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Public Health Impact Assessment of RSVPreF3 OA Adjuvanted Vaccine on Respiratory Syncytial Virus in Selected European Countries

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Conclusions

- RSVPreF3 OA adjuvanted vaccination of adult population ≥60 years has the potential to have a significant preventive effect on the healthcare resource utilisation burden.
- Analysis highlights the importance of RSV immunisation for the older adult (OA) population in Europe.

Background

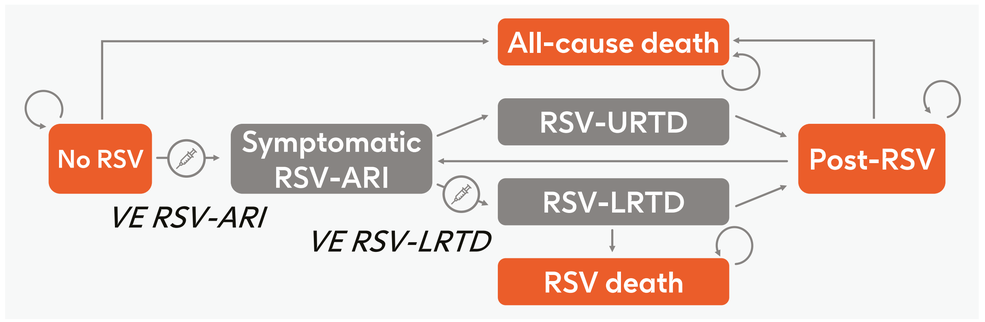
- Respiratory syncytial virus (RSV) is a contagious pathogen that causes acute respiratory illness (ARI) in individuals of all ages[1]. RSV infections pose a significant health burden among adults aged ≥60 years in Europe.
- Each year, RSV infections can affect 4–7% of the older adult (OA) population[2].

Aims

This study aims to assess the potential public health impact of the GSK RSVPreF3 OA adjuvanted vaccine for adults aged ≥60 years in selected European countries.

Methods

- A monthly-cycle static Markov model was developed to assess RSVPreF3 OA adjuvanted vaccine impact on adults aged ≥60 years across selected countries.
- A single RSVPreF3 vaccine dose was compared with no vaccination over a three-year time-horizon.
- Input data are based on the best available data from published literature, while vaccine efficacy and waning rates were informed by the published AReSVi-006 Phase 3 clinical trial[3].



Results

Vaccination can considerably reduce the RSV-associated healthcare resource burden in adults aged ≥60 years among 11 European countries

ARI cases avoided	LRTD cases avoided	Hospitalisations avoided	Deaths avoided
2,271,456–2,363,268	1,360,223–1,408,594	173,019–179,254	16,930–17,550

- With a vaccination coverage of 90%, the RSVPreF3 OA vaccine would be administered to a total of 32,625,861 individuals.
- The model predicts that the adjuvanted RSVPreF3 OA vaccine, when compared with no vaccination, is likely to significantly decrease the impact of RSV on the adult population aged ≥60 years, in the form of reduction of RSV-associated ARI cases, associated healthcare resource utilisation, and mortality.
- Parameter uncertainty was assessed using probabilistic sensitivity analysis over 1,000 iterations.

Number needed to vaccinate to avoid one case:

Ireland
ARI: 15
OP visit: 35
Hospitalisation: 200
ICU visit: 1,223
Death: 1,714

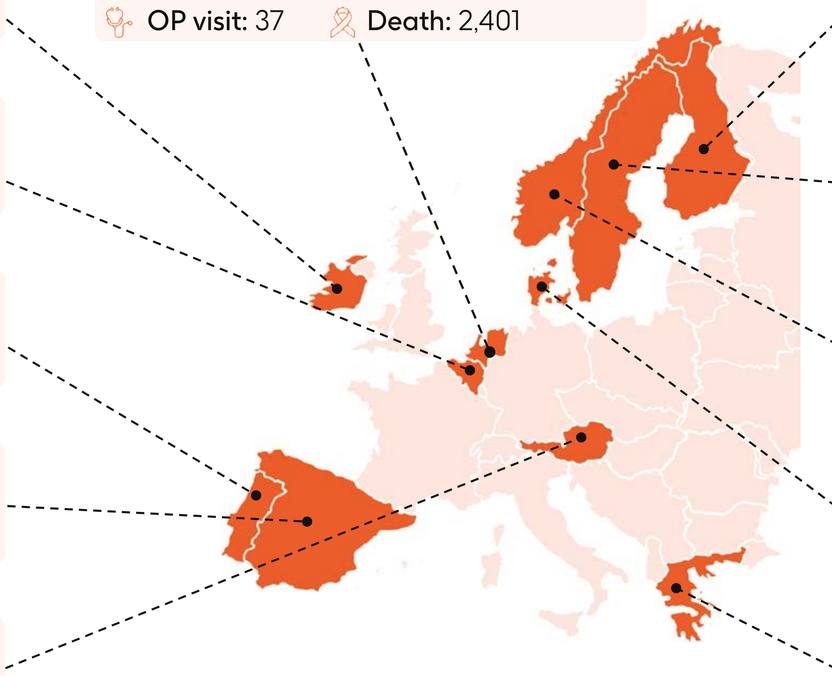
Belgium
ARI: 15
OP visit: 35
Hospitalisation: 191
ICU visit: 1,182
Death: 1,408

