EE237

Cost-Effectiveness of Bivalent Respiratory Syncytial Virus Stabilised Prefusion F Subunit Vaccine (RSVpreF) Among Older Adults in Ireland

Marion Fahey[1], Ahuva Averin[2], Reece Grindley[2], and Diana Mendes[3]

[1]Pfizer Healthcare Ireland; [2]Avalere Health, US; [3]Pfizer UK

INTRODUCTION

- Respiratory syncytial virus (RSV) is a common cause of lower respiratory tract disease (LRTD; RSV-LRTD) among older adults, often leading to significant morbidity with considerable healthcare costs[1,2]
- The European Medicines Agency (EMA) has authorized three vaccines for protection against RSV in adults ≥60 years, as well as in younger adults with risk conditions;[3-5] authorisation for RSVpreF has been recently expanded to include all adults aged ≥18 years[3]
- While the National Immunisation Advisory Committee of Ireland has recommended use of recombinant protein subunit vaccines (i.e., RSVpreF and RSVpreF3) among adults aged ≥65 years since 2023,[6] there is currently no national RSV programme for adults in Ireland
- Given the burden imposed by RSV, especially during the winter months, a universal immunisation program in Ireland may provide significant relief to the healthcare system while reducing incidence of severe disease[7]

OBJECTIVE

- **To evaluate the cost-effectiveness of RSVpreF for adults aged ≥65 years in Ireland**

METHODS

Model Overview:

- A static cohort model was used to depict clinical outcomes and economic costs of RSV-LRTD, and the expected impact of vaccination with RSVpreF over a lifetime modelling horizon
- Model population included a hypothetical cohort of adults in Ireland aged 65-99 years (N=844,559) characterized by age and comorbidity profile ("CMC-" [without chronic/immunocompromising conditions], "CMC+" [immunocompetent with selected chronic medical conditions], or "IC+" [immunocompromised]):
  - Persons who were CMC+ or IC+ were considered to be at elevated risk of RSV (herein referred to collectively as "at-risk")
- Clinical outcomes and economic costs were projected monthly, from model entry through end of modelling horizon:
  - Clinical: RSV-LRTD cases by care setting (hospital [H], emergency department [ED], general practice [GP]), RSV-attributable deaths, life-years (LYs), and quality-adjusted LYs (QALYs)
  - Economic: direct medical care costs and vaccination costs, reported in €2024

Estimation of Model Inputs:

- Model inputs that vary by age and comorbidity profile are detailed in Table 1
- Model population of adults aged 65-99 years was based on 2025 projections[8] and distributed by comorbidity profile using UK data[9]
- Incidence of RSV-H was from a recent publication which used data from the Institute for Health Metrics and Evaluation[10]; rates of RSV-ED and RSV-GP were based on a UK modelling study[11]
  - Age-specific rates were allocated by comorbidity profile based on US incidence data[12] and UK population risk distribution[9]
  - RSV rates were allocated across calendar months using Hospital In-Patient Enquiry (HIPE) data[13]
- Case fatality due to RSV-H by age was derived using RSV-related mortality data from a UK study[11] and further allocated by comorbidity profile based on published relative risks (RR) of pneumonia-related mortality[14]

METHODS (continued)

- General population mortality rates were extracted from the Central Statistics Office of Ireland[15] and were allocated by comorbidity profile based on assumption (RR vs. CMC-: CMC+, 1.5; IC+, 2.0); deaths were distributed by calendar month using UK data[16]
- Direct medical cost per episode of RSV-H (€5,760) was based on the 2024 Health Service Executive price list[17]; RSV-ED (€426) was based on Keegan et al.[18] (inflated to €2024[19]); and cost per episode of RSV-GP was assumed to be €55. Costs were assumed to be invariant of age and comorbidity profile
- Vaccine price was €165 (assumption)[7]; administration fee was €25[7]
- Baseline utility was based on values for UK population[20]; utility decrement was 0.0167 for RSV-H and 0.0054 for RSV-ED/GP cases[21,22]
- Vaccine effectiveness (VE) of RSVpreF was based on medically-attended efficacy in season 1 and season 2 results from the RENOIR trial, extrapolated to month 41 (Figure 1)[23]

