CO194

Public Health Impact of Bivalent Respiratory Syncytial Virus Prefusion F Vaccine for Prevention of Respiratory Syncytial Virus Illness Among High-Risk Adults Aged 18-59 Years in Germany

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INTRODUCTION

- Respiratory syncytial virus (RSV) is one of the leading causes of lower respiratory tract illness (LRTI) among adults in Germany[1-3]
- Adults with chronic or immunocompromising medical conditions ("CMC+/IC") are particularly susceptible to significant RSV-related morbidity and mortality[3-6]
- In August 2023, the European Medicines Agency (EMA) authorized use of RSVpreF for prevention of lower respiratory tract disease due to RSV in adults aged ≥60 years[7]
- EMA authorization of RSVpreF was extended to include all adults aged ≥18 years in March 2025[7]

OBJECTIVE

- **To evaluate the potential public health impact of vaccination with RSVpreF among CMC+/IC adults aged 18-59 years in Germany**

METHODS

Model Overview:

- We employed a population-based, multi-cohort, Markov-type model depicting clinical outcomes of RSV-LRTI and expected impact of vaccination with RSVpreF over a 5-year horizon
- Model population (N=14.7M) included CMC+/IC 18-59-year-olds; where available, inputs were assumed to vary by age group (18-49 years, 50-59 years)
- Public health outcomes were projected on a monthly basis, from model entry through end of modelling horizon, and included RSV-LRTI cases by care setting (hospital [H], ambulatory [Amb]) and RSV-attributable deaths
- Public health impact was calculated as difference in clinical outcomes associated with use of RSVpreF vs. no intervention

Estimation of Model Inputs:

- Model inputs that vary by age are detailed in Table 1
- Total number of adults in Germany by age group was extracted from the Federal Statistics Office of Germany[8]; proportion of adults in each age group characterized as CMC+/IC was taken from a recent German study[3]
- Age-specific RSV-H[3] and RSV-Amb rates[9,10] were allocated across calendar months based on observed seasonality of RSV[11] (Table 2)
- Case-fatality rate (CFR) due to RSV-H from a German study[12] was estimated for CMC+/IC adults aged 18-59 years based on a study of mortality risk among patients hospitalized for pneumonia[13]; we assumed no RSV-LRTI-related mortality among ambulatory cases
- Age-specific rates of general population mortality[14] were allocated by risk based on assumption that CMC+/IC individuals have a 75% increased risk of mortality versus CMC- persons[15]
- Vaccine effectiveness (VE) of RSVpreF was based on season 1 and season 2 results from the RENOIR trial, extrapolated to month 41 (i.e., up to 4 RSV seasons, dependent on month of vaccine uptake; Figure 1)[15,16]

Table 1. Model inputs for CMC+/IC adults

	Age (years)	
	18-49	50-59
No. of persons	8,705,759	5,966,142
RSV rates (annual, per 100K)		
Hospitalized	81.5	110.4
Ambulatory	845.9	806.9
General population mortality (per 100)	0.1	0.5
CFR (hospital only, per 100)	2.6	5.2

CFR: case-fatality rate

Analyses:

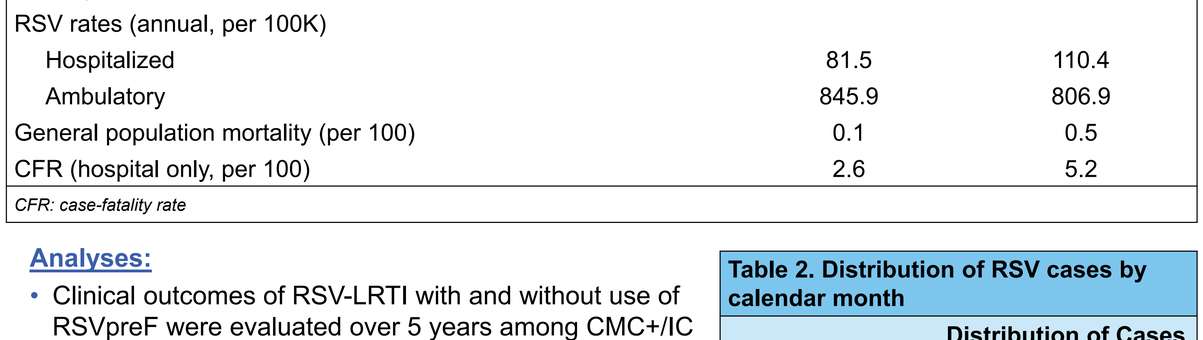
- Clinical outcomes of RSV-LRTI with and without use of RSVpreF were evaluated over 5 years among CMC+/IC adults aged 18-59 years in Germany
- RSVpreF uptake for base case analyses (18-49y: 9.9%; 50-59y: 18.8%) was based on influenza vaccine uptake in Germany[17] and allocated across calendar months (Sep: 11%; Oct: 52%; Nov: 31%; Dec: 5%; Jan: 1%)[18]
- Scenario analyses were conducted to evaluate alternative input assumptions:
  - Scenario #1: Extended VE waning assumptions (linear waning to 0 at 70 months)
  - Scenario #2: 75% uptake based on the World Health Organization (WHO) influenza vaccination target for persons at high-risk for influenza[19]
  - Scenario #3: Extended VE waning assumptions with 75% uptake

