG	200	HEX	"T"=BHQ1	Spacer C6				
17F-R	AACGTTCTAATTTGTCCACATC	200							
18C/18F/18B/18A-F	TCGATGGCTAGAACAGATTTATGG	200				wzy (CR931673)	12934-13081	148	Pimenta et al., (2013)
18C/18F/18B/18A-P	AGGGAGTTGAA"TT" CAACCTATAATTCGCCCC	100	CY5	"T"=BHQ2	Spacer C6				
18C/18F/18B/18A-R	CCATTGTCCTGTAAAGACCATTG	200							
19A-F	CGCCTAGTCTAAATACCA	200							

19A-P	TATCAATGAGCCGA"TT"CCGTCACTT	100	ROX	"T"=BHQ2	Spacer C6	wzy (CR931675)	9492-9580	89	Pimenta et al., (2013)
19A-R	GAGGTCAACTATAATAGTAAGAG	200							
19F-F	TGAGGTTAAGATTGCTGATCG	300							
19F-P	CGCACTGTCAATTACCTTC	100	ROX	LNA	BHQ2	wzy (CR931678)	11131-11350	221	Pimenta et al., (2013)
19F-R	CACGAATGAGAACTCGAATAAAAG	300							
20-F	AAAGATACTGGCTGAGGAGCTATCTATT	200							
20-P	AGGATAAGGTC"TT"ACTTTGTGGGAGTTC	200	FAM	"T"=BHQ1	Spacer C6	wcIL (CR931679)	10132-10223	92	Velusamy et al., (2020)
20-R	AGTCAAAAGTACTCAACCATTCTGATATATTC	200							
21-F	GGTTTAAATATCGCTCCGGGTAT	100							
21-P	TGTGAATTGGACACGTTATGGAGC	100	ROX		BHQ2	wzy (CR931680)	12355-12441	87	Velusamy et al., (2020)
21-R	CAAAAAAGGGCTTGATAGCGAA	100							
22A/22F-F	CTTGGGACTTCTCTATTTGTTATAGG	200							
22A/22F-P	TCCCGAAACCAAA"TT"TGCTATCCCTCC	200	FAM	"T"=BHQ1	Spacer C6	wzy (CR631682)	12961-13048	88	Velusamy et al., (2020)
22A/22F-R	AATATGAGTTACCGCCAACCTT	200							
22A-F	CCCAGGACAATCACAAGAACTA	300							
22A-P	TTTGAGATTGG"TT"TTCTGATCCAGA	100	ROX	"T"=BHQ2	Spacer C6	wcWA (CR931681)	8693-8776	84	Velusamy et al., (2020)
22A-R	TGATGCTTGGCCAAATTGGAG	300							
22F-F	CTTGTCAGATGCTGAGGATTG	200							
22F-P	ACTCAACAAGC"TT"ACAGATGGACATGAAGT	200	CY5	"T"=BHQ2	Spacer C6	wcWA (HE651300)	39-120	82	Velusamy et al., (2020)
22F-R	AGATTCTCTCGGATATAATGCGAT	200							
23A-F	CTCCCTCCATTACCCATTTGG	200							
23A-P	AGCTAGAAC"TT"CCCACACTCCCTACTCCCA	200	ROX	"T"=BHQ1	Spacer C6	wzy (CR931683)	8626-8711	86	Pimenta et al., (2013)
23A-R	TGAAGAAAGTGCTGTTGTGAACC	200							
23B-F	TTGAAGAAATTGCTCCAGAAACAT	300							
23B-P	TAGAGCTATT"TT"ATCTTTCTGGTTTT	200	CY5	"T"=BHQ2	Spacer C6	wzx (CR931684)	13656-13733	78	Velusamy et al., (2020)
23B-R	CCAAAAGACTAGCCTCAACCACTAA	300							
23F-F	GACAGCAACGACAATAGTCATCTC	300							
23F-P	ATTGTGTCCA"TT"AAACCCTTCGTCGATTTCCAAAG	200	ROX	"T"=BHQ1	Spacer C6	wzy (CR931685)	9049-9274	226	Pimenta et al., (2013)
23F-R	TCCATCCCAACCTAACACACTTC	300							
24F/24A/24B-F	GGAGCGGGATATATTTCTCTAGTC	200							
24F/24A/24B-P	TCTATTGTTC"TT"GGTCCATTAGGACGT	200	CY5	"T"=BHQ2	Spacer C6	wzy (CR931688)	12323-12415	93	Velusamy et al., (2020)
24F/24A/24B-R	CAAACCTACATCGCTTGGATAAT	200							
28F/28A-F	TTTAGTTCGTGGAGGTAGACT	200							
28F/28A-P	ACCAATTTCAA"TT"TCAGGAGCGAA	100	CY5	"T"=BHQ2	Spacer C6	wzy (CR931692)	10658-10753	96	Velusamy et al., (2020)
28F/28A-R	ACATTCCTCAATACCTATAAATAGCC	200							
31-F	AGGTTGGGACAAACCTTGC	200							
31-P	CCCTTAGTGACA"TT"CTGTAATGCTATCTTCT	200	CY5	"T"=BHQ2	Spacer C6	wzy (CR931695)	9382-9496	115	Velusamy et al., (2020)
31-R	CGTAAGAGAGCCTTCTCAATAGTC	200							
33A/33F/37-F	GGAAGTGGTTCAGCAACTATACG	500							
33A/33F/37-P	CCCCAAATAGGAC"TT"TTTCTGCCATGCCAAA	300	HEX	"T"=BHQ1	Spacer C6	wzy (CR931698)	11392-11537	146	Pimenta et al., (2013)
33A/33F/37-R	GGTTCTAAGACCGTCTGAAATACC	500							
34-F	CGTGGAGTTTCTCGCAAATAA	200							
34-P	TTTACTGAAGAC"TT"TAGTCGGATTGGG	200	HEX	"T"=BHQ1	Spacer C6	wzy (CR931703)	7683-7820	138	Velusamy et al., (2020)
34-R	CACGTAAGAAAATAGGAGATATGAAGC	200							
35A-F	TTCTGATTATGTTGAGATTTGGC	200							
35A-P	ACCAGAGTTAGACAC"TT"ATCTTGTTTCC	300	HEX	"T"=BHQ1	Spacer C6	wzy (CR931704)	7389-7467	79	Velusamy et al., (2020)
35A-R	AGCGTTGATGGAAGTAATGAATATC	200							
35B-F	GAAAGGTATGGAGAAGTTGAGAATG	200							
35B-P	ATTCCTTACG"TT"AGAACTGTAAGGGAAGG	200	HEX	"T"=BHQ1	Spacer C6	wzy (CR931705)	8168-8256	89	

