

BURDEN OF DISEASE ASSOCIATED WITH PNEUMONIA AND INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN INDIVIDUALS AGED 15 YEARS AND ABOVE IN SPAIN IN 2015

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BACKGROUND AND AIMS

Streptococcus pneumoniae (pneumococcus) is a major cause of morbidity and mortality worldwide¹. In Spain, the incidence of pneumococcal pneumonia is estimated to be around 300 cases per 100,000 people> 65 years, of which 50 would be of bacteremic origin. In addition to incidence, pneumococcal infections are an important cause of mortality, especially among children under 2 years of age, in adults with risky conditions and in the elderly. The available epidemiological studies in Spain in adult population, are limited to analyzing data restricted geographically to specific regions, which makes it difficult to know the overall situation of the country^{2,3,4}.

This study assessed the clinical burden associated with *streptococcus pneumoniae* in Spain through publicly available Real-World Data (RWD) database.

METHODS

A retrospective study was performed using data from the Conjunto Mínimo de Datos-Hospitalización (CMBD-H) of the Ministry of Health, Social Services and Equality of Spain. The CMBD is a compulsory registry for both public and private hospitals that provides statistical knowledge of hospital morbidity that includes data of a total of 457 hospitals covering the 90% of population and more than 90% of hospitalization episodes⁵.

The study population consisted of any inpatient admission collected in MBDS-H whose main diagnosis in the ICD-9-CM was pneumonia (481; 482.9; 485; 486, 510.9, 511.1), bacteremia (038.0; 038.2; 038.9; 790.7) and meningitis (320.1, 320.2, 320.82, 320.9, 322.9) in adults aged 15 years and older in 2015.

RESULTS

In 2015, the estimated burden of pneumococcal disease potentially avoidable through vaccination represented 10,274 inpatient admissions including 9,015 cases of pneumonia, 309 cases of meningitis and 950 cases of septicemia.

Additionally, 867 deaths were registered during these hospitalization episodes.

Pneumonia

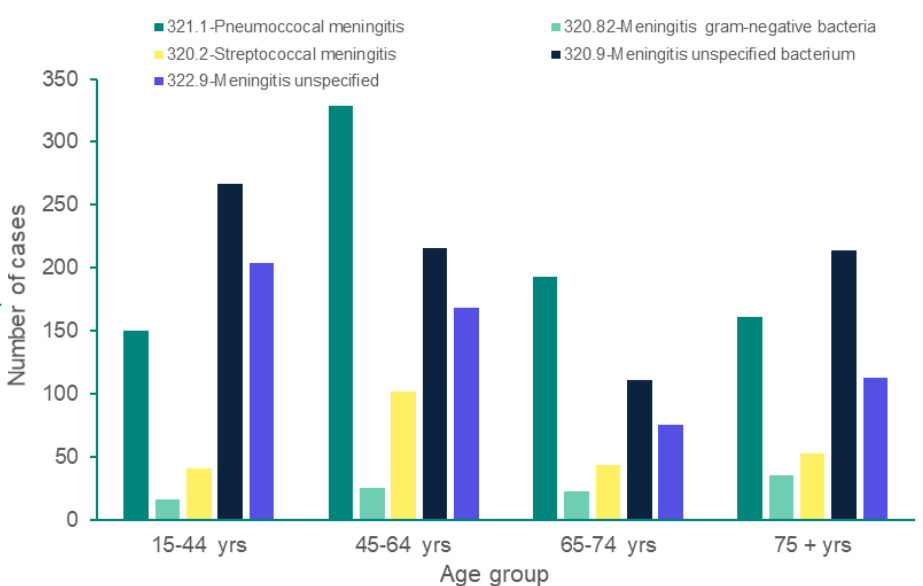
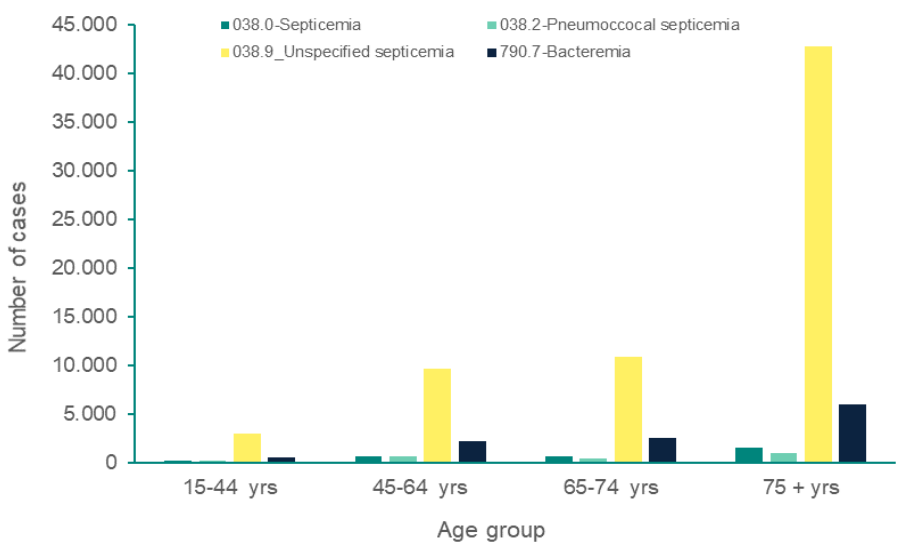
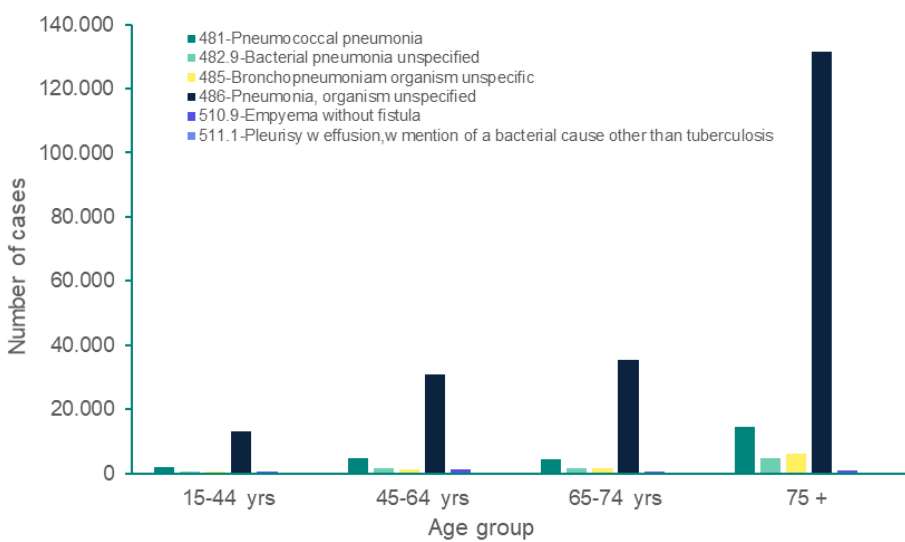
- In 2015 there were 94,651 cases of hospitalizations for pneumonia as principal diagnosis of which 9.5% was coded as pneumococcal pneumonia.
- More than 76% of the cases coded as pneumococcal pneumonia were observed in those older than 65 years.
- 657 deaths associated with pneumococcal pneumonia were recorded to bring the mortality rate for this disease to 7.29%. 78% of these deaths occurred in adults aged 75 years and older.

