

Respiratory tract infections associated with RSV: a cost analysis from the Brazilian Supplementary Healthcare System's perspective

Respiratory tract infections associated with RSV: a cost analysis from the Brazilian Supplementary Healthcare System's perspective

Magda Araujo¹, Rafael Aguiar Maciel¹, Graziela Bernardino¹, Igor Sampietri¹, Ana Carolina Padula², Roberta Arineli², Lessandra Michellin¹

¹ GSK, Rio de Janeiro, Brazil, ² Origin Health, São Paulo, Brazil

ABSTRACT

Objective: To estimate healthcare resource utilization and direct medical costs associated with respiratory syncytial virus (RSV)-related respiratory tract infections among older adults (≥ 50 years old) in Brazil from the perspective of the Brazilian Supplementary Healthcare System. **Methods:** A cost-of-illness analysis using a micro-costing approach was conducted. Healthcare resources were identified through a literature review and validated by a Delphi panel of Brazilian specialists. Resource utilization and costs related to the management of an RSV infection episode were estimated according to care setting (outpatient, emergency room, hospital ward, and intensive care unit), age group (50–59 years and ≥ 60 years), and comorbidity profile (none, cardiac, respiratory, and endocrine-metabolic). Direct medical costs included medical visits, diagnostic tests, procedures, hospitalizations, and medications. Costs were reported in 2026 Brazilian Reals (BRL). **Results:** RSV upper respiratory tract infections generated a mean cost of BRL 3,071.28 per patient, driven primarily by diagnostic testing. For RSV lower respiratory tract infections, costs increased with age, comorbidity profile, and level of care. Among adults aged 50–59 years, total mean costs ranged from BRL 11,878.29 to BRL 17,505.77, depending on the type of comorbidity. Among adults aged ≥ 60 years, mean costs ranged from BRL 12,557.04 in patients without comorbidities to BRL 25,487.57 in those with respiratory comorbidities. ICU admissions were the main cost driver, reaching BRL 84,601.02 per patient among adults aged ≥ 60 years with respiratory comorbidities. **Conclusions:** RSV-associated respiratory tract infections impose a substantial economic burden on Brazilian adults, particularly older adults aged ≥ 60 years with respiratory comorbidities.

Keywords: Respiratory Syncytial Virus Infections; Healthcare Costs; Cost of Illness; Hospitalization.

Recebido: 03/09/2026 **Aprovado:** 13/10/2026 **Publicado:** 23/10/2026

Conflitos de interesse: M.A., R.A.M., G.B., I.S. e L.M. são funcionários da GlaxoSmithKline (GSK). A.C. e R.A. são funcionários da Origin Health. A Origin Health presta serviços de análise de dados e consultoria a empresas farmacêuticas, incluindo a GSK. Este estudo foi patrocinado pela GSK.

Financiamento: GSK Brazil (VEO-003195).

Autor correspondente: Magda Araujo (magda.x.araujo@gsk.com)

RESUMO

Objetivos: Estimar a utilização dos recursos em saúde e os custos médicos diretos associados às infecções respiratórias relacionadas ao vírus sincicial respiratório (VSR) na população adulta (≥ 50 anos) no Brasil, sob a perspectiva do Sistema Brasileiro de Saúde Suplementar. **Métodos:** Foi realizada uma análise de custo da doença utilizando microcusteio. A identificação dos recursos em saúde foi realizada por revisão da literatura, seguida de validação por um painel de especialistas brasileiros. A utilização de recursos e os custos relacionados ao manejo de episódios de infecção por VSR foram estimados de acordo com o nível de atenção à saúde (ambulatorial, pronto-socorro, enfermagem hospitalar e unidade de terapia intensiva), faixa etária (50–59 anos e ≥ 60 anos) e presença de comorbidade (ausência de comorbidades, doenças cardíacas, respiratórias e endocrinometabólicas). Os custos médicos diretos incluíram consultas médicas, exames diagnósticos, procedimentos, internações e medicamentos. Todos os custos foram expressos em Reais Brasileiros (R\$) referente ao ano de 2026. **Resultados:** As infecções do trato respiratório superior por VSR resultaram em um custo médio de R\$ 3.071,28 por paciente, impulsionado principalmente por exames diagnósticos. Para infecções do trato respiratório inferior por VSR, os custos aumentaram de acordo com a idade, perfil de comorbidade e nível de cuidado. Entre adultos de 50-59 anos, os custos médios totais variaram de R\$ 11.878,29 a R\$ 17.505,77, dependendo do tipo de comorbidade. Entre adultos de ≥ 60 anos, os custos médios variaram de R\$ 12.557,04 em pacientes sem comorbidades a R\$ 25.487,57 naqueles com comorbidades respiratórias. As admissões na UTI foram o principal fator de custo, atingindo R\$ 84.601,02 por paciente entre adultos de ≥ 60 anos com comorbidades respiratórias. **Conclusões:** Infecções do trato respiratório associadas ao VSR em adultos impõem uma carga econômica substancial no contexto do Sistema Brasileiro de Saúde Suplementar, especialmente em adultos de ≥ 60 anos com comorbidades respiratórias.

