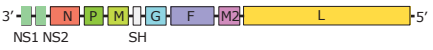
Respiratory Syncytial Virus & Human Metapneumovirus Disease Burden in Older Adults

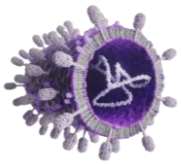
RSV and HMPV Share Similar Structural Characteristics

RSV and HMPV belong to the Pneumoviridae family[1]; they are single-stranded, negative-sense, RNA viruses[2]

RSV



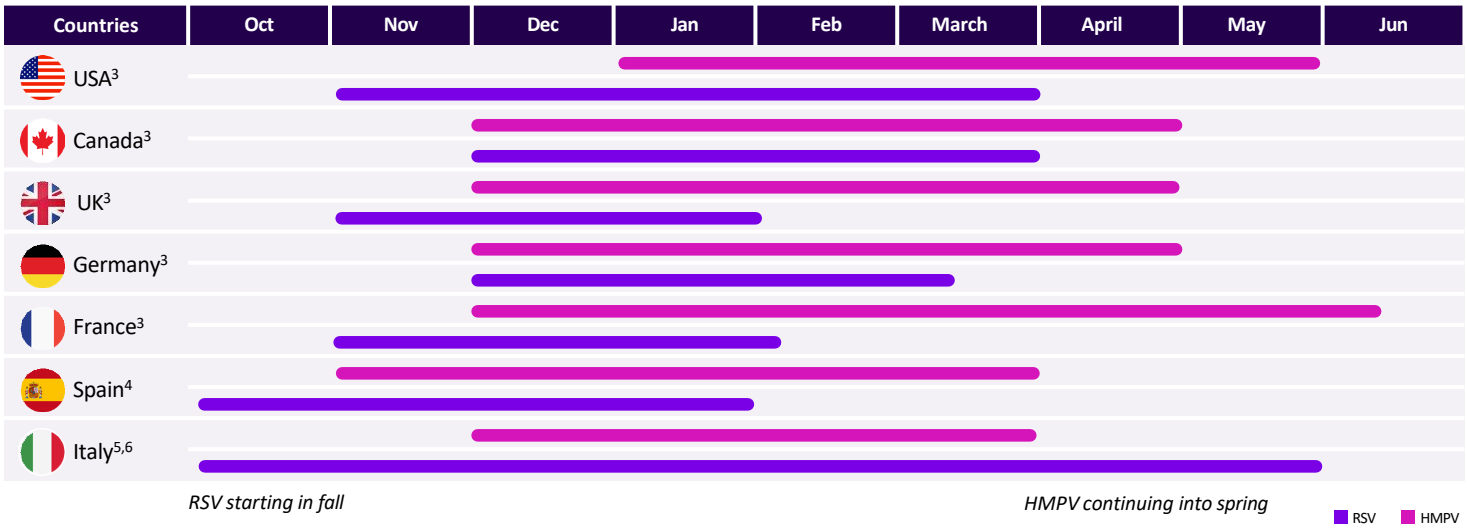
RSV is a 15 kb negative sense single stranded RNA virus encoding 11 proteins[2]



HMPV

HMPV is a 13 kb negative sense single stranded RNA virus encoding 9 proteins[2]

RSV and HMPV Epidemic Months Overlap



RSV and HMPV Have Comparable Clinical Manifestations in Adults

Most frequent respiratory symptoms

Upper respiratory tract infections

- Nasal congestion[7,8]
- Hoarseness[7,9]
- Sore throat[7,9]

Lower respiratory tract infections

- Sputum[7,8]
- Dyspnea[7,8]
- Wheezing[7,10]

Potential complications[11]

Acute asthma exacerbations

Acute exacerbations of chronic obstructive pulmonary disease (COPD)

Pneumonia

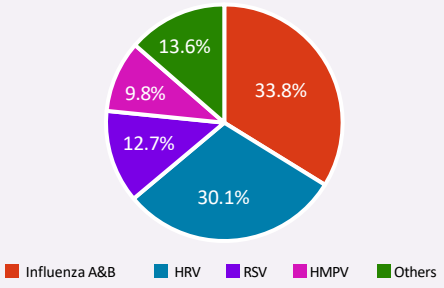
Other symptoms: Fever, headache, fatigue, myalgia, chest pain[7,12]

These symptoms in most of the cases are mild but can lead to severe outcomes especially in older adults and in adults with risk factors[12,13]

RSV and HMPV are Major Causes of Hospitalizations in Adults

RSV and HMPV Lead to Substantial Hospitalization Burden

RSV and HMPV contribute to ~25% of all viral respiratory hospitalizations[13]



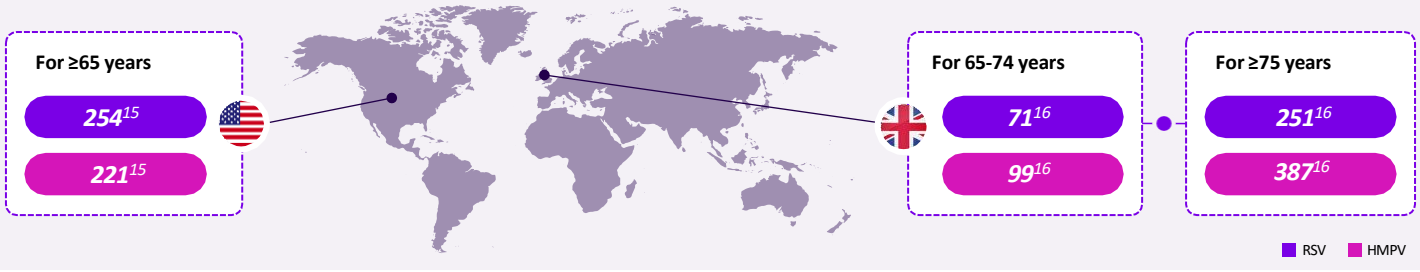
RSV and HMPV caused substantial hospitalization burden in adults aged ≥65 years in 2019[14]