Table 1. Model inputs

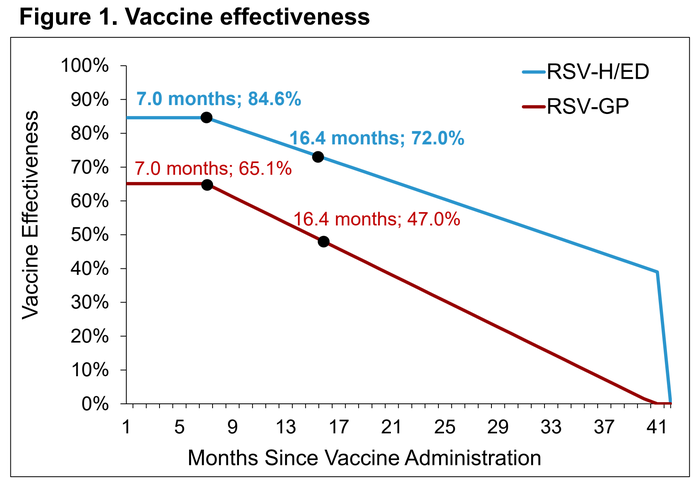
	Age								
	65-74 years			75-84 years			85-99 years		
	CMC-	CMC+	IC+	CMC-	CMC+	IC+	CMC-	CMC+	IC+
No. of persons	225,018	205,867	30,095	111,156	149,685	24,373	28,387	59,582	10,395
RSV Rates (annual, per 100K)									
Hospitalized	28.4	379.9	695.2	50.5	621.5	820.9	73.5	878.7	951.7
ED	31.1	81.7	99.3	44.9	128.7	142.8	249.4	705.3	724.4
GP	1,166.1	2,258.7	2,418.8	1,235.4	2,560.0	2,899.6	1,301.5	2,867.5	3,396.4
Mortality (per 100)									
General population	1.2	1.7	2.3	3.3	4.9	6.5	10.1	15.1	20.1
CFR (hospital only)	1.8	2.7	4.0	12.5	14.4	16.1	16.3	17.0	20.1

CFR: case-fatality rate; CMC-: persons without selected chronic/immunocompromising medical conditions; CMC+: persons with selected chronic/immunocompromising medical conditions; ED: emergency department; GP: general practice; IC: immunocompromised

Analyses:

- Cost-effectiveness of RSVpreF versus no intervention was calculated in terms of differences in costs and QALYs, reported as an incremental cost-effectiveness ratio (ICER) for four separately modelled populations:
  - All adults aged 65-99 years
  - At-risk adults aged 65-99 years
  - All adults aged 75-99 years
  - At-risk adults aged 75-99 years
- Analyses were conducted from the healthcare system perspective, with costs/benefits discounted 4% annually
- RSVpreF uptake (65-74y: 76%; 75-99y: 87% [average over 65-99y: 81%]) was based on influenza vaccine uptake in Ireland, with >99% of doses administered from September through January of the first modelled year[24]