Palavras-chave: Infecções por Vírus Respiratório Sincicial; Custos de Saúde; Custo da Doença; Internação.

INTRODUCTION

Respiratory syncytial virus (RSV) is an enveloped, single-stranded RNA virus recognized as a major causative agent of seasonal respiratory infections in individuals of all age groups. Although RSV has historically been predominantly associated with clinical presentations in the pediatric population, recent evidence has consistently demonstrated its impact on morbidity and mortality among the elderly.¹

Although most RSV infections are mild and self-limiting, substantial morbidity and mortality can occur in vulnerable populations, especially at the extremes of age and among individuals with conditions such as chronic obstructive pulmonary disease (COPD) or heart failure. These populations are at increased risk of severe RSV disease outcomes, including hospitalization and death.^{1,2}

The burden of RSV-related morbidity and mortality among elderly remains difficult to measure, which often results in an underestimation of its actual epidemiological impact. In industrialized countries, the annual incidence of RSV infection among elderly (≥ 60 years) is approximately 600.7 cases per 100,000 person-years, with hospitalization rates of around 157 per 100,000 person-years. In the United States, it has been estimated that by the year 2023, RSV would be responsible for approximately 100,000 to 160,000 hospitalizations per year among adults aged 60 and older. In-hospital mortality rates can be high, especially in developing countries, reaching up to 9.1%.^{3,4}

In Brazil, RSV cases generally peak in the second quarter of the year, with the highest incidence in the South and Southeast regions. In a Brazilian study, 1,465 cases of severe acute respiratory infection in adults aged 60 years or older were attributed to RSV among the 355,230 cases observed between 2022 and 2023. Although the overall hospitalization rate was low, 2.3 per 100,000 inhabitants, a high frequency of severe clinical outcomes was observed, with 30.4% of patients requiring admission to an intensive care unit (ICU), while the mortality rate reached 24.9%.⁵

Given the growing clinical and economic significance of RSV among the elderly, and the scarcity of evidence on healthcare resource utilization and direct medical costs associated with RSV infection in the Brazilian Supplementary Healthcare System, this study aimed to estimate the use of healthcare resources and the direct medical costs associated with RSV-related respiratory tract infections in Brazil. Costs were subsequently evaluated according to the age group and comorbidity profile from the Brazilian Supplementary Healthcare System's perspective.

METHODS

Study Design

To understand the burden of RSV-associated respiratory infections among adults in Brazil, a disease cost analysis was conducted using cross-sectional cost-of-illness analysis using a bottom-up micro-costing approach. A set of resources was defined using patient management strategies proposed in guidelines and the available literature and was further validated by experts with experience in the field. Costs were defined using official price lists. The analysis was conducted solely from the Brazilian Supplementary Healthcare System's perspective.

Resource utilization and the respective costs were assessed according to the manifestation of the infection. Upper respiratory tract infection was defined as the presence of symptoms such as rhinorrhea, pharyngitis, cough, headache, fatigue, and fever, when these manifestations are limited to the upper airways and occur in the absence of signs or symptoms indicative of lower respiratory tract involvement.⁶ Lower respiratory tract infection was defined as at least two lower respiratory symptoms or signs (including at least one lower respiratory sign) or at least three lower respiratory symptoms, lasting 24 hours or longer. Lower respiratory symptoms and signs included dyspnea, wheezing, sputum production, tachypnea, hypoxemia (including reduced oxygen saturation), crackles on auscultation, and radiographic findings consistent with lower respiratory tract involvement, when available.⁷

Micro-costing

A micro-costing model was developed to estimate healthcare resource utilization and direct medical costs associated with the management of a single acute RSV-related respiratory tract infection episode in adult patients. To determine resource utilization, only those resources used for the management of the acute infection until its clinical resolution were considered, without a predefined fixed time limit. Given that the analysis was conducted from the Brazilian Supplementary Healthcare System's perspective, only direct medical costs were considered.

