Figure 1. AOM incidence in commercially and Medicaid-insured children ages 0 - 1 years, episodes per 100,000 patient-years (1998 - 2018)

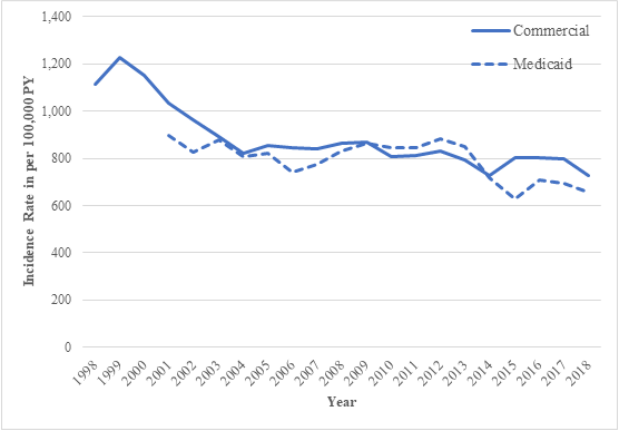


Figure 2. AOM incidence in commercially and Medicaid-insured children ages 2 - 4 years, episodes per 100,000 patient-years (1998 - 2018)

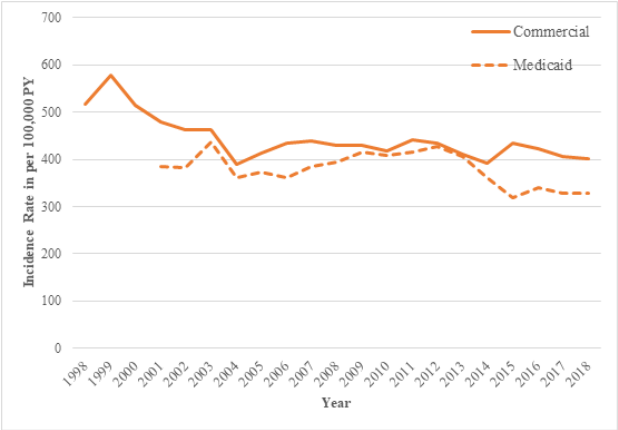
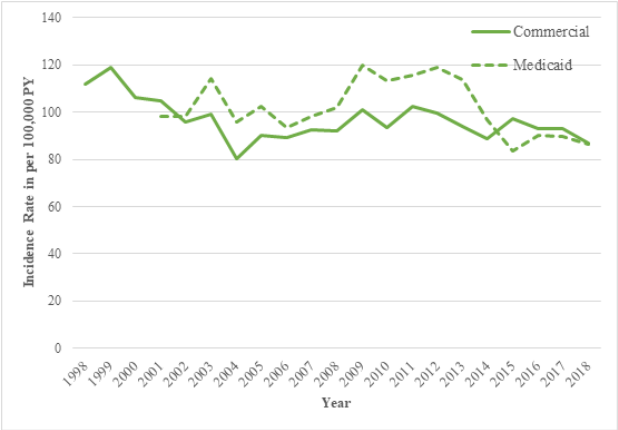


Figure 3. AOM incidence in commercially and Medicaid-insured children ages 5 - 17 years, episodes per 100,000 patient-years (1998 - 2018)



Conclusion: AOM IRs declined following the introduction of PCV7 and PCV13; however, disease burden remains substantial in younger children. The impact of future PCVs on AOM will depend on the proportion of AOM caused by *S. pneumoniae* and vaccine-type serotypes.

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1480. Incidence of Non-Invasive Pneumococcal Pneumonia in Children in the United States before and after Introduction Pneumococcal Conjugate Vaccines (PCV7 and PCV13) during 1998-2018

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Session: P-67. Respiratory Infections - Bacterial

Background. Pneumonia causes significant pediatric morbidity, mortality, and healthcare resource utilization. *S. pneumoniae* is a leading cause of bacterial pneumonia in children. Merck is developing V114, an investigational 15-valent PCV that contains PCV13 serotypes as well as 22F and 33F. To demonstrate the potential value of V114, it is important to estimate the remaining burden associated with pneumococcal pneumonia (PP). This study was to estimate incidence rates (IRs) of non-invasive PP before and after PCV7 and PCV13 introduction in children in the US.

