

Supplementary Information

Table S1. Search strings used to define the best search strategy for the PubMed and MEDLINE databases.

Search	Search string	Records 2010-2022 &
Pneumococcal infections	Pneumococcal Infections[MeSH Major Topic]	6863
	Pneumococcal Infections[MeSH Major Topic] AND Europe[MeSH Terms] AND Adult[MeSH Terms]	534
	Pneumococcal Infections[MeSH Major Topic] AND Europe[MeSH Terms] AND (adult)	553
Streptococcus pneumoniae	Streptococcus Pneumoniae[MeSH Major Topic]	5687
	Streptococcus Pneumoniae[MeSH Major Topic] AND Europe[MeSH Terms] AND Adult[MeSH Terms]	267
	Streptococcus Pneumoniae[MeSH Major Topic] AND Europe[MeSH Terms] AND (adult)	279
Overlap check	<i>Streptococcus Pneumoniae[MeSH Major Topic] AND Europe[MeSH Terms] AND (adult) NOT Pneumococcal Infections[MeSH Major Topic]</i>	36
(Pneumococcal) serotype	Europe[MeSH Terms] AND (adult) AND (serotype)	1025
	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype)	341
	Pneumococcal Infections[MeSH Major Topic] AND (serotype)	2899
	Pneumococcal Infections[MeSH Major Topic] AND Europe[MeSH Terms] AND Adult[MeSH Terms] AND (serotype)	290
	Pneumococcal Infections[MeSH Major Topic] AND Europe[MeSH Terms] AND (adult) AND (serotype)	304
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype) NOT Pneumococcal Infections[MeSH Major Topic]</i>	37 *
Serotype 8	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 8)	157
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 8) NOT Pneumococcal Infections[MeSH Major Topic]</i>	12 §

Serotype 10A	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 10A)	5
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 10A) NOT Pneumococcal Infections[MeSH Major Topic]</i>	0 §
Serotype 11A	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 11A)	24
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 11A) NOT Pneumococcal Infections[MeSH Major Topic]</i>	3 §
Serotype 12F	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 12F)	24
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 12F) NOT Pneumococcal Infections[MeSH Major Topic]</i>	1 § (children)
Serotype 15B	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 15B)	8
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 15B) NOT Pneumococcal Infections[MeSH Major Topic]</i>	0 §
Serotype 22F	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 22F)	28
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 22F) NOT Pneumococcal Infections[MeSH Major Topic]</i>	1 § (unrelated)
Serotype 33F	Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 33F)	10
Overlap check	<i>Europe[MeSH Terms] AND (adult) AND (pneumococcal serotype 33F) NOT Pneumococcal Infections[MeSH Major Topic]</i>	0 §

& Between the 1st of January 2010 and the 20th of April 2022 * Enough entries to justify conducting this search

§ Serotype 8 and serotype 11A are the only "single serotype search" worth adding

Supplementary Table S2 - Summary of the findings from the pre-PCV7 era (pre-2001, unless stated otherwise by the authors of each paper).

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
8	• 5.1% prevalence in Spain [1]*				• Does not associate with greater risk of respiratory failure upon IPP (Spain) [2].	
	• 3.1% pneumococcal meningitis isolates in Germany [3]				• Caused IPD more frequently in Spanish smokers (OR 3.28) [5]	
	• 7% prevalence in Czech Republic [4]				• Does not associate with risk of hearing loss upon pneumococcal meningitis (Netherlands) [8].	
	• 6.6% prevalence in England [6]*				• Significantly associated with a lower propensity for death OR 0.7 (individuals ≥5yo, IPD, Netherlands) [10]*	
	• Among the most common serotypes in Scotland (6%) [7]**				• Increased risk of septic shock OR 2.37 [11]	
	• 6.5% prevalence in Ireland (2000-2001) – 5 th most prevalent [9]*				• 6.6% of the isolates of pneumococcal empyema in Spain [13].	
	• Among the most common serotypes in pneumococcal meningitis in the Netherlands (6%) [8]					
	• 7.8% prevalence in the Netherlands (2004-2006) [10] [§]	• 8.1% prevalence in the Netherlands (2004-2006) [10]				
	• Mean prevalence in Denmark 0.63 [12] [§]	• Mean prevalence in Denmark 3.23 [12]				
	• 3.5% prevalence in Sweden [11]					
• 0.38 in 100.000 prevalence in Norway [14] [§]						
10A	• 0.1% prevalence in Spain [1]*				• Significantly associated with a higher propensity for meningitis OR 3.7 (individuals ≥5yo, IPD, Netherlands) [10] [#]	
	• 3.6% pneumococcal meningitis isolates in Germany [3]					
	• 0.3% prevalence in England [6]*					
	• 1.5% prevalence in the Netherlands (2004-2006) [10] [§]	• 1.5% prevalence in the Netherlands (2004-2006) [10]				
	• 0.18 in 100.000 prevalence in Norway [14] [§]					
11A	• 1.5% prevalence in Spain [1]*		• Among the most common serotypes in NIPP in Portugal (6.7%) [15] [#]		• Among the most common serotypes in patients with haematological malignancy in Finland (6.4%) [16]*	
	• 2.1% pneumococcal meningitis isolates in Germany [3]				• Caused IPD more frequently in Spanish alcohol abusers (OR 3.28) [5]	
	• 1.5% prevalence in England [6]*				• Significantly higher (OR 2.72) risk of mortality (IPD, Sweden) [17]*	
	• 0.7% prevalence in the Netherlands (2004-2006) [10] [§]	• 1.4% prevalence in the Netherlands (2004-2006) [10]	• Significantly associated with NIPP vs IPD (Portugal) [15] [#]		• Significantly associated with a higher propensity for death OR 1.9 (IPD, Netherlands) [10] ^{#§}	
	• Mean prevalence in Denmark 0.16 [12] [§]	• Mean prevalence in Denmark 1.03 [12] [§]				
	• 0.25 in 100.000 prevalence in Norway [14] [§]					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
12F	• 2.9% prevalence in Spain [1]*				• Does not associate with greater risk of respiratory failure upon IPP (Spain) [2].	
	• 1.7% pneumococcal meningitis isolates in Germany [3]				• Significantly lower OR (0.29) for pneumonia (IPD, Sweden) [17]*	
	• 2.8% prevalence in England [6]*				• Significantly higher OR (3.03) for septicaemia (IPD, Sweden) [17]*	
	• 2.4% prevalence in the Netherlands (2004-2006) [10]§	• 1.2% prevalence in the Netherlands (2004-2006) [10]			• Significantly associated with hearing loss after pneumococcal meningitis in Denmark [18]*#	
	• Mean prevalence in Denmark 0.49 [12]§	• Mean prevalence in Denmark 2.65 [12]§				
	• Proportion of cases 12F increased, serotype more predominantly encountered in the adult population (Denmark) [19].					
	• 0.35 in 100.000 prevalence in Norway [14]§					
15B	• 0.6% prevalence in England [6]*					
	• 1.0% pneumococcal meningitis isolates in Germany [3].					
	• 0.9% prevalence in the Netherlands (2004-2006) [10]§					
	• 0.13 in 100.000 prevalence in Norway [14]§#					
22F	• 1.4% prevalence in Spain [1]*		• Among the most common serotypes in NIPP in Portugal (4.1%) [15]#		• Does not associate with risk of hearing loss upon pneumococcal meningitis (Netherlands) [8]	
	• 3.5% pneumococcal meningitis isolates in Germany [3]				• Significantly lower OR (0.40) for pneumonia (IPD, Sweden) [17]*	
	• 2.1% prevalence in England [6]*				• Significantly higher OR (3.13) for septicaemia (IPD, Sweden) [17]*	
	• Among the most common serotypes in pneumococcal meningitis in the Netherlands (5%) [8]				• Significantly associated with a lower propensity for empyema OR 0.3 (individuals ≥5yo, IPD, Netherlands) [10]#	
	• 2.6% prevalence in the Netherlands (2004-2006) [10]§	• 1.7% prevalence in the Netherlands (2004-2006) [10]				
	• Mean prevalence in Denmark 0.36 [12]§	• Mean prevalence in Denmark 2.23 [12]§				
	• 0.86 in 100.000 prevalence in Norway [14]§				• Significantly associated with a higher propensity for meningitis OR 2.0 (individuals ≥5yo, IPD, Netherlands) [10]#	
33F	• 1.3% prevalence in England [6]*					
	• 1.7% pneumococcal meningitis isolates in Germany [3].					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> • 2.2% prevalence in the Netherlands (2004-2006) [10][§] 	<ul style="list-style-type: none"> • 0.8% prevalence in the Netherlands (2004-2006) [10] 				
	<ul style="list-style-type: none"> • Mean prevalence in Denmark 0.11 [12][§] 	<ul style="list-style-type: none"> • Mean prevalence in Denmark 1.04 [12][§] 				
	<ul style="list-style-type: none"> • 0.33 in 100.000 prevalence in Norway [14][§] 					

* total population, [§] 5-64 years, [§] ≥ 5 years, & 15B/C, # cumulative prevalence with other PCV eras (PCV7 or PCV7 and PCV10/13)

(N)IPP (non-)invasive pneumococcal pneumonia, OR odds ratio

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Supplementary Table S3 - Summary of the findings from the PCV7 era (2001-2009, unless stated otherwise by the authors of each paper).

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
8	<ul style="list-style-type: none">3.2% prevalence in Spain [1]*		<ul style="list-style-type: none">3.1% prevalence of uncomplicated CAP in Spain [2]6% prevalence in CAP in Spain [6]*		<ul style="list-style-type: none">Does not associate with greater risk of respiratory failure upon IPP (Spain) [3].	<ul style="list-style-type: none">Among the most frequent serotypes showing ERY resistance 29.4% (only in the PCV7 era, IPD, Spain) [4]
	<ul style="list-style-type: none">4.5% prevalence in bacteremic pneumococcal community-acquired pneumonia (BPP) in Spain [5]				<ul style="list-style-type: none">1.7% of the isolates of pneumococcal empyema in Spain [7].	
	<ul style="list-style-type: none">0.35 per 100.000 prevalence in Catalonia, Spain [8]*		<ul style="list-style-type: none">1.3% prevalence NIPD in Greece [9]		<ul style="list-style-type: none">Caused IPD more frequently in Spanish smokers (OR 3.28) [10]	<ul style="list-style-type: none">61.8% of the serotype 8 isolates were co-resistant to ERY, LVX and tetracycline (IPD, Spain) [11]*
	<ul style="list-style-type: none">0.73 in 100.000 prevalence in Spain [4]13.5% prevalence in Spain [11]*				<ul style="list-style-type: none">Does not associate with risk of hearing loss upon pneumococcal meningitis (Netherlands) [13].	
	<ul style="list-style-type: none">Main serotype causing recurrent IPD in Spain (12.1%) [12]**				<ul style="list-style-type: none">Significantly associated with lower CFR (IPD, Netherlands) [18]*	<ul style="list-style-type: none">Serotype 8 represented 14% of the NFX- and LVX-resistant isolates (MIC > 256 ug/mL and > 1.5-2 ug/mL) (IPD, Spain) [16]*
	<ul style="list-style-type: none">5.2% prevalence in Spain [14]	<ul style="list-style-type: none">5.8% prevalence in Spain [14]			<ul style="list-style-type: none">Significantly less common in high-risk group patients (IPD, Netherlands) [20]#	
		<ul style="list-style-type: none">5.0% prevalence in individuals aged 60 and up, Madrid, Spain [15]#			<ul style="list-style-type: none">Significantly associated with a lower propensity for death OR 0.7 (individuals ≥5yo, IPD, Netherlands) [23]Detected in 7.5% of CAP hospitalized patients with pneumococcal bacteraemia (UK) [25]	<ul style="list-style-type: none">Serotype 8 accounted for 0.6% of the PNSP (IPD, Denmark) [24]
		<ul style="list-style-type: none">4-5% prevalence in bacteremic pneumonia and 14-21% prevalence in primary bacteremia in South Catalonia, Spain (2002-2009) [17]				
	<ul style="list-style-type: none">Significantly decreased vs pre-PCV7 era in Portugal [19]Among the most common serotypes in Portugal (6.2%) [21]#5.7% prevalence in Portugal - 5th most prevalent [22]				<ul style="list-style-type: none">Serotype 8 was significantly more frequent among HIV-infected patients (36.5%) (IPD, Spain) [11]*Serotype 8 was found to have enhanced propensity to cause invasive disease OR 46.2 [22]	
	<ul style="list-style-type: none">Significantly more frequent in the younger adults (18-49) 10.5% (Portugal) [21]#	<ul style="list-style-type: none">vs 4.5% in ≥65yo [21]#				
	<ul style="list-style-type: none">9.1% prevalence in 18-49yo, 4.5% in 50-64yo in Portugal [26]#	<ul style="list-style-type: none">4.2% prevalence in Portugal [26]#				
	<ul style="list-style-type: none">1% prevalence in pneumococcal meningitis in France (2008-2009) [27]*					
		<ul style="list-style-type: none">2.6%, 1.6%, 2.1% prevalence in France (2001/02, 2003/05, 2006/10) [28]				
	<ul style="list-style-type: none">3.5% prevalence in Italy (2009) [29]*3.9% prevalence in Italy [30]2.1% pneumococcal meningitis isolates in Germany [31].1.5% prevalence in Poland (2009) [32]*					

