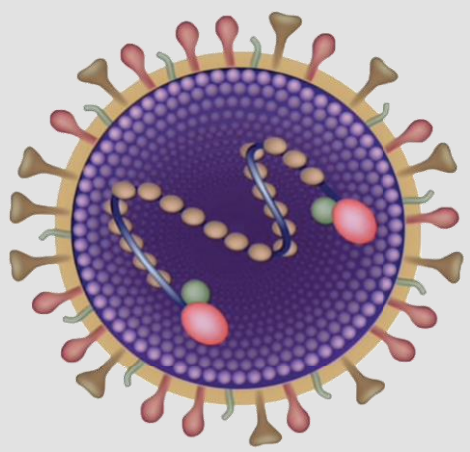


Use of Health Resources and Micro-Costing Analysis of Hospitalization for Bronchiolitis and Pneumonia in Pediatric Patients: A Retrospective Study From Brazilian Perspective

Gabriel Toffoli da Silva†; Ricardo Paranhos Pires Moreira†; Cassio Moreira Regist†; Ana Paula Lemos Paiva†.
† ASTRAZENECA BRAZIL | Contact: gabriel.silva@astrazeneca.com

INTRODUCTION



Respiratory syncytial virus (RSV) remains **the leading cause of hospitalizations** for bronchiolitis and pneumonia in infants worldwide resulting in **significant health and financial burden**, representing a major challenge for hospital services, and thus requiring substantial investments.^{1,2}

3 out of 5 hospitalizations for lower respiratory tract infections (LRTIs) in premature babies (among those < 35 weeks of gestational age) are **caused by RSV**.³

Estimating the costs involved in hospitalizations caused by RSV through microcosting is important for payers to evaluate the cost-effectiveness of preventives and therapeutical options.

METHODS

- 1
- An **exploratory study** of the **cost of the disease caused by RSV**, with a quantitative, retrospective, and micro-costing approach.
- 2
- Data collection was carried out at a **private hospital in the south of Brazil**.
- 3
- Inclusion criteria were: Patients **under 2 years old** with suspected and/or confirmed **bronchiolitis or pneumonia**, between 2016 and 2021.

- 4
- As it is a study from the perspective of supplementary health, only **direct medical costs** were considered, including medication costs, tests, procedures, and hospitalizations (both in the ward and intensive care unit, ICU). The values were established based on the **Brazilian Hierarchical Classification of Medical Procedures (CBHPM) table** and also according to the price list of the **Medicines Market Regulation Chamber (CMED)**.
- 5
- The comparison of categorical variables was performed using the χ^2 test. To test the statistical difference between the means, the Student's t test was used and for the medians, the Mann-Whitney test., as appropriate. The statistical significance level was set at 0.05.

RESULTS

240 patients

60% male and 40% female

5 months

Median age

	ICU (n=23)			Ward (n=217)			Comparison
	Total (BRL)	Average±SD (BRL)	Median (IIQ) (BRL)	Total (BRL)	Average±SD (BRL)	Median (IIQ) (BRL)	P-Value
DRUGS							
bronchodilators	539	24 ± 25	26 (IIQ 9-35)	4,221	20 ± 20	9 (IIQ 9-26)	p<0,01
corticosteroids	5,246	229 ± 428	26 (IIQ 0-191)	57,960	268 ± 356	136 (IIQ 0-393)	
antimicrobial	44,228	1,923 ± 4,471	245 (IIQ 72-1403)	76,948	355 ± 490	63 (IIQ 0-657)	
Other treatments	36,594	1,592 ± 1,287	2,091 (IIQ 178-2374)	50,655	234 ± 252	199 (IIQ 158-308)	
Total	86,608	3,766 ± 5,594	2,356 (IIQ 540-3854)	189,785	875 ± 814	644 (IIQ 302-1297)	
EXAMS							
RSV	10,750	468 ± 281	669 (IIQ 92-669)	73,729	340 ± 292	92 (IIQ 92-669)	p<0,01
Laboratory tests	31,916	1,388 ± 937	1,158 (IIQ 743-1778)	89,549	413 ± 486	161 (IIQ 68-600)	
Imaging exams	36,271	1,577 ± 1,570	917 (IIQ 491-2126)	73,355	339 ± 1,424	90 (IIQ 90-180)	
Total	78,936	3,433 ± 2,213	2,735 (IIQ 2,078-4,406)	236,633	1091 ± 1,615	867 (IIQ 393-1148)	
HOSPITALIZATION							
General hospitalization	79,189	3,444 ± 3,028	2,400 (IIQ 1,800-3,300)	773,297	3,564 ± 2,855	3,000 (IIQ 2400-4200)	p<0,01
ICU admission	292,470	12,717 ± 6,696	11,304 (IIQ 8,478-17,662)	-	-	-	
Total	371,660	16,160 ± 6,515	13,703 (IIQ 10,491-21,968)	773,297	3,564 ± 2,855	3,000 (IIQ 2400-4200)	
TOTAL	537,204	23,357 ± 11,327	20,717 (IIQ 15,138-29,753)	124,010	5,529 ± 3,871	4,877 (IIQ 3716-6508)	p<0,01

