

# ECONOMIC BURDEN OF HOSPITALIZED PNEUMONIA FROM A PRIVATE HEALTHCARE SYSTEM PERSPECTIVE IN BRAZIL

## INTRODUCTION

Pneumococcal infection is one of the leading cause of infectious disease and death worldwide; however, current estimates of the disease burden varies widely<sup>1</sup>. In 2002, the World Health Organization (WHO) estimated that about 1.6 million cases of fatal pneumococcal disease occur annually worldwide, especially in children and the elderly. Based on the 2011 WHO data, infections of the upper airways was listed as the third leading cause of death worldwide (3.5 million deaths). Although most of these deaths occur in developing countries, such infections are the fifth leading cause of death in developed countries.

Pneumococcal disease can affect individuals at any age. However, young children and seniors as well as individuals of any age with underlying diseases are at higher risk of infection.<sup>2</sup>

## OBJECTIVES

This study aimed to evaluate the economic burden of hospitalized pneumonia and its associated costs in the Brazilian Private Health System.

## METHODS

- Orizon claims database containing over 18 million lives was used to identify hospitalized pneumonia episodes, in all ages, between October 2010 and December 2013.
- Pneumonia episodes were identified using ICD-10 codes of A40.3, B95.3, G00.1, J13, J15, J15.0, J15.3, J15.4, J15.8, J15.9, J18, J18.0, J18.9, J20.2, P23.3. Pneumonia costs included taxes and exchange, medicines, materials, medicinal gases, food, medical fees, exams, procedures and personal hygiene.
- All-cause costs were captured. Cost per pneumonia patients was also calculated.

## RESULTS

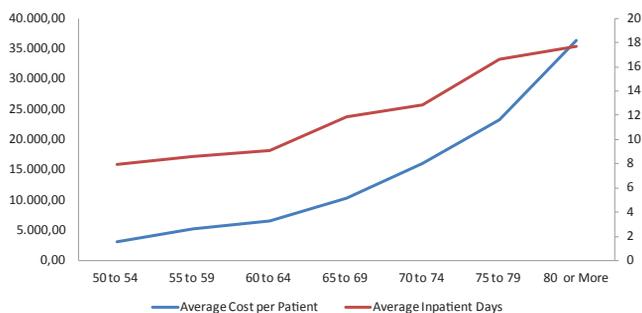
- 68,717 pneumonia patients were identified during the study period
- There were 16,227 patients who were hospitalized with a total of 17,781 hospitalizations. This represented an average of 1.1 hospitalization per patient.
  - 4% of patient had 2 hospitalizations, and 1.2% had three or more hospitalizations
  - The average cost per hospitalization was BRL 11,399.13
  - The average length of stay was 7.5 days
- There was 59,408 patients treated in an outpatient setting for a total of 73,838 visits. The average cost per visit was BRL 160.65.

- The total aggregate costs were BRL 202,687,872.71 for inpatients and BRL 11,862,426.93 for outpatients during the study period.
- The average cost of a pneumonia hospitalization is much higher than the costs of a general hospitalization (Table 1)

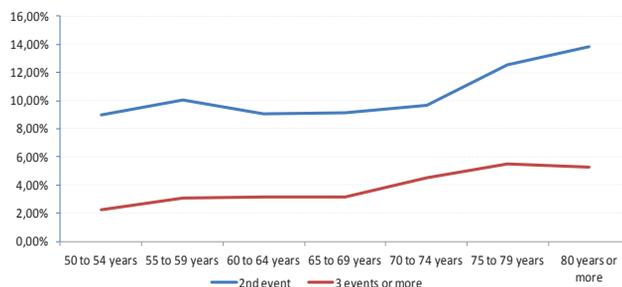
**Table 1 – Average cost of hospitalization and length of stay for pneumonia**

Groups	Number of Patients	Average Cost per Event (BRL)	Average Length of Stay
General	68,717.00	3,122.23	-
All ages - hospitalization	16,227.00	11,399.13	7.33
Patients >50 years old - hospitalization	8,048.00	18,800.13	12.09
All ages - outpatients	59,408.00	199.68	-

**Figure 1 – Average inpatient days and costs for pneumonia by age group**



**Figure 2 – Proportion of all pneumonia episodes (inpatient or outpatient) that are 2<sup>nd</sup> or 3<sup>rd</sup> episodes**



## CONCLUSIONS

Costs related to pneumonia hospitalization are high and represents a large impact to the total budget expenditures in the Brazilian private healthcare system. Given that the cost for a pneumonia hospitalization is much higher than an average hospitalization, there is a need to better implement pneumonia prevention strategies such as flu and pneumococcal vaccinations and smoking cessation.

## REFERENCES

1- Chambers S. Disease overview - pneumococcal infections. *Drugs in Context* 200/6;2:461-474.  
 2- WHO, 10 leading causes of death. <http://who.int/mediacentre/factsheets/fs310/en/>.  
 3- Jasti H, Mortensen EM, Obrosky DS, et al. Causes and risk factors for rehospitalization of patients hospitalized with community-acquired pneumonia. *Clin Infect Dis* 2008;46:550-6.