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
<ul style="list-style-type: none"> 5.0% (15-24yo) and 3.6% (25-54yo) prevalence in Poland [34] 	<ul style="list-style-type: none"> 1.9% prevalence in Poland [34] 			<ul style="list-style-type: none"> Among the serotypes with lowest CFR (6%), and the lowest QALY loss (1.17) (IPD, England) [33]^s 	
<ul style="list-style-type: none"> 18.9% prevalence in England [35]* 					
<ul style="list-style-type: none"> 0.58 per 100.000 prevalence in England, but not detected in carriage [36]* 					
<ul style="list-style-type: none"> 7.5% prevalence in North East England [37]*^s 					
<ul style="list-style-type: none"> 0.5-0.8 in 100.000 prevalence in IPD in North East England (2006-2009) [38]* 					
<ul style="list-style-type: none"> 3rd most prevalent serotype in invasive and non-invasive pneumococcal CAP in the UK, 9.6% prevalence [25] 					
<ul style="list-style-type: none"> 7.3% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] 					
<ul style="list-style-type: none"> Among the most prevalent serotypes in England and Wales (2009-2010) [40]^s 					
<ul style="list-style-type: none"> Significant decrease in prevalence vs pre-PCV7 era in England and Wales IRR 0.58 (2008-2010) [40]^s 					
<ul style="list-style-type: none"> Among the most common serotypes in Scotland (6%) [41]* 					
<ul style="list-style-type: none"> Significant decrease in prevalence vs pre-PCV7 era in Ireland (2007-2008) [42]* 					
	<ul style="list-style-type: none"> 0.64 per 100.000 prevalence in Ireland (2007-2008) [43] 				
<ul style="list-style-type: none"> Among the most common serotypes in pneumococcal meningitis in the Netherlands (6%) [13] 					
<ul style="list-style-type: none"> 8% prevalence in community acquired bacterial (pneumococcal) meningitis in the Netherlands [44] 					
<ul style="list-style-type: none"> Third most prevalent serotype (2008-2010) in the Netherlands [45]* 					
<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 12% prevalence in the Netherlands [46]* 				
<ul style="list-style-type: none"> 10.5% prevalence in the Netherlands (2004-2006) [23]^s 	<ul style="list-style-type: none"> 10.8% prevalence in the Netherlands (2004-2006) [23] 				
	<ul style="list-style-type: none"> Significantly increasing vs pre-PCV7 era in IPD in Denmark for 85+ yo (IRR 1.97) [47] 				
<ul style="list-style-type: none"> Mean prevalence in Denmark 0.62 [48]^s 	<ul style="list-style-type: none"> Mean prevalence in Denmark 3.84 [48]^s 				
	<ul style="list-style-type: none"> Among the most predominant serotypes in Denmark, particularly in this population [49] 				
<ul style="list-style-type: none"> 0.42 per 100.000 prevalence in Sweden (2009) [50]* 					
<ul style="list-style-type: none"> 3.4% prevalence of pneumonia, 3.5% prevalence of meningitis and 1.4% prevalence of septicaemia in Norway (2008) [51]* 					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> 0.48 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 1.25 [52][§] 					
10A	<ul style="list-style-type: none"> 0.8% prevalence in Spain [1]* 		<ul style="list-style-type: none"> 3.5% prevalence in NIPD in Spain – increased vs pre-PCV7 era (1.8%) [53]* 		<ul style="list-style-type: none"> High CFP in meningitis in Poland 22% [32]* 	<ul style="list-style-type: none"> Serotype 10A accounted for 0.6% of the PNSP (IPD, Denmark) [24]
	<ul style="list-style-type: none"> 0.30 per 100.000 prevalence in Catalonia, Spain [8]* 				<ul style="list-style-type: none"> Significantly more common in high-risk group patients 39% vs 16% (average) – significantly associated with IPD in high-risk patients (Netherlands) [20][‡] 	
	<ul style="list-style-type: none"> 0.18 in 100.000 prevalence in Spain [4] 					
		<ul style="list-style-type: none"> 14-21% prevalence in primary bacteremia in South Catalonia, Spain (2002-2009) [17] 		<ul style="list-style-type: none"> 1.9% prevalence of complicated CAP in Spain [2] 		
		<ul style="list-style-type: none"> 1.6%, 0.9%, 1.0% prevalence in France (2001/02, 2003/05, 2006/10) [28] 	<ul style="list-style-type: none"> 3% prevalence in CAP in Portugal [6]* 1.9% prevalence NIPD in Greece [9] 		<ul style="list-style-type: none"> Significantly associated with a higher propensity for meningitis OR 3.7 (individuals ≥5yo, IPD, Netherlands) [23][#] 	
	<ul style="list-style-type: none"> 2% prevalence in pneumococcal meningitis in France (2008-2009) [27]* 				<ul style="list-style-type: none"> Very associated with meningitis (IPD, Norway) [51]* 	
	<ul style="list-style-type: none"> 2.2% prevalence in Italy (2009) [29]* 					
	<ul style="list-style-type: none"> 5.0% pneumococcal meningitis isolates in Germany [31]. 				<ul style="list-style-type: none"> More associated with meningitis and septicemia than with pneumonia (IPD, Norway) [51]* 	
	<ul style="list-style-type: none"> 3.0% prevalence in Poland (2009) [32]* 				<ul style="list-style-type: none"> Significantly more likely to cause meningitis (isolated in 32% of the isolates) (IPD, England) [33][§] 	
	<ul style="list-style-type: none"> 4.1% (25-54yo) and 2.1% (55-64) prevalence in Poland [34] 	<ul style="list-style-type: none"> 1.9% prevalence in Poland [34] 				
	<ul style="list-style-type: none"> 1.0% prevalence in England [35]* 					
	<ul style="list-style-type: none"> 1.2% prevalence in North East England [37]*[‡] 					
	<ul style="list-style-type: none"> 1.3% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] 					
	<ul style="list-style-type: none"> 2.2% prevalence in the Netherlands (2004-2006) [23][§] 	<ul style="list-style-type: none"> 1.8% prevalence in the Netherlands (2004-2006) [23] 				
	<ul style="list-style-type: none"> 0.13 per 100.000 prevalence in Sweden (2009) [50]* 					
	<ul style="list-style-type: none"> 0.7% prevalence of pneumonia, 40% prevalence of meningitis and 2.5% prevalence of septicemia in Norway (2009) [51]* 					
	<ul style="list-style-type: none"> 0.32 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 1.73 [52][§] 					
11A	<ul style="list-style-type: none"> 1.8% prevalence in Spain [1]* 		<ul style="list-style-type: none"> Among the most common serotypes in NIPP in Portugal (6.7%) [54] 		<ul style="list-style-type: none"> Caused IPD more frequently in Spanish alcohol abusers (OR 3.28) [10] 	<ul style="list-style-type: none"> 5.3% of serotype 11A isolates showed resistance to PEN and CTX (MIC > 0.06 mg/L and > 0.5 mg/L) (IPD, Poland) [34]*
	<ul style="list-style-type: none"> 0.24 per 100.000 prevalence in Spain [55] 0.23 in 100.000 prevalence in Spain [4] 				<ul style="list-style-type: none"> Significantly higher (OR 2.72) risk of mortality (IPD, Sweden) [56]* 	
	<ul style="list-style-type: none"> 0.10 per 100.000 prevalence in Catalonia, Spain [8]* 		<ul style="list-style-type: none"> Significantly associated with NIPP vs IPD (Portugal) [54] 		<ul style="list-style-type: none"> Significantly associated with higher CFR (IPD, Netherlands) [18]* 	<ul style="list-style-type: none"> Serotype 11A represented 14.3% of the isolates resistant to ERY (IPD, Spain) [57]
		<ul style="list-style-type: none"> 3.8% prevalence in individuals aged 60 and up, Madrid, Spain [15][#] 	<ul style="list-style-type: none"> 5.3% prevalence in NIPD in Spain – emerging vs pre-PCV7 era [53]* 			

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
		<ul style="list-style-type: none"> 2-2.5% prevalence in bacteremic pneumonia in South Catalonia, Spain (2002-2009) [17] 	<ul style="list-style-type: none"> Most frequently carried serotype in the parents of vaccinated children in the Netherlands (2%) [59] 		<ul style="list-style-type: none"> IPD patients with serotype 11A were significantly older than those infected with other vaccinal serotypes (Sweden) [58]* 	<ul style="list-style-type: none"> Serotype 11A accounted for 1.7% of the PNSP (IPD, Denmark) [24]
	<ul style="list-style-type: none"> 2.8% prevalence in 18-49yo, 3.4% in 50-64yo in Portugal [26]# 	<ul style="list-style-type: none"> 2.5% prevalence in Portugal [26]# 			<ul style="list-style-type: none"> Significantly associated with a higher propensity for death OR 1.9 (individuals ≥5yo, IPD, Netherlands) [23] 	<ul style="list-style-type: none"> Non-susceptibility rates of around 35% for PEN, AMOX, CXM and ERY (NIPD, Spain) [53]*
	<ul style="list-style-type: none"> 2.6% prevalence in Italy (2009) [29]* 				<ul style="list-style-type: none"> Serotype 11A was associated with carriage, having a lower invasive disease potential (Portugal) OR 0.37 [22] 	
	<ul style="list-style-type: none"> 2.4% prevalence in Greece [9] 					
	<ul style="list-style-type: none"> 2.1% pneumococcal meningitis isolates in Germany [31]. 					
	<ul style="list-style-type: none"> 3.0% prevalence in Poland (2009) [32]* 					
	<ul style="list-style-type: none"> 5.0% (15-24yo), 3.6% (25-54yo) and 1.0% (55-64) prevalence in Poland [34] 	<ul style="list-style-type: none"> 2.5% prevalence in Poland [34] 				
	<ul style="list-style-type: none"> 5.3% prevalence in Hungary [60]* 					
	<ul style="list-style-type: none"> 7.5% prevalence in England [35]* 					
	<ul style="list-style-type: none"> 1.7% prevalence in North East England [37]*# 					
	<ul style="list-style-type: none"> 0.1-0.2 in 100.000 prevalence in IPD in North East England (2006-2009) [38]* 					
	<ul style="list-style-type: none"> 1.2% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] 					
	<ul style="list-style-type: none"> Responsible for at least 1% of IPD in Scotland (2006-2009) [41]* 					
		<ul style="list-style-type: none"> 0.64 per 100.000 prevalence in Ireland (2007-2008) [43] 				
	<ul style="list-style-type: none"> Mean prevalence in Denmark 0.19 [48]§ 	<ul style="list-style-type: none"> Mean prevalence in Denmark 1.67 [48]§ 				
		<ul style="list-style-type: none"> 1.7% prevalence in the Netherlands [46]# 				
	<ul style="list-style-type: none"> 1.6% prevalence in the Netherlands (2004-2006) [23]§ 	<ul style="list-style-type: none"> 1.8% prevalence in the Netherlands (2004-2006) [23] 				
	<ul style="list-style-type: none"> 0.26 per 100.000 prevalence in Sweden (2009) [50]* 					
	<ul style="list-style-type: none"> 4.0% prevalence in acute otitis media in Sweden [61]* 					
	<ul style="list-style-type: none"> 2.4% prevalence of pneumonia, 5.3% prevalence of meningitis in Norway (2008) [51]* 					
	<ul style="list-style-type: none"> 0.39 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 1.55 [52]§ 					
	<ul style="list-style-type: none"> 4.9 per 100.000 prevalence in Iceland [62] 	<ul style="list-style-type: none"> 26.4 per 100.000 prevalence in Iceland [62] 				
12F	<ul style="list-style-type: none"> 2.3% prevalence in Spain [1]* 		<ul style="list-style-type: none"> 5.7% prevalence of complicated CAP in Spain [2] 		<ul style="list-style-type: none"> Does not associate with greater risk of respiratory failure upon IPP (Spain) [3] 	<ul style="list-style-type: none"> Serotype 12F represented 7.1% of the isolates resistant to PEN and 7.1% of the
	<ul style="list-style-type: none"> 0.34 in 100.000 prevalence in Spain [4] 					
	<ul style="list-style-type: none"> 4.0% prevalence in Spain [11]* 					
	<ul style="list-style-type: none"> 0.55 per 100.000 prevalence in Catalonia, Spain [8]* 					