Figure 1. Vaccine effectiveness

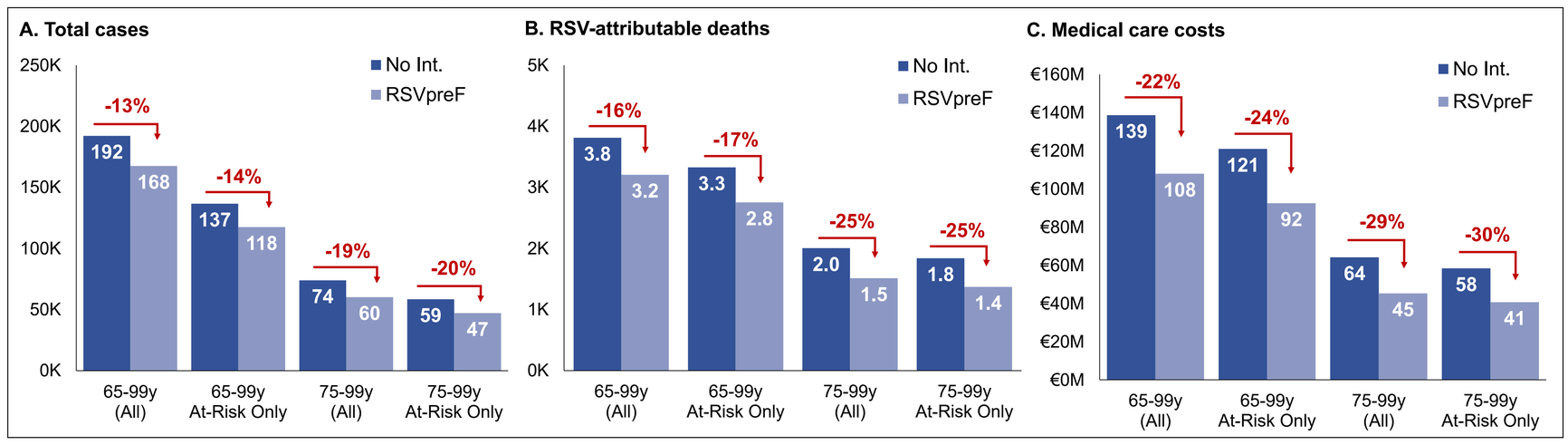


ED: emergency department; GP: general practice; H: hospital; RSV: respiratory syncytial virus

RESULTS

- Administering a single dose of RSVpreF to 81% of adults aged 65-99 years was projected to prevent 24,613 RSV-LRTD cases and 605 deaths, reducing medical care costs by €31M; vaccination costs totaled €126M, thus overall costs increased by €95M and the incremental cost-effectiveness ratio (ICER) was €49,829/QALY gained (Table 2; Figure 2)
  - The majority of cases (78%) and deaths (95%) averted were among the subgroup of adults who are at-risk; among this group, overall associated costs were €43M and the ICER of RSVpreF versus no intervention was €24,591/QALY gained
- Among adults aged 75-99 years, RSVpreF prevented 13,759 RSV-LRTD cases and 493 deaths, reducing medical care costs by €19M; vaccination costs totaled €61M, thus overall costs increased by €42M and the ICER was €30,054/QALY gained
  - Most averted cases (83%) and deaths (95%) among adults aged ≥75 years were among the at-risk subgroup; associated overall costs for this subgroup were €21M and the ICER was €16,027/QALY gained

Figure 2. Burden of RSV with use of a single dose of RSVpreF versus No Intervention, by population*



K: thousand; M: million; No Int.: no intervention; RSV: respiratory syncytial virus
*Outcomes are projected over a lifetime horizon; in the RSVpreF arm, a single dose of RSVpreF was assumed to be administered in the first year of the horizon

Table 2. Clinical outcomes and economic costs with use of RSVpreF versus no intervention in Ireland, by population subgroup

	65-99 years						75-99 years					
	All Adults (N=844,559)			At-Risk Only (N=479,318)			All Adults (N=405,244)			At-Risk Only (N=243,810)		
	No Int.	RSVpreF	Difference	No Int.	RSVpreF	Difference	No Int.	RSVpreF	Difference	No Int.	RSVpreF	Difference
Clinical outcomes												
No. of cases												
Hospital	28,946	23,636	-5,310	25,221	20,248	-4,973	12,444	9,188	-3,256	11,381	8,299	-3,082
ED	15,874	13,500	-2,373	11,738	9,793	-1,945	9,042	7,191	-1,850	7,249	5,686	-1,563
GP	147,379	130,450	-16,929	99,750	87,477	-12,273	52,510	43,858	-8,652	39,874	33,109	-6,765
No. of deaths	3,812	3,207	-605	3,328	2,754	-574	2,005	1,512	-493	1,840	1,371	-469
Life-years (discounted)	5,662,918	5,665,611	2,693	2,982,862	2,985,406	2,544	1,895,433	1,897,454	2,022	1,156,752	1,158,670	1,918
QALYs (discounted)	4,231,690	4,233,601	1,911	1,955,122	1,956,883	1,761	1,361,853	1,363,240	1,388	736,913	738,204	1,291
Economic outcomes (millions)												
Medical care	€139	€108	-€31	€121	€92	-€28	€64	€45	-€19	€58	€41	-€18
Vaccination*	€0	€126	€126	€0	€72	€72	€0	€61	€61	€0	€38	€38
Total	€139	€234	€95	€121	€164	€43	€64	€106	€42	€58	€79	€21
Cost per QALY	---	---	€49,829	---	---	€24,591	---	---	€30,054	---	---	€16,027

