

Table 2. Patient-reported Symptoms in the HZO-Affected Eye at Baseline (N=13)

Symptom	n	%
Pain		
Above the eye	9	69.2
Behind the eye	8	61.5
To the left or right of the eye	6	46.2
Below the eye	4	30.8
Sensitivity to light	9	69.2
Redness in the eye	9	69.2
Feeling of sand or grit in the eye	9	69.2
Dryness in the eye	8	61.5
Eye lid that is lower or droopy compared to healthy eye	6	46.2
Tearing	6	46.2
Other ocular problem(s) <sup>a</sup>	9	69.2

<sup>a</sup>Other problems included visual disturbance (double vision, blurriness), swelling, headache, and skin sensitivity. HZO, Herpes Zoster Ophthalmicus

Table 3. Patient-reported Outcomes: Depressive Symptoms, Vision-Related Quality of Life, and Herpes Zoster Pain at Baseline (N=13)

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	Mean (SD)	(min, max)
<b>Depressive Symptoms (PHQ-8)<sup>a</sup></b>		
PHQ-8 score	5.9 (4.5)	(0.0, 15.0)
<b>Vision-Related Quality of Life (NEI-VFQ-25)<sup>b</sup></b>		
Overall score	74.6 (13.9)	(58.7, 96.7)
Driving	55.3 (30.8)	(0.0, 91.7)
General health	55.8 (18.1)	(25.0, 75.0)
Ocular pain	62.5 (22.2)	(25.0, 100.0)
Vision-specific mental health	63.5 (23.2)	(31.3, 100.0)
Vision-specific role difficulties	64.4 (29.3)	(12.5, 100.0)
General vision	67.7 (13.0)	(40.0, 80.0)
Near activities	74.4 (21.4)	(33.3, 100.0)
Peripheral vision	76.9 (27.9)	(25.0, 100.0)
Vision-specific dependency	79.5 (27.1)	(8.3, 100.0)
Distant activities	80.5 (15.1)	(58.3, 100.0)
Vision-specific social functioning	94.2 (9.7)	(75.0, 100.0)
Color vision	100.0 (0.0)	(100.0, 100.0)
<b>Pain (ZBPI)<sup>c</sup></b>		
Worst pain severity	3.3 (3.8)	(0.0, 10.0)
Average pain severity	2.4 (2.7)	(0.0, 9.0)
Overall pain severity	2.4 (2.7)	(0.0, 8.3)

<sup>a</sup>PHQ-8 scores range from 0-24; scores of 5, 10, 15, and 20 represent cutpoints for mild, moderate, moderately severe, and severe depression, respectively.

<sup>b</sup>NEI-VFQ-25 scores range from 0-100; a high score represents better functioning. The scores interpreted as an achieved percentage of total possible score. Domain scores are ordered from lowest to highest.

<sup>c</sup>ZBPI scores range from 0-10; a high score represents worse pain severity from 0=no pain to 10=pain as bad as you can imagine.

PHQ-8, eight-item Patient Health Questionnaire depression scale; NEI-VFQ-25, National Eye Institute 25-item Visual Function Questionnaire; ZBPI, Zoster Brief Pain Inventory; SD: Standard Deviation

**Conclusion:** This study represents the first large scale effort to quantify HZO burden. Findings will inform development of a formal patient-reported symptom scale for use in research and clinical practice.

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**1717. Relationship between Neighborhood Census-tract Level Poverty and Respiratory Syncytial Virus (RSV)-associated Hospitalizations in U.S. adults, 2015-2017**

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**Session: P-75. Virology: Studies of the Epidemiology of Viral Infections**

**Background.** In the U.S., RSV is increasingly recognized as a cause of hospitalization for adults with respiratory illness. In adults > 50 years of age, it accounts for up to 12% of medically-attended acute respiratory illnesses and has a case fatality proportion of ~ 6-8%. Poverty can have important influences on health on both the individual level as well as the community level. Few studies have evaluated the relationship of RSV and poverty level, and no identified studies have evaluated this relationship among adults. We evaluated the incidence of RSV-associated hospitalizations in adults across multiple sites in the U.S. by census-tract (CT) level poverty.

**Methods.** Medical record data abstraction was conducted for all adults with a laboratory-confirmed RSV infection admitted to a hospital within the Centers for Disease Control and Prevention's Emerging Infections Program catchment areas within California, Georgia, Maryland, Minnesota, New York, and Tennessee during the 2015-2017 RSV seasons (October-April). Patient addresses were geocoded to their corresponding CT. CTs were divided into four levels of poverty, as selected in prior publications, based on American Community Survey data of percentage of people living below the poverty level: 0-4.9%, 5-9.9%, 10-19.9%, and ≥20%. Incidence rates were calculated by dividing the number of RSV cases in each CT poverty-level (numerator) by the number of adults living in each CT poverty level (denominator), as determined from the 2010 US census, and standardized for age.