35B-R	TCCATCTCTATTATTCATATTA AACCTATTA	200							Velusamy et al., (2020)
35F/47F-F	GTGGTCGTATATACTTGATGAATAAATCG	200							
35F/47F-P	TCCATCAACTGG" T"CGTCCGAATAATCC	200	FAM	"T"=BHQ1	Spacer C6	wzy (CR931707)	7694-7834	141	Velusamy et al., (2020)
35F/47F-R	ACATACAAATTATCAACATACAGATAGGTC	200							
37-F	GATGCCAGCATTATTACACC	200							
37-P	AGAGACGCCAG" T" GAGTATCAAGGAGT	200	FAM	"T"=BHQ1	Spacer C6	tts (AJ131985)	2220-2310	91	Velusamy et al., (2020)
37-R	GGCATTCAATACGACTAATAACCAATAC	200							
38-F	TGATGAGCTTCCAAATTCCTTT	200							
38-P	TGATGAAAACCAA" T" CATGATAGTGGCAGTATTA	200	CY5	"T"=BHQ2	Spacer C6	wcyV (CR931710)	18262-18344	83	Velusamy et al., (2020)
38-R	TCAAGTCTTCTTTGTTTTTACAAT	200							
39-F	TGCGCTAAGGTATATTCCGTATTT	200							
39-P	TGATGATGGAGCC" T" ATCATTATAAAGCAGC	200	CY5	"T"=BHQ2	Spacer C6	wzy (CR931711)	11321-11431	111	Velusamy et al., (2020)
39-R	GACATCAAGTTCCCAAACCAATC	200							

Updated Quadriplexed reaction scheme (from that published Velusamy et al. 2020) for identification of 64 pneumococcal serotypes commonly found in the USA.

Serotype Reactions	Serotypes/Serogroup
1	3, 22A/22F, 22A, 22F
2	12F/44, 23A, 35B, 15A/15F
3	9L/9N, 19A, 8, 16F
4	33A/33F/37, 11A/11D/11E, 6A/6B/6C/6D*, 6C/6D
5	23B, 20, 6B/6D, 6A/6B
6	19F, 31, 7B/7C1, 7B/7C2
7	10A, 7F/7A, 15B/15C, 17F
8	4, 32, 35F/47F, 38
9	21, 13, 24F/24A/24B, 9V/9A
10	1, 14, 23F, 28A/28F
11	37, 11B/11C, 10F, 18C/18F/18B/18A
12	5, 39, 35A, 2

*if any sample positive for 6A/6B/6C/6D in reaction 4, continue with reaction 5 for further discrimination.

Interpretation criteria to identify individual serotypes/serogroup.

Target 1	Target 2	Target 3	Interpretation
6A/6B/6C/6D	6A/6B	-	6A
6A/6B/6C/6D	6A/6B	6B/6D	6B
6A/6B/6C/6D	6C/6D	-	6C
6A/6B/6C/6D	6C/6D	6B/6D	6D
7C/7B1	7C/7B2	-	7C
7C/7B1	-	-	7B
22A/22F	22A	-	22A
22A/22F	22F	-	22F
33A/33F/37	-	-	33A/33F
33A/33F/37	37	-	37