Initially, a list of resources was defined based on the available literature and disease guidelines.^{8–11} Healthcare resources were defined by the setting of disease care (outpatient, emergency department, inpatient ward, and ICU), including medical consultations, hospital admissions, laboratory and imaging tests, procedures, and medications. Episode-level costs were estimated by multiplying the quantity of each resource by its corresponding unit cost and aggregating all costs across the patient pathway. Detailed resource quantities, treatment duration assumptions, and medication dosing assumptions are provided in the Supplementary Material, and are available from the authors upon request. Resource utilization and costs were stratified by age (50–59 years and ≥60 years) and by the presence of comorbidities (none, cardiac, respiratory, and/or endocrine-metabolic). These age categories were selected to capture the increasing clinical risk associated with aging, while accounting for

differences in disease severity and outcomes related to comorbidities. The 50–59-year age group was restricted to patients with comorbidities, reflecting the greater clinical relevance of RSV in this subgroup. The presence of comorbidities was defined according to the following criteria: cardiac comorbidity, defined as chronic heart failure, other heart diseases, systemic hypertension, and coronary artery disease; respiratory comorbidity, any chronic respiratory or pulmonary disease (including chronic obstructive pulmonary disease and asthma); and endocrine-metabolic comorbidity, defined as type 1 or type 2 diabetes and advanced liver or kidney disease.

The data were used to calculate the proportion of patients utilizing each healthcare resource and the mean resource use per acute RSV episode, from symptom onset until clinical resolution. Resource utilization included the frequency of outpatient visits, emergency department visits, hospitalizations, and ICU admissions, as well as hospital and ICU length of stay when applicable. All costs were estimated on a per-episode basis and do not represent annual costs. Costs were presented as the average expenditure per patient, reported in Brazilian real (BRL) for the year 2026.

Unit costs were estimated using official Brazilian sources. Consultations, tests, and procedures were valued based on the *Brazilian Hierarchical of Medical Procedures Classification* (CBHPM), while drug prices were obtained from the *Drug Market Regulation Chamber* (CMED), considering the factory price plus 18% ICMS, in line with the practice of the Supplementary Healthcare System. For some hospital services, cost data from Planserv was also used when applicable.

Validation by Experts

The list of resources considered for disease management was also validated by Brazilian specialists. In total, nine specialists participated in the study. Physicians were eligible to participate if they met the following criteria: clinical practice in infectious diseases, pulmonology, cardiology, intensive care, or emergency medicine; more than five years of medical practice; and mandatory experience in the management of RSV, defined as the clinical care of patients with viral respiratory tract infections including RSV at multiple levels of care complexity, including patients with chronic comorbidities and experience with adult immunization. Academic experience, including scientific publications on viral respiratory infections, was considered desirable but not mandatory. Specialists who were not working in the Supplementary Healthcare System were excluded.

The specialists completed a structured questionnaire independently and anonymously followed by moderated 3-hour virtual consensus meetings to validate estimates of resource utilization. Given the complexity and granularity of the micro-costing model, which included multiple clinical scenarios, healthcare settings, and resource categories, consensus was not based on predefined quantitative agreement thresholds. Instead, a structured qualitative consensus process was adopted. During the consensus meeting, participants reviewed aggregated responses, discussed areas of disagreement, and justified their estimates based on clinical experience and routine

practice. For quantitative inputs, such as the probability and frequency of resource use, convergence was defined as a reasonable level of alignment among experts achieved through moderated discussion and clinical judgment. For qualitative inputs, including care pathways and resource selection, consensus was defined as general agreement among participants supported by clinical plausibility and consistency with real-world practice. Discrepancies were addressed through iterative discussion until a stable consensus was reached. Both stages covered the full spectrum of management of RSV-associated respiratory tract infections in adults, including patient profiles, diagnostic testing patterns, outpatient and emergency care for upper and lower respiratory tract infections, and hospital management in the emergency department, general wards, and the ICU.

Specialists were asked about the number of patients seen per month, and responses ranged from one to five. In the specialist' opinion, estimates of the number of patients treated for RSV infection are limited by the low frequency of testing in clinical practice. Resource utilization estimates provided by the specialists were reviewed and consolidated through expert consensus. The care pathways reflected the management of laboratory-confirmed RSV-associated respiratory tract infections in adults. The agreed-upon resource utilization estimates were subsequently used to estimate direct medical costs.

RESULTS

Healthcare Resource Utilization and Costs related to upper respiratory tract infections associated with RSV

According to experts, mild cases are rarely tested, so it is generally assumed that RSV-associated respiratory infections primarily involve the lower respiratory tract. However, because RSV is perceived as a milder upper respiratory tract illness, the costs may be underestimated.

In this analysis, it was assumed that RSV-associated upper respiratory tract infections are treated on an outpatient basis or in an emergency department. Table 1 shows the average cost per episode of infection per patient with this type of disease presentation. Costs are primarily driven by diagnostic tests, totaling BRL 3,071.28 per patient.

