

Hospitalization and Healthcare Consumption Burden of Respiratory Syncytial Virus (RSV) in Adults over 50 years in France (RESVYR Study)

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RATIONALE

- Respiratory syncytial virus (RSV) presents a wide clinical spectrum and can cause severe infections in adults, leading to respiratory and non-respiratory complications, functional decline, hospitalization and even death. Its burden in older and high-risk adults is underestimated. Care utilization, is crucial to inform public health strategies.
- Given recent developments in preventive measures such as RSV vaccination, generating robust, integrated healthcare data, including both hospital and out-of-hospital

OBJECTIVE

To characterize French patients aged 50 years and older who were hospitalized with RSV from 2015-2022 and to describe their care pathways, including in- and out-hospital healthcare use data.

METHODS

- Source:** French National Health Data System (SNDS)
- Outcomes:** hospital admissions and out-of-hospital healthcare consumptions
- Population analyzed:** patients aged 50 years and over who were hospitalized at least once for RSV between 1st June 2015 and 31st July 2022. Hospitalizations with RSV infection were defined as admission to acute care (Medical Surgery and Obstetrics (MSO)) with one of the following four ICD10 codes as main, related or associated diagnosis: B97.4, J12.1, J20.5 or J21.0. The index date corresponds to the first admittance in the MSO.
- Analysis:**
 - Four age categories were defined: 50-59 years, 60-64 years, 65-74 years and 75+ years;
 - Long-term disease status and inpatient and outpatient healthcare use were considered over a 5-year historic period before the index hospitalization date to detect preexisting comorbidities; using these comorbidities, four risk groups defined in consultation with the scientific committee on a transposition of populations at risk of influenza and pneumococcal infections were defined to classify patients; from most to least severe, 1) High-risk patients corresponding to immunocompromised patients, 2) Medium-risk corresponding to non-immunocompromised patients with underlying predispositions to RSV infections, 3) patients with other risk factors for respiratory infection, and 4) patients with comorbidities out of those cited above. Risk groups were mutually exclusive (the most severe risk group classification retained);
 - Analyzing post-hospitalization healthcare consumption, differential healthcare use and global direct medical costs (national insurance perspective) compared to a 30-day reference period prior to RSV infection were described.

RESULTS

- From 2015-2022, 15,509 RSV hospitalizations were observed for adults over 50 years of age in France with some variability in the number of cases from one year to another.
- Infections occurred primarily in the winter season of each year (Fig 1 as an illustration for 2018-2019 period)
- The median age was 80.0 years; 61.7% of patients were 75+ years.
- 92.2% of the hospitalized patients had at least one comorbidity (Table 1):
 - 15.9% of these patients were immunocompromised, the rate was highest in the 60-64 years group, and lowest in the 75+ years age group
 - 71.4% were not immunocompromised but had underlying predisposing comorbidities or another comorbidity, the rate was highest in the older age group, the lowest in the youngest age group.
- On average, patients had 2.6 (SD 1.7) comorbidities.

Figure 1: RSV hospitalizations per month and age (A) or risk group (B) for the period 2018-2019