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
<ul style="list-style-type: none"> 2.8% prevalence in Spain [14] 	<ul style="list-style-type: none"> 3.1% prevalence in Spain [14] 			<ul style="list-style-type: none"> Significant decrease in prevalence vs pre-PCV7 era in England and Wales IRR 0.73 (2008-2010) [40]^s 	isolates resistant to ERY (IPD, Spain) [57]
	<ul style="list-style-type: none"> 3.1-3.8% prevalence in bacteremic pneumonia in South Catalonia, Spain (2002-2009) [17] 			<ul style="list-style-type: none"> Significantly lower OR (0.29) for pneumonia (IPD, Sweden) [56]* 	
<ul style="list-style-type: none"> 3% prevalence in pneumococcal meningitis in France (2008-2009) [27]* 4.7% prevalence in France, 7th most prevalent serotype [63] 	<ul style="list-style-type: none"> 0.2%, 0.3%, 2.1% prevalence in France (2001/02, 2003/05, 2006/10) [28] 			<ul style="list-style-type: none"> Significantly higher OR (3.03) for septicaemia (IPD, Sweden) [56]* 	
<ul style="list-style-type: none"> 2.2% prevalence in Italy (2009) [29]* 8% prevalence in Belgium, 5th most prevalent serotype [65][#] 2.7% pneumococcal meningitis isolates in Germany [31]. 2.7% prevalence in Poland (2008) [32]* Significantly more common in persons aged above 25 years (89% occurred in adults, IPD, Poland) [34] 				<ul style="list-style-type: none"> Significantly associated with hearing loss after pneumococcal meningitis in Denmark [64]* Significantly associated with lower CFR (IPD, Netherlands) [18]* Significantly less common in high-risk group patients (IPD, Netherlands) [20][#] CFR 6% (IPD, Belgium) [65][#] 	
<ul style="list-style-type: none"> 12F: 5.0% (15-24yo), 4.1% (25-54yo) and 9.3% (55-64) prevalence in Poland [34] 5.9% prevalence in England [35]* 0.25 per 100.000 prevalence in England, but not detected in carriage [36]* 2.9% prevalence in North East England [37]*[#] 0.2-0.3 in 100.000 prevalence in IPD in North East England (2006-2009) [38]* 4.7% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] Significant decrease in prevalence vs pre-PCV7 era in England and Wales IRR 0.73 (2008-2010) [40]^s Responsible for at least 1% of IPD in Scotland (2006-2009) [41]* 	<ul style="list-style-type: none"> 8.6% prevalence in Poland [34] 				
	<ul style="list-style-type: none"> 1.06 per 100.000 prevalence in Ireland (2007-2008) [43] 				
	<ul style="list-style-type: none"> 2.6% prevalence in the Netherlands [46][#] 				
<ul style="list-style-type: none"> 2.2% prevalence in the Netherlands (2004-2006) [23]^s Mean prevalence in Denmark 0.45 [48]^s 	<ul style="list-style-type: none"> 3.4% prevalence in the Netherlands (2004-2006) [23] Mean prevalence in Denmark 2.13 [48]^s 				

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> • 0.09 per 100.000 prevalence in Sweden (2009) [50]* • 0.5% prevalence of pneumonia in Norway (2008) [51]* • 0.14 in 100.000 prevalence in Norway – decreased vs pre-PCV7 era IRR 0.38 [52][§] 					
15B	<ul style="list-style-type: none"> • 0.07 in 100.000 prevalence in Spain [4] • 0.13 per 100.000 prevalence in Catalonia, Spain [8]* 	<ul style="list-style-type: none"> • 1% prevalence in bacteremic pneumonia in South Catalonia, Spain (2002-2009) [17] 	<ul style="list-style-type: none"> • Among the most prevalent serotypes in pneumococcal ocular infections in Spain 4.9% (increasing from 2.4% to 8.9% over time) [66]* 		<ul style="list-style-type: none"> • Significantly associated with higher CFR (IPD, Netherlands) [18]* 	<ul style="list-style-type: none"> • 20% of serotype 15B/C isolates showed resistance to PEN (MIC > 0.06 mg/L, IPD, Poland) [34]*
	<ul style="list-style-type: none"> • 2% prevalence in pneumococcal meningitis in France (2008-2009) [27]* 	<ul style="list-style-type: none"> • 0.5%, 1.3%, 0.9% prevalence in France (2001/02, 2003/05, 2006/10) [28][§] 			<ul style="list-style-type: none"> • Significantly more common in high-risk group patients 52% vs 16% (average) – significantly associated with IPD in high-risk patients (Netherlands) [20][#] 	<ul style="list-style-type: none"> • Serotype 15B accounted for 2.3% of the PNSP (IPD, Denmark) [24]
	<ul style="list-style-type: none"> • 3.1% prevalence in Italy (2009) [29]* • Significantly increasing vs pre-PCV7 era in IPD in Germany (1.2% vs 0.6%) [67,68] • 3.1% pneumococcal meningitis isolates in Germany [31] • 3.0% prevalence in Poland (2009) [32]*[§] • 1.8% prevalence in England [35]* • 1.2% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] 				<ul style="list-style-type: none"> • More associated with meningitis and septicemia than with pneumonia (IPD, Norway) [51]* 	
	<ul style="list-style-type: none"> • Significant increase in prevalence vs pre-PCV7 era in England and Wales IRR 2.23 (2008-2010) [40] 				<ul style="list-style-type: none"> • Serotype 15B/C was associated with carriage, having a lower invasive disease potential (Portugal) OR 0.09 [22] 	
	<ul style="list-style-type: none"> • Responsible for at least 1% of IPD in Scotland (2006-2009) [41]* • 1.0% prevalence in the Netherlands (2004-2006) [23][§] 	<ul style="list-style-type: none"> • 1.2% prevalence in the Netherlands (2004-2006) [23] 			<ul style="list-style-type: none"> • Significantly more likely to cause meningitis (isolated in 22% of the isolates) (IPD, England) [33][§] 	
	<ul style="list-style-type: none"> • 0.09 per 100.000 prevalence in Sweden (2009) [50]* • 2.1% prevalence in acute otitis media in Sweden [61]* • 1% prevalence of pneumonia, 3.5% prevalence of meningitis and 2.7% prevalence of septicaemia in Norway (2008) [51]* • 0.29 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 2.25 [52]^{§§} • 2.8 per 100.000 prevalence in Iceland [62][§] 	<ul style="list-style-type: none"> • 15.1 per 100.000 prevalence in Iceland [62][§] 				
22F	<ul style="list-style-type: none"> • 2.0% prevalence in Spain [1]* • 4.5% prevalence in BPP in Spain [5] • 0.34 in 100.000 prevalence in Spain [4] 		<ul style="list-style-type: none"> • Among the most common serotypes in NIPP in Portugal (4.1%) [54] 		<ul style="list-style-type: none"> • Does not associate with risk of hearing loss upon pneumococcal meningitis (Netherlands) [13] 	

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none">2% prevalence in Spain [14]	<ul style="list-style-type: none">2.2% prevalence in Spain [14]			<ul style="list-style-type: none">Significantly lower OR (0.40) for pneumonia (IPD, Sweden) [56]*	
		<ul style="list-style-type: none">3.6% prevalence in Spain [69]			<ul style="list-style-type: none">Significantly higher OR (3.13) for septicaemia (IPD, Sweden) [56]*	
	<ul style="list-style-type: none">0.10 per 100.000 prevalence in Catalonia, Spain [8]*		<ul style="list-style-type: none">7% prevalence in CAP in Belgium, 8% in the UK, 6% in Portugal, 3% in Spain, 5% in Denmark [6]*	<ul style="list-style-type: none">High CFP in meningitis in Poland 29% [32]*		
		<ul style="list-style-type: none">1% prevalence in bacteremic pneumonia in South Catalonia, Spain (2002-2009) [17]		<ul style="list-style-type: none">Percentage of septic shock was significantly higher in patients with serotype 22F in BPP [5]		
		<ul style="list-style-type: none">4.9% prevalence in individuals aged 60 and up, Madrid, Spain [15]#	<ul style="list-style-type: none">1.3% prevalence NIPD in Greece [9]	<ul style="list-style-type: none">Significantly associated with a lower propensity for empyema OR 0.3 (individuals ≥5yo, IPD, Netherlands) [23]		
	<ul style="list-style-type: none">10.7% prevalence in pneumococcal pneumonia (invasive plus non-invasive) in individuals aged 60 and up, in Southern Catalonia, Spain [70]			<ul style="list-style-type: none">Significantly associated with a higher propensity for meningitis OR 2.0 (individuals ≥5yo, IPD, Netherlands) [23]		
	<ul style="list-style-type: none">3.2% prevalence in 18-49yo, 3.4% in 50-64yo in Portugal [26]#	<ul style="list-style-type: none">4.6% prevalence in Portugal [26]#			<ul style="list-style-type: none">CFR 12% (IPD, Belgium) [65]#	
	<ul style="list-style-type: none">4% prevalence in pneumococcal meningitis in France (2008-2009) [27]*				<ul style="list-style-type: none">Detected in 7.5% of CAP hospitalized patients with pneumococcal bacteraemia (UK) [25]	
		<ul style="list-style-type: none">1.9%, 3.5%, 4.7% prevalence in France (2001/02, 2003/05, 2006/10) [28]				
	<ul style="list-style-type: none">6.1% prevalence in Italy (2009) [29]*				<ul style="list-style-type: none">Very associated with septicemia (IPD, Norway) [51]*	
	<ul style="list-style-type: none">5% prevalence in Belgium, 6th most prevalent serotype [65]#					
	<ul style="list-style-type: none">6.3% pneumococcal meningitis isolates in Germany [31]					
	<ul style="list-style-type: none">Significantly increasing vs pre-PCV7 era in IPD in Germany (4.7% vs 2.3%) [68].					
	<ul style="list-style-type: none">1.5% prevalence in Poland (2009) [32]*					
	<ul style="list-style-type: none">2.3% (25-54yo) and 4.1% (55-64) prevalence in Poland [34]	<ul style="list-style-type: none">2.5% prevalence in Poland [34]				
	<ul style="list-style-type: none">0.24 per 100.000 prevalence in Austria (rank 8) [71]					
	<ul style="list-style-type: none">20.7% prevalence in England [35]*					
	<ul style="list-style-type: none">Significant increase in England after vaccine implementation (IRR ~1.9) [72]*					
	<ul style="list-style-type: none">6.8% prevalence in North East England [37]*#					
	<ul style="list-style-type: none">0.1-0.9 in 100.000 prevalence in IPD in North East England (2006-2009) [38]*					
	<ul style="list-style-type: none">Significant increase in prevalence over time by 1192% (IPD, North East England) [38]§	<ul style="list-style-type: none">Significant increase in prevalence over time by 681% (IPD, North East England) [38]				

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none">• 4.5% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39]• Significant increase in prevalence vs pre-PCV7 era in England and Wales IRR 1.85 (2008-2010) [40]^s• Significantly increasing vs pre-PCV7 era in Scotland (OR 1.34) [41]*	<ul style="list-style-type: none">• Significant increase in prevalence vs pre-PCV7 era in England and Wales IRR 2.09 (2008-2010) [40]• 0.85 per 100.000 prevalence in Ireland (2007-2008) [43]				
		<ul style="list-style-type: none">• Among the most common serotypes in pneumococcal meningitis in the Netherlands (5%) [13]• 7% prevalence in community acquired bacterial (pneumococcal) meningitis in the Netherlands [44][#]• Significant increase in prevalence vs pre-PCV7 era in the Netherlands [45]*• Significantly increased vs pre-PCV7 period in the Netherlands [73]*				
		<ul style="list-style-type: none">• 9.4% prevalence in the Netherlands [46][#]				
	<ul style="list-style-type: none">• 4.6% prevalence in the Netherlands (2004-2006) [23]^s	<ul style="list-style-type: none">• 6.5% prevalence in the Netherlands (2004-2006) [23]				
		<ul style="list-style-type: none">• Significant increase in prevalence vs pre-PCV7 era in the Netherlands in individuals aged 50 and up [74]				
	<ul style="list-style-type: none">• Mean prevalence in Denmark 0.36 [48]^s	<ul style="list-style-type: none">• Mean prevalence in Denmark 3.22 [48]^s				
		<ul style="list-style-type: none">• Among the most predominant serotypes in Denmark, particularly in this population [49]				
		<ul style="list-style-type: none">• Significantly increased vs pre-PCV7 era RR 3.29 (Sweden) [58]*				
		<ul style="list-style-type: none">• 1.14 per 100.000 prevalence in Sweden (2009) [50]*				
		<ul style="list-style-type: none">• 10.6% prevalence of pneumonia, 5.7% prevalence of meningitis and 25% prevalence of septicaemia in Norway (2009) [51]*				
		<ul style="list-style-type: none">• 1.07 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 1.23 [52]^s				
	<ul style="list-style-type: none">• 5.6 per 100.000 prevalence in Iceland [62]	<ul style="list-style-type: none">• 15.1 per 100.000 prevalence in Iceland [62]				
	<ul style="list-style-type: none">• 4% of the IPD isolates in Finland (2009) [75]*					
33F	<ul style="list-style-type: none">• Increase from the pre-PCV7 era in Spain [76]• 0.2 in 100.000 prevalence in Spain [4]• 0.08 per 100.000 prevalence in Catalonia, Spain [8]*			<ul style="list-style-type: none">• Significantly more common in high-risk group patients 30% vs 16% (average) –	<ul style="list-style-type: none">• Increase in IPD prevalence from the pre-PCV7 era in Spain accompanied by	

