

OBJECTIVE

- Respiratory syncytial virus (RSV) represents the most common cause of acute respiratory infection that affects individuals across all ages; however, it poses a significant risk to older adults and individuals with risk conditions.¹
- In April 2025, the European Medicines Agency approved the RSVpreF vaccine for use in adults aged ≥18 years.²
- The Romanian Society of Pulmonology recommends RSV vaccination for adults with underlying chronic conditions and for all adults aged ≥60 years.³
- Accordingly, this study evaluated the health and economic impact of RSVpreF vaccination in adults in Romania aged 18-59 years with risk conditions and all adults aged ≥60 years.

METHODS

Model Overview

- A Markov cohort model was used to project clinical and economic outcomes of RSV with a single dose of RSVpreF vaccination compared to no vaccination, among older and high-risk adults (n = 6,413,291).⁴
- Clinical outcomes included medically attended RSV stratified by care setting (i.e., hospital [H], emergency department [ED], or physician's office [PO]), and RSV-associated in-hospital mortality. Economic outcomes included direct medical and indirect costs.

Estimation of Model Inputs

- Incidence of RSV-H (37, 190, 404 per 100,000 adults aged 18-59, 60-74, and ≥75 years, respectively) was derived from published estimates of RSV-attributable respiratory hospitalization rates in Poland.⁵
- Incidence of RSV-ED (309, 300, 685 per 100,000 adults aged 18-49, 50-64, and ≥65 years, respectively) and RSV-PO (2,231, 3,113, 4,079 per 100,000 adults in the same age groups) was derived from published estimates for high-income countries.⁶ All incidence rates were stratified by risk based on a recent US study.⁷
- General mortality rates were obtained from the Romanian National Institute of Statistics.⁸
- RSV-associated in-hospital mortality of 3.9 and 7.8 deaths per 100 hospitalizations among adults aged 18-59 and ≥60 years, respectively, was based on a nationwide analysis of RSV-coded hospitalizations in Germany,⁹ and distributed across age and risk groups based on published literature.¹⁰
- Vaccine effectiveness against RSV-H and RSV-ED visits was informed by the Kaiser Permanente Southern California (KPSC) 2-season, real-world evidence study,¹¹ while effectiveness against RSV-PO visits was derived from efficacy data from the RENOIR clinical trial.¹²
- Vaccine uptake (6.1% for 18-64 years; and 20.2% for ≥65 years) was derived from Romania's 2024-2025 influenza season data.¹³
- All costs were expressed in 2025 Euros (€). Direct costs of RSV-H, RSV-ED, and RSV-PO [Table 1] were derived from published estimates for RSV medical care costs in Greece.¹⁴

Table 1: RSV-related healthcare costs, by setting, risk and age group

	18-49	50-64	65-74	75-84	85-99
Hospitalization					
Low-risk	€ 1,824.48	€ 1,824.48	€ 3,107.14	€ 5,440.43	€ 7,543.79
High-risk	€ 3,111.40	€ 3,111.40	€ 4,131.15	€ 7,539.53	€ 9,562.00
Emergency department					
Low-risk	€ 258.66	€ 258.66	€ 339.56	€ 339.56	€ 339.56
High-risk	€ 331.05	€ 331.05	€ 413.01	€ 413.01	€ 413.01
Physician office					
Low-risk	€ 173.51	€ 173.51	€ 254.40	€ 254.40	€ 254.40
High-risk	€ 245.89	€ 245.89	€ 327.85	€ 327.85	€ 327.85

- Workforce participation rates and wage data for the calculation of indirect costs were obtained from the Romanian National Institute of Statistics.^{15,16} Patient and caregiver work loss days were based on expert opinion and published literature.¹⁷

Analyses

- For the base case analysis, an annual discount rate of 3% was applied to both future costs and outcomes, and model time horizon of lifetime (up to 99 years) was considered.
- Scenario analyses included capturing the wider burden of RSV using incidence of RSV-attributable cardiorespiratory hospitalization rates⁵ and the impact of achieving higher vaccine uptake, 61.7% as reported in the United Kingdom.¹⁸

RESULTS

Base Case Analysis

- Assuming RSVpreF vaccine uptake of 6.1% for adults aged 18-64 with risk conditions and 20.2% for those aged ≥65 years (9.60% overall), a total of 924,817 adults would be vaccinated.
- Base-case projections showed a single dose of RSVpreF vaccination for adults aged 18-59 years with risk conditions and adults aged ≥60 years could prevent 8,208 RSV hospitalizations, 17,548 ED visits, and 47,365 PO visits over the cohort's lifetime, corresponding to a total of 73,122 medically-attended RSV cases prevented [Table 2].
- Additionally, a single dose of RSVpreF would prevent 633 RSV-related deaths.
- RSVpreF vaccination would result in €67.19 million savings in direct medical care costs and €16.65 million savings in indirect costs, to a total of €83.84 million savings in RSV economic burden averted.