Methods. PP-related claims in children < 18 years were identified in the IBM MarketScan® Commercial database (1998-2018) using pneumococcal specific ICD9/10 codes. Claims with any invasive pneumococcal disease ICD9/10 codes were excluded. An episode could comprise one or more claims. Episodes with any inpatient stays were categorized as inpatient, and as outpatient otherwise. Age-stratified (< 2, 2-4, and 5-17 years) IRs were episodes per 100,000 patient-years (PYs) during the pre-PCV7 (1998-1999), early and late PCV7 (2001-2005, 2006-2009), and early and late PCV13 (2011-2013, 2014-2018) periods.

Results. Inpatient and outpatient PP IRs decreased steadily in children < 2 years (146.8, 117.9, 102.0, 67.8, and 32.2 per 100,000 PYs for pre-PCV7, early and late PCV7, and early and late PCV13 periods, respectively; **Figure 1**). In children 2-4 years, IRs increased slightly from 88.6 to 90.0 per 100,000 PYs from the pre-PCV7 to early PCV7 period, then declined to 83.9 and 30.8 per 100,000 PYs in the late PCV7 and late PCV13 periods, respectively **(Figure 2)**. In children 5-17 years, IRs declined from 35.3 to 34.2 per 100,000 PYs from the pre-PCV7 to early PCV7 period, stabilized at 34.1 per 100,000 PYs in the late PCV7 period, followed by a steeper decline to 12.5 per 100,000 PYs in the late PCV13 period **(Figure 3)**. The majority of episodes were outpatient in all three age groups.

Figure 1. Non-invasive pneumococcal pneumonia incidence in children <2 years, episodes per 100,000 patient-years (1998 - 2018)

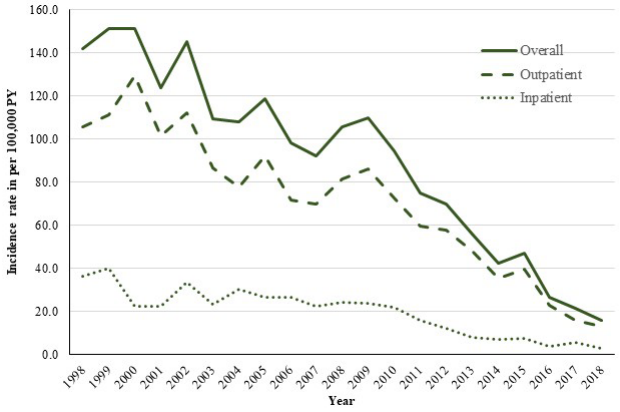


Figure 2. Non-invasive pneumococcal pneumonia incidence in children 2 - 4 years, episodes per 100,000 patient-years (1998 - 2018)

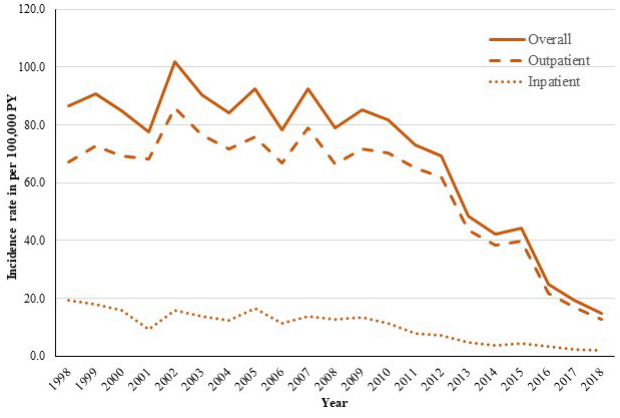
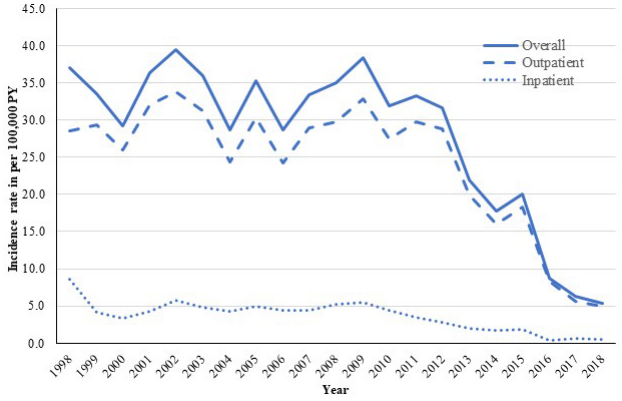


Figure 3. Non-invasive pneumococcal pneumonia incidence in children 5 - 17 years, episodes per 100,000 patient-years (1998 - 2018)



Conclusion: In children < 2 years, IRs of non-invasive PP decreased after introduction of PCV7 and PCV13. Following introduction of PCV 7 and PCV13, there remains a residual burden of non-invasive PP in children in the US. The impact of future PCVs on PP will depend on the proportion of PP caused by *S. pneumoniae* and vaccine-type serotypes.