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> 7-9% prevalence in meningitis in South Catalonia, Spain (2002-2009) [17] 			significantly associated with IPD in high-risk patients (Netherlands) [20] [#] <ul style="list-style-type: none"> Detected in 7.5% of CAP hospitalized patients with pneumococcal bacteraemia (UK) [25] 	increased in macrolide resistant isolates [76]. <ul style="list-style-type: none"> Emerged in Norway as a frequent serotype displaying resistance to several antimicrobials in IPD (ERY, SXT, CLI) [77][*] Among the most frequent serotypes showing ERY resistance 12.9% (IPD, Spain) [4] Serotype 33F accounted for 0.6% of the PNSP (IPD, Denmark) [24]
<ul style="list-style-type: none"> 2% prevalence in pneumococcal meningitis in France (2008-2009) [27][*] 1.3% prevalence in Italy (2009) [29][*] 1.9% pneumococcal meningitis isolates in Germany [31] 7% prevalence in England [35][*] 2.6% prevalence in North East England [37]^{**} 0.2-0.3 in 100.000 prevalence in IPD in North East England (2006-2009) [38][*] Significant increase in prevalence vs pre-PCV7 era in England and Wales IRR 1.58 (2008-2010) [40][§] 1.8% prevalence of pneumococcal meningitis in England and Wales (2004-2009) [39] Responsible for at least 1% of IPD in Scotland (2006-2009) [41][*] 	<ul style="list-style-type: none"> Significant increase in prevalence vs pre-PCV7 era in England and Wales IRR 2.04 (2008-2010) [40] 1.27 per 100.000 prevalence in Ireland (2007-2008) [43] 2.6% prevalence in the Netherlands [46][#] 2.3% prevalence in the Netherlands (2004-2006) [23] Mean prevalence in Denmark 1.72 [48][§] 15.1 per 100.000 prevalence in Iceland [62] 				
<ul style="list-style-type: none"> 2.0% prevalence in the Netherlands (2004-2006) [23][§] Mean prevalence in Denmark 0.18 [48][§] 0.24 per 100.000 prevalence in Sweden (2009) [50][*] Significantly increased vs pre-PCV7 era RR 2.02 (Sweden) [58][*] 3.6% prevalence of pneumonia and 5.0% prevalence of septicaemia in Norway (2009) [51][*] 0.66 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 2.00 [52][§] 	<ul style="list-style-type: none"> 2.3% prevalence in the Netherlands (2004-2006) [23] Mean prevalence in Denmark 1.72 [48][§] 				
<ul style="list-style-type: none"> 0.66 in 100.000 prevalence in Norway – increased vs pre-PCV7 era IRR 2.00 [52][§] 					

* total population, [§] 5-64 years, [§] ≥ 5 years, [&] 15B/C, [#] cumulative prevalence with other PCV eras (PCV10/13)

AMOX amoxicillin, BPP bacteremic pneumococcal community-acquired pneumonia, CFP case fatality proportion, CFR case fatality ratio, CLI clindamycin, CTX cefotaxime, CXM cefuroxime, ERY erythromycin, IRR prevalence rate ratio, LVX levofloxacin, MIC minimal inhibitory concentration, NFX norfloxacin, (N)IPP (non-)invasive pneumococcal pneumonia, OR odds ratio, PEN penicillin, SXT trimethoprim/sulfamethoxazole

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Supplementary Table S4 - Summary of the findings from the PCV10/13 era (2010-2015, unless stated otherwise by the authors of each paper).

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
8	<ul style="list-style-type: none"> 4.0% prevalence in Spain [1]* 		<ul style="list-style-type: none"> 2nd most prevalent serotype in adults hospitalized with CAP in the Netherlands [2] 		<ul style="list-style-type: none"> Caused IPD more frequently in Spanish smokers (OR 3.28) [3] 	<ul style="list-style-type: none"> 19.3% of serotype 8 isolates showed LVX non-susceptibility, and 22.9% showed ERY non-susceptibility (IPD, Spain) [4]
	<ul style="list-style-type: none"> 7.7% prevalence in Spain – 3rd most prevalent serotype (13.4% prevalence in 2014/2015) [4] 				<ul style="list-style-type: none"> Significantly associated with lower CFR (IPD, Netherlands) [6]* 	
	<ul style="list-style-type: none"> 4.1% prevalence in BPP in Spain [5] 					
	<ul style="list-style-type: none"> 0.47 in 100.000 prevalence in Spain [7] 		<ul style="list-style-type: none"> 3.7% prevalence in NIPP in Portugal (2015) [8] 		<ul style="list-style-type: none"> Significantly lower odds of meningitis (OR 0.69, IPD, England and Wales) [9]* 	
	<ul style="list-style-type: none"> Significantly decreased vs PCV7 era -35% (Spain) [7] 					
	<ul style="list-style-type: none"> Main serotype causing recurrent IPD in Spain (12.1%) [10]* 		<ul style="list-style-type: none"> Among the serotypes with higher case:carrier ratio (prevalent in IPD but not in carriage) in England [11]* 		<ul style="list-style-type: none"> Significantly associated with increased odds of death (OR 2.9, CFR 33%) (IPD, England and Wales) [9]* 	
	<ul style="list-style-type: none"> 14% prevalence in Spain [12] 	<ul style="list-style-type: none"> 8.9% prevalence in Spain [12] 				
	<ul style="list-style-type: none"> 3.9% prevalence in Spain (2010) [13]* 					
	<ul style="list-style-type: none"> Most common serotype in young adults (<50yo) in Spain 10.4% [4] 	<ul style="list-style-type: none"> 2nd most common serotype in older adults in Spain 5.5% [4] 				
	<ul style="list-style-type: none"> 5.0% prevalence in Catalonia, Spain [15]* 			<ul style="list-style-type: none"> Record of an unusual outbreak of LRTI due to pneumococcal serotype 8 with an exceptionally high attack rate (65%) in a residential home with elderly individuals vaccinated with the PPV23 [14] 	<ul style="list-style-type: none"> Most common in sepsis not associated with other clinical conditions (IPD, Italy) 11.6% [16] 	
	<ul style="list-style-type: none"> 0.61 per 100.000 prevalence in Catalonia, Spain [17]* 				<ul style="list-style-type: none"> Higher prevalence in younger adults than older (15-64 vs ≥65yo, IPD, England) [19] 	
	<ul style="list-style-type: none"> Significantly increased vs PCV7 era IRR 1.73 (Catalonia, Spain) [17]* 				<ul style="list-style-type: none"> More present in individuals with no comorbidities comparing to PCV13 serotypes (IPD, England) [19] 	
	<ul style="list-style-type: none"> 8.1% prevalence in Catalonia, Spain [18]* 				<ul style="list-style-type: none"> Significantly lower CFR comparing to PCV13 serotypes OR 0.44 (IPD, England) [19] 	
		<ul style="list-style-type: none"> 5.0% prevalence in individuals aged 60 and up, Madrid, Spain [20] 			<ul style="list-style-type: none"> High CFP in meningitis in Poland 29% [23]* 	
	<ul style="list-style-type: none"> Among the most common serotypes in Portugal (6.2%) [21] 				<ul style="list-style-type: none"> Significantly less common in high-risk group patients (IPD, Netherlands) [25] 	
	<ul style="list-style-type: none"> Significantly increased vs PCV7 era (8% vs 3.7%, Portugal) [21] 				<ul style="list-style-type: none"> Among most common serotypes (2nd) in pneumonia isolates 9.6% (IPD, Spain) – 	
	<ul style="list-style-type: none"> Significantly more frequent in the younger adults (18-49) 10.5% (Portugal) [21] 	<ul style="list-style-type: none"> vs 4.5% in ≥65yo [21] 				
	<ul style="list-style-type: none"> 9.1% prevalence in 18-49yo, 4.5% in 50-64yo in Portugal [22] 	<ul style="list-style-type: none"> 4.2% prevalence in Portugal [22] 				
	<ul style="list-style-type: none"> 3% prevalence in pneumococcal meningitis in France (2013-2014) [24]* 					
	<ul style="list-style-type: none"> 1.9% prevalence in France (2010) [13]* 					
		<ul style="list-style-type: none"> 2.3% prevalence in France [26] 	<ul style="list-style-type: none"> 1.6% of all-cause CAP in Germany [27] 			
	<ul style="list-style-type: none"> 7.9% prevalence in Italy (2014) [28]* 					
	<ul style="list-style-type: none"> Among the most frequent serotypes in Italy 8.5% (+5.5% vs PCV7 era) [16] 					

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
<ul style="list-style-type: none">2.5% prevalence in Italy (2010) [13]*		<ul style="list-style-type: none">8.1% prevalence in CAP in England - 2nd most prevalent serotype [29]		no difference in prevalence between uncomplicated and complicated pneumonia [4]	
<ul style="list-style-type: none">28.6% prevalence in Malta (2010) [13]*3.0% prevalence in Belgium (2010) [13]*		<ul style="list-style-type: none">18.3% prevalence in CAP in the UK [30]		<ul style="list-style-type: none">Significantly more frequent in immunocompetent patients 9.3% vs 5.6% (IPD, Spain) [4]	
<ul style="list-style-type: none">3.3% pneumococcal meningitis isolates in Germany [31]Significantly increasing vs PCV7 era in IPD in Germany (4.0% vs 3.0%) [33].21.1% of bacteremic pneumococcal CAP in Germany [27]		<ul style="list-style-type: none">Identified in 7.7% of the young adults who were carriers in the UK [32]			
<ul style="list-style-type: none">2.4% prevalence in Poland (2010) [13]*5.4% prevalence in Poland (2015) [23]*					
<ul style="list-style-type: none">4.8% (15-24yo), 3.9% (25-54yo), 4.6% (55-64yo) prevalence in Poland [34]	<ul style="list-style-type: none">1.0% prevalence in Poland [34]				
<ul style="list-style-type: none">1.7% prevalence in Czech Republic (2010) [13]*1.7% prevalence in Austria (2010) [13]*0.9% prevalence in Hungary (2010) [13]*1.3% prevalence in Slovenia (2010) [13]*			<ul style="list-style-type: none">Identified in 16.7% of the older adults who were carriers in Italy [35]		
<ul style="list-style-type: none">3.2% prevalence in Serbia (2009-2016) [36]	<ul style="list-style-type: none">7.4% prevalence in Serbia (2009-2016) [36]				
<ul style="list-style-type: none">20.2% prevalence in England [37]*					
<ul style="list-style-type: none">30.3% prevalence (15-44yo), 25.7% prevalence (45-64yo) in England [19]	<ul style="list-style-type: none">18.6% prevalence (65-79yo), 10.0% prevalence (>80yo) in England [19]				
<ul style="list-style-type: none">7.5% prevalence in North East England [38]*					
<ul style="list-style-type: none">Significantly increased vs PCV7 era IRR 1.33 in England and Wales [39]*	<ul style="list-style-type: none">Significantly increased vs PCV7 era IRR 1.43 in England and Wales [39]				
<ul style="list-style-type: none">Significantly increasing vs PCV7 era in Scotland (OR 1.16) [40]*					
	<ul style="list-style-type: none">2.0 per 100.000 prevalence in Ireland (2012-2013) [41]				
<ul style="list-style-type: none">9.3% prevalence in Ireland (2010) [13]*					
<ul style="list-style-type: none">9.1% prevalence in the UK (2010) [13]*					
<ul style="list-style-type: none">Prevalence in the Netherlands 1.5 per 100.000 [6]*					
<ul style="list-style-type: none">8% prevalence in community acquired bacterial (pneumococcal) meningitis in the Netherlands [42]					
	<ul style="list-style-type: none">6.7 per 100.000 prevalence in the Netherlands [43]				