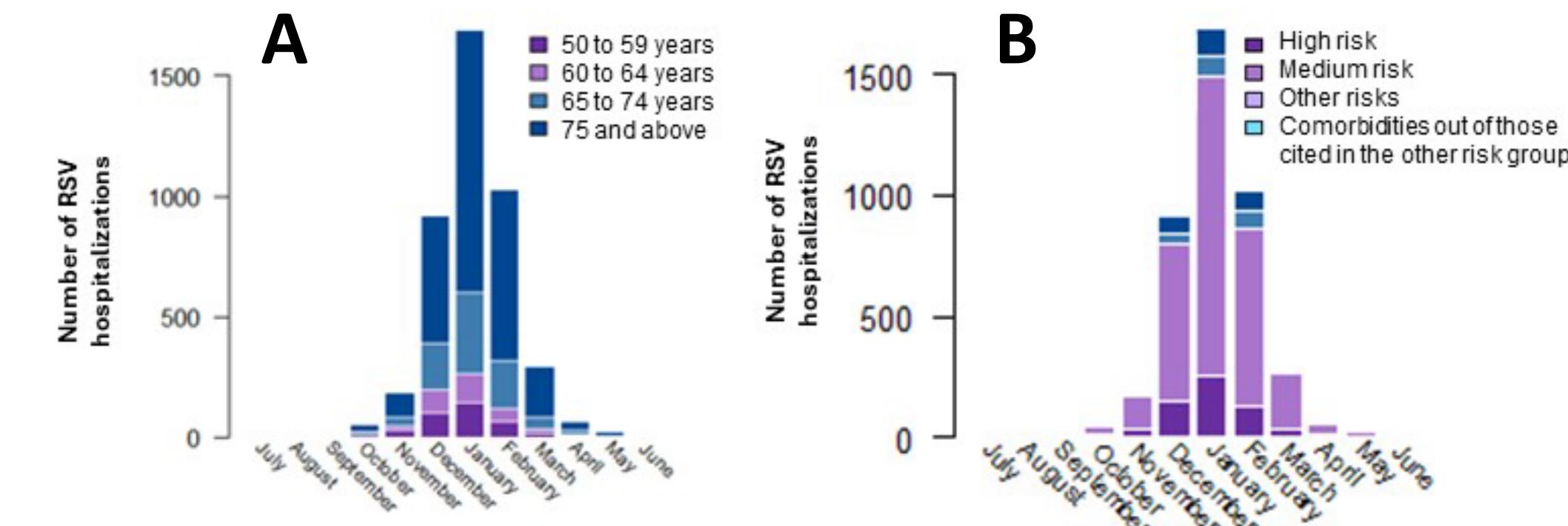


Table 1: Risk groups at index date by age group

	50 to 59 years N=1,453 (%)	60 to 64 years N=1,242 (%)	65 to 74 years N=3,244 (%)	75 years or over N=9,570 (%)	All patients - (50+) N=15,509 (%)
No comorbidities	152 (10.5)	99 (8.0)	244 (7.5)	718 (7.5)	1,213 (7.8)
Immunocompromised patients (high risk)	469 (32.3)	425 (34.2)	831 (25.6)	742 (7.8)	2,467 (15.9)
Non immunocompromised patients with predisposing underlying disease (medium risk)	782 (53.8)	673 (54.2)	2,064 (63.6)	7,559 (79.0)	11,078 (71.4)
Other comorbidities	50 (3.4)	45 (3.6)	105 (3.2)	551 (5.8)	751 (4.8)
Number of comorbidities, among those cited above	2.6 (1.8)	2.8 (1.8)	2.7 (1.8)	2.5 (1.6)	2.6 (1.7)

Table 2: Description of RSV hospitalization by age or risk group

Length of index hospitalization (in days), N	All patients (N=15,509)	Age groups				Risk groups			
		50 to 59 years (N=1,453)	60 to 64 years (N=1,242)	65 to 74 years (N=3,244)	75 and above (N=9,570)	High risk (N=2,467)	Medium risk (N=11,078)	Other risks (N=751)	No comorbidities (N=1,213)
Mean (SD)	15.0 (15.6)	13.5 (16.8)	14.1 (16.1)	14.7 (16.7)	15.5 (14.9)	15.6 (17.5)	15.3 (15.5)	13.5 (12.2)	12.0 (14.0)
Median (IQR)	11.0 (7.0; 17.0)	9.0 (5.0; 15.0)	10.0 (6.0; 16.0)	10.0 (6.0; 17.0)	11.0 (7.0; 18.0)	10.0 (6.0; 18.0)	11.0 (7.0; 18.0)	10.0 (6.0; 17.0)	8.0 (5.0; 14.0)
Origin of index hospitalization, N (%)									
Emergency room	10,532 (76.5)	866 (66.0)	713 (64.2)	2,064 (71.0)	6,889 (81.7)	1,141 (51.7)	7,914 (81.0)	570 (85.6)	907 (81.0)
Home	3,151 (22.9)	447 (34.0)	396 (35.7)	837 (28.8)	1,471 (17.4)	1,066 (48.3)	1,789 (18.3)	89 (13.4)	207 (18.5)
Nursing home	83 (0.6)	0 (0.0)	<10	<10	76 (0.9)	<10	68 (0.7)	<10	<10
Missing	1743	140	132	337	1134	258	1307	85	93
At least one stay in ICU, N (%)	3,937 (25.4)	551 (37.9)	470 (37.8)	1,145 (35.3)	1,771 (18.5)	688 (27.9)	3,030 (27.4)	70 (9.3)	149 (12.3)

