

Healthcare resource utilization and estimated costs in adult pneumococcal disease in Peru: Results of a panel of experts

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Introduction

- Pneumococcal disease (PD) comprises any disease resulting from infection with the *Streptococcus pneumoniae* bacteria¹
 - The most common manifestations in adults are pneumonia, bacteremia, and meningitis¹
- This presents a significant medical and economic burden on a country's healthcare system, owing to the high cost of diagnosis, treatment, and follow-up required for patients being treated for PD^{2,3}
- Healthcare interventions, such as pneumococcal vaccinations, could lead to substantial savings for the healthcare system by reducing the clinical burden of PD³
- Few studies have explored the cost of illness and the resulting economic burden associated with PD in Latin America

Objective

- This study aimed to estimate the healthcare resource utilization (HCRU) and direct medical costs of PD in adults in Peru in 2022

Methods

- A panel of experts was developed with five local infectious disease or critical care specialists from Peruvian Ministry of Health (MoH) institutions
 - Panelists had experience treating PD-related syndromes in adults
- Information on HCRU by category (lab/imaging tests, professional services, procedures, medications, and length of hospital stay [LoS]) and frequency was collected using a discussion-based guide through online interviews conducted in June 2022
- This discussion guide gathered information based on local clinical practice guideline recommendations and publications relevant to PD-related syndromes
- To estimate costs, a micro-costing approach from the payer perspective was applied for each PD syndrome: outpatient pneumonia, inpatient pneumonia, and inpatient invasive disease (bacteremia and meningitis). Inpatient cases were categorized as uncomplicated or complicated
 - This approach considered the reported average use of each resource and its respective unit cost in the MoH national tariff
 - Costs were adjusted based on proportion of patients receiving each service
- Data collected from the questionnaires were compiled and analyzed in Microsoft® Excel
- Costs in local currency were converted to United States dollars (exchange rate \$1 USD=3.65 soles in June 2023)

Results

- Based on expert panel:
 - The average length of stay among pneumococcal clinical presentations varied between 14.5 days for pneumonia and 55.5 for meningitis with complications (**Figure 1**)
 - The average cost per episode for each condition was (**Table 1**):
 - outpatient pneumococcal pneumonia: US \$194
 - pneumonia with complications: US \$10,450
 - bacteremia: US \$7,329
 - meningitis with complications: US \$7,075
 - The average cost for pneumococcal meningitis sequelae was US \$3,132
 - Among PD, the highest costs were driven by hospital daily rates, followed by lab/ imaging tests, professional services, and medications

Figure 1. Average length of stay (days) in adults by inpatient pneumococcal clinical presentation, Peru, 2022

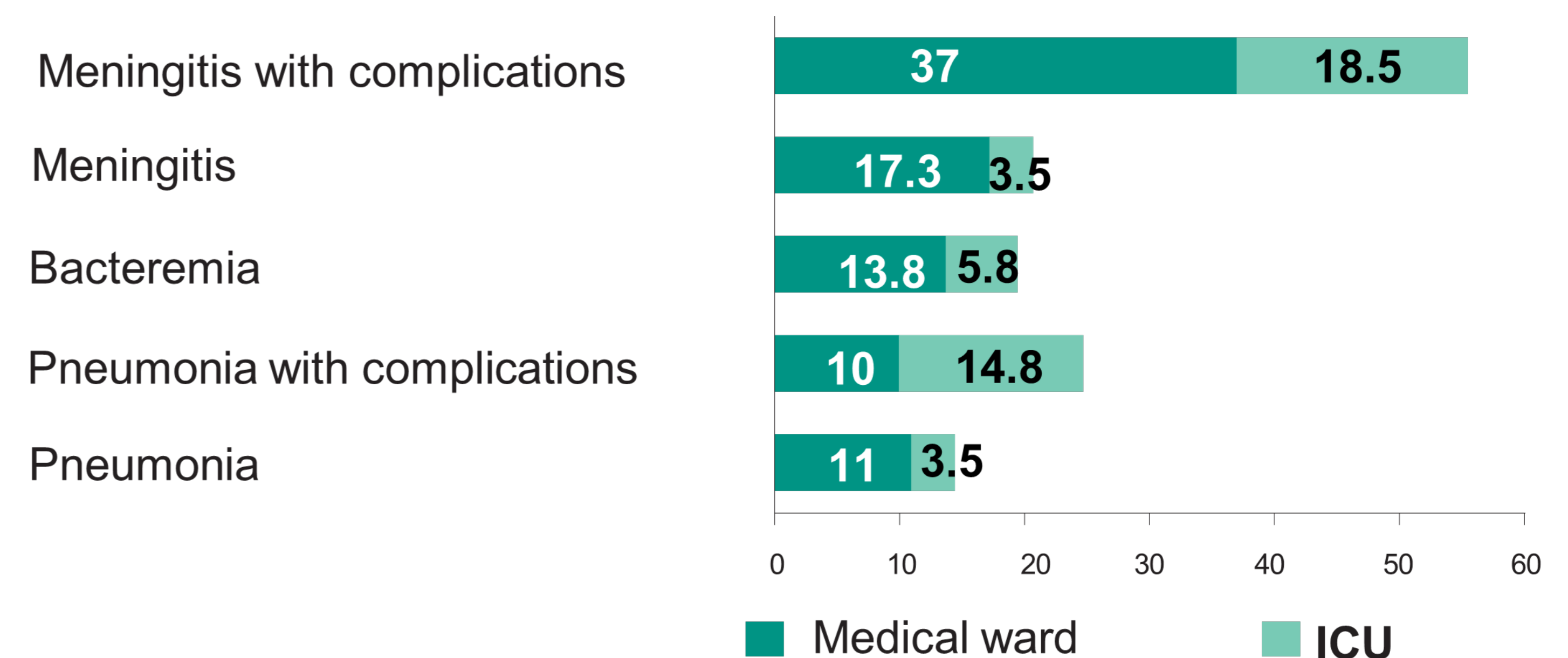


Table 1. Total costs in adults by pneumococcal clinical presentation, Peru, 2022

Pneumococcal Disease	Costs in US\$		
	Lab/imaging tests, professional services, and procedures	Medications	Total
Pneumonia			
Outpatient pneumonia	183	11	194
Inpatient pneumonia	1,872	167	2,038
Inpatient pneumonia with complications	8,255	2,195	10,450
Bacteremia			
Bacteremia	6,569	759	7,329
Meningitis			
Meningitis	4,157	1,621	5,778
Meningitis with complications	5,429	1,646	7,075
Meningitis with sequelae	2,705	427	3,132

Conclusions

- PD in adults was associated with substantial utilization of resources and direct medical costs
- HCRU and cost data reflecting local practices are critical to conducting economic evaluations that may inform pneumococcal vaccination policies
- By implementing immunization policies and supporting high vaccination rates in adults, it is possible to prevent these diseases and reduce the economic burden on healthcare systems and individuals