Table 1. Average costs and healthcare resource utilization for RSV-related upper respiratory tract infections in outpatient and emergency healthcare settings

Consultations daily rates	Utilization Rate (%)	Quantity	Unit cost (BRL)	Weight cost (BRL)
Specialist Consultations	54	1	236.90	127.93
Consultations with a general practitioner	46	1	236.90	108.97
Laboratory tests	Utilization Rate (%)	Quantity	Unit cost (BRL)	Total cost (BRL)
Real-time PCR for respiratory syncytial virus	30	1	785.49	235.65
Multiplex identification by PCR panel	0	1	2,696.52	0.00
SARS-CoV-2 (Coronavirus COVID-19) - RT search - PCR	40	1	514.16	205.66
Real-time PCR for influenza A and B viruses	33	1	1,187.94	392.02
Real-time PCR for parainfluenza and influenza viruses (each)	0	0	760.60	0.00
RSV Antigen Test	28	1	760.60	212.97
Influenza Antigen Test	50	1	1,187.94	593.97
Antigen test for Covid-19	75	1	244.77	183.58
Complete blood count	75	1	26.26	19.69
Glucose	67	1	11.86	7.95
Urea	67	1	11.86	7.95
Creatinine	50	1	11.86	5.93
Sodium	13	1	11.86	1.54
Potassium	13	1	11.86	1.54
Creative protein	75	1	65.50	49.13
Procalcitonin	3	1	455.91	13.68
Liver function tests (bilirubin's, protein electrophoresis, AF, AST, ALT, and Gamma-PGT)	7	1	153.24	10.73
Coagulogram (TS, CT, loop test, clot retraction, platelet count, prothrombin time, thromboplastin time, activated partial)	7	1	74.36	5.20
Imaging Exams electrophysiological Oximetry	Utilization Rate (%)	Quantity	Unit cost (BRL)	Weight cost (BRL)
Sinus X-ray	13	1	120.70	15.69
Chest X-ray	55	1	119.28	65.61
Chest CT scan	34	1	1,290.07	438.62
Sinus CT	22	1	1,269.82	279.36
Pulse oximetry	80	1	109.88	87.91
TOTAL			3,071.28	

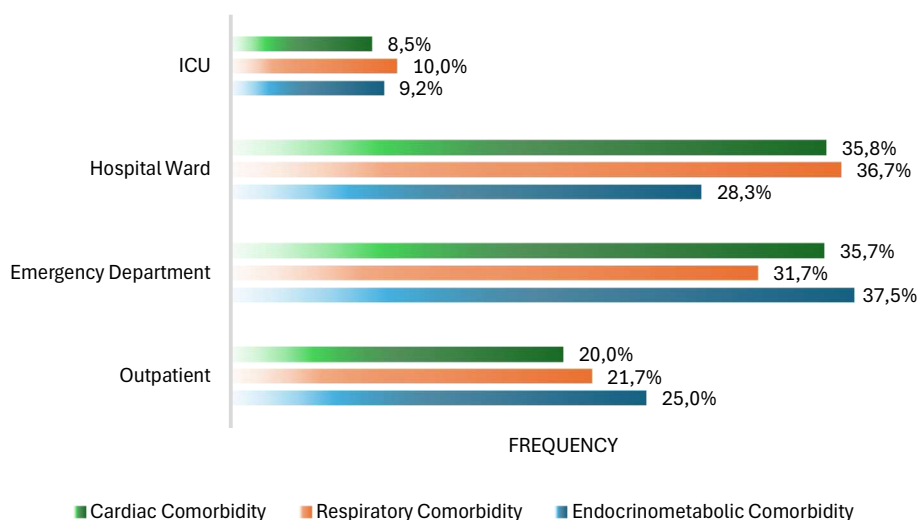
BRL: Brazilian real.

Reference: CBHPM 2026

Healthcare Resource Utilization and Costs associated with lower respiratory tract infections linked to RSV

The costs associated with the management of RSV lower respiratory tract infections were estimated by age group, presence of comorbidities, and care setting. Hospitalization was most required for individuals aged 60 years or older and for those with respiratory comorbidities, regardless of age group. Figure 1 shows the proportion of patients in each group of interest who require care in different settings, based on the opinion of Brazilian specialists.