Table 3: In-hospital and short-term mortality and rehospitalization by age or risk group

	All patients (N=15,509)	Age groups				Risk groups			
		50 to 59 years (N=1,453)	60 to 64 years (N=1,242)	65 to 74 years (N=3,244)	75 years or over (N=9,570)	High risk (N=2,467)	Medium risk (N=11,078)	Other risks (N=751)	No comorbidities (N=1,213)
In-hospital death	1,326 (8.5)	66 (4.5)	68 (5.5)	230 (7.1)	962 (10.1)	210 (8.5)	1,002 (9.0)	59 (7.9)	55 (4.5)
Patients still alive at hospital discharge, N	14,183	1,387	1,174	3,014	8,608	2,257	10,076	692	1,158
Mortality rate at 30 days	542 (3.8)	26 (1.9)	27 (2.3)	75 (2.5)	414 (4.8)	98 (4.3)	388 (3.9)	41 (5.9)	15 (1.3)
Overnight rehospitalization for all causes at 30 days	2,521 (17.8)	258 (18.6)	267 (22.7)	583 (19.3)	1,413 (16.4)	629 (27.9)	1,680 (16.7)	83 (12.0)	129 (11.1)
Overnight rehospitalization for cardiorespiratory causes at 30 days	1,106 (7.8)	90 (6.5)	105 (8.9)	235 (7.8)	676 (7.9)	176 (7.8)	868 (8.6)	27 (3.9)	35 (3.0)

Table 4: Index hospitalization cost and cost after RSV hospitalization by age or risk group

	All patients (N=15,509)	Age groups				Risk groups			
		50 to 59 years (N=1,453)	60 to 64 years (N=1,242)	65 to 74 years (N=3,244)	75 years or over (N=9,570)	High risk (N=2,467)	Medium risk (N=11,078)	Other risks (N=751)	No comorbidities (N=1,213)
Cost of index hospitalization in euros, N	15,169								
Mean (SD)	6,876 (9,346)	8,729 (13,274)	9,275 (14,514)	8,149 (11,721)	5,854 (6,178)	9618 (15070)	6562 (7739)	5,290 (6,789)	5,087 (7,512)
Additional costs post RSV hospitalization ^a , N	14,183								
Mean (SD)	2,357 (9,648)	2,477 (10,010)	2,502 (11,661)	2,009 (11,042)	2,440 (8,715)	1,993 (13,879)	2,411 (8,377)	2,242 (7,284)	2,622 (10,704)

^a: data for all patients alive at hospital discharge; ^b: additional healthcare costs are the difference between the post-RSV hospitalization 30-days costs and the 30-day costs prior to hospitalization

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CONCLUSIONS

- RSV infection represents a significant hospitalization and economic burden for patients 65 years and older, particularly for patients over 75 years.
- Younger patients (immunocompromised or with underlying conditions), even if they are fewer in number, are also affected by severe forms of infections, with a high use of ICU and with additional costs for the healthcare system.
- These results highlight the importance of considering both comorbidities and age in prevention measures to reduce the impact of these infections.

DISCLOSURES

- SF, EB, MV: employees of Pfizer France. LB, CBF, PMS, LI employees of Horiana (a company under research contract with Pfizer France). PL, LW: members of the scientific committee of RESVYR project. This study was funded by Pfizer.