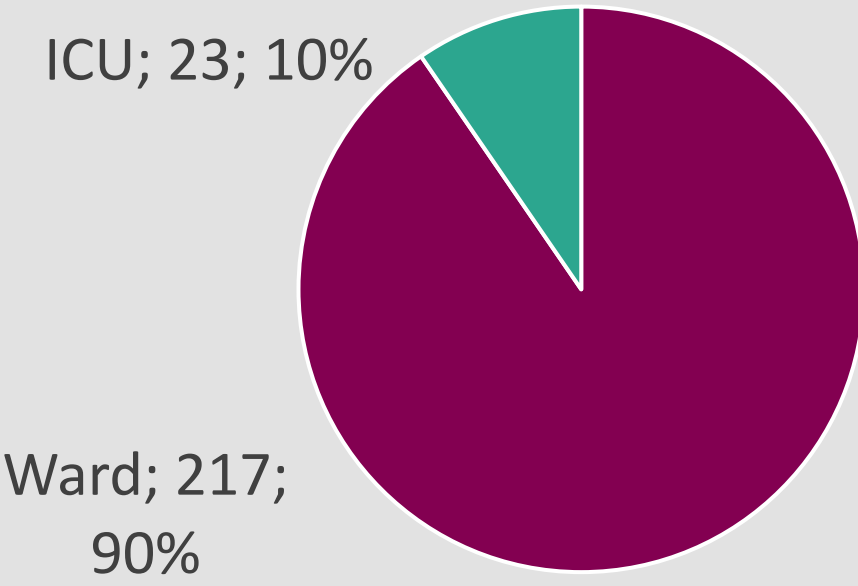
The total cost of hospitalization for bronchiolitis was 1.7 million BRL for the 240 patients (±7,237 BRL per patient). When comparing patients admitted to the ICU or not admitted to the ICU, it was noted that the costs were **significantly higher for patients admitted to the ICU**.



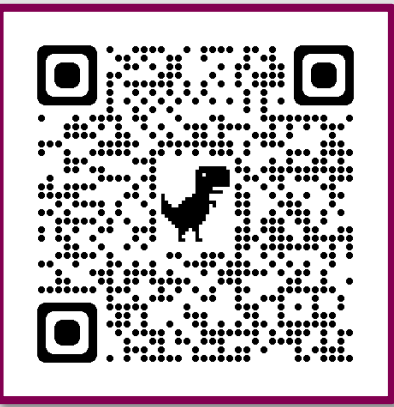
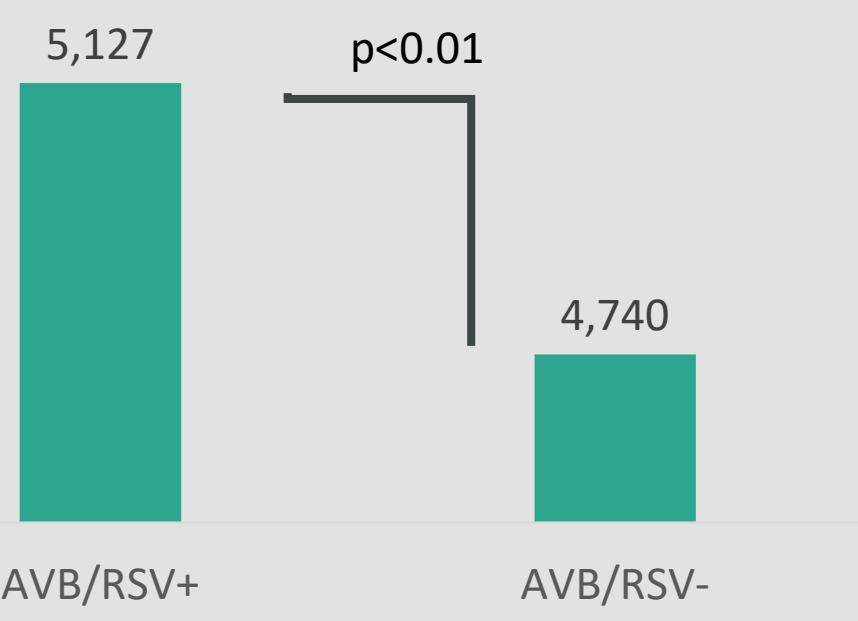
Average length of stay:

- 8 days in Ward
- 7 days in ICU

Number of patients:



Costs (BRL) were higher in patients presenting bronchiolitis and **RSV positive** in comparison with patients RSV negative.



Access the QR Code for information about the **health resources used**.

CONCLUSION

Compared to the flu, RSV causes up to 16 times more hospitalizations and emergency room visits in children <1 year⁴. So, hospitalization for bronchiolitis and pneumonia in infants represents **an important clinical and financial burden for the private health system in Brazil**.

AVB Acute Viral Bronchiolitis
RSV Respiratory Syncytial Virus
ICU Intensive Care Unit
BRL Brazilian Currency (Reais)

References: 1. Acero-Bedoya S. *et al.* Recent Trends in RSV Immunoprophylaxis: Clinical Implications for the Infant. *American Journal of Perinatology*. 2019;36(S 02):S63-S67; 2.Shi T. *et al.* Global, regional, and national disease burden estimates of acute lower respiratory infections due to respiratory syncytial virus in young children in 2015: a systematic review and modelling study. *Lancet*. 2017;390(10098):946-958; 3. Hall CB. *et al.* The burden of respiratory syncytial virus infection in young children. *N Engl J Med*. 2009;360:588–598; 4- Zhou H. *et al.* Hospitalizations associated with influenza and respiratory syncytial virus in the United States, 1993–2008. *Clin Infect Dis*. 2012;54:1427–36