A - 50 TO 59 YEARS OLD



B - ≥ 60 YEARS OLD

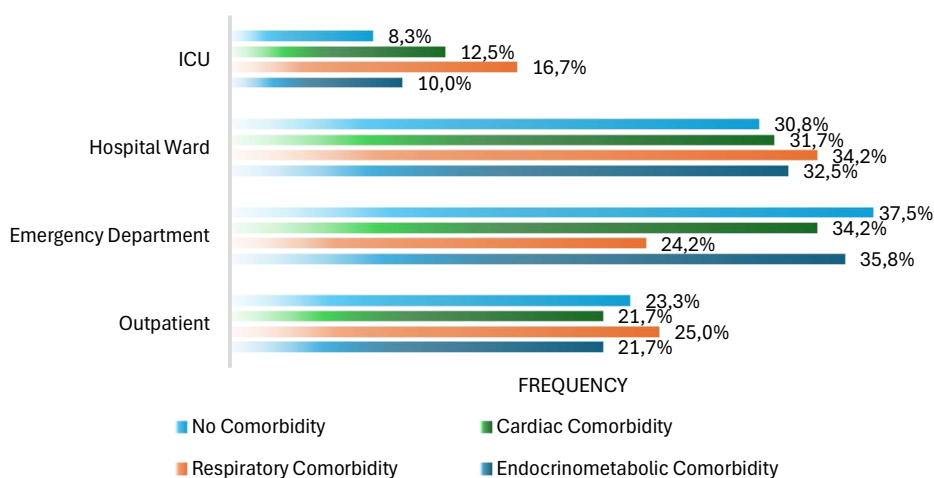


Figure 1. Proportion of patients with lower respiratory tract infection associated with RSV according to the care context and according to the specialists' opinion.

ICU: intensive care unit.

Table 2 shows the average cost per patient with RSV lower respiratory tract infection. A gradient in the estimates can be observed as the patients' age and the level of care required increase.

Among patients aged 50-59 years, an increase in the average cost was observed, ranging from BRL 11,878.29 in patients with endocrine-metabolic comorbidities to BRL 14,245.62 in those with cardiac comorbidities and to BRL 17,505.77 in individuals with respiratory comorbidities (Table 2). Costs were higher among patients with cardiac and respiratory comorbidities.

A similar trend was observed in patients aged ≥ 60 years (Table 2). Compared to patients without comorbidities, endocrine-metabolic conditions increased the total cost per episode of RSV infection by approximately 27.1%, while cardiac comorbidities increased costs by 39.4%. Respiratory comorbidities showed the greatest increase, more than doubling the total cost compared to patients without comorbidities (BRL 25,487.57 vs. BRL 12,557.04).

This progressive increase was also reflected in hospitalization costs, particularly for ICU admissions, suggesting that respiratory comorbidities are associated with greater resource utilization and a greater overall economic impact compared with patients without comorbidities (Table 2).

Table 2. Average cost associated with RSV- related lower respiratory tract infections by age group and presence of comorbidities.

	Outpatient setting (BRL)	Emergency department (BRL)	Inpatient care in a general ward (BRL)	ICU admission (BRL)	Total (BRL)
50–59 years					
Endocrine-metabolic comorbidity	3,473.63	4,578.63	16,979.76	48,894.20	11,878.29
Cardiac comorbidity	3,481.40	4,632.32	20,916.59	51,788.66	14,245.62
Respiratory comorbidity	4,324.90	5,644.77	23,484.22	61,703.17	17,505.77
≥ 60 years or older					
No comorbidities	3,316.53	4,663.31	18,232.88	52,951.64	12,557.04
Endocrine-metabolic comorbidities	3,945.78	5,026.94	21,349.25	63,654.79	15,960.22
Cardiac comorbidity	4,182.82	5,149.37	21,527.89	64,185.12	17,505.95
Respiratory comorbidity	5,019.41	6,114.60	25,331.26	84,601.02	25,487.57

BRL: Brazilian real; ICU: Intensive care unit.

DISCUSSION

RSV is increasingly recognized as important cause of morbidity, hospitalization, and mortality among adults, mainly the elderly and people with chronic cardiopulmonary conditions.¹ The present study is consistent with international evidence in demonstrating that respiratory tract infections associated with RSV impose a substantial clinical and economic burden on Brazilian adults, especially among individuals aged ≥ 60 years and those with chronic cardiopulmonary conditions.^{2,3} Higher costs were consistently associated with increased disease severity and greater use of healthcare resources, particularly hospitalization and ICU admission.

These findings reinforce the growing recognition that RSV should no longer be considered a predominantly pediatric pathogen.^{1,3,12,13} In our analysis, ICU admissions represented the main cost driver across all evaluated subgroups, with estimated costs exceeding BRL 84,000 per patient among adults aged ≥ 60 years with respiratory comorbidities. Within this subgroup, ICU-related costs were more than three times the costs of general ward hospitalization and were substantially higher than the costs of outpatient management of the condition. These findings suggest that severe cases of RSV may contribute disproportionately to healthcare expenditures within the Brazilian Supplementary Healthcare System.

The progressive increase in costs, according to age group and comorbidity profile, is clinically plausible. Older adults are more susceptible to infections due to immunosenescence, reduced respiratory capacity, and a high prevalence of chronic comorbidities, factors that are associated with increased susceptibility to severe RSV infection and complications.^{1-3,13,14} Respiratory comorbidities were associated with a higher economic burden in both age groups and more than doubled the total cost among adults aged ≥ 60 years compared with those without comorbidities. Chronic respiratory diseases such as COPD and asthma are risk factors for severe lower respiratory tract infections associated with RSV, exacerbations, respiratory failure, and prolonged hospitalizations.^{1,2,14} These patients often require more intensive diagnostic workup, oxygen therapy, ventilatory support, and ICU admission, which may explain the higher resource utilization observed in the present analysis.^{14,15}