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
		<ul style="list-style-type: none">12% prevalence in the Netherlands [44]				
	<ul style="list-style-type: none">6.7% prevalence in the Netherlands (2010) [13]*8.3% prevalence in bacteremic pneumonia in Denmark (vs 1.8% prevalence in non-bacteremic pneumonia) [45]Mean prevalence in Denmark 0.91 [46]^s5.9% prevalence in Denmark (2010) [13]*0.42 per 100.000 prevalence in Sweden (2014) [47]*2.6% prevalence in Norway (2010) [13]*0.6% prevalence in Finland (2010) [13]*	<ul style="list-style-type: none">Mean prevalence in Denmark 4.87 [46]^s				
10A	<ul style="list-style-type: none">1.8% prevalence in Spain [1]*2.0% prevalence in Spain (2.9% prevalence in 2014/2015) [4]0.11 in 100.000 prevalence in Spain [7]1.8% prevalence in Spain (2010) [13]*3.1% prevalence in Catalonia, Spain [18]*0.24 per 100.000 prevalence in Catalonia, Spain [17]*2.1% prevalence in Catalonia, Spain [15]*6% prevalence in pneumococcal meningitis in France (2013-2014) - among most frequent non-vaccine serotypes [24]*2.5% prevalence in France (2010) [13]*2.5% prevalence in France [26]3.1% prevalence in Italy (2014) [28]*1.8% prevalence in Italy (2010) [13]*0.8% prevalence in Belgium (2010) [13]*4.0% pneumococcal meningitis isolates in Germany [31]Significantly increasing vs PCV7 era in IPD in Germany (3.0% vs 2.3%) [33]Prevalence was significantly higher than would have been expected without vaccination (2014-2015, Poland) [23]*7.5% prevalence in Poland (2015) [23]*1.5% prevalence in Poland (2010) [13]*2.9% (25-54yo) prevalence in Poland [49]2.7% prevalence in Czech Republic (2010) [13]*1.4% prevalence in Austria (2010) [13]*	<ul style="list-style-type: none">2.3% prevalence in NIPP in Portugal (2015) [8]3.0% carriage across several countries in Europe (Austria, Belgium, Croatia, France, Hungary, Netherlands, Spain, Sweden, UK) [48]*Lower carriage in Austria, Croatia and Sweden (0%) and higher in UK (13.9%) [48]		<ul style="list-style-type: none">Significantly higher odds of meningitis (OR 2.06, IPD, England and Wales) [9]*High CFP in meningitis in Poland 22% [23]*Significantly more common in high-risk group patients 39% vs 16% (average) – significantly associated with IPD in high-risk patients (Netherlands) [25]Significantly more frequent in immunocompromised patients 3.6% vs 0.8% (IPD, Spain) [4]Pneumonia diagnosed rarely among cases caused by serotype 10A 5.0% (IPD, Poland) [34]	<ul style="list-style-type: none">31.8% of serotype 10A isolates showed ERY non-susceptibility (IPD, Spain) [4]	

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none">• 0.9% prevalence in Hungary (2010) [13]*• 2.2% prevalence in Slovenia (2010) [13]*• 3.3% prevalence in England [37]*• 1.2% prevalence in North East England [38]* <div><div></div><ul style="list-style-type: none">• Significantly increased vs PCV7 era IRR 2.58 in England and Wales [39]</div> <ul style="list-style-type: none">• 2.0% prevalence in the UK (2010) [13]*• 1.2% prevalence in Ireland (2010) [13]*• 4.4% prevalence in the Netherlands (2010) [13]*• 2.1% prevalence in Denmark (2010) [13]*• 0.37 per 100.000 prevalence in Sweden (2014) [47]*• Significantly increased vs PCV7 era RR 2.84 (Sweden) [50]*• 1.9% prevalence in Norway (2010) [13]*• 0.4% prevalence in Finland (2010) [13]*					
11A	<ul style="list-style-type: none">• 2.4% prevalence in Spain [1]*• 4.2% prevalence in Spain – 7th most prevalent serotype (5.3% prevalence in 2014/2015) [4]• 0.34 in 100.000 prevalence in Spain [7]• 2.1% prevalence in Spain (2008) [52]• 1.8% prevalence in Spain (2010) [13]*• 3.3% prevalence in Spain (2012) [52] <div><div></div><ul style="list-style-type: none">• 3.1% of the invasive isolates in Majorca, Spain (14.3% total isolates) [53]</div> <div><div></div><ul style="list-style-type: none">• 3.8% prevalence in individuals aged 60 and up, Madrid, Spain [20]</div> <ul style="list-style-type: none">• 1.9% prevalence in Catalonia, Spain [15]*• 2.6% prevalence in Catalonia, Spain [18]*• 0.23 per 100.000 prevalence in Catalonia, Spain [17]*• Significantly increased vs PCV7 era IRR 2.35* 204%* (Catalonia, Spain) [17]• 2.8% prevalence in 18-49yo, 3.4% in 50-64yo in Portugal [22]• 3% prevalence in pneumococcal meningitis in France (2013-2014) [24]*	<ul style="list-style-type: none">• Among the most common serotypes in NIPP in Portugal (6.7%) [51] <div><div></div><div><div>Identified in 7.7% of the young adults who were carriers in the UK [32]</div></div></div> <ul style="list-style-type: none">• Significantly associated with NIPP vs IPD (Portugal) [51]• 9.2% prevalence in NIPP in Portugal (2015) – 2nd most prevalent serotype [8]• The proportion of serotype 11A associated with non-invasive pneumococcal disease increased		<ul style="list-style-type: none">• Caused IPD more frequently in Spanish alcohol abusers (OR 3.28) [3]• Significantly associated with higher CFR (IPD, Netherlands) [6]*• IPD patients with serotype 11A were significantly older than those infected with other vaccinal serotypes (Sweden) [50]*• Serotype isolated more frequently among adults than children (IPD, Spain) [52]• Among most common serotypes (2nd) in meningitis isolates 7.4% (IPD, Spain) [4]• Among most common serotypes (3rd) in non-focal bacteremia isolates 6.9% (IPD, Spain) [4]• Most common serotype in peritonitis isolates 14.7% (IPD, Spain) [4]	<ul style="list-style-type: none">• Increases in non-susceptibility to PEN and ERY [1]*• Among the most frequent serotypes showing ERY resistance 16.3% (emerging in the PCV10/13 era, IPD, Spain) [7]• 69.9% of serotype 11A isolates showed PEN non-susceptibility, 50% showed CTX non-susceptibility, and 28.3% showed ERY non-susceptibility (IPD, Spain) [4]• 24% of isolates non-susceptible to ERY and 4% MDR (IPD, Poland) [34]	

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none">1.6% prevalence in France (2010) [13]*1.9% prevalence in Italy (2014) [28]*		in Spanish adults during the period 2000-2012 (from 3.3% to 9.3%) [52]		<ul style="list-style-type: none">Significantly more frequent in immunocompromised patients 5.8% vs 3.1% (IPD, Spain) [4]	<ul style="list-style-type: none">The proportion of highly penicillin-resistant (MIC > 2 ug/mL) serotype 11A isolates corresponded to 23.8% in 2012 (increased vs previous years, IPD, Spain) [52]
	<ul style="list-style-type: none">0.7% prevalence in Italy (2010) [13]*		<ul style="list-style-type: none">3.5% prevalence in CAP in the UK [30]		<ul style="list-style-type: none">Highest CFR 52.2% (IPD, Poland) [34]Serotype isolated more frequently among adults than children (IPD, Spain) [52]	
	<ul style="list-style-type: none">0.6% prevalence in Belgium (2010) [13]*4.0% pneumococcal meningitis isolates in Germany [55].1.1% prevalence in Poland (2015) [23]*			<ul style="list-style-type: none">14.3% of the isolates in Majorca, Spain but only 3.1% of the invasive isolates – more associated with non-invasive disease [53]	<ul style="list-style-type: none">Combined data from several European countries found that serotype 11A is significantly associated with death RR 1.97 [54]*	
	<ul style="list-style-type: none">2.1% (25-54yo), 3.0% (55-64yo) prevalence in Poland [34]	<ul style="list-style-type: none">2.2% prevalence in Poland [34]				
	<ul style="list-style-type: none">2.9% prevalence in Poland (2010) [13]*					
	<ul style="list-style-type: none">0.7% prevalence in Austria (2010) [13]*					
	<ul style="list-style-type: none">0.18 per 100.000 prevalence in Austria (rank 9) [56]					
	<ul style="list-style-type: none">1.7% prevalence in Czech Republic (2010) [13]*					
	<ul style="list-style-type: none">3.7% prevalence in Hungary (2010) [13]*					
	<ul style="list-style-type: none">1.3% prevalence in Slovenia (2010) [13]*					
	<ul style="list-style-type: none">3.3% prevalence in England [37]*					
	<ul style="list-style-type: none">1.7% prevalence in North East England [38]*					
		<ul style="list-style-type: none">0.55 per 100.000 prevalence in Ireland (2012-2013) [41]	<ul style="list-style-type: none">Among the most prevalent serotypes in carriage in individuals over 60 years in Portugal 6.4% [57]			
	<ul style="list-style-type: none">0.6% prevalence in the UK (2010) [13]*2.4% prevalence in Ireland (2010) [13]*		<ul style="list-style-type: none">Most common in carriage accross several countries in Europe (Austria, Belgium, Croatia, France, Hungary, Netherlands, Spain, Sweden, UK) 6.4% [48]*			
		<ul style="list-style-type: none">1.7% prevalence in the Netherlands [44]#				
	<ul style="list-style-type: none">Mean prevalence in Denmark 0.13 [46]§	<ul style="list-style-type: none">Mean prevalence in Denmark 1.28 [46]§				
	<ul style="list-style-type: none">2.6% prevalence in Denmark (2010) [13]*		<ul style="list-style-type: none">Lower carriage in Croatia (2.2%) and Spain (2.4%), higher in France (10.6%) and Sweden (10.7%) [48]*			
	<ul style="list-style-type: none">0.34 per 100.000 prevalence in Sweden (2014) [47]*					
	<ul style="list-style-type: none">Significantly increase vs the PCV7 era RR 1.74 (Sweden) [50]*					
	<ul style="list-style-type: none">10.0% prevalence in acute otitis media in Sweden – most prevalent serotype [58]*		<ul style="list-style-type: none">7.7% prevalence in non-bacteremic pneumonia in			
<ul style="list-style-type: none">Significantly increased vs PCV7 era (acute otitis media, Sweden) [58]*						

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none">• 3.2% prevalence in Norway (2010) [13]*• 1.6% prevalence in Finland (2010) [13]*• 4.0 per 100.000 prevalence in Iceland [59]	<ul style="list-style-type: none">• 17.1 per 100.000 prevalence in Iceland [59]	<ul style="list-style-type: none">• Denmark (vs 1.0% prevalence in bacteremic pneumonia) [45]• 0.8% of all-cause CAP in Germany [27]	<ul style="list-style-type: none">• Identified in 8.3% of the older adults who were carriers in Italy [35]		
12F	<ul style="list-style-type: none">• 3.5% prevalence in Spain [1]*• 3.2% prevalence in Spain (5.3% prevalence in 2014/2015) [4]• 0.45 in 100.000 prevalence in Spain [7]• 2.7% prevalence in Spain (2010) [13]*• 3.4% prevalence in Spain [12]• 6.4% prevalence in Catalonia, Spain (9.2% in 2012) [15]*• 8.1% prevalence in Catalonia, Spain [18]*• 0.79 per 100.000 prevalence in Catalonia, Spain [17]*• Significantly increased vs PCV7 era IRR 1.45 (Catalonia, Spain) [17]• 9.3% prevalence in Catalonia, Spain [15]• 7% prevalence in pneumococcal meningitis in France (2013-2014) – most frequent non-vaccine serotype [24]*• 7.1% prevalence in France (2010) [13]*• 7.9% prevalence in Italy (2014) [28]*• 1.1% prevalence in Italy (2010) [13]*• 8% prevalence in Belgium, 5th most prevalent serotype [61]• 2.7% prevalence in Belgium (2010) [13]*• 5.3% of bacteremic pneumococcal CAP in Germany [27]	<ul style="list-style-type: none">• 3.5% prevalence in Spain [12]• 3.1% of the invasive isolates in Majorca, Spain (2.9% total isolates) [53]• 6.5% prevalence in France [26]	<ul style="list-style-type: none">• 6th most prevalent serotype in adults hospitalized with CAP in the Netherlands [2]• 2.5% prevalence in CAP in England - 2nd most prevalent serotype [29]• 5.6% prevalence in CAP in the UK [30]	<ul style="list-style-type: none">• Among the most frequent serotypes in septic arthritis (UK) [60]• Significantly associated with lower CFR (IPD, Netherlands) [6]*• Significantly less common in high-risk group patients (IPD, Netherlands) [25]• CFR 6% (IPD, Belgium) [61]#• Higher prevalence in younger adults than older (15-64 vs ≥65yo, IPD, England) [19]• More present in individuals with no comorbidities comparing to PCV13 serotypes (IPD, England) [19]• Significantly lower CFR comparing to PCV13 serotypes OR 0.54 (IPD, England) [19]		