ED: emergency department; GP: general practice; LY: life-year; No Int.: no intervention; QALY: quality-adjusted life year
*Vaccination costs include costs of vaccine and administration

LIMITATIONS

- Due to an insufficient number of hospitalizations in RENOIR, VE against RSV-H was based on efficacy against medically-attended RSV-related lower respiratory tract illness with ≥3 symptoms; because vaccines are generally more protective against severe disease, estimated VE against RSV-H is likely conservative[25,26]
- Where Ireland-specific data were unavailable, data from comparable country settings (e,g., UK) were employed; therefore, results may not be fully generalizable to Ireland
- Indirect costs due to patient productivity loss, caregiver productivity loss, and the value of lost future earnings due to RSV-related mortality were not captured in these analyses, thus the full societal burden of RSV is not characterized

For more information please contact: *Marion Fahey (Marion.Fahey@pfizer.com)*

CONCLUSIONS

- **The ICERs associated with RSVpreF vaccination among adults aged ≥65 years were all near or below the Health Information and Quality Authority's €45,000/QALY gained willingness-to-pay threshold,[19] and thus would be considered a cost-effective intervention in Ireland**
- **Vaccination of adults aged ≥65 years would yield the greatest reduction in clinical outcomes and medical care costs associated with RSV**

References

1. Ackerson et al. *Clin Infect Dis*. 2018;69(2):197-203.
2. Nguyen-Van-Tam et al. *Eur Respir Rev*. 2022;31(166).
3. Abrysvo. European Medicines Agency. 2025.
4. Arexvy. European Medicines Agency. 2025.
5. mResvia. European Medicines Agency. 2025.
6. NIAC. Royal College of Physicians of Ireland. 2023.
7. HIQA. Rapid HTA of immunisation against respiratory syncytial virus in Ireland. 2024.
8. Central Statistics Office. Regional Population Projections - Table PEB07. 2024.
9. Pokutnaya et al. *Epidemiol Infect*. 2022;150:e107.
10. Burkart et al. *eClinicalMedicine*. 2025;85:103292.
11. Fleming et al. *BMC Infect Dis*. 2015;15:443.
12. Weycker et al. *Infect Dis Ther*. 2024;13(1):207-220.
13. Healthcare Pricing Office. HIPE data - RSV. 2024.
14. Averin et al. *Resp Med*. 2021;185:106476.
15. Central Statistics Office. Period Life Expectancy - Table VSA312. 2020.
16. Statistics OfN. Deaths registered monthly in England and Wales, 2019. In:2025.
17. Health Service Executive. ABF 2024 Admitted Patient Price List - Inpatients. 2024.
18. Keegan et al. *ESRI*; 2020.
19. HIQA. Guidelines for the Economic Evaluation of Health Technologies in Ireland. 2025.
20. Szende et al. *Springer Netherlands*; 2013.
21. Falsey et al. Influenza Other Respir Viruses. 2022;16(1):79-89.
22. Mao et al. *J Infect Dis*. 2022;226(Supplement_1):S87-S94.
23. Walsh et al. *NEJM*. 2024;391(15):1459-1460.
24. HPSC. Seasonal Influenza Vaccine Uptake in Ireland, 2022-23. 2024.
25. Melgar M. Meeting of the ACIP; 2022; Atlanta, GA.
26. Tartof et al. *JAMA Netw Open*. 2024;7(12):e2450832-e2450832.

This study was sponsored by Pfizer Inc.

ISPOR EU 2025; November 9th-12th; Glasgow, Scotland, UK