The presence of cardiac comorbidities also suggests increased healthcare costs, especially among the elderly. This finding is consistent with evidence linking RSV infection to cardiovascular complications, such as decompensated heart failure, arrhythmias, and ischemic events, which may contribute to clinical deterioration and hospitalization.¹⁶ The presence of endocrine-metabolic conditions also led to moderate increases in costs, albeit to a lesser extent, possibly reflecting the greater clinical complexity and vulnerability of these patients.¹⁷

An additional finding of this study relates to the possible underestimation of the RSV burden among adults. Upper respiratory tract infections are rarely tested for RSV in routine clinical practice, especially in mild cases managed on an outpatient basis. Limited diagnostic testing, combined with historically low clinical suspicion of RSV in

adults and the absence of specific antiviral therapy, may contribute to underdiagnosis. Consequently, the true clinical and economic impact of RSV-associated disease in adults may be underestimated both in clinical practice and in administrative databases.¹⁸ Although upper respiratory tract infections generated lower direct costs in the present analysis, their economic impact may be substantial, given the likely high incidence and resource utilization associated with their management.³

The findings of this study are consistent with previously published studies that assessed the RSV burden in adults.^{2–5,19–21} International evidence has shown that RSV-associated hospitalizations among older adults generate substantial healthcare costs, especially in high-risk populations.^{2,3} In the United States, prior to large-scale vaccination, RSV was responsible for approximately 100,000 to 160,000 hospitalizations annually among adults aged ≥ 60 years.⁴ Brazilian studies have also reported high rates of ICU admission and mortality associated with RSV infection in adults.^{5,19} The present study complements current data by providing detailed micro-costing estimates from the Brazilian Supplementary Healthcare System's perspective.

These findings may have important implications for health planning and preventive strategies in Brazil.^{5,22} The substantial costs associated with hospitalization and ICU admission suggest that interventions capable of reducing severe RSV disease could lower healthcare expenditures and alleviate seasonal pressure on emergency departments, inpatient wards, and intensive care units.^{13,22–26} In this context, approved RSV vaccines for older adults represent a potential opportunity to reduce both the clinical and economic burden, especially among individuals with chronic cardiopulmonary conditions who appear to be at higher risk of severe disease and increased use of healthcare.^{3,4,25}

From a health economics perspective, the current findings may support future cost-effectiveness analyses and discussions regarding reimbursement for RSV vaccination in adults within the Brazilian Supplementary Healthcare System. These findings may also be relevant to other middle-income countries undergoing demographic transition, characterized by rapid population aging and an increasing prevalence of chronic diseases, such as Brazil.^{27,28}

This study has limitations that should be considered when interpreting the results. First, the analysis was based on a micro-costing model informed by expert opinion and a literature review, rather than actual patient-level data. Although validation by experts in the field allowed for the incorporation of clinical practice patterns from different Brazilian regions, local variations in practice and access to healthcare may not have been fully captured. Second, only direct medical costs from the perspective of supplemental health insurance were included; indirect costs, including productivity losses, caregiver burden, long-term functional decline, and broader social impacts, were not assessed and may substantially increase the true economic impact of RSV. Third, the low frequency of RSV testing in adults may contribute to an underestimation of the disease burden, especially in outpatient settings. Finally, the study did not assess

the impact of co-infections, regional differences in RSV seasonality, or temporal variations in healthcare utilization.

CONCLUSIONS

Overall, the present study suggests that RSV respiratory tract infections impose a substantial economic burden on Brazilian adults, especially older adults (≥ 60 years-old) with respiratory comorbidities. These findings may support future economic evaluations and inform preventive strategies, including vaccination policies, within the Brazilian Supplementary Healthcare System.

ACKNOWLEDGEMENTS AND AUTHOR CONTRIBUTIONS

Acknowledgements: Editorial support, including coordination of manuscript reviews and approval management, was provided by Costello Medical. This support was funded by GSK.

Author Contributions: All authors made substantial contributions to the work reported.

- **Conceptualization:** M.A., R.A.M., I.S., and G.B.
- **Methodology:** M.A. and R.A.M
- **Validation:** G.B. and L.M.
- **Formal Analysis:** M.A., L.M., R.A.M., A.C., and R.A.
- **Data Curation:** M.A., L.M., A.C., and R.A.
- **Writing – Original Draft Preparation:** A.C. and R.A.
- **Writing – Review and Editing:** M.A., R.A.M., G.B., L.M., and I.S.

All authors contributed to the development, revision, and/or critical review of the manuscript. All named authors meet the authorship criteria established by the International Committee of Medical Journal Editors (ICMJE), take responsibility for the integrity of the work, and have approved this version for publication.

Funding: This research was funded by GSK Brazil (VEO-003195).