**Results.** There were 1713 RSV case-patients with demographic characteristics (Table 1). The incidence of RSV-associated hospitalizations of adults increased with increasing CT level poverty (Figure 1 and Table 2). The risk of RSV-associated hospitalization was 2.58 times higher in census tracts with the highest (20%) versus the lowest (< 5%) percentages of individuals living below the poverty level.

Table 1: Demographic characteristics of adults with an RSV-associated hospitalization, 2015-2017.

Patient age (years)	Percent of individuals living below the poverty level within a census tract				Total (n=1713)
	0-4.9% (n=397)	5-9.9% (n=535)	10-19.9% (n=438)	≥20% (n=343)	
18-<49	49 (12)	59 (11)	70 (16)	73 (21)	251 (15)
50-64	76 (19)	132 (25)	109 (25)	115 (34)	432 (25)
65-79	137 (35)	167 (31)	123 (28)	112 (33)	539 (31)
>80	135 (34)	177 (33)	136 (31)	43 (13)	491 (29)
<b>Sex</b>					
Male	180 (45)	196 (37)	183 (42)	141 (41)	700 (41)
Female	217 (55)	339 (63)	255 (58)	202 (59)	1013 (59)
<b>Race/Ethnicity</b>					
White	306 (77)	358 (67)	247 (56)	123 (36)	1034 (60)
Black	34 (9)	78 (15)	116 (26)	171 (50)	399 (23)
Asian/Pacific Islander	33 (8)	58 (11)	38 (9)	13 (4)	142 (8)
Other/not-reported	4 (1)	5 (1)	3 (1)	3 (1)	15 (1)
Hispanic	15 (4)	31 (6)	25 (6)	30 (9)	101 (6)
<b>Insurance type</b>					
Medicare	234 (59)	321 (60)	248 (57)	176 (51)	979 (57)
Medicaid	48 (12)	81 (15)	95 (22)	153 (45)	377 (22)
Private insurance	229 (58)	248 (46)	188 (43)	115 (34)	780 (46)
Uninsured	5 (1)	2 (0)	10 (2)	5 (1)	22 (1)
Other/not-reported	11 (3)	8 (1)	9 (2)	5 (1)	33 (2)
<b>State</b>					
California	123 (31)	199 (37)	143 (33)	57 (17)	522 (30)
Georgia	36 (9)	39 (7)	66 (15)	45 (13)	186 (11)
Maryland	94 (24)	100 (19)	86 (20)	61 (18)	341 (20)
Minnesota	43 (11)	45 (8)	28 (6)	21 (6)	137 (8)
New York	89 (22)	101 (19)	81 (18)	124 (36)	395 (23)
Tennessee	12 (3)	51 (10)	34 (8)	35 (10)	132 (8)

Figure 1. Age-adjusted incidence rate of RSV-associated hospitalizations of adults by census-tract poverty level, 2015-2017

Poverty levels (all sites)	Relative Risk	95% Confidence Interval
0-4.9%	---	---
5-9.9%	1.12	0.98, 1.28
10-19.9%	1.38	1.20, 1.58
≥20%	2.58	2.23, 2.98

Table 2. Incidence rate ratios for RSV-associated hospitalizations of adults by census-tract poverty level, 2015-2017.

Poverty levels (all sites)	Relative Risk	95% Confidence Interval
0-4.9%	---	---
5-9.9%	1.12	0.98, 1.28
10-19.9%	1.38	1.20, 1.58
≥20%	2.58	2.23, 2.98

**Conclusion:** The incidence rate of RSV-associated hospitalization in adults appears to have a positive association with increasing CT level of poverty; however, this trend reached significance only among cases living in CTs with higher percentages of poverty (≥ 10%).

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**1718. Respiratory Syncytial Virus (RSV) Surveillance in the Department of Veterans Affairs (VA), 2010-2018**

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**Session:** P-75. Virology: Studies of the Epidemiology of Viral Infections

**Background.** Respiratory Syncytial Virus (RSV) is an increasingly recognized cause of acute respiratory illness in older adults, leading to an estimated 177,000 hospitalizations and 14,000 deaths each year in the US. In adult populations, diagnostic testing for RSV has historically been underutilized. Herein, we examine national trends in RSV testing and infection across the Veterans Affairs (VA) healthcare system.

**Methods.** Electronic RSV laboratory testing results, ICD-coded hospitalizations and outpatient encounters were obtained from VA's Praedico Surveillance System (1/1/2010-12/31/2018). Patients were reviewed for positive results, repeat testing, and demographics. Antibody tests were excluded.

**Results.** A total of 102,251 RSV results were included. Overall, 4,372 (4.3%) specimens from 4,263 unique individuals were positive with a median age of 67 years (range 0-101) and 90% were male. 1,511 individuals (35.4%) also had an RSV-coded hospitalization. RSV type was specified for only 7.8% of positives (Table). During 2010-2018 there were 2,522 RSV-coded hospitalizations (median length of stay = 4 days) among 2,444 unique individuals, which included 413 ICU stays (16.4%) and 98 deaths (3.9%) during the RSV-coded hospitalization. Approximately 78% of RSV-coded hospitalizations within VA (excluding all non-VA hospitalizations) had a documented positive test result. A greater than 15-fold increase in RSV tests performed, hospitalizations and outpatient encounters was observed from 2010-2018, although the percent testing positive remained relatively stable (Figure, Table).

