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Distribution of *Streptococcus pneumoniae* serotypes recovered from adults \geq 50 years of age in select European countries over a seven-year interval (2009-2015)

Rodrigo E. Mendes^{*1}, Heather Sings², Leah N. Woosley¹, Mariana Castanheira¹, Robert Flamm¹, Raul Isturiz³

¹*Jmi Laboratories*

²*Pfizer Inc.*

³*Pfizer; Vaccines*

Background: The implementation of pneumococcal conjugate vaccines in paediatric National Immunization Programmes (NIPs) requires serotype monitoring in all ages. This study assessed the serotype distribution of *Streptococcus pneumoniae* isolates associated with respiratory tract infections in older adults in select European countries.

Material/methods: A total of 1,388 *S. pneumoniae* collected mainly from respiratory tract specimens of patients \geq 50 years of age were included. Isolates were collected from patients in France (575), Germany (211), Ireland (259) and the United Kingdom (UK, 343) during 2009–2015. Identification was performed by biochemical algorithms and/or PCR. Serotyping was performed by *cpsB* sequencing and multiplex PCR.

Results: PCV7 and PCV13 serotypes comprised 13.7% and 37.2% of all isolates, respectively. Serotype 19F (35.8%) predominated among PCV7-type isolates over the period, while serotypes 3 (22.1%) and 19A (25.4%) were the most common among PCV13-types. The prevalence of PCV7 serotypes during 2009–2015 were 24.5, 18.3, 18.1, 13.4, 10.0, 8.2 and 5.1%, respectively, whereas the PCV13 distributions were 58.7, 52.0, 42.3, 35.8, 27.0, 23.1 and 25.2%, respectively. A decreasing trend for PCV7-types during the 2009-2010, 2011-2013 and 2014-2015 years were observed in France (20.5, 13.1 and 4.7%, respectively), Ireland (42.3, 28.5 and 11.7%) and the UK (7.3, 6.8 and 4.0%), but rates in Germany (14.6, 10.9 and 11.4%) were more stable. A comparison for PCV13-types among the 2009-2010, 2011-2013 and 2014-2015 periods also showed declined rates in France (55.8, 40.7 and 25.5%, respectively), Germany (52.1, 30.3 and 22.7%), Ireland (65.4, 46.2 and 42.9%) and

the UK (43.6, 24.1 and 11.9%). During 2014-2015, 19A (12.1%) and 3 (6.0%) were the most frequent PCV13 serotypes in France; 19A (6.8%), 19F (6.8%) and 3 (4.5%) were the most common in Germany; and serotypes 19A (19.5%) and 3 (5.6%) were the most prevalent in Ireland and the UK, respectively. Prevalence of non-vaccine serotypes increased during 2009-2010, 2011-2013 and 2014-2015 in all countries evaluated, except Ireland.

Conclusions: The prevalence of PCV7 and PCV13 serotypes associated with respiratory tract infections in adults ≥ 50 years of age declined considerably over the seven-year period. However, both PCV7 and PCV13 unique serotypes were found in all countries, and remained during 2014-2015, particular PCV7 serotypes remained elevated in Germany (11.4%) and Ireland (11.7%) and PCV13 rates remained high in Ireland (42.9%).