Conflict of Interest Statement: M.A., R.A.M., G.B., I.S., and L.M. are employees of GlaxoSmithKline (GSK). A.C. and R.A. are employees of Origin Health. Origin Health provides data analysis and consulting services to pharmaceutical companies, including GSK. This study was sponsored by GSK.

As the journal does not accept supplementary material, all supporting information is available from the authors upon request.

REFERENCES

1. Wildenbeest JG, Lowe DM, Standing JF, et al. Respiratory syncytial virus infections in adults: a narrative review. *Lancet Respir Med* 2024; 12: 822–836. DOI: [10.1016/S2213-2600\(24\)00255-8](https://doi.org/10.1016/S2213-2600(24)00255-8).
2. Nguyen-van-tam JS, Leary MO, et al. Burden of respiratory syncytial virus infection in older and high-risk adults: a systematic review and meta-analysis of the evidence from developed countries. *Eur Respir Rev* 2022; 31: 1–14. DOI: [10.1183/16000617.0105-2022](https://doi.org/10.1183/16000617.0105-2022).
3. Kenmoe S, Nair H. The disease burden of respiratory syncytial virus in older adults. *Curr Opin Infect Dis* 2024; 37: 129–136. DOI: [10.1097/QCO.0000000000001000](https://doi.org/10.1097/QCO.0000000000001000).
4. Payne AB, Watts JA, Mitchell PK, et al. Respiratory syncytial virus (RSV) vaccine effectiveness against RSV-associated hospitalizations and emergency department visits among adults aged 60 years and older in the USA, October 2023 to March 2024: a test-negative design analysis. *The Lancet* 2024; 404: 1547–1559. DOI: [10.1016/S0140-6736\(24\)01738-0](https://doi.org/10.1016/S0140-6736(24)01738-0).
5. Bierrenbach AL, Ranzani OT. Burden of respiratory syncytial virus in older adults in Brazil: insights from national surveillance data for the 2022–2023 period. *Jornal Brasileiro de Pneumologia* 2025; 51: 3–9. DOI: [10.36416/1806-3756/e20250068](https://doi.org/10.36416/1806-3756/e20250068).
6. U.S. Centers for Disease Control and Prevention. Clinical Overview of RSV, <https://www.cdc.gov/rsv/hcp/clinical-overview/index.html> (2026, accessed June 14, 2026).
7. Ison MG, Papi A, Athan E, et al. Efficacy, safety, and immunogenicity of the AS01E-adjuvanted respiratory syncytial virus prefusion F protein vaccine (RSVPreF3 OA) in older adults over three respiratory syncytial virus seasons (AReSVi-006): a multicenter, randomized, observer-blinded, placebo-controlled, phase 3 trial. *Lancet Respir Med* 2025; 13: 517–529. DOI: [10.1016/S2213-2600\(25\)00048-7](https://doi.org/10.1016/S2213-2600(25)00048-7).
8. Carrico J, Hicks KA, Wilson E, et al. The Annual Economic Burden of Respiratory Syncytial Virus in Adults in the United States. *Journal of Infectious Diseases* 2024; 230: e342–e352. DOI: [10.1093/infdis/jiad559](https://doi.org/10.1093/infdis/jiad559).
9. Demartino JK, Lafeuille MH, Emond B, et al. Respiratory Syncytial Virus-Related Complications and Healthcare Costs Among a Medicare-Insured Population in the United States. *Open Forum Infectious Diseases* 2023; 10 (5). DOI: [10.1093/ofid/ofad203](https://doi.org/10.1093/ofid/ofad203).