Disclosures. Tianyan Hu, PhD, Merck (Employee, Shareholder) Yan Song, PhD, Merck (Consultant) Nicolae Done, PhD, Merck & Co., Inc. (Consultant) Qing liu, PhD, Merck (Consultant) James Signorovitch, PhD, Merck & Co., Inc. (Consultant) Tanaz Petigara, PhD, Merck & Co., Inc. (Employee, Shareholder)

1481. Incidence of Pertussis in Older Adults in England and the United Kingdom: A Large, Retrospective Database Analysis

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Session: P-67. Respiratory Infections - Bacterial

Background. Pertussis affects people of all ages and can lead to severe complications in adults, including hospitalization. Pertussis immunity, whether vaccine-induced or from natural infection, wanes over time. Therefore, despite extensive pediatric vaccination against pertussis, adults remain susceptible to the disease. Here we present the reported incidence of pertussis in people ≥ 50 years old (≥ 50yo) in England and the United Kingdom (UK).

Methods. We performed an observational, retrospective database analysis using the UK Clinical Practice Research Datalink GOLD and Aurum primary care databases, and Hospital Episode Statistics database when available for English subjects (HES-Eng), 2009-2018. Occurrence of pertussis was identified by diagnostic codes recorded in primary care only for the UK subset, and primary care and/or secondary care for HES-Eng.

Results. In the ≥ 50yo UK population, a total of 47.1 million (m) person-years of follow-up (PYFU) including 28.5m PYFU for HES-Eng, were included. In the UK, the pertussis Incidence Rate (IR) across all years was 5.44 per 100,000 PYFU. Yearly IRs ranged from 0.79 – 11.40 per 100,000 PYFU and reflected the cyclic epidemiology of pertussis. A peak of IR was observed in 2012, known to be an outbreak year, and observed IRs were higher in 2013-2018 (4.75 – 9.73 per 100,000 PYFU) than 2009-2011 (0.79 – 1.48 per 100,000 PYFU). In the HES-Eng population, overall IR was 5.76 per 100,000 PYFU. IRs were highest in the younger age groups (HES-Eng: 8.88 in 50-54 yo; 1.42 in ≥ 85 yo) (see table 1 and 2).

Table 1

	UK population			HES-Eng population		
	Follow-Up (100,000 PYFU)	Pertussis events	Pertussis IR per 100,000 PYFU (95%CI)	Follow-Up (100,000 PYFU)	Pertussis events	Pertussis IR per 100,000 PYFU (95%CI)
Overall incidence (whole study period 2009-2018)						
	471.48	**2565**	**5.44 (5.23 – 5.66)**	**284.5**	**1638**	**5.76 (5.48 – 6.04)**
By year						
2009	46.49	45	0.97 (0.71 – 1.30)	28.52	28	0.98 (0.65 – 1.42)
2010	46.87	37	0.79 (0.56 – 1.09)	28.73	22	0.77 (0.48 – 1.16)
2011	47.15	70	1.48 (1.16 – 1.88)	28.81	41	1.42 (1.02 – 1.93)
2012	47.62	543	11.40 (10.46 –12.40)	28.97	359	12.39 (11.14 – 13.74)
2013	47,11	296	6.28 (5.59 – 7.04)	28.72	197	6.86 (5.94 – 7.89)
2014	46.99	223	4.75 (4.14 – 5.41)	28.63	148	5.17 (4.37 – 6.07)
2015	47.14	295	6.26 (5.56 – 7.01)	28.62	163	5.70 (4.85 – 6.64)
2016	46.96	457	9.73 (8.86 – 10.67)	28.45	281	9.88 (8.76 – 11.10)
2017	47.28	364	7.70 (6.93 – 8.53)	28.62	247	8.63 (7.59 – 9.78)
2018	47.86	235	4.91 (4.30 – 5.58)	26.43	152	5.75 (4.87 – 6.74)

UK, United Kingdom subject with primary health care data available, HES-Eng, English subject with primary and secondary health care data available, 95%CI, 95% confidence interval; IR, incidence rate; PYFU, person-year of follow-up.

