154. Circulation of Rhinovirus/Enterovirus Respiratory Infections in Children During 2020-21 in the United States

Danielle A. Rankin, MPH, CIC[1]; Andrew Speaker, PhD[2]; Ariana Perez, MPH[3]; Zaid Haddadin, MD[1]; Varvara Probst, MD, MPH[4]; Jennifer E. Schuster, MD[5]; Anna L. Blozinski, MPH[2]; Herdi Kurnia. Rahman, Bachelor's Degree[2]; Laura S. Stewart, PhD[2]; Brian Rha, MD, MSPH[3]; Marian G. Michaels, MD, MPH[6]; John V. Williams, MD[7]; Julie A. Boom, MD[8]; Leila C. Sahni, PhD, MPH[9]; Mary. Allen Staat, MD, MPH[10]; Elizabeth P. Schlaudecker, MD, MPH[11]; Monica McNeal, MS[10]; Rangaraj Selvarangan, BVSc, PhD[5]; Christopher J. Harrison, MD[5]; Geoffrey A. Weinberg, MD[12]; Peter G. Szilagyi, MD, MPH[13]; Janet A. Englund, MD[14]; Eileen J. Klein, MD, MPH[15]; Meredith McMorrow, MD, MPH[3]; Manish Patel, MD[3]; James Chappell, MD, PhD[2]; Claire Midgley, PhD[16]; Natasha B. Halasa, MD, MPH[2]; Natasha B. Halasa, MD, MPH[2]; [1]Vanderbilt University Medical Center; Division of Pediatric Infectious Diseases, Nashville, TN; [2]Vanderbilt University Medical Center, Nashville, TN; [3]Centers for Disease Control and Prevention, Atlanta, Georgia; [4]University of Florida, Jacksonville, Jacksonville, Florida; [5]Children's Mercy Hospital, Kansas City, MO; [6]Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA; [7]University of Pittsburgh, Pittsburgh, Pennsylvania; [8]Baylor College of Medicine, Houston, TX; [9]Texas Children's Hospital, Houston, Texas; [10]Cincinnati Children's Hospital Medical Center, Cincinnati, OH; [11]Cincinnati Children's Hospital Medical Center, University of Cincinnati College of Medicine, Cincinnati, OH; [12]University of Rochester, Rochester, New York; [13]University of California, Los Angeles, Los Angeles, California; [14]Seattle Children's Hospital/Univ. of Washington, Seattle, Washington; [15]Seattle Children's Hospital, Seattle, Washington; [16]CDC, Georgia

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Background. Sharp declines in influenza and respiratory syncytial virus (RSV) circulation across the U.S. have been described during the pandemic in temporal association with community mitigation for control of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). We aimed to determine relative frequencies of rhinovirus/enterovirus (RV/EV) and other respiratory viruses in children presenting to emergency departments or hospitalized with acute respiratory illness (ARI) prior to and during the COVID-19 pandemic.

Methods. We conducted a multi-center active prospective ARI surveillance study in children as part of the New Vaccine Surveillance Network (NVSN) from December 2016 through January 2021. Molecular testing for RV/EV, RSV, influenza, and other respiratory viruses [i.e., human metapneumovirus, parainfluenza virus (Types 1-4), and adenovirus] were performed on specimens collected from children enrolled children. Cumulative percent positivity of each virus type during March 2020–January 2021 was compared from March-January in the prior seasons (2017-2018, 2018-2019, 2019-2020) using Pearson's chi-squared. Data are provisional.

Results. Among 69,403 eligible children, 37,676 (54%) were enrolled and tested for respiratory viruses. The number of both eligible and enrolled children declined in early 2020 (Figure 1), but 4,691 children (52% of eligible) were enrolled and tested during March 2020-January 2021. From March 2020-January 2021, the overall percentage of enrolled children with respiratory testing who had detectable RV/EV was similar compared to the same time period in 2017-2018 and 2019-2020 (Figure 1, Table 1). In contrast, the percent positivity of RSV, influenza, and other respiratory viruses combined declined compared to prior years, (p< 0.001, Figure 1, Table 1).

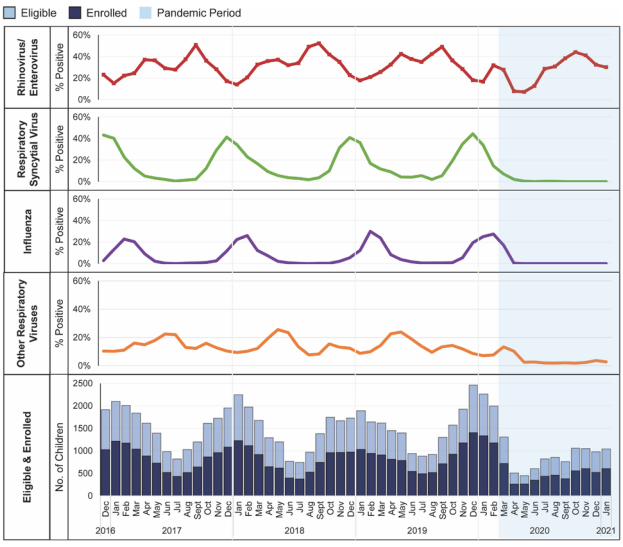

Figure 1. Percentage of Viral Detection Among Enrolled Children Who Received Respiratory Testing, New Vaccine Surveillance Network (NVSN), United States, December 2016 – January 2021

