Respiratory pathogen surveillance in pediatric healthcare workers

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BACKGROUND

- Pediatric healthcare workers may be exposed to respiratory pathogens at work.

OBJECTIVE

- Detect respiratory infections among pediatric healthcare workers and analyze factors associated with pathogen detection.

METHODS

- **Design:** Prospective longitudinal observational surveillance study 2/2022-03/2025.
- **Population:** Pediatric faculty, residents, medical students, nurses at an academic medical center.
- **Data collection:** Bi-monthly nasal swabs and surveys including demographics, symptoms, household sick contacts, occupational location.
- **Sample testing:** PCR (BioFire Respiratory Panel 1.7)
- **Analysis:** Associations between pathogen detection and data collection points using Chi squared and rank sum tests.

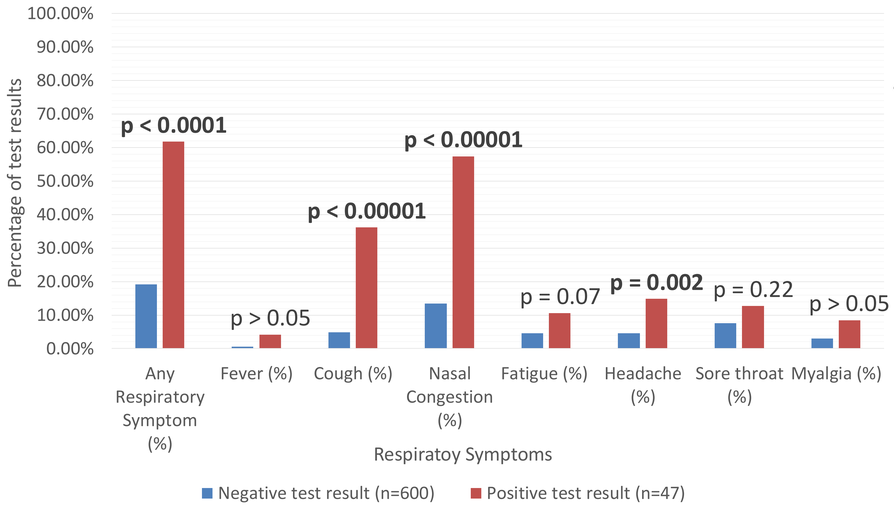
Demographic, household, and occupational data reported at time of respiratory sample collection

	Negative test result (n=897)	Positive test result (n=56)	P
Median (IQR) age (yrs)	42 (37-47)	32 (30-35)	
Sex (%)			0.06
Female	644 (72%)	47 (83.9%)	
Male	240 (26.8%)	9 (16.1%)	
Race/ethnicity (%)			0.48
White	636 (70.9%)	46 (82.1%)	
Black	37 (4.12%)	0 (0%)	
Asian	99 (11%)	5 (8.9%)	
Other	98 (10.9.3%)	4 (7.14%)	
Role (%)			0.92
Faculty	335 (37.3%)	23 (41.1%)	
Resident	322 (35.9%)	19 (33.9%)	
Student	25 (2.8%)	2 (3.57%)	
Nurse	54 (6.02%)	4 (7.14%)	
Other	161 (17.9%)	8 (14.3%)	
Location (%)			0.96
Non-clinical	146 (16.2%)	9 (16.1%)	
Clinical	751 (83.7%)	47 (83.9%)	
Median household size	2 (1 - 3)	4 (3 - 4)	
Child in household (%)			**0.0015**
No	486 (54.2%)	18 (32.1%)	
Yes	391 (43.6%)	36 (64.3%)	
Sick contact in household (%)			**<.0000 1**
No	780 (86.9%)	30 (53.6%)	
Yes	107 (11.9%)	26 (45.6%)	

RESULTS

- 897 samples were obtained from 44 pediatric health care workers
- 61 positive results (6.8%): 28 rhino-/enterovirus, 5 Respiratory syncytial virus, 2 Adenovirus, 2 Parainfluenza virus type 3, 15 Coronavirus-19, 4 Human metapneumovirus, 2 Coronavirus 229E, 2 Coronavirus NL63, 1 Coronavirus HKU1.
- Pathogen detection associated with household sick contact, children in household, female sex

Graph 1: Respiratory symptoms reported at the time of respiratory sample collection



- Any respiratory symptom, headache, cough, nasal congestion associated with respiratory pathogen detection.

CONCLUSIONS

- Respiratory infections in pediatric health care workers are common and associated with sick household contacts, children in the house but not gender, clinical role or location.
- Identification of factors associated with respiratory infections in HCWs may lead to mitigation strategies to prevent the spread of respiratory pathogens in health care settings