Table 2

	HES-Eng population		
	Follow-Up (100,000 PYFU)	Pertussis events	Pertussis IR per 100,000 PYFU (95%CI)
Incidence by age-group			
50-54 y	55.43	492	8.88 (8.11 – 9.7)
55-59 y	47.96	363	7.57 (6.81 – 8.39)
60-64 y	44.36	267	6.02 (5.32 – 6.79)
65-69 y	40.29	216	5.36 (4.67 – 6.13)
70-74 y	32.47	148	4.56 (3.85 – 5.36)
75-79 y	25.63	83	3.24 (2.58 – 4.01)
80-84 y	19.32	42	2.17 (1.57 – 2.94)
≥ 85 y	19.04	27	1.42 (0.93 – 2.06)

HES-Eng, English subject with primary and secondary health care data available, 95%CI, 95% confidence interval; IR, incidence rate; PYFU, person-year of follow-up; y, year-old.

Conclusion. The observed reported IR of pertussis was similar in the UK and HES-Eng populations, noting the inclusion of secondary care diagnoses in the latter. The dynamics of IRs across years are consistent with estimated IRs from Public Health England data. Considering the burden of pertussis established elsewhere in older adults, and their non-negligible contribution to the whole population incidence, strategies for the prevention of pertussis should include this age group.

Disclosures. Emmanuel Aris, PhD, the GSK group of companies (Employee, Shareholder) Esse Ifebi Akpo, n/a, the GSK group of companies (Employee, Shareholder) Amit Bhavsar, MBBS, MHA, the GSK group of companies (Employee) Lauriane Harrington, n/a, the GSK group of companies (Employee) Evie Merinopoulou, MSc, Evidera Ltd (Employee)the GSK group of companies (Consultant) Nicola Sawalhi-Leckenby, MSc, Evidera Ltd (Employee)the GSK group of companies (Consultant) Elisa Turriani, PhD, the GSK group of companies (Employee) Kinga Meszaros, MBA, the GSK group of companies (Employee, Shareholder) Dimitra Lambrelli, PhD, MPharm, Evidera Ltd (Employee)the GSK group of companies (Consultant) Piyali Mukherjee, MBBS, MPH, the GSK group of companies (Employee, Shareholder)

1482. Local validation of the drug resistance in pneumonia clinical prediction score at a large academic medical center and a community hospital

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Session: P-67. Respiratory Infections - Bacterial

Background. Community-acquired pneumonia (CAP) is responsible for ~1 million emergency department (ED) visits yearly and the leading cause of infection-related deaths. Given that increasing antibiotic resistance rates complicate appropriate empiric antibiotic selection, clinicians may benefit from tools to help identify patients at risk for drug-resistant pathogens (DRPs). Limitations of traditional tools, such as healthcare-associated pneumonia criteria (HCAP), have led to development of novel scoring tools such as the drug resistance in pneumonia (DRIP) score. Webb *et al.* showed the DRIP score was more predictive of CAP caused by DRPs than HCAP criteria. The objective of this study was to validate the DRIP score in a local population of hospitalized patients at an academic and a community medical center.

Methods. Patients who presented to the ED between May 2017 and May 2019 were included in this retrospective review. Patients were included if they were ≥ 18 years diagnosed with CAP by radiographic evidence with respiratory culture positivity and susceptibility results. Exclusion criteria were: presence of non-bacterial non-respiratory pathogens, patients with cystic fibrosis, lung transplant or systemic co-infections. The primary outcome was validation of the DRIP score by comparing the sensitivity, specificity, negative and positive predictive values (NPV/PPV) to the derivation and validation study by Webb et al. Secondary outcomes were the percentage of CAP cases with DRPs and the predictability of DRP using the DRIP score versus HCAP criteria.

Results. A total of 164 patients were included; 60.4% were male with a median age of 70 years. The primary outcome shown in Table 1 demonstrated similar sensitivity,