Portugal
ARI: 16
OP visit: 37
Hospitalisation: 199
ICU visit: 1,226
Death: 2,179

Spain
ARI: 14
OP visit: 31
Hospitalisation: 173
ICU visit: 1,068
Death: 2,188

Austria
ARI: 16
OP visit: 36
Hospitalisation: 203
ICU visit: 618
Death: 2,225

Netherlands
ARI: 17
OP visit: 37
Hospitalisation: 210
ICU visit: 1,295
Death: 2,401



Finland
ARI: 15
OP visit: 35
Hospitalisation: 191
ICU visit: 1,181
Death: 1,457

Sweden
ARI: 16
OP visit: 36
Hospitalisation: 193
ICU visit: 1,191
Death: 1,446

Norway
ARI: 17
OP visit: 38
Hospitalisation: 210
ICU visit: 1,299
Death: 1,630

Denmark
ARI: 16
OP visit: 36
Hospitalisation: 201
ICU visit: 1,243
Death: 1,560

Greece
ARI: 17
OP visit: 38
Hospitalisation: 204
ICU visit: 1.258
Death: 1,633

Average
ARI: 13.8–14.3
OP visit: 32.9–34.1
Hospitalisation: 182–188.6
ICU visit: 1,195–1,238
Death: 1,859–1,927

Limitations

These preliminary results rely on the most recent published data sources, and ongoing studies might reduce the uncertainty around the estimates.

Abbreviations

ARI, acute respiratory infection; ICU, intensive care unit; LRTD, lower respiratory tract disease; OA, older adult; OP, outpatient; RSV, respiratory syncytial virus; RSVPreF3, respiratory syncytial virus prefusion F subtype 3; URTD, upper respiratory tract disease.

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Disclosures

All authors are employed by GSK. EZ, AK, GU, NVD, LAV-A, SR, AA, DL, LG and AM hold shares in GSK. DL holds shares in Haleon. PB had been employed by INFARMED - National Authority of Medicines and Health Products. KM received travel fees to present study results at conferences. The authors declare no other financial and non-financial relationships and activities.

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Digital poster with supplemental data

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Supplementary material

Assumptions used in the RSV model

Average annual incidence of the first RSV ARI event	Austria, Belgium, Denmark, Finland, Greece, Ireland, the Netherlands, Norway, Portugal and Sweden[1]	Spain[1]
All age groups (60+)	0.05673	0.066374

This assumption is based on Korsten et al. (2021)[1], a prospective study in European Union countries (United Kingdom, the Netherlands and Belgium), which reported an average RSV ARI incidence over two seasons in patients aged ≥60 years.

Proportion of RSV LRTD within the first RSV ARI event	Austria, Belgium, Denmark, Finland, Greece, Ireland, the Netherlands, Norway, Portugal, Spain and Sweden[2]
All age groups (60+)	0.476

The proportion of LRTD cases among all RSV ARI is based on the case distribution in the RSVPreF3 Phase 3 clinical trial[2].

General population - Coverage	Austria, Belgium, Denmark, Finland, Greece, Ireland, the Netherlands, Norway, Portugal, Spain and Sweden(assumption)
All age groups (60+)	90%

Number of hospitalisations per RSV LRTD event	Austria, Belgium, Greece, Ireland, the Netherlands, Portugal and Spain[3]	Denmark, Finland, Norway and Sweden[4]
60–64 years	0.036	0.075802
65–69 years	0.109	0.075802
70–74 years	0.109	0.075802
75–79 years	0.184	0.159629
80–84 years	0.184	0.159629
85–89 years	0.184	0.329046
90–109 years	0.184	0.329046

Case fatality rate	Austria, the Netherlands and Portugal[5]	Belgium[6]	Denmark, Finland, Greece, Ireland, Norway and Sweden[7]	Spain[8]
60–64 years	0.044	0.136	0.073801	0.0592
65–69 years	0.053	0.136	0.073801	0.0592
70–74 years	0.053	0.136	0.073801	0.0631
75–79 years	0.09	0.136	0.135981	0.0631
80–84 years	0.145	0.136	0.135981	0.0849
85–89 years	0.145	0.136	0.218504	0.0849
90–94 years	0.145	0.136	0.218504	0.1195
95–99 years	0.145	0.136	0.218504	0.1195
100+ years	0.145	0.136	0.218504	0.1195

Abbreviations

ARI, acute respiratory infection; LRTD, lower respiratory tract disease; OA, older adult; RSV, Respiratory syncytial virus; RSVPreF3, respiratory syncytial virus prefusion F subtype 3.

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