

# ECONOMIC BURDEN OF PNEUMOCOCCAL DISEASE IN INDIVIDUALS AGED 15 YEARS AND OLDER IN SPAIN IN 2015: AN APPROXIMATION BASED ON THE CONJUNTO MÍNIMO DE DATOS-HOSPITALIZACIÓN (CMBD-H)

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## BACKGROUND AND AIMS

Pneumococcal disease carries a high economic burden. In Europe, total healthcare costs related to community acquired pneumonia were estimated to be as high as €10.1 billion annually<sup>1</sup>. Few studies in Spain have addressed the costs of pneumococcal disease<sup>2,3,4</sup>. One of these studies specifically compared the costs of pneumococcal pneumonia with non-pneumococcal pneumonia and found that PP had significantly higher overall costs (€2,865 vs €2,260, respectively)<sup>4</sup>.

This study assessed the healthcare resource utilization and costs associated with inpatient admissions for pneumonia and invasive pneumococcal disease (IPD) in individuals aged 15 years and older in Spain in 2015.

## 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 episodes<sup>5</sup>.

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. The average total costs per hospital admission episode was calculated as the average inpatients cost per episode. Additionally, the length of stay (days of hospitalization) due to pneumococcal disease was estimated.

## RESULTS

The aggregated annual economic burden of pneumococcal disease was 54.5 million euros (\$59.3 million) These represented over 97,390 hospitalization days, 80% of which were associated with pneumococcal pneumonia.

Pneumococcal meningitis has the highest average cost per episode, 10,706 euros (\$11,904) followed by the average cost of a septicemia episode, 9,338 euros (\$10,382).

### Pneumonia

- Economic burden of all pneumonia cases exceeded 407.5 million euros (\$443 million) resulting from 766,73 days of hospitalization.
- Pneumococcal pneumonia represented the 10,4% of the economic burden associated with pneumonia.
- The hospitalization cost of a pneumococcal pneumonia episode was 9.2% higher than the average hospitalization cost of any cause pneumonia.

Number of cases (2015)	Average lenght of stay	Total length of stay (days)	Hospitalization cost per stay	Total cost
All pneumonia 94,651	8.1	766,673	4,306 € (4676 \$)	407,567,206 € (442,581,305 \$)
Pneumococcal pneumonia 9,015	8.7	78.160	4,701 € (5105 \$)	42,379,515 € (46,020,339 \$)

### Bacteremia

- Economic burden of all bacteremia cases exceeded 224.5 million euros (\$244 million) resulting from 339,974 days of hospitalization.
- Pneumococcal septicemia represented the 3.9% of the economic burden associated with bacteremia.
- The hospitalization cost of a pneumococcal septicemia episode was 31.8 % higher than the average hospitalization cost of any cause bacteremia.

Number of cases (2015)	Average lenght of stay	Total length of stay (days)	Hospitalization cost per stay	Total cost
All bacteremia 31,714	10.7	339,974	7,081 € (7,689 \$)	224,566,834 € (243,859,371 \$)
Pneumocccocal septicemia 950	14.8	14,051	9,338 € (10,140 \$)	8,871,100 € (9,633,216 \$)

### Meningitis

- Economic burden of all meningitis cases exceeded 8.3 million euros (\$9 million) resulting from 12,872 days of hospitalization.
- Pneumococcal meningitis represented nearly 40% of the economic burden associated with meningitis.
- The hospitalization cost of a pneumococcal meningitis episode was 11.5 % higher than the average hospitalization cost of any cause meningitis.

Number of cases (2015)	Average lenght of stay	Total length of stay (days)	Hospitalization cost per stay	Total cost
All meningitis 868	14,8	12,872	9,599 € (10424 \$)	8,331,932 € (9,047,728 \$)
Pneumocccocal meningitis 309	16,8	5,182	10,706 € (11,626 \$)	3,308,154 € (3,592,357 \$)

## CONCLUSION

These results demonstrate the substantial economic impact of pneumococcal disease on the Spanish National Health System. The hospitalization costs of pneumococcal disease are up to 33% higher compared to the average hospitalization costs of any cause.

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