Table 2. Distribution of RSV cases by calendar month

	Distribution of Cases
January	24%
February	28%
March	19%
April	6%
May	1%
June	0%
July	0%
August	0%
September	0%
October	0%
November	3%
December	17%

RSV: respiratory syncytial virus

Figure 1. Vaccine effectiveness



Amb: ambulatory; H: hospital; RSV: respiratory syncytial virus
*Dotted line depicts effectiveness assumptions employed in extended waning scenario

RESULTS

Table 3. Public health outcomes with use of RSVpreF versus no intervention among CMC+/IC adults aged 18-59 years in Germany (N=14,671,901) over 5 years

		RSVpreF			
	No Intervention	Base Case	Scenario #1 (Extended VE)	Scenario #2 (75% Uptake)	Scenario #3 (75% Uptake & Extended VE)
Clinical outcomes					
No. of cases					
Hospital	78,370	73,003	72,232	50,443	46,485
Ambulatory	600,708	578,296	578,297	475,890	475,897
Total	679,078	651,299	650,529	526,333	522,382
No. of deaths	3,383	3,139	3,103	2,203	2,025

VE: vaccine effectiveness

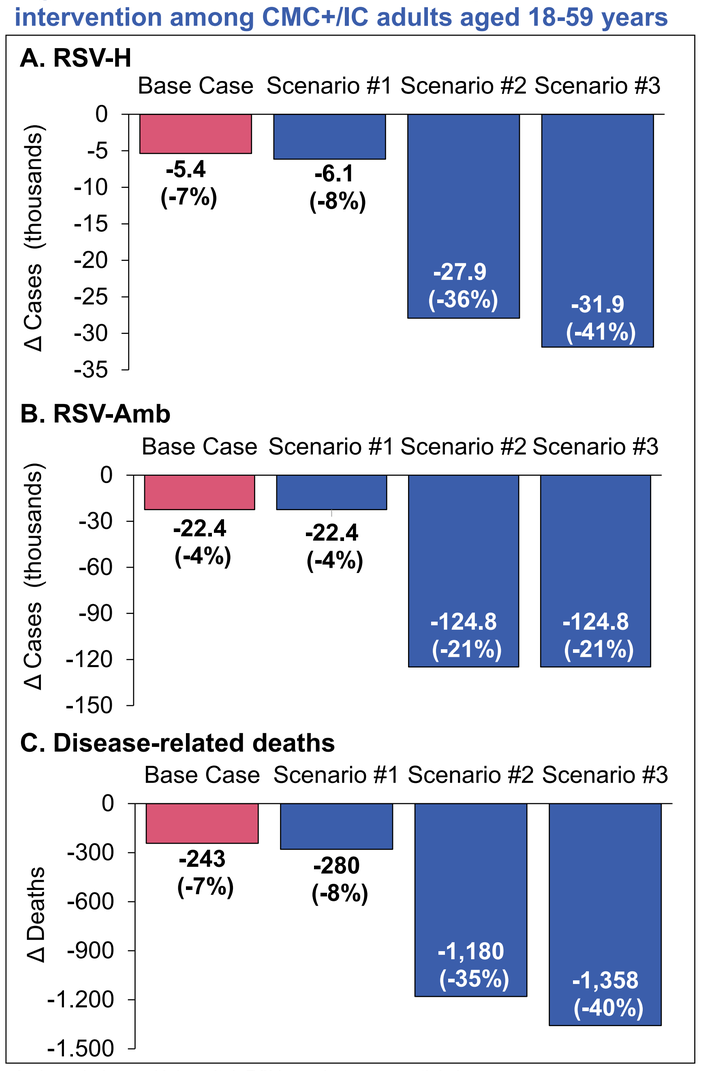
Base Case Analysis

- With no intervention, there were 78,370 hospitalizations, 600,708 ambulatory encounters, and 3,383 deaths due to RSV-LRTI projected among CMC+/IC adults aged 18-59 years over five years (Table 3)
- Use of RSVpreF is anticipated to prevent **5,367 hospitalizations** (7% reduction), **22,413 ambulatory encounters** (4% reduction), **and 243 RSV-LRTI-related deaths** (7% reduction) over the 5-year horizon (Figure 2)

Scenario Analyses

- Compared to base case:
  - Scenario #1 would avert an additional 771 hospitalizations and 37 deaths
  - Scenario #2 would avert an additional 22,560 hospitalizations, 102,407 ambulatory encounters, and 937 deaths
  - Scenario #3 would avert an additional 26,518 hospitalizations, 102,399 ambulatory encounters, and 1,114 deaths

Figure 2. Public health impact of RSVpreF versus no intervention among CMC+/IC adults aged 18-59 years



Amb: ambulatory; H: hospital; RSV: respiratory syncytial virus

CONCLUSIONS

- **RSVpreF uptake comparable to current influenza vaccine uptake would substantially reduce the public health burden of RSV-LRTI in CMC+/IC adults aged 18-59 years in Germany**
- **A public health campaign aimed at achieving RSVpreF uptake to levels close to the WHO recommendation for influenza vaccination (75%) would represent a 5-fold increase in potential disease reduction**

LIMITATIONS

- VE versus RSV-H was based on efficacy against RSV-LRTI with ≥3 symptoms, a trial-based endpoint that was not limited to hospitalized cases; early real-world effectiveness against RSV-associated hospitalization suggests similar magnitude of protection in older adults[20]

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Disclosures

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