10. Brazil. Ministry of Health. Respiratory Syncytial Virus, <https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/v/vsr> (accessed June 14, 2026).
11. Foley DA, Phuong LK. RSV: an update on prevention and management. *Aust Prescr* 2025; 48: 34–39. DOI: [10.18773/austprescr.2025.018](https://doi.org/10.18773/austprescr.2025.018).
12. Hall CB. Respiratory Syncytial Virus and Parainfluenza Virus. *N Engl J Med. European Respiratory Review* 2001; VOL. 344: NO. 25. DOI: [10.1056/NEJM200106213442507](https://doi.org/10.1056/NEJM200106213442507).
13. Havers FP, Whitaker M, Melgar M, et al. Burden of Respiratory Syncytial Virus–Associated Hospitalizations in U.S. Adults, October 2016 to September 2023. *JAMA Netw Open* 2024; 7: e2444756. DOI: [10.1001/jamanetworkopen.2024.44756](https://doi.org/10.1001/jamanetworkopen.2024.44756).
14. Penders Y, Brusselle G, Falsey AR, et al. Burden of Respiratory Syncytial Virus Disease in Adults with Asthma and Chronic Obstructive Pulmonary Disease: A Systematic Literature Review. *Curr Allergy Asthma Rep* 2025; 25: 14. DOI: [10.1007/s11882-025-01194-w](https://doi.org/10.1007/s11882-025-01194-w).
15. Prasad N, Newbern EC, Trenholme AA, et al. The health and economic burden of respiratory syncytial virus-associated hospitalizations in adults. *PLoS One* 2020; 15: e0234235. DOI: [10.1371/journal.pone.0234235](https://doi.org/10.1371/journal.pone.0234235).
16. Penders Y, Falsey AR, Bhatt DL, et al. Burden and severity of respiratory syncytial virus infection in adults with cardiovascular diseases: A systematic literature review. *Prog Cardiovasc Dis* 2025; 92: 130–143. DOI: [10.1016/j.pcad.2025.06.010](https://doi.org/10.1016/j.pcad.2025.06.010).
17. Havers FP, Whitaker M, Melgar M, et al. Characteristics and Outcomes Among Adults Aged ≥60 Years Hospitalized with Laboratory-Confirmed Respiratory Syncytial Virus — RSV-NET, 12 States, July 2022–June 2023. *MMWR Morb Mortal Wkly Rep* 2023; 72: 1075–1082. DOI: [10.15585/mmwr.mm7240a1](https://doi.org/10.15585/mmwr.mm7240a1).
18. Alfano F, Bigoni T, Caggiano FP, et al. Respiratory Syncytial Virus Infection in Older Adults: An Update. *Drugs Aging* 2024; 41: 487–505. DOI: [10.1007/s40266-024-01118-9](https://doi.org/10.1007/s40266-024-01118-9).
19. Faico-Filho KS, Perosa AHS, Bellei N. Epidemiological and clinical insights into respiratory syncytial virus among hospitalized adults and healthcare workers in Brazil: A retrospective study. *Infect Dis Now* 2025; 56: 105190. DOI: [10.1016/j.idnow.2025.105190](https://doi.org/10.1016/j.idnow.2025.105190).

20. Marijic P, Kliemt R, Krammer M, et al. Costs and Complications of Respiratory Syncytial Virus and Acute Respiratory Infections in the Adult Population: Analysis of a German Claims Database. *Pharmacoecoon Open* 2025; 9: 445–459. DOI: [10.1007/s41669-025-00565-3](https://doi.org/10.1007/s41669-025-00565-3).
21. Buitrago G, González-Caicedo P, Reyes-Sanchez JM, et al. Economic Burden of Respiratory Syncytial Virus Infection in Colombia: A Nationwide Cost-of-Illness Study. *J Health Econ Outcomes Res* 2025; 12 (2). DOI: [10.36469/001c.151678](https://doi.org/10.36469/001c.151678).
22. Shi T, Denouel A, Tietjen AK, et al. Global Disease Burden Estimates of Respiratory Syncytial Virus–Associated Acute Respiratory Infection in Older Adults in 2015: A Systematic Review and Meta-Analysis. *J Infect Dis* 2020; 222: S577–S583. DOI: [10.1093/infdis/jiz059](https://doi.org/10.1093/infdis/jiz059).
23. Averin A, Atwood M, Sato R, et al. Attributable Cost of Adult Respiratory Syncytial Virus Illness Beyond the Acute Phase. *Open Forum Infect Dis* 2024; 11 (3). DOI: [10.1093/ofid/ofae097](https://doi.org/10.1093/ofid/ofae097).
24. Grace M, Colosia A, Wolowacz S, et al. Economic burden of respiratory syncytial virus infection in adults: a systematic literature review. *J Med Econ* 2023; 26: 742–759. DOI: [10.1080/13696998.2023.2213125](https://doi.org/10.1080/13696998.2023.2213125).
25. Hutton DW, Prosser LA, Rose AM, et al. Cost-effectiveness of vaccinating adults aged 60 years and older against respiratory syncytial virus. *Vaccine* 2024; 42: 126294. DOI: [10.1016/j.vaccine.2024.126294](https://doi.org/10.1016/j.vaccine.2024.126294).
26. Du Z, Pandey A, Moghadas SM, et al. Impact of RSVpreF vaccination on reducing the burden of respiratory syncytial virus in infants and older adults. *Nat Med* 2025; 31: 647–652. DOI: [10.1038/s41591-024-03431-7](https://doi.org/10.1038/s41591-024-03431-7).
27. Brazil. Ministry of Health. *Vigitel Brasil 2023: Surveillance of Risk Factors and Protective Factors for Chronic Diseases*. Brasília, 2024. vigitel-brasil-2023-vigilancia-de-fatores-de-risco-e-protecao-para-doencas-cronicas-por-inquerito-telefonico (accessed August 8, 2026).
28. Brazilian Institute of Geography and Statistics. *2022 Demographic Census: General Results*. Rio de Janeiro, 2023. <https://censo2022.ibge.gov.br/en/> (accessed August 8, 2026).