

CLINICAL CHARACTERISTICS OF COMMON RESPIRATORY VIRUSES DETECTED IN INFANTS ACROSS DIFFERENT CLINICAL SETTINGS

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1. INTRODUCTION

- Viral acute respiratory infections (ARI) continue to be a significant cause of healthcare visits in young children
- The clinical presentations and ARI severity vary and are related to both host and virus-related factors
- We aimed to evaluate the clinical presentation and disease severity of common respiratory viruses associated with medically attended ARI

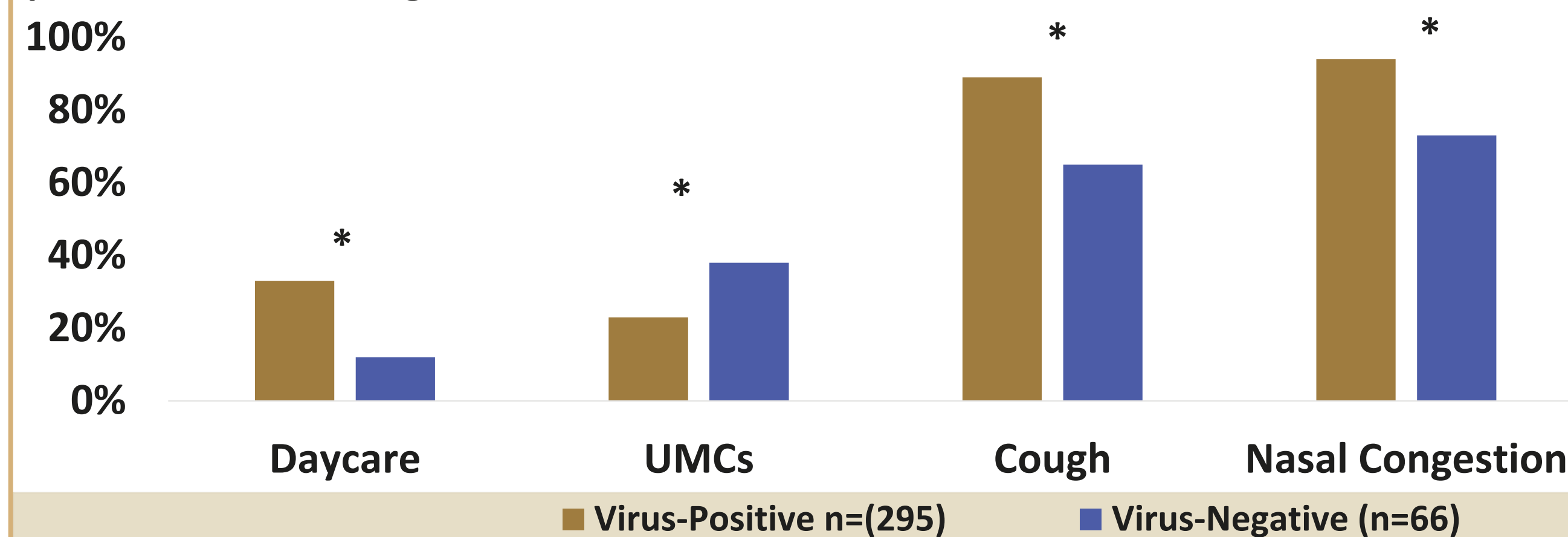
2. METHODS

- Infants less than one year who presented with fever and/or respiratory symptoms were enrolled from December 16, 2019 to April 30, 2020 in Nashville, TN from three different clinical settings [outpatient (OP), emergency department (ED) and inpatient (IP)]
- Nasal and throat swabs were collected and tested by molecular testing for common respiratory viruses, and SARS-CoV-2
- Demographic and clinical characteristics were collected through parent/guardian interviews, medical chart abstractions and follow up surveys
- Multivariable logistic regression was used to compare the odds of hospital admission in virus-positive infants

3. RESULTS

- Of 361 infants enrolled and had nasal swabs collected and tested, 295 (82%) had at least one virus detected
- Rhinovirus/enterovirus (RV/EV) [124 (42%)], respiratory syncytial virus (RSV) [101 (32%)], and influenza (flu) [44 (15%)] were the three most common pathogens detected

Figure 1. Univariable Analysis of Demographic and Clinical Characteristics of Virus-positive vs. Virus-negative Children



	Virus-Positive n=(295)	Virus-Negative (n=66)
Maximum RR	44.9±14*	39.1±12.2
Minimum O2 Saturation	95.6±5.4*	97.2±3.6

UMCs: underlying medical conditions; RR: respiratory rate. T-test was used to compare means between continuous data, Pearson's Chi-Squared test was used to compare proportions between categorical data* p<0.05

Table 1. Demographic and clinical characteristics of infants positive for RV/EV, RSV or Influenza

	RV/EV (n=124)**	RSV (n=101)**	Influenza (n=44)**
Demographic Characteristics			
Age, months, mean ± SD	6.4±3.2	4.9±3.2*↓	7.8±2.9*↑
White	55%*↑	44%	45%
Daycare	44%*↑	29%	30%
Signs and symptoms			
Documented Fever	48%*↓	56%	82%*↑
Chills	5%*↓	13%	27%*↑
Cough	84%*↓	100%*↑	93%
SOB	35%*↓	67%*↑	45%
Wheezing	6%*↓	23%*↑	5%
Crackles/Rales/Ronchi	11%*↓	50%*↑	11%*↓
Accessory Muscle Use	2%	7%*↑	0
Apnea	4%	7%	0*↓
Maximum RR	40.9±12*↓	51.1±14.5*↑	39.5±7.6*↓
Minimum O2 Saturation	97±5.3*↑	94.4±5.7*↓	96.2±4.1
Markers of severity			
IP	10%*↓	37%*↑	14%
O2 Use	7/13 (53.9)%	24/37 (65%)*↑	1/6 (17%)

RR= respiratory rate; SOB: shortness of breath; Categorical Data are in n (%), Continuous Data are in Mean ± SD
**.: comparison between each virus and all other viruses, * P<0.05, ↑: higher, ↓: lower, T-test was used to compare means between continuous data, Pearson's Chi-Squared test was used to compare proportions between categorical data

Table 2. Adjusted Odds ratios from logistic regression model to evaluate association between variables associated with hospital admission in virus-positive infants

	N=226	
	OR	95% CI
<i>Virus type</i>		
RSV-positive	Ref	Ref
RV/EV-positive	0.185	0.074-0.464
Influenza-positive	0.384	0.120-1.227

OR: odds ratio; CI: confidence interval
Adjusted for age, race, ethnicity, gender, underlying medical conditions, prematurity, and breastfeeding

4. CONCLUSIONS

- Majority of infants with ARI had at least one virus detected and RV/EV, RSV, and flu were the most common virus detected
- RSV was most severe, as indicated by clinical presentation, hospital admission and oxygen use
- These data highlight the importance of continuous viral ARI surveillance in different populations, settings and across clinical severities, to help develop and advance preventive and treatment measures

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