Percent (n/N) children positive for:	2017-2018 % (N)	2018-2019 % (N)	2019-2020 % (N)	2020-2021 % (N)‡
Rhinovirus/enterovirus*	29.0 (2,562/8,828)	34.4 (2,782/8,084)†	30.4 (2,885/9,485)	29.6 (1,341/4,532)
Respiratory syncytial virus*	16.7 (1,473/8,830)†	18.2 (1,468/8,086)†	20.5 (1,949/9,488)†	1.2 (58/4,688)
Influenza*	8.4 (742/8,830)†	4.7 (377/8,086)†	10.5 (999/9,487)†	2.6 (122/4,625)
Other respiratory viruses*	15.3 (1,262/8,830)†	14.0 (1,128/8,087)†	14.0 (1,327/9,488)†	6.1 (284/4,691)

‡ Referent group for pairwise comparisons
† *P*<0.001
*among enrolled children who received respiratory testing
Other respiratory viruses include human metapneumovirus, parainfluenza virus (Types 1-4), and adenovirus

Table 1. Percent of Respiratory Viruses Circulating in March 2020– January 2021, compared to March-January in Prior Years, New Vaccine Surveillance Network (NVSN), United States, March 2017 – January 2021

Conclusion. During 2020, RV/EV continued to circulate among children receiving care for ARI despite abrupt declines in other respiratory viruses within this population. These findings warrant further studies to understand virologic, behavioral, biological, and/or environmental factors associated with this continued RV/EV circulation.

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155. *In Vitro* Evaluation of Delafloxacin Activity Against Contemporary US Isolates from Community-Acquired Pneumonia and Community-Acquired Lower Respiratory Tract Infections: Results from the SENTRY Antimicrobial Surveillance Program (2014-2020)

Dee Shortridge, PhD[1]; Jennifer M. Streit, BS[2]; Michael D. Huband, BS[2]; Mariana Castanheira, PhD[2]; Mariana Castanheira, PhD[2]; [1]JMI Labortories, North Liberty, Iowa; [2]JMI Laboratories, North Liberty, IA

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Background. Delafloxacin (DLX) is a broad-spectrum fluoroquinolone antibacterial approved in the US for the treatment of community-acquired bacterial pneumonia (CABP). DLX is indicated to treat CABP caused by *Streptococcus pneumoniae* (SPN), *Haemophilus influenzae* (HI), *Haemophilus parainfluenzae* (HP), methicillin-susceptible *Staphylococcus aureus* (MSSA), *Escherichia coli* (EC), *Klebsiella pneumoniae* (KPN), *Pseudomonas aeruginosa* (PSA), *Chlamydia pneumoniae*, *Mycoplasma pneumoniae* and *L. pneumophila*. In this study, the *in vitro* susceptibilities of DLX and comparator quinolones were determined for clinical isolates from CAP and CA-lower respiratory tract infections (LRTIs).

Methods. CAP and CA-LRTI isolates were consecutively collected at 67 US medical centers participating in the SENTRY Surveillance Program during 2014-2020. Sites submitted 1 isolate per patient per infection episode. Isolate identification was determined at each site and confirmed using standard biochemical or molecular methods at JMI Laboratories. Susceptibility testing was performed according to CLSI broth microdilution methodology. CLSI (2021) interpretive criteria were applied, FDA criteria were used for DLX.

Results. The susceptibility results for DLX, levofloxacin (LEV), moxifloxacin (MOX), and ciprofloxacin (CIP) for the indicated species are shown in the table. As MOX does not have CLSI breakpoints for EC, KPN, or PSA, CIP was tested for those species instead. DLX had the highest percent susceptibility against MSSA (91.8%). SPN and HI were >97% susceptible, and HP was >91% for all 3 drugs. KPN susceptibility ranged from 86.4% for LEV to 76.9% for DLX. Susceptibilities for EC and PSA were similar for the 3 drugs, EC varied from 59.8% for LEV to 57.0% for DLX, and PSA varied from 71.6% for CIP to 64.0% to LEV.

Conclusion. DLX had good activity against recent CAP and CA-LRTI isolates from US hospitals. DLX had the highest susceptibility of the quinolones tested against MSSA. Quinolone-resistant SPN and HI were uncommon. These *in vitro* results suggest that DLX may be a useful therapeutic option for CABP caused by Gram-positive, Gram-negative and fastidious pathogens.