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> • 5.9% pneumococcal meningitis isolates in Germany [31]. • Among most strongly increasing non-PCV13 serotypes in the PCV10/13 era in IPD in Germany [62]. • Significantly increasing vs PCV7 era in IPD in Germany (5.8% vs 1.9%) [33]. • Prevalence was significantly higher than would have been expected without vaccination (2014-2015, Poland) [63]* • 2.2% prevalence in Poland (2015) [23]* • 2.9% prevalence in Poland (2010) [13]* • 3.9% (25-54yo), 2.1% (55-64yo) prevalence in Poland [34] • 1.9% prevalence in Poland [34] • 1.0% prevalence in Czech Republic (2010) [13]* • 0.9% prevalence in Hungary (2010) [13]* • 1.0% prevalence in Austria (2010) [13]* • 8.0% prevalence in England [37]* • 2.9% prevalence in North East England [38]* • 19.4% prevalence (15-44yo), 15.4% prevalence (45-64yo) in England [19] • 9.4% prevalence (65-79yo), 6.4% prevalence (>80yo) in England [19] • Significantly increased vs PCV7 era IRR 2.12 in England and Wales [39] • 0.36 per 100.000 prevalence in Ireland (2012-2013) [41] • 2.0% prevalence in the UK (2010) [13]* • 2.8% prevalence in Ireland (2010) [13]* • 2.6% prevalence in the Netherlands [44]# • Mean prevalence in Denmark 0.51 [46]s • Mean prevalence in Denmark 2.60 [46]s • 4.2% prevalence in bacteremic pneumonia in Denmark (vs 1.1% prevalence in non-bacteremic pneumonia) [45] • 4.1% prevalence in Denmark (2010) [13]* • 0.13 per 100.000 prevalence in Sweden (2014) [47]* • 0.3% prevalence in Norway (2010) [13]* • 0.3% prevalence in Finland (2010) [13]* 					
15B	<ul style="list-style-type: none"> • 0.07 in 100.000 prevalence in Spain [7] • 1.0% prevalence in Spain (2010) [13]* • 1.2% prevalence in Catalonia, Spain [15]* 		<ul style="list-style-type: none"> • 2.3% prevalence in NIPP in Portugal (2015) [8] 		<ul style="list-style-type: none"> • Significantly associated with higher CFR (IPD, Netherlands) [6]* 	<ul style="list-style-type: none"> • 25% of serotype 15B isolates showed ERY non-susceptibility (IPD, Spain) [4]

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> • 0.13 per 100.000 prevalence in Catalonia, Spain [17]* • 1% prevalence in pneumococcal meningitis in France (2013-2014) [24]* • 1.5% prevalence in France (2010) [13]* 			<ul style="list-style-type: none"> • 2.9% of the isolates in Majorca, Spain (not detected in invasive isolates) [53] 	<ul style="list-style-type: none"> • Significantly more common in high-risk group patients 52% vs 16% (average) – significantly associated with IPD in high-risk patients (Netherlands) [25] • Meningitis presentation more prevalent in patients infected with pneumococci of serotype 15B/C 63.3% vs 31.3% (IPD, Poland) [34] • Pneumonia diagnosed rarely among cases caused by serotype 15B/C 3.3% (IPD, Poland) [34] 	<ul style="list-style-type: none"> • 20% of isolates non-susceptible to ERY (IPD, Poland) [34]
	<ul style="list-style-type: none"> • 1.7% prevalence in France [26]^a • 1.5% prevalence in Italy (2014) [28]* • 0.4% prevalence in Italy (2010) [13]* • 0.4% prevalence in Belgium (2010) [13]* • 3.0% pneumococcal meningitis isolates in Germany [31] • 2.9% (25-54yo), 2.1% (55-64yo) prevalence in Poland [34] • 2.2% prevalence in Poland (2015) [23]*^a • 1.0% prevalence in Poland (2010) [13]* • 0.7% prevalence in Czech Republic (2010) [13]* • 1.7% prevalence in Austria (2010) [13]* • 1.9% prevalence in Hungary (2010) [13]* • 1.8% prevalence in Slovenia (2010) [13]* • 2.7% prevalence in England [37]* • 0.8% prevalence in the UK (2010) [13]* • 1.2% prevalence in Ireland (2010) [13]* • 2.2% prevalence in the Netherlands (2010) [13]* • 0.9% prevalence in Denmark (2010) [13]* • 0.16 per 100.000 prevalence in Sweden (2014) [47]* • 9.3% prevalence in acute otitis media in Sweden – among the most prevalent serotypes [58]* • Significantly increased vs PCV7 era (acute otitis media, Sweden) [58]* • 1.3% prevalence in Norway (2010) [13]* • 0.3% prevalence in Finland (2010) [13]* • 2.0 per 100.000 prevalence in Iceland [59]^a 	<ul style="list-style-type: none"> • 1.1% prevalence in Poland [34] 	<ul style="list-style-type: none"> • 3.7% carriage accross several countries in Europe (Austria, Belgium, Croatia, France, Hungary, Netherlands, Spain, Sweden, UK) [48]*^a 	<ul style="list-style-type: none"> • Identified in 8.3% of the older adults who were carriers in Italy [35] 		
	<ul style="list-style-type: none"> • 2.7% prevalence in England [37]* • 0.8% prevalence in the UK (2010) [13]* • 1.2% prevalence in Ireland (2010) [13]* • 2.2% prevalence in the Netherlands (2010) [13]* • 0.9% prevalence in Denmark (2010) [13]* • 0.16 per 100.000 prevalence in Sweden (2014) [47]* • 9.3% prevalence in acute otitis media in Sweden – among the most prevalent serotypes [58]* • Significantly increased vs PCV7 era (acute otitis media, Sweden) [58]* • 1.3% prevalence in Norway (2010) [13]* • 0.3% prevalence in Finland (2010) [13]* • 2.0 per 100.000 prevalence in Iceland [59]^a 	<ul style="list-style-type: none"> • 27.4 per 100.000 prevalence in Iceland [59]^a 				
22F	<ul style="list-style-type: none"> • 4.4% prevalence in Spain [1]* • 4.2% prevalence in Spain – 8th most prevalent serotype [4] • 6.5% prevalence in BPP in Spain [5] 		<ul style="list-style-type: none"> • Among the most common serotypes in NIPP in Portugal (4.1%) [51] 	<ul style="list-style-type: none"> • Among the most frequent serotypes in septic arthritis (UK) [60] 		

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
<ul style="list-style-type: none"> 0.39 in 100.000 prevalence in Spain [7] 		<ul style="list-style-type: none"> Among the most prevalent serotypes in carriage in individuals over 60 years in Portugal 9.0% [57] 	<ul style="list-style-type: none"> Significantly higher odds of meningitis (OR 1.39, IPD, England and Wales) [9]* 		
<ul style="list-style-type: none"> 3.7% prevalence in Spain (2010) [13]* 			<ul style="list-style-type: none"> High CFP in meningitis in Poland 22% [23]* 		
<ul style="list-style-type: none"> 4.3% prevalence in Spain [12] 	<ul style="list-style-type: none"> 6.1% prevalence in Spain [12] 		<ul style="list-style-type: none"> Percentage of septic shock was significantly higher in patients with serotype 22F in BPP [5] 		
	<ul style="list-style-type: none"> 4th most common serotype in older adults in Spain 5.4% [4] 	<ul style="list-style-type: none"> 4.8% prevalence in NIPP in Portugal (2015) [8] 	<ul style="list-style-type: none"> CFR 12% (IPD, Belgium) [61] 		
	<ul style="list-style-type: none"> 9.4% of the invasive isolates in Majorca, Spain (8.6% total isolates) [53] 	<ul style="list-style-type: none"> 3.4% carriage across several countries in Europe (Austria, Belgium, Croatia, France, Hungary, Netherlands, Spain, Sweden, UK) [48]* 	<ul style="list-style-type: none"> 2nd highest CFR 37.5% (IPD, Poland) [34] 		
<ul style="list-style-type: none"> 4.3% prevalence in Catalonia, Spain [15]* 			<ul style="list-style-type: none"> Higher prevalence in older adults than younger age groups, particularly ≥80 yo (IPD, England) [64] 		
<ul style="list-style-type: none"> 3.6% prevalence in Catalonia, Spain [18]* 		<ul style="list-style-type: none"> 3.6% prevalence in non-bacteremic pneumonia in Denmark [45] 	<ul style="list-style-type: none"> Comorbidity prevalence of 68.7% - significantly higher than other serotypes altogether (IPD, England) [64] 		
<ul style="list-style-type: none"> 0.53 per 100.000 prevalence in Catalonia, Spain [17]* 	<ul style="list-style-type: none"> 4.9% prevalence in individuals aged 60 and up, Madrid, Spain [20] 	<ul style="list-style-type: none"> 1.0% of all-cause CAP in Germany [27] 	<ul style="list-style-type: none"> CFR 15.4% - significantly lower than other serotypes altogether (IPD, England) [64] 		
<ul style="list-style-type: none"> Significantly increased vs PCV7 era IRR 5.34* 396%^s (Catalonia, Spain) [17] 	<ul style="list-style-type: none"> 4.6% prevalence in Portugal [22] 	<ul style="list-style-type: none"> 3.3% prevalence in CAP in the UK [30] 	<ul style="list-style-type: none"> Death in 30d in patients with the 22F serotype associated with increasing age and clinical presentation with meningitis or septicemia vs invasive pneumonia [64] 		
<ul style="list-style-type: none"> 3.2% prevalence in 18-49yo, 3.4% in 50-64yo in Portugal [22] 					
<ul style="list-style-type: none"> 5% prevalence in pneumococcal meningitis in France (2013-2014) [24]* 	<ul style="list-style-type: none"> 6.8% prevalence in France [26] 				
<ul style="list-style-type: none"> 3.2% prevalence in France (2010) [13]* 					
<ul style="list-style-type: none"> 4.0% prevalence in Italy (2014) [28]* 					
<ul style="list-style-type: none"> 3.3% prevalence in Italy (2010) [13]* 					
<ul style="list-style-type: none"> 1.7% prevalence in Belgium (2010) [13]* 					
<ul style="list-style-type: none"> 5% prevalence in Belgium, 6th most prevalent serotype [61] 					
<ul style="list-style-type: none"> 5.9% pneumococcal meningitis isolates in Germany [31] 					
<ul style="list-style-type: none"> Among most strongly increasing non-PCV13 serotypes in the PCV10/13 era in IPD in Germany [62]. 					
<ul style="list-style-type: none"> Significantly increasing vs PCV7 era in IPD in Germany (6.9% vs 4.7%) [33]. 					

