

Severe outcomes following invasive pneumococcal disease in adults in France

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Introduction: Factors associated with severe invasive pneumococcal disease (IPD) not known in France

- Pneumococcal vaccine serotypes and host factors may increase the risk of severe invasive pneumococcal disease (IPD)
- In France, pneumococcal vaccination in adults is recommended for at-risk groups (immunosuppression or chronic conditions/diseases)

Objectives: In 2014-2017, we conducted a study of IPD in adults to identify factors/serotypes associated with disease severity

Methods: We included non-meningitis IPD cases from 25 acute-care hospitals in 6/13 French regions (2014-2017)

- **Data source:** In 2014-2017, we included **non-meningitis IPD** cases in adults from 25 acute-care hospitals in 6/13 regions
- **Case definition:** **Severe cases** were IPD patients either admitted to an ICU or under mechanical ventilation or with severe sepsis or shock

- **Data collection:** Infectious disease specialists collected clinical/microbiological data on all cases
- **Laboratory methods:** All isolates were transferred to the National Reference Centre for Pneumococci (NRC) for serotyping
- **Data analysis:** We calculated adjusted risk ratios (aRR) using binomial regression

Results: The risk of severe IPD increased with increasing number of comorbidities

- 908 cases were diagnosed; median age 71 (range 18-101) yrs
- 48% were severe and 84% were at-risk; 31% were admitted to an ICU
- 22% died during hospitalization
- The risk of severe disease increased with increasing number of at-risk conditions (Table)
- PCV13 serotypes were more likely to induce severe IPD compared to non-vaccine serotypes among risk groups (aRR 1.5; 95%CI 1.3-1.9), but not among previously healthy individuals (aRR 1.6; 95%CI 0.94-2.8)
- The same pattern was observed for PPV23/nonPCV13 serotypes
- Those having received vaccination for seasonal influenza were less likely to develop severe non-meningitis IPD (Table)

Table. Number of severe cases among patients with IPD by selected factors and most prevalent serotypes, France, 2014-2017

Characteristic	Category	Severe cases		Adjusted RR	95% CI
		n	%		
Number of comorbidities	0	139	42%	-	-
	1-2	243	51%	1.2	1.0-1.4
	≥ 2	49	54%	1.3	1.0-1.7
Serotype category	PCV13	148	60%	1.6	1.3-1.9
	PPV23	157	45%	1.2	1.1-1.4
	Non-vac	90	39%	-	-
Influenza vaccination	Yes	86	41%	0.77	0.64-0.93
	No	301	50%	ref	-

Conclusions

- We observed a moderate cumulative effect of concurrent comorbidities on severe IPD outcomes
- Non-vaccine serotypes increased the risk of severe outcomes only in risk groups, suggesting a different interplay between host factors and the pathogen in vulnerable groups
- **Limitations:** We did not include meningitis IPD; part of other study

Recommendations

- Enhance vaccination among risk groups and especially in those most at risk for poor IPD-related outcomes