Table. Susceptibilities of delafloxacin and comparators tested against isolates from community-acquired respiratory pathogens

Organism/ Antimicrobial agent	No. of isolates	mg/L			CLSI/ FDA [a]		
		MIC_{50}	MIC_{90}	MIC range	%S	%I	%R
S. aureus							
MSSA							
Delafloxacin	1,217	≤0.004	0.12	≤0.004 to 4	91.8	3.9	4.4
Levofloxacin	1,217	0.25	4	≤0.12 to >4	88.3	0.2	11.4
Moxifloxacin [b]	1,108	≤0.06	1	≤0.06 to >4	88.6	2.1	9.3
S. pneumoniae							
Delafloxacin	2,909	0.015	0.03	≤0.004 to 0.25	97.6		
Levofloxacin	2,909	1	1	0.25 to >4	99.4	0.1	0.5
Moxifloxacin	2,618	≤0.12	0.25	≤0.12 to 4	99.6	0.3	0.1
H. influenzae							
Delafloxacin	1,765	≤0.001	0.002	≤0.001 to >0.25	97.2		
Levofloxacin	1,765	≤0.015	0.03	≤0.015 to >2	99.7		
Moxifloxacin	1,602	0.03	0.06	0.008 to >2	99.6		
H. parainfluenzae							
Delafloxacin	46	0.004	0.015	≤0.001 to >0.06	91.3		
Levofloxacin	46	0.03	0.06	≤0.015 to 1	97.8		
Moxifloxacin	13	0.06	0.25	0.015 to >2	92.3		
E. coli							
Delafloxacin	321	0.06	>4	0.008 to >4	57.0	1.6	41.4
Levofloxacin	321	≤0.12	>4	≤0.25 to >4	59.8	0.6	39.6
Ciprofloxacin	319	0.06	>4	≤0.03 to >4	57.4	3.4	39.2
K. pneumoniae							
Delafloxacin	337	0.12	4	≤0.004 to >4	76.9	5.9	17.2
Levofloxacin	337	≤0.12	1	≤0.12 to >4	86.4	3.9	9.8
Ciprofloxacin	336	≤0.03	2	≤0.03 to >4	82.4	5.1	12.5
P. aeruginosa							
Delafloxacin	1,248	0.5	4	≤0.004 to >8	67.1	10.7	22.2
Levofloxacin	1,248	0.5	>4	≤0.12 to >4	64.0	11.2	24.8
Ciprofloxacin	1,248	0.25	4	≤0.03 to >4	71.6	7.5	20.9

[a] Criteria as published by FDA (delafloxacin) or CLSI (2021).
[b] Moxifloxacin not tested in 2015

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156. Correlation Between WHO (World Health Organization) Case Definition of Severe Pneumonia and Lung POCUS (Point of Care Ultrasound) vs Chest X-ray (CXR) Findings to Diagnose Pediatric Community-Acquired Pneumonia (CAP) in Limited Resource Settings

Ingrid Y. Camelo, MD, MPH[1]; Rachel Pieciak, MPH[2]; Ilse castro-aragon, MD[3]; Bindu Setty, MD[3]; Lauren Etter, n/a[4]; Christopher Gill, MD MS[5]; [1]UMass- Baystate Medical Center/Baystate Children's Hospital, Northampton, Massachusetts; [2]MPH, Boston, Massachusetts; [3]Boston Medical Center, Chestnut Hill, Massachusetts; [4]Boston University, Boston, Massachusetts; [5]Boston U. School of Public Health, Boston, MA

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Background. Childhood pneumonia is one of the leading causes of death in low-income countries. The diagnosis of pediatric pneumonia is a critical epidemiological duty for treatment effectiveness and vaccine surveillance. Previous studies have demonstrated an important lack in correlation between CXR findings and the clinical WHO case definition of severe pneumonia. Lung Point of Care Ultrasound (POCUS) has demonstrated in multiple studies to be more sensitive and specific for diagnosing pneumonia in the pediatric population. With no exposure to radiation, extensive availability in limited-resource settings, and easy interpretation, this modality can be a breakpoint in making a more accurate correlation between pneumonia clinical findings and diagnostic imaging.

Methods. 50 children from 1-59 months meeting the WHO case definition of severe pneumonia were enrolled at the Emergency Department at University Teaching Hospital (UTH) in Lusaka, Zambia. Children underwent lung POCUS and CXR. Correlation between symptoms and all abnormalities (consolidation, effusion, and interstitial patterns) seen in both imaging modalities were analyzed by calculating the proportion of children with abnormalities on CXR and ultrasound. Each participant was assigned a score based on findings. 0 = normal, 1 = consolidation only, 2 = Consolidation and non-consolidation (interstitial and/or effusion) and 3 = non-consolidation (interstitial and/or effusion) only.

Results. 44 (90%) of children had abnormalities on CXR and 46 (94%) on POCUS. Five children (10%) had normal findings on CXR vs 3 (6%) on Lung POCUS. 4 (8%) had consolidation only on CXR vs 0 (0%) on POCUS. 19 (39%) had consolidation and non-consolidation (interstitial and/or effusion) on CXR vs. 20 (41%) on POCUS. 21 (43%) had non-consolidation (interstitial and/or effusion) only on CXR vs. 26 (53%) on POCUS.