RSV-hospitalizations (95% CI)
759,000 (620,000–1,357,000)

HMPV-hospitalizations (95% CI)
473,000 (396,000–777,000)

RSV and HMPV hospitalization figures are likely subject to under-ascertainment, which could lead to an underestimation of the true RSV and HMPV burden

RSV and HMPV hospitalization rates for acute respiratory illness are similar in UK and USA (per 100,000)

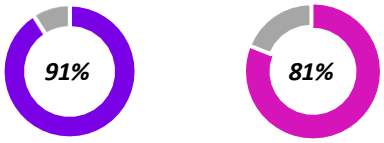


RSV and HMPV Infections Can Lead to Severe Outcomes

Burden Beyond RSV: Adults Need Protection From RSV and HMPV

RSV and HMPV are Associated with Comparable Comorbidities

Percentage of at least one chronic disease in hospitalized patients, 2012–2018[18]



Most of the patients with 65+ age had at least one associated chronic condition

RSV HMPV

Prevalence of comorbidities in RSV or HMPV hospitalized patients[18]

RSV		HMPV
50%	Chronic heart disease	50%
54%	Chronic respiratory disease	44%
23%	Diabetes	20%
20%	Chronic renal failure	10%
26%	Cancer	14%

RSV HMPV

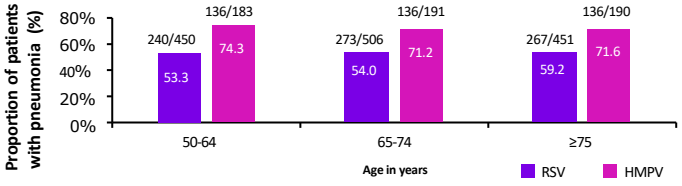
Comorbidities may increase the risk of severe disease[11]

RSV and HMPV Infections Can Lead to Mid- and Long-term Sequelae

Complications During Hospital Stay[18]

	RSV (N=129)	HMPV (N=90)
Age ≥65 years	74%	84%
At least one complication during hospital stay	**66%**	**62%**
Pneumonia	39%	36%
Respiratory failure	37%	36%
Acute heart failure	16%	25%
Acute respiratory distress syndrome	12%	9%

Proportion of Patients with Pneumonia in ICU Admissions[19]



Among 1,407 RSV-patients and 564 HMPV-patients in ICU admissions, 780 (55.4%) and 408 (72.3%), respectively, had pneumonia

High use of Antibiotics in RSV or HMPV ARI-Hospitalized Patients (≥18 years old)[11]

Readmission to the Hospital within 3 months Post-discharge for any Reason (≥18 years old)[11]

- *RSV and HMPV infections share similarities in terms of virus characteristics, seasonal distributions, and clinical manifestations*
- *Both viruses lead to substantial hospitalization burden and severe outcomes especially in older adults and those with chronic conditions*
- *Disease burden remains elusive and under-reported in the adult population due to many factors*

Abbreviations: ARI: Acute Respiratory Infection; CI: Confidence Interval; COPD: Chronic Obstructive Pulmonary Disease; HMPV: Human Metapneumovirus; HRV: Human Rhinovirus; ICU: Intensive Care Unit; kb: KiloBase, LOS: Length of Stay; PCR: Polymerase Chain Reaction; RNA: Ribonucleic Acid; RSV: Respiratory Syncytial Virus; UK: United Kingdom; USA: United States of America

References: 1. Amarasinghe GK, et al. *Arch Virol*. 2019;164(7):1967-1980. **2.** Kolli D, et al. *Pathogen*. 2013;1;2(2):232-263. **3.** Li Y, et al. *The Lancet Global Health*. 2019;7(8):e1031-e1045. **4.** Pinana M, et al. *J Clin Virol*. 2020;132:104590. **5.** Obando-Pacheco P, et al. *J Infect Dis*. 2018;217(9):1356-1364. **6.** Guido M, et al. *Virology*. 2011;417(1):64-70. **7.** Kodama F, et al. *Infect Dis Clin North Am*. 2017;31(4):767-790. **8.** Walsh EE, et al. *Arch Intern Med*. 2008;168(22):2489-2496. **9.** van den Hoogen BG, et al. Pediatr *Infect Dis J*. 2004;23(1 Suppl):S25-S32. **10.** Falsey AR, et al. *J Infect Dis*. 2003;187(5):785-790. **11.** Falsey AR, et al. *Open Forum Infect Dis*. 2021;8(11):ofab491. **12.** Kenmoe S, et al. *Curr Opin Infect Dis*. 2024;37(2):129-136. **13.** Zimmerman RK, et al. *Influenza Other Respir Viruses*. 2022;16(6):1133-1140. **14.** Kulkarni D, et al. *Lancet Healthy Longev*. 2025;6(2):100679. **15.** Widmer K, et al. *J Infect Dis*. 2012;206(1):56-62. **16.** Sharp A, et al. *Influenza Other Respir Viruses*. 2022;16(1). **17.** Falsey AR, et al. *N Engl J Med*. 2005;352(17):1749-1759. **18.** Loubet P, et al. *Clin Microbiol Infect*. 2021;27(1):127.e1-127.e6. **19.** Simões E, et al. Poster presented at the 13th RSV Conference, Igazu (Brazil), March 2025.

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