THE CHANGING EPIDEMIOLOGY OF INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN ADULTS OF 65 YEARS OR OVER. IMPACT OF THE PAEDIATRIC PNEUMOCOCCAL VACCINATION PROGRAMME, SPAIN, 2010-2017

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INTRODUCTION

- The paediatric heptavalent pneumococcal conjugate vaccine (PCV7) was first available in Spain in June 2001[1] and incorporated in the Madrid regional immunisation programme (RIP) in 2006[2], remaining in the private market for other regions.
- From mid-2010 through 2016, Spanish regions introduced the 13-valent conjugate vaccine (PCV13) in their RIPs[1].
- Adult vaccination with the 23-valent polysaccharide vaccine (PPV23) officially started in 2004[2], and with PCV13 in 2016 for some cohorts, without expected impact for this analysis.

OBJECTIVES

- To describe serotype distribution of invasive pneumococcal disease (IPD) in ≥ 65 years people for the period 2010-2017 in Spain to assess:
  - -The evolution of serotype distribution in adults since the routine paediatric use of PCV13
  - - The potential coverage for PCV15 and PCV20

METHODS

- Data source: cases reported through the European Centre for Disease Prevention and Control surveillance system (available online)[3]
- IPD serotype specific counts were aggregated into PCV13-, PCV13 non-PCV7-, 20-valent conjugate vaccine (PCV20) non-PCV13-, PPV23-, and PPV23 non-PCV13-type groups. Proportions of IPD by vaccine-type groups were calculated.
- For some years ECDC reported 15B and 15C counts together as 15B/C for Spain. This approach was applied to all the period as 15B/15C strains can have reversible switching[4]
- The percentage change in annual number of cases was estimated using linear regression analysis of the log of the annual number of cases.

RESULTS

- During 2010-17, a 6.1% (95%CI -11.4 to -0.6; p=0.04) and an 8.1% average annual decline (95%CI -13.7 to -2.2; p=0.02) in PCV13- and PCV13 non-PCV7-type IPD, respectively, was observed (Table 1).
- PCV20 non-PCV13-type IPD showed a 13.4% average annual increase (95%CI 7.8 to 19.2; p=0.001).
- Despite vaccination, PPV23 non-PCV13-type IPD increased an average annual 13.2% (95%CI 8.6 to 17.9; p<0.001).

Figure 1. Prevalence of IPD by PCV-type in adults ≥ 65 years, 2010-2017

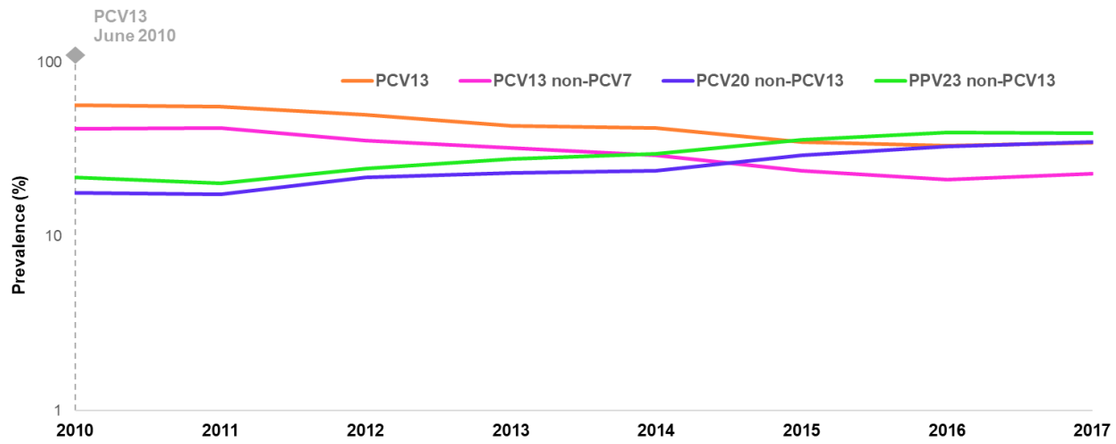
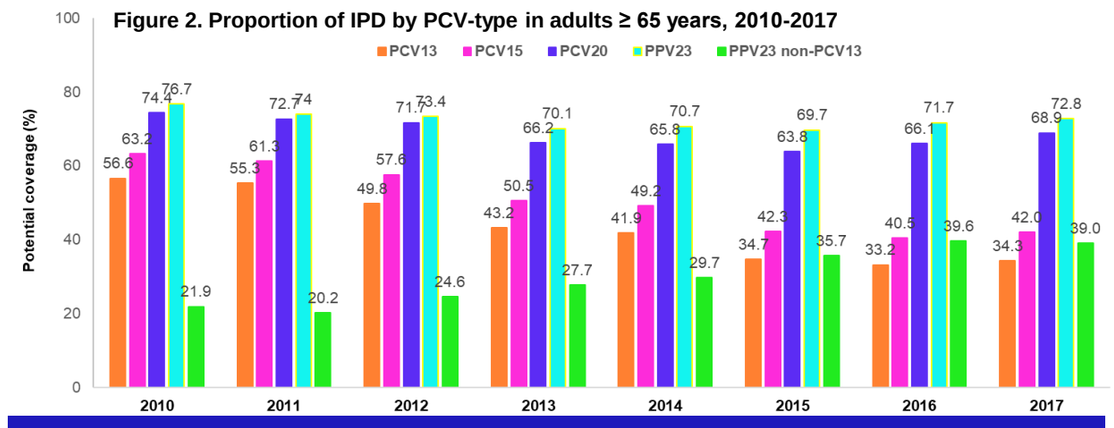


Figure 2. Proportion of IPD by PCV-type in adults ≥ 65 years, 2010-2017



LIMITATIONS

- Spanish data come from the National Reference Laboratory covering 80% of the population, thus limiting generalisability
- Roundoff in counts calculation may have introduced some bias

CONCLUSIONS

- Implementation of regional paediatric PCV13 programmes in Spain has been associated with decline of PCV13-type IPD in adults ≥ 65 years. Further reductions may only be achieved with direct immunisation.
- In 2017, PCV20 could potentially have covered around 69% of IPD whereas PCV15 would have covered 42% (Fig 2).

Table 1. Annual number of cases and percent change in annual number of cases of IPD in adults ≥ 65 years by vaccine-type group, Spain, 2010-2017*

Vaccine-type group	Number of cases								Percentage change in annual number of cases (95%CI)	p value
	2010	2011	2012	2013	2014	2015	2016	2017		
PCV13	531	524	525	417	373	351	304	444	-6.1 (-11.4 to -0.6)	0.04
PCV13 non-PCV7	391	399	375	311	260	241	193	295	-8.1 (-13.7 to -2.2)	0.02
PCV20 non-PCV13	168	166	231	222	213	294	301	449	13.4 (7.8 to 19.2)	0.001
PPV23	721	703	773	677	630	705	657	944	1.4 (-3.4 to 6.5)	0.5
PPV23 non-PCV13	207	193	259	268	265	361	363	506	13.2 (8.6 to 17.9)	<0.001

*Dataset provided by ECDC based on data provided by WHO and Ministries of Health from the affected countries

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Abstract ID 470, Topic: Vaccines / C2 Impact of Vaccine programs and Serotype Replacement
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12th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD), June 2020