

Clinical Evolution and Medical Resource Utilization in Adults With Respiratory Syncytial Virus Infection at a Community Hospital in Argentina

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INTRODUCTION

Respiratory syncytial virus (RSV) is an increasingly recognized cause of respiratory illness in adults, particularly in older individuals and those with comorbidities¹⁻⁴. In Latin America, RSV is prevalent among adults with respiratory infections, with hospitalization rates as high as 91.7% in some cases⁵. Despite this, there is limited data on the medical resource utilization for RSV in adults, especially in Argentina.

OBJECTIVE

The objective of this study was to **describe the hospital medical resource utilization among adult patients hospitalized with RSV infection** and to assess the impact of comorbidities on resource utilization and clinical outcomes. Additionally, **we describe the characteristics of patients hospitalized with influenza**.

METHODS

This **retrospective observational cohort** study utilized Hospital Alemán’s electronic healthcare database to identify adult patients (> 18 years old) hospitalized between **September 2010 and December 2023** who tested positive for RSV. **RSV diagnosis was confirmed through Respiratory Film Array or respiratory panel antigen tests**. Data on comorbidities, hospital resource use, and clinical outcomes were extracted and analyzed using multivariate regression models. The follow-up period extended from admission to hospital, up to patient discharge or death during hospitalization. An exploratory comparison was made with patients hospitalized for influenza during the same period.

RESULTS

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

Between 2010 and 2023, a total of 2,968 patients underwent testing with Respiratory Film Array or respiratory panel antigen tests, revealing 98 positive cases of RSV. Among these, we identified **72 hospitalized adults with confirmed RSV infections**. The majority occurred in 2023 (29/72) and 2022 (11/72). The mean age was **65.19 years** (SD 18.59), and 58.33% of them were female.

HEALTHCARE RESOURCE UTILIZATION AND CLINICAL OUTCOMES

The **median hospitalization stay was 8 days (IQR 3 – 16 days)**. **Intensive care unit (ICU) admission** was required in **37.50%** of cases, with 26.38% needing non-invasive ventilation (NIV) and 11.11% requiring mechanical ventilation (MV). Severe disease, defined as **ICU admission and/or NIV**, occurred in **43.10%** of patients, and mortality was 5.55%. Cardiovascular comorbidities were strongly associated with severe outcomes and ICU admission (OR 3.53, 95% CI 1.00-12.54, p=0.051). **Compared to Influenza patients, RSV cases showed longer hospital stays and higher ICU admission rates**.

DISCUSSION

Information on RSV in Latin America is scarce; however, our findings align with the limited data available, suggesting that RSV infections may be a significant cause of hospitalization in the region. **Our findings demonstrate significant medical resource utilization, prolonged hospital stays, and high rates of ICU admission and ventilation support among RSV patients**. Cardiovascular comorbidities were linked to worse clinical outcomes, emphasizing the need for targeted management in these high-risk groups. This is consistent with a systematic review that showed that RSV patients hospitalized with pulmonary, cardiac, and/or immunodeficiency conditions are at increased risk of complications following any respiratory tract infection⁶. **When compared to Influenza, RSV patients faced longer hospital stays and greater ICU admission rates**. This study was conducted in a single healthcare center with hospitalized RSV patients, limiting the generalizability of the results to broader populations and settings. Also, RSV testing could have been biased to include only patients with severe respiratory illness. Finally, due to the study design, we cannot confirm the exact cause of hospitalization.

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Table 1. Medical Resource Utilization

	RSV (n=72)		Influenza (n=226)	
	Nº, (%)	Mean (SD), days	Nº, (%)	Mean (SD), days
LoS	-	12.18 (12.91)	-	10.85 (19.10)
Oxygen	32 (44.44)	4.17 (6.67)	95 (42.04)	3.56 (7.13)
Antibiotics	54 (75)	7.99 (9.72)	173 (76.55)	8.5 (17.78)
CT scan	27 (37.50)	-	70 (30.97)	-
NIV	19 (26.38)	2.96 (6.39)	50 (22.12)	1.66 (4.33)
ICU	27 (37.50)	5.49 (11.73)	64 (28.32)	4.05 (12.36)
MV	8 (11.11)	2.43 (9.52)	31 (13.72)	2.28 (10.14)

LoS: Length of Stay RSV= respiratory syncytial virus; ICU= intensive care unit; NIV= non-invasive ventilation; MV= mechanical ventilation; CT= computed tomography; SD= standard deviation

CONCLUSIONS

RSV infection in adults leads to substantial hospital resource utilization in our setting, with a significant proportion requiring ICU care and ventilation support. Our results suggest the need for further preventive strategies, including vaccination, particularly in vulnerable adult populations. Further evidence and studies are needed to strengthen the findings.

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