Bacteremia

- In 2015 there were 31,714 cases of hospitalizations for bacteremia as principal diagnosis of which 3.0% was coded as pneumococcal bacteremia.
- More than 61% of the cases coded as pneumococcal bacteremia were observed in those older than 65 years.
- 10,374 deaths associated with pneumococcal bacteremia were recorded to bring the mortality rate for this disease to 32.7%. About 76% of these deaths occurred in in adults aged 75 years and older.

Meningitis

- In 2015 there were 868 cases of hospitalizations for meningitis as principal diagnosis of which 35.6% was coded as pneumococcal meningitis.
- More than 46% of the cases coded as pneumococcal meningitis were observed in those older than 65 years.
- 43 deaths associated with pneumococcal meningitis were recorded to bring the mortality rate for this disease above 13.9%. More than 62% of these deaths occurred in adults aged 65 years and older.



Number of cases (2015)	Rate per 100,000 hab	Number of deaths	Mortality	Mortality rate per 100,000 hab
All pneumonia 94,651	240.23 (CI 95%; 240.13-240.32)	9,343	9.87%	23.75 (CI 95%; 23.72-23.78)
Pneumococcal pneumonia 9,015	22.88 (CI 95%; 22.85-22.91)	657	7.29%	1.67 (CI 95%; 1.66-1.68)
All bacteremia 31,714	80.49 (CI 95%; 80.44; 80.55)	10,374	32.71%	26.33 (CI 95%; 26.30-26.36)
Pneumococcal septicemia 950	2.41 (CI 95%; 2.40; 2.42)	167	17.58%	0.42 (CI 95%; 0.42-0.43)
All meningitis 868	2.20 (CI 95%; 2.19; 2.21)	92	10.59%	0.23 (CI 95%; 0.23-0.24)
Pneumococcal meningitis 309	0.78 (CI 95%; 0.78; 0.79)	43	13.91%	0.11 (CI 95%; 0.11-0.11)

Limitations

The information available in CMBD-H only captures individual hospitalization episodes and cannot capture per patient hospitalization, therefore it could be used as an approximation to estimate disease incidence, but not real incidence, which is a limitation of the study.

CONCLUSION

Our analysis suggests that pneumococcal disease is responsible for a considerable hospitalization burden among individuals aged 15 years and older in Spain. Mortality due to pneumococcal pneumonia and pneumococcal bacteremia increases dramatically in those individuals aged 75 years and older whereas mortality due to meningitis pneumococcal impacts at earlier ages.

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