18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
<ul style="list-style-type: none"> Prevalence was significantly higher than would have been expected without vaccination (2014-2015, IPD, Poland) [63]* 					
<ul style="list-style-type: none"> 5.4% prevalence in Poland (2015) [23]* 					
<ul style="list-style-type: none"> 2.1% (25-54yo), 1.7% (55-64yo) prevalence in Poland [34] 	<ul style="list-style-type: none"> 3.0% prevalence in Poland [34] 				
<ul style="list-style-type: none"> 1.5% prevalence in Poland (2010) [13]* 					
<ul style="list-style-type: none"> 1.7% prevalence in Czech Republic (2010) [13]* 					
<ul style="list-style-type: none"> 3.1% prevalence in Austria (2010) [13]* 					
<ul style="list-style-type: none"> 0.22 per 100.000 prevalence in Austria (rank 8) [56] 					
<ul style="list-style-type: none"> 0.9% prevalence in Hungary (2010) [13]* 					
<ul style="list-style-type: none"> 1.3% prevalence in Slovenia (2010) [13]* 					
<ul style="list-style-type: none"> 14.3% prevalence in England [37]* 					
<ul style="list-style-type: none"> 7.0% prevalence in England [64] 					
<ul style="list-style-type: none"> Increased in prevalence after PCV7 era, plateaued in PCV10/13 era (England) [64] 					
<ul style="list-style-type: none"> 16.5% prevalence in England [19]* 					
<ul style="list-style-type: none"> 6.9% prevalence in North East England [38]* 					
<ul style="list-style-type: none"> Significantly decreased vs PCV7 era IRR 0.65 in England and Wales [39][§] 					
<ul style="list-style-type: none"> Significantly increasing vs PCV7 era in Scotland (OR 1.51) [40]* 					
	<ul style="list-style-type: none"> 3.09 per 100.000 prevalence in Ireland (2012-2013) [41] 				
<ul style="list-style-type: none"> 7.7% prevalence in Ireland (2010) [13]* 					
<ul style="list-style-type: none"> 7.2% prevalence in the UK (2010) [13]* 					
<ul style="list-style-type: none"> 7% prevalence in community acquired bacterial (pneumococcal) meningitis in the Netherlands [42] 					
	<ul style="list-style-type: none"> 4.1 per 100.000 prevalence in the Netherlands [43] 				
	<ul style="list-style-type: none"> 9.4% prevalence in the Netherlands [44][#] 				
<ul style="list-style-type: none"> 3.3% prevalence in bacteremic pneumonia in Denmark [45] 					
<ul style="list-style-type: none"> 5.8% prevalence in Denmark (2010) [13]* 					
<ul style="list-style-type: none"> Mean prevalence in Denmark 0.44 [46][§] 	<ul style="list-style-type: none"> Mean prevalence in Denmark 3.80 [46][§] 				
<ul style="list-style-type: none"> 1.4 per 100.000 prevalence in Sweden (2014) [47]* 					
<ul style="list-style-type: none"> Significantly increased vs PCV7 era RR 2.78 (Sweden) [50]* 					
<ul style="list-style-type: none"> 12.4% prevalence in Norway (2010) [13]* 					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> • 5.8% prevalence in Finland (2010) [13]* • 8.8% of the IPD isolates in Finland (2011) – increased vs PCV7 era [65]* • 4.7 per 100.000 prevalence in Iceland [59] 	<ul style="list-style-type: none"> • 6.9 per 100.000 prevalence in Iceland [59] 				
33F	<ul style="list-style-type: none"> • 0.11 in 100.000 prevalence in Spain [7] • 1.3% prevalence in Spain (2010) [13]* • 1.0% prevalence in Catalonia, Spain [15]* • 1.6% prevalence in Catalonia, Spain [18]* 		<ul style="list-style-type: none"> • 0.7% prevalence in NIPP in Portugal (2015) [8] • 2.1% prevalence in non-bacteremic pneumonia in Denmark [45] 		<ul style="list-style-type: none"> • Significantly more common in high-risk group patients 30% vs 16% (average) – significantly associated with IPD in high-risk patients (Netherlands) [25] 	<ul style="list-style-type: none"> • Emerged in Norway as a frequent serotype displaying resistance to several antimicrobials in IPD (ERY, SXT, CLI) [66]*
	<ul style="list-style-type: none"> • 0.14 per 100.000 prevalence in Catalonia, Spain [17]* • Significantly increased vs PCV7 era IRR 1.74 (Catalonia, Spain) [17] 	<ul style="list-style-type: none"> • 3.1% of the invasive isolates in Majorca, Spain (4.3% total isolates) [53] 			<ul style="list-style-type: none"> • Significantly associated with IPD in high-risk patients (Netherlands) [25] • Highest prevalence in adults aged 65-79 (IPD, England) [64] 	<ul style="list-style-type: none"> • Still among the most frequent serotypes showing ERY resistance 11.6% (IPD, Spain) [7]
	<ul style="list-style-type: none"> • 3% prevalence in pneumococcal meningitis in France (2013-2014) [24]* • 1.1% prevalence in France (2010) [13]* • 2.1% prevalence in Italy (2014) [28]* • 0.4% prevalence in Italy (2010) [13]* • 1.1% prevalence in Belgium (2010) [13]* • 5.3% of bacteremic pneumococcal CAP in Germany [27] • 1.9% pneumococcal meningitis isolates in Germany [31] • 0.5% prevalence in Poland (2010) [13]* • 1.4% prevalence in Czech Republic (2010) [13]* • 0.3% prevalence in Austria (2010) [13]* • 1.0% prevalence in Hungary (2010) [13]* • 7.6% prevalence in England [37]* • 8.6% prevalence in England [19]* • 3.5% prevalence in England [64] • Increased in prevalence after PCV7 era, plateaued in PCV10/13 era (England) [64] • Significantly lower CFR comparing to PCV13 serotypes OR 0.44 (IPD, England) [19] • 2.6% prevalence in North East England [38]* 				<ul style="list-style-type: none"> • Comorbidity prevalence of 67.2% - significantly higher than other serotypes altogether (IPD, England) [64] • CFR 16.5% - significantly lower than other serotypes altogether (IPD, England) [64] • Death in 30d in patients with the 33F serotype associated with increasing age, comorbidity status and clinical presentation with septicaemia vs invasive pneumonia [64] 	
	<ul style="list-style-type: none"> • 2.8% prevalence in Ireland (2010) [13]* 	<ul style="list-style-type: none"> • 0.73 per 100.000 prevalence in Ireland (2012-2013) [41] 				

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	• 3.4% prevalence in the UK (2010) [13]*					
		• 2.6% prevalence in the Netherlands [44]#				
	• 2.6% prevalence in bacteremic pneumonia in Denmark [45]					
	• 2.3% prevalence in Denmark (2010) [13]*					
	• Mean prevalence in Denmark 0.15 [46]§	• Mean prevalence in Denmark 1.67 [46]§				
	• 0.65 per 100.000 prevalence in Sweden (2014) [47]*					
	• 3.3% prevalence in Norway (2010) [13]*					
	• 2.0 per 100.000 prevalence in Iceland [59]					

* total population, § 5-64 years, & 15B/C

BPP bacteremic pneumococcal community-acquired pneumonia, CFP case fatality proportion, CFR case fatality ratio, CLI clindamycin, CTX cefotaxime, ERY erythromycin, IRR prevalence rate ratio, LVX levofloxacin, (N)IPP (non-)invasive pneumococcal pneumonia, OR odds ratio, PEN penicillin, SXT trimethoprim/sulfamethoxazole

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Supplementary table S5 - Summary of the findings from the post-PCV10/13 era (2016-2022, unless stated otherwise by the authors of each paper).

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
8	<ul style="list-style-type: none"> 15.1% prevalence in Spain [1] 		<ul style="list-style-type: none"> 1.6% of all-cause CAP in Germany [2] 		<ul style="list-style-type: none"> Associated with empyema in IPD in the Netherlands 51.1% [3]* 	
	<ul style="list-style-type: none"> 7% prevalence in CAP in Spain, 20.1% prevalence in invasive CAP cases [4] 		<ul style="list-style-type: none"> 7% prevalence in CAP in Spain, 7.1% prevalence in non-invasive CAP cases [4] 		<ul style="list-style-type: none"> Significantly associated with lower CFR (IPD, Netherlands) [3]* 	
	<ul style="list-style-type: none"> 30% prevalence in Spain [5] 	<ul style="list-style-type: none"> 19% prevalence in Spain [5] 			<ul style="list-style-type: none"> Most frequent serotype in pneumonia cases in Spain (IPD) 16.7% [1] 	
	<ul style="list-style-type: none"> 18.5% prevalence in Catalonia, Spain (vs 8.1% in the PCV10/13 era) [6]* 		<ul style="list-style-type: none"> 8.1% prevalence in CAP in England - 2nd most prevalent serotype [8] 		<ul style="list-style-type: none"> Significantly lower odds of meningitis (OR 0.69, IPD, England and Wales) [9]* 	
	<ul style="list-style-type: none"> Among the most prevalent serotypes in the PCV10/13 and post-PCV10/13 era but significant increase in the latter in Catalonia, Spain [7] 	<ul style="list-style-type: none"> Among the most prevalent serotypes in the PCV10/13 and post-PCV10/13 era but significant increase in the latter in Catalonia, Spain [7] 	<ul style="list-style-type: none"> 18.3% prevalence in CAP in the UK [10] 		<ul style="list-style-type: none"> Significantly associated with increased odds of death (OR 2.9, CFR 33%) (IPD, England and Wales) [9]* 	
		<ul style="list-style-type: none"> Significant increase in prevalence vs the PCV10/13 era (Catalonia, Spain) [6] 	<ul style="list-style-type: none"> Identified in 7.7% of the young adults who were carriers in the UK [11] 		<ul style="list-style-type: none"> Most common in sepsis not associated with other clinical conditions (IPD, Italy) 11.6% [14] 	
		<ul style="list-style-type: none"> 6.9% prevalence in France [12] 			<ul style="list-style-type: none"> Among the most prevalent serotypes (>=1% of total cases) in the presence of underlying conditions (CAP, Spain) [4] 	
	<ul style="list-style-type: none"> 22.1% prevalence in Italy (2017) [13]* 				<ul style="list-style-type: none"> Most prevalent serotype in patients with chronic renal failure, patients with asthma, tobacco cigarette smokers, and patients with diabetes mellitus (33.3%, 14.6%, 14.2%, 8.7%) (CAP, Spain) [4] 	
	<ul style="list-style-type: none"> Among the most frequent serotypes in Italy 8.5% (+5.5% vs PCV7 era) [14] 				<ul style="list-style-type: none"> Among the serotypes most associated with risk of sepsis/septic shock on admission or during hospitalization OR 4.9 (CAP, Spain) [4] 	
	<ul style="list-style-type: none"> 21.1% of bacteremic pneumococcal CAP in Germany [2] 					
	<ul style="list-style-type: none"> 0.32 per 100.000 prevalence in Austria (rank 4) [15] 					
	<ul style="list-style-type: none"> 30.3% prevalence (15-44yo), 25.7% prevalence (45-64yo) in England [16] 	<ul style="list-style-type: none"> 18.6% prevalence (65-79yo), 10.0% prevalence (>80yo) in England [16] 		<ul style="list-style-type: none"> Identified in 16.7% of the older adults who were carriers in Italy [17] 		
	<ul style="list-style-type: none"> 27.2% prevalence in England and Wales, increased vs PCV10/13 [18]§ 	<ul style="list-style-type: none"> 15.7% prevalence in England and Wales, increased vs PCV10/13 [18] 				
	<ul style="list-style-type: none"> Predominant cause of meningitis in England and Wales (2015-16) [9]§ 	<ul style="list-style-type: none"> 25% of the cases of meningitis in England and Wales (2015-16) [9] 				
	<ul style="list-style-type: none"> Significantly increased vs PCV10/13 era IRR 1.18 (North East England) [19]* 					
		<ul style="list-style-type: none"> 2.31 per 100.000 prevalence in Ireland (2015-2016), significant vs PCV7 IRR 3.63 [20] 				
	<ul style="list-style-type: none"> Prevalence in the Netherlands 3.7 per 100.000 (significant increase from 2010) [3]* 					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
		<ul style="list-style-type: none"> 11.3 per 100.000 prevalence in the Netherlands, steep increase vs PCV10/13 era [21] 			<ul style="list-style-type: none"> Higher prevalence in younger adults than older (15-64 vs ≥65yo, IPD, England) [16] 	
	<ul style="list-style-type: none"> Significantly increasing vs PCV10/13 era in IPD in Denmark (IRR ~2) [22] 0.75 per 100.000 prevalence in Sweden (2016), 5th most prevalent [23]* 	<ul style="list-style-type: none"> 17% prevalence in 2018 across several countries in Europe vs 8% in 2012 (Czech Republic, Denmark, England, Finland, France, Ireland, the Netherlands, Norway, Scotland, Sweden, Spain) [24] 			<ul style="list-style-type: none"> More present in individuals with no comorbidities comparing to PCV13 serotypes (IPD, England) [16] 	
					<ul style="list-style-type: none"> Significantly lower CFR comparing to PCV13 serotypes OR 0.44 (IPD, England) [16] 	
10A	<ul style="list-style-type: none"> 2.3% prevalence in Spain [5] 	<ul style="list-style-type: none"> 1.8% prevalence in Spain [5] 			<ul style="list-style-type: none"> Significantly higher odds of meningitis (OR 2.06, IPD, England and Wales) [9]* 	
	<ul style="list-style-type: none"> 2.3% prevalence in Catalonia, Spain [6]* 					
		<ul style="list-style-type: none"> 3.0% prevalence in France [12] 				
	<ul style="list-style-type: none"> 3.6% prevalence in Italy (2017) [13]* 					
		<ul style="list-style-type: none"> 5.4% prevalence (>50yo) in Hungary [25] 				
	<ul style="list-style-type: none"> 2.5% prevalence in England and Wales [18]^s 	<ul style="list-style-type: none"> 3.1% prevalence in England and Wales [18] 				
	<ul style="list-style-type: none"> 0.46 per 100.000 prevalence in Sweden (2016) [23]* 					
11A	<ul style="list-style-type: none"> 2.9% prevalence in Spain [5] 	<ul style="list-style-type: none"> 3.3% prevalence in Spain [5] 	<ul style="list-style-type: none"> 0.8% of all-cause CAP in Germany [2] 		<ul style="list-style-type: none"> Significantly associated with higher CFR (IPD, Netherlands) [3]* 	<ul style="list-style-type: none"> Clonal replacement linked to an increase in PEN+AMOX-resistant isolates in IPD in Spain, France, Portugal, and Italy – 0 resistant isolates in 2008 vs 11 out of 13 in 2016 [26]
	<ul style="list-style-type: none"> 0.36 per 100.000 prevalence in Spain (non-significant increase vs PCV7 era) [26] 		<ul style="list-style-type: none"> 3.5% prevalence in CAP in the UK [10] 		<ul style="list-style-type: none"> Most frequent serotype in peritonitis cases in Spain (IPD) 19% [1] 	
	<ul style="list-style-type: none"> 		<ul style="list-style-type: none"> Identified in 7.7% of the young adults who were carriers in the UK [11] 		<ul style="list-style-type: none"> 	
		<ul style="list-style-type: none"> Significant increase in prevalence vs the PCV10/13 era (Catalonia, Spain) [6] 				
	<ul style="list-style-type: none"> 1.8% prevalence in Italy (2017) [13]* 					<ul style="list-style-type: none"> β-lactam-resistance associated with serotype 11A (IPD, Spain) [1]
	<ul style="list-style-type: none"> 0.18 per 100.000 prevalence in Austria (rank 10) [15] 7.4% prevalence (7-49yo), 14.3% prevalence (>50yo) in Hungary [25] 					
	<ul style="list-style-type: none"> 1.6% prevalence in England and Wales [18]^s 	<ul style="list-style-type: none"> 2.4% prevalence in England and Wales [18] 		<ul style="list-style-type: none"> Identified in 8.3% of the older adults who were 		<ul style="list-style-type: none"> Clone Spain9V-ST156, mainly expressing
		<ul style="list-style-type: none"> 0.66 per 100.000 prevalence in Ireland (2015-2016) [20] 				