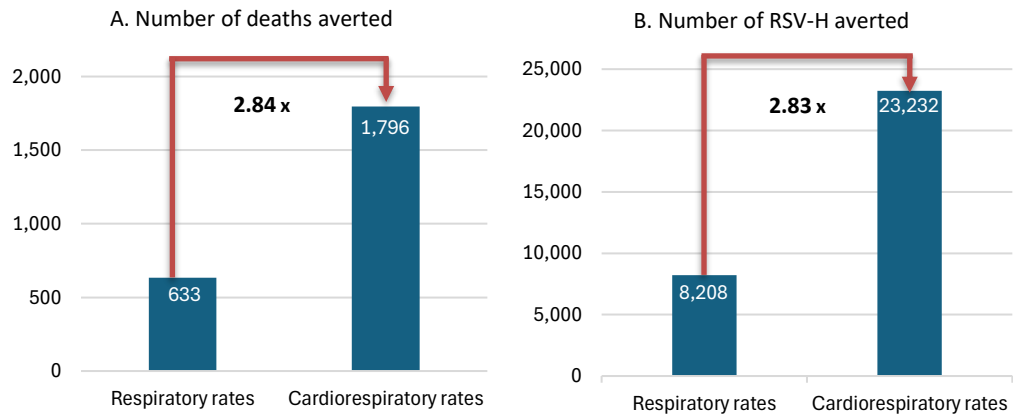
Table 2: Base case analysis results

	No Vaccine	RSVpreF	Difference
Clinical outcomes (events)			
No. of cases – RSV H	351,226	343,018	-8,208
No. of cases – RSV ED	781,495	763,947	-17,548
No. of cases – RSV PO	4,602,480	4,555,114	-47,365
No. of RSV-related deaths	27,513	26,880	-633
Economic outcomes (in millions €)			
Direct medical care costs	2,690.51	2,623.31	-67.19
Total indirect costs	747.11	730.46	-16.65
Morbidity-related productivity loss	311.47	305.07	-6.39
Mortality-related productivity loss	435.64	425.39	-10.26
Total direct + indirect costs	3,437.62	3,353.77	-83.84

Scenario Analysis

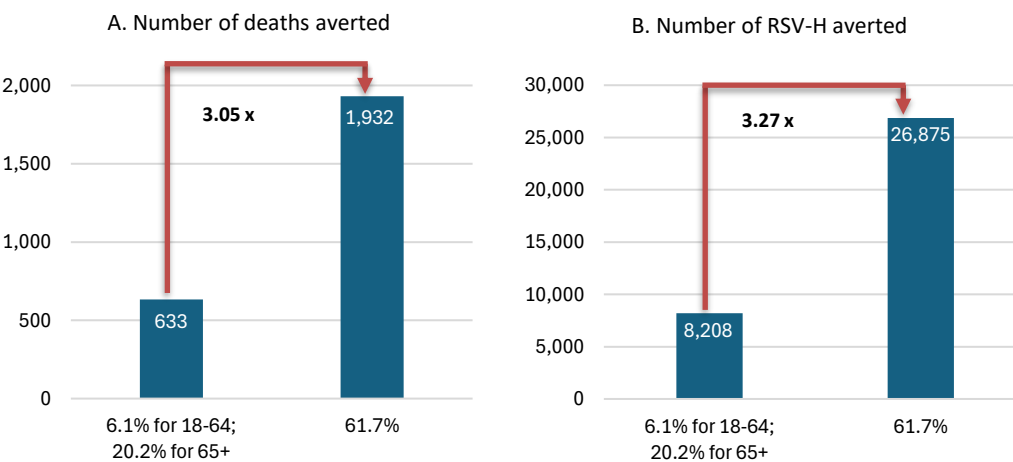
- Applying cardiorespiratory RSV-H rates captures the wider burden of RSV, including exacerbations of chronic cardiac conditions, and more comprehensively projects the impact of RSVpreF vaccination among adults (Figure 1). Accounting for these cardiorespiratory RSV-H rates results in an approximately 2.8-fold greater RSV-related burden averted compared with respiratory-only estimates.

Figure 1: Total number of RSV deaths (A) and RSV hospitalizations (B) averted (RSVpreF vs. No intervention) with respiratory and cardiorespiratory RSV-H rates



- Increasing overall vaccine uptake from base case to 61.7%, would prevent 3 times as many RSV-related deaths and hospitalizations (Figure 2), highlighting the importance of coverage for the success of the vaccination program in averting RSV-related burden among adults in Romania.

Figure 2: Total number of RSV deaths (A) and RSV hospitalizations (B) averted (RSVpreF vs. No intervention) for base case uptake and scenario 61.7% uptake



CONCLUSION

- Implementing a year-round RSVpreF vaccination program would substantially reduce the clinical and economic burden of RSV among older adults and younger adults with risk conditions in Romania.

REFERENCES

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