

Viral Respiratory Diseases HMPV in Western Australia

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Introduction

- Telethon Kids Institute (TKI) is a medical research institute located in Perth, Western Australia
- The research conducted at TKI contributes to limited research on environmental determinants of respiratory viruses
- Similar baseline hMPV rates worldwide indicate that applicable on an international scale

Objective of the Study

Observe the influence of SARS-CoV-2 related non-pharmaceutical interventions on hMPV in different age groups and clinical phenotypes

Methods

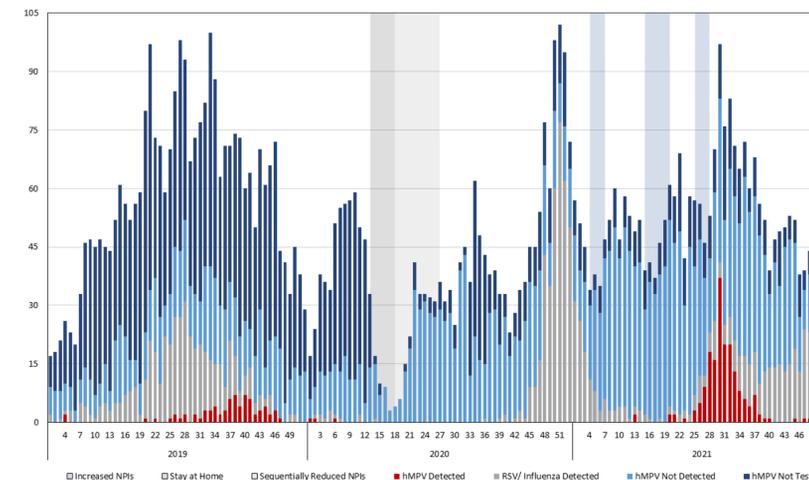
- Analyze data of emergency department presentations at Perth Children's Hospital from 2017-2021
- Subgroup analysis was performed by age and by clinical phenotype
- After researching hMPV, I sorted and analyzed data, built figures, and wrote this paper on hMPV

Results

- Following the implementation of NPIs, WA observed an absent hMPV season in 2020 and an early peak in 2021.
- hMPV incidence increased by 3-fold in 2021 compared to 2017-2019
- These changes led to an increase in OALRI cases and median age of hMPV infected individuals.

Age Groups	≥1 yr. to < 5 years		
Period	Baseline	2021	
hMPV Tested, N (%)	357 (23%)	1089 (68%)	p<0.001
hMPV Detected, N (% Admitted)	33 (2%)	117 (7%)	p<0.001
Metropolitan Incidence (per 100,000)	28 (19-41)	107 (87-129)	IRR 3.8 (2.5-5.9)

- Overall rate of hMPV testing increased from 34.7% to 66.2% throughout the study
- hMPV detections increased by 2-fold for bronchiolitis and 3-fold for OALRI and wheeze compared to baseline
- Percentage positivity for bronchiolitis and OALRI increased by more than two-fold
- hMPV testing increased for all age groups but most significantly for 1-4 years



- The impact of NPIs was determined by comparing data from the baseline (2017-2019) to 2021
- hMPV detections increased for infants aged <12 months, although hMPV tested remained similar
- Increase in detections were observed amongst all age groups with the most significant change in the 1-4 years category

Clinical Phenotype	Bronchiolitis			OALRI			Wheeze		
	Baseline	2021		Baseline	2021		Baseline	2021	
Admission (% ED Presentations)	438 (40%)	464 (37%)	ns	550 (42%)	604 (44%)	ns	1352 (68%)	1308 (68%)	ns
hMPV Tested (%)	290 (66%)	233 (50%)	p<0.001	312 (57%)	409 (68%)	p<0.001	166 (12%)	980 (75%)	p<0.001
hMPV Detected (% Admitted)	24 (5%)	39 (8%)	ns	26 (5%)	71 (12%)	p<0.001	12 (1%)	55 (4%)	p<0.001
% Positive of Tested	8%	17%	p=0.002	8%	17%	p<0.001	7%	6%	ns

Discussion

- The drop in hMPV cases is due to a drop in population immunity and an expanded group of hMPV-naïve infants.
- More infants presented with OALRI and wheeze because their first infections occurred past ≥12 months old

Questions

There are many unknowns about hMPV seasonality in future years, as changes in travel patterns, hygiene practices, local NPIs, and other viruses may influence hMPV seasons

Conclusion

- The burden of hMPV may be greater than previously assessed
- Human migration, population immunity, and environmental conditions are all factors that affect hMPV transmission

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