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	<ul style="list-style-type: none"> 0.46 per 100.000 prevalence in Sweden (2016) [23]* 			carriers in Italy [17]		serotype 11A, accounted for more than 50% of IPD episodes caused by penicillin-non-susceptible pneumococci after PCV13 [27]
	<ul style="list-style-type: none"> 7.1 per 100.000 prevalence in Iceland [28] 	<ul style="list-style-type: none"> 27.8 per 100.000 prevalence in Iceland [28] 				
12F	<ul style="list-style-type: none"> 7.9% prevalence in Spain [1] 6.3% prevalence in Spain [5] 	4.6% prevalence in Spain [5]	<ul style="list-style-type: none"> 2.5% prevalence in CAP in England – 3rd most prevalent serotype [8] 5.6% prevalence in CAP in the UK [10] 		<ul style="list-style-type: none"> Among the most frequent serotypes in septic arthritis (UK) (6 out of 21 cases) [29] Significantly associated with lower CFR (IPD, Netherlands) [3]* 	
	<ul style="list-style-type: none"> 8.0% prevalence in Catalonia, Spain (vs 8.1% in the PCV10/13 era) [6]* 	<ul style="list-style-type: none"> Significant increase in prevalence vs the PCV10/13 era (Catalonia, Spain) [6] 			<ul style="list-style-type: none"> Among the most prevalent serotypes (≥1% of total cases) in the presence of underlying conditions (CAP, Spain) [4] 	
	<ul style="list-style-type: none"> Among the most prevalent serotypes in the PCV10/13 and post-PCV10/13 era but significant increase in the latter in Catalonia, Spain [7] 				<ul style="list-style-type: none"> Among the serotypes most associated with risk of ICU admission on admission or during hospitalization OR 3.5 (CAP, Spain) [4] 	
		<ul style="list-style-type: none"> 4.8% prevalence in France [12] 			<ul style="list-style-type: none"> Higher prevalence in younger adults than older (15-64 vs ≥65yo, IPD, England) [16] 	
	<ul style="list-style-type: none"> 10.1% prevalence in Italy (2016) [13]* 				<ul style="list-style-type: none"> More present in individuals with no comorbidities comparing to PCV13 serotypes (IPD, England) [16] 	
	<ul style="list-style-type: none"> 5.3% of bacteremic pneumococcal CAP in Germany [2] 				<ul style="list-style-type: none"> Significantly lower CFR comparing to PCV13 serotypes OR 0.54 (IPD, England) [16] 	
	<ul style="list-style-type: none"> 19.4% prevalence (15-44yo), 15.4% prevalence (45-64yo) in England [16] 	<ul style="list-style-type: none"> 9.4% prevalence (65-79yo), 6.4% prevalence (>80yo) in England [16] 				
	<ul style="list-style-type: none"> Significantly increased vs PCV10/13 era IRR 1.28 (North East England) [19]* 					
	<ul style="list-style-type: none"> 17.9% prevalence in England and Wales, increased vs PCV10/13 [18]^a 	<ul style="list-style-type: none"> 9.3% prevalence in England and Wales, increased vs PCV10/13 [18] 				
	<ul style="list-style-type: none"> Predominant cause of meningitis in England and Wales (2015-16) [9]^b 					
		<ul style="list-style-type: none"> 2.48 per 100.000 prevalence in Ireland (2015-2016) [20] 				
	<ul style="list-style-type: none"> 0.66 per 100.000 prevalence in Sweden (2016), 6th most prevalent [23]* 					
15B	<ul style="list-style-type: none"> 1.2% prevalence in Spain [5] 	<ul style="list-style-type: none"> 2.4% prevalence in Spain [5] 		<ul style="list-style-type: none"> Identified in 8.3% of the older adults 	<ul style="list-style-type: none"> Significantly associated with higher CFR (IPD, Netherlands) [3]* 	
		<ul style="list-style-type: none"> 2.4% prevalence in France [12]^a 				
	<ul style="list-style-type: none"> 2.0% prevalence in Italy (2017) [13]* 					

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance		
	<ul style="list-style-type: none">1.2% prevalence in England and Wales [18]^{§§}5.8 per 100.000 prevalence in Iceland [28][§]0.20 per 100.000 prevalence in Sweden (2016) [23]*	<ul style="list-style-type: none">1.5% prevalence in England and Wales [18][§]6.2 per 100.000 prevalence in Iceland [28][§]		who were carriers in Italy [17]				
22F	<ul style="list-style-type: none">4.1% prevalence in Spain [1]4.6% prevalence in Spain [5]		<ul style="list-style-type: none">1.0% of all-cause CAP in Germany [2]3.3% prevalence in CAP in the UK [10]		<ul style="list-style-type: none">Among the most frequent serotypes in septic arthritis (UK) [29]			
	<ul style="list-style-type: none">4.5% prevalence in Catalonia, Spain (vs 3.6% in the PCV10/13 era) [6]*				<ul style="list-style-type: none">Associated with empyema in IPD in the Netherlands 13.3% [3]*			
	<ul style="list-style-type: none">8.1% prevalence in France [12]				<ul style="list-style-type: none">Significantly higher odds of meningitis (OR 1.39, IPD, England and Wales) [9]*Higher prevalence in older adults than younger age groups, particularly ≥80 yo (IPD, England) [30]Comorbidity prevalence of 68.7% - significantly higher than other serotypes altogether (IPD, England) [30]CFR 15.4% - significantly lower than other serotypes altogether (IPD, England) [30]Death in 30d in patients with the 22F serotype associated with increasing age and clinical presentation with meningitis or septicaemia vs invasive pneumonia [30]Among the serotypes most associated with risk of sepsis/septic shock on admission or during hospitalization OR 4.5 (CAP, Spain) [4]			
	<ul style="list-style-type: none">5.9% prevalence in Italy (2017) [13]*5.1% prevalence in Italy (decreasing over time and not among the most common) [14]0.45 per 100.000 prevalence in Austria (rank 3) [15]7.0% prevalence in England [30]Increased in prevalence after PCV7 era, plateaued in PCV10/13 era (England) [30]16.5% prevalence in England [16]*							
	<ul style="list-style-type: none">6.2% prevalence in England and Wales, plateaued vs PCV10/13 era [18][§]	<ul style="list-style-type: none">7.3% prevalence in England and Wales, plateaued vs PCV10/13 era [18]2.15 per 100.000 prevalence in Ireland (2015-2016) [20]2.9 per 100.000 prevalence in the Netherlands, relatively stable vs PCV10/13 era [21]						
	<ul style="list-style-type: none">1.44 per 100.000 prevalence in Sweden (2016), 2nd most prevalent [23]*Caused most of the cases of pneumococcal meningitis in Finland 25% [31]*3.2 per 100.000 prevalence in Iceland [28][§]	<ul style="list-style-type: none">15.4 per 100.000 prevalence in Iceland [28][§]7% prevalence in 2018 across several countries in Europe (Czech Republic, Denmark, England, Finland, France, Ireland, the Netherlands, Norway, Scotland, Sweden, Spain) [24]						
	<ul style="list-style-type: none">2.2% prevalence in Spain [5]2.5% prevalence in Catalonia, Spain (vs 1.6% in the PCV10/13 era) [6]*				<ul style="list-style-type: none">3.2% prevalence in Spain [5]		<ul style="list-style-type: none">Highest prevalence in adults aged 65-79 (IPD, England) [30]	
	<ul style="list-style-type: none">Significant increase vs PCV10/13 in Catalonia, Spain [7]						<ul style="list-style-type: none">Comorbidity prevalence of 67.2% - significantly higher than other serotypes altogether (IPD, England) [30]	
	<ul style="list-style-type: none">1.5% prevalence in Italy (2017) [13]*							

	18-64yo (IPD)	≥65yo (IPD)	18-64yo (other)	≥65yo (other)	Severity and Lethality	Antimicrobial resistance
	• 5.3% of bacteremic pneumococcal CAP in Germany [2]				• CFR 16.5% - significantly lower than other serotypes altogether (IPD, England) [30]	
	• 3.5% prevalence in England [30]				• Death in 30d in patients with the 33F serotype associated with increasing age, comorbidity status and clinical presentation with septicaemia vs invasive pneumonia [30]	
	• Increased in prevalence after PCV7 era, plateaued in PCV10/13 era (England) [30]					
	• 8.6% prevalence in England [16]*					
		• 2.31 per 100.000 prevalence in Ireland (2015-2016) [20]				
	• 2.5% prevalence in England and Wales [18]§	• 3.6% prevalence in England and Wales [18]				
	• 0.38 per 100.000 prevalence in Sweden (2016) [23]*					
	• 1.3 per 100.000 prevalence in Iceland [28]					

* total population, [§] 5-64 years, & 15B/C

AMOX amoxicillin, CFR case fatality ratio, IRR prevalence rate ratio, MIC minimal inhibitory concentration, OR odds ratio, PEN penicillin

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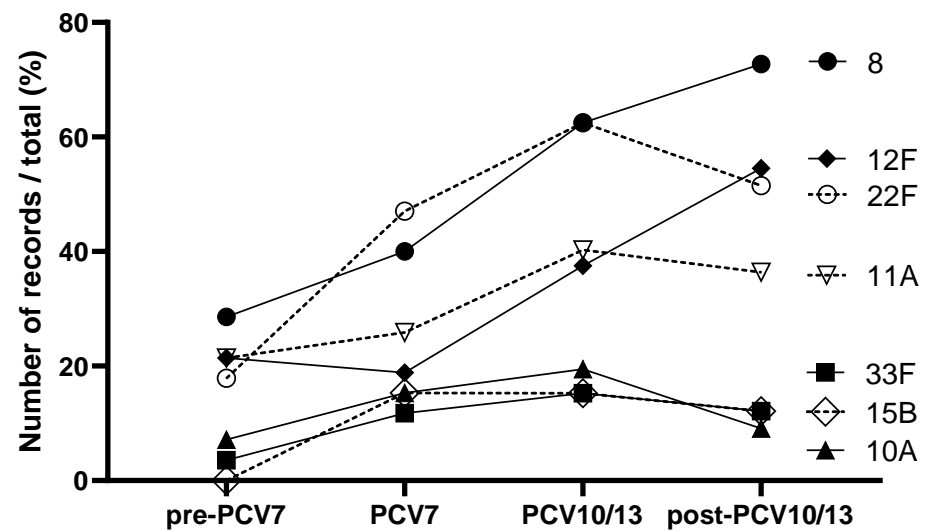


Figure S1 – Number of records included in the study for each serotype for each PCV period divided by the total number of records considered for each PCV era (%). Serotypes were included if they were central in the study, i.e., amongst the most prevalent, representing more serious pneumococcal disease or showing antimicrobial resistance. Articles spanning several PCV eras (e.g., PCV7 and PCV10/13) were counted for the total of records in all time periods that applied.