**Figure.** Testing for Respiratory Syncytial Virus (RSV), Department of Veterans Affairs, 2010-2018.

Figure. Testing for Respiratory Syncytial Virus (RSV), Department of Veterans Affairs, 2010-2018.

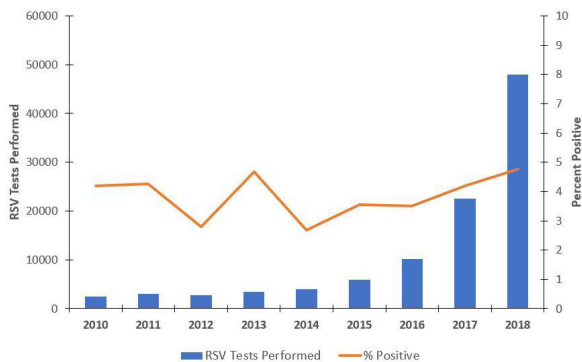


Table. Select RSV Surveillance Metrics, Department of Veterans Affairs, 2010-2018

Year	RSV-Coded Hospitalizations	RSV-Coded Outpatient Encounters	Tests Performed	Positives (%)	RSV A (%)	RSV B (%)	Type not Specified (%)
2010	59	36	2,428	101 (4.2)	5 (5)	3 (3)	93 (92.1)
2011	62	58	3,058	130 (4.3)	8 (6.1)	17 (13)	105 (80.8)
2012	48	81	2,791	78 (2.8)	9 (11.5)	2 (2.6)	67 (86)
2013	100	126	3,386	158 (4.7)	35 (22.2)	7 (4.4)	116 (73.4)
2014	139	77	4,010	107 (2.7)	6 (5.6)	11 (10.3)	90 (84.1)
2015	221	185	5,936	211 (3.6)	22 (10.4)	43 (20.4)	146 (69.2)
2016	333	300	10,129	356 (3.5)	32 (9)	30 (8.4)	294 (82.6)
2017	581	562	22,563	948 (4.2)	20 (2.1)	35 (3.7)	893 (94.2)
2018	979	1,554	47,950	2,285 (4.8)	10 (0.4)	32 (1.4)	2,241 (98.2)
Total	2,522	2,979	102,251	4,372 (4.3)	147 (3.4)	180 (4.1)	4,045 (92.5)

Notes: Outpatient Encounters includes Outpatient, Emergency Department and Telehealth encounters. RSV tests include: polymerase chain reaction (PCR), nucleic acid amplification testing (NAAT), antigen detection (EIA), direct or indirect fluorescent antibody (DFA/IFA), shell vial and standard culture. Antibody tests were excluded.

**Conclusion.** RSV testing and identification of patients with RSV infection increased dramatically during the time period analyzed, likely due to increased availability of PCR-based multi-pathogen panels and duplex assays. While the percentage of tests positive for RSV remained relatively stable, the rise in coded hospitalizations may be due to increased testing for RSV among hospitalized Veterans with severe respiratory infections. These surveillance data may allow for further characterization of RSV disease burden estimates which can help inform clinical management and development of interventions for adults, such as vaccines and antiviral therapies.

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**1719. Respiratory Syncytial Virus-Associated Hospitalization Rates among US Infants: A Systematic Review and Meta-Analysis**

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**Session:** P-75. Virology: Studies of the Epidemiology of Viral Infections

**Background.** Understanding the true magnitude of infant respiratory syncytial virus (RSV) burden is critical for determining the potential public-health benefit of RSV prevention strategies. Although global reviews of infant RSV burden exist, none have summarized data from the United States or evaluated how RSV burden estimates are influenced by variations in study design.

**Methods.** We performed a systematic literature review and meta-analysis of studies describing RSV-associated hospitalization rates among US infants. We also examined the impact of key study characteristics on these estimates.

**Results.** After review of 3058 articles through January 2020, we identified 25 studies with 31 unique estimates of RSV-associated hospitalization rates. Among US infants < 1 year of age, annual rates ranged from 8.4 to 40.8 per 1000 with a pooled rate= 19.4 (95%CI= 17.9-20.9). Study type was associated with RSV hospitalization rates (P =.003), with active surveillance studies having pooled rates per 1000 (11.1; 95%CI: 9.8-12.3) that were half that of studies based on administrative claims (21.4; 95%CI: 19.5-23.3) or modeling approaches (23.2; 95%CI: 20.2-26.2).

**Conclusion.** Applying the pooled rates identified in our review to the 2020 US birth cohort suggests that 73,680 to 86,020 RSV-associated infant hospitalizations occur each year. To date, public-health officials have used conservative estimates from active surveillance as the basis for defining US infant RSV burden. The full range of RSV-associated hospitalization rates identified in our review better characterizes the true RSV burden in infants and can better inform future evaluations of RSV prevention strategies.

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