TRACKING COVID-19 FOR SAFER SCHOOLS

HOW ROBUST CONTACT TRACING AND SEROLOGY DATA SUPPORTED EVIDENCE-BASED PUBLIC HEALTH DECISIONS AND SCHOOL POLICIES FOR YOUTH IN BC

Allison W. Watts1, Louise C. Mâsse David M. Goldfarb, Alexandra Choi, Sarah Hutchison, Else S. Bosman, Kathy O'Sullivan, Collette O'Reilly, Michael A. Irvine, Daniel Coombs, Vilte Barakauskas, Sam Bardwell, Tisha Montgomery, Lauren Muttucomaroe, Frederic Reicherz, Hamid Razzaghian, Bethany Poon, Nalin Dhillon, Adrienne MacDonald, Sadaf Sedigi, Rui Yang Xu, Mark Pitblado, Julia A. Bettinger, Manish Sadarangani, Anne Gadermann, Eva Oberle, Tim Oberlander, Sheila F. O'Brian, Pascal M. Lavoie¹

¹ Department of Pediatrics, Faculty of Medicine, University of British Columbia; BC Children's Hospital Research Institute

Introduction

The COVID-19 pandemic had a dramatic impact on schools, with mental and physical consequences on students and staff.¹⁻³ Previous studies have not found increased transmission within schools. however, this continues to be debated. There is a need to understand the risk of COVID-19 within the school setting across phases of the pandemic, including in the context of highly transmissible Omicron variants and after the mask mandates in schools were removed.

Objective

To report on the a) longitudinal SARS-CoV-2 serology and mental health outcomes among school workers of the Vancouver, Richmond and Delta school districts, and b) results of a close contact tracing sub-study among students and school workers who tested positive for COVID-19.

Methods

Longitudinal serology and questionnaire data collected from 2538 school staff in Feb-May 2021 (phase 1), Jan-Apr 2022 (phase 2) and Jan-Feb 2023 (ongoing). Seroprevalence adjusted for test sensitivity and specificity was compared to neighborhood-, age-, sex- and period-weighted data among blood donors (n=5417 in 2021; n=7164 in 2022). Psychological Measures: Mental Health: In general, how would you describe your mental health? (excellent, very good, good, fair, *poor*); High Anxiety: Score \geq 10 on 7-item Generalized Anxiety Disorder Assessment (GAD-7).

Figure 1. COVID-19 Cases in BC and serology testing periods



Results

Table 1. Participants, COVID-19 Testing & Exposures

		Phase 1 2021 (n=1689)	Phase 2 2022 (n=1850)	Phase 3 2023 (n=920)
Age, years (mean ± SD)		45.4 ± 10.4	46.9 ± 10.2	48.2 ± 10.2
Sex, % female		80.6%	82.0%	83.7%
Vaccination, % 3+ doses		-	85.6%	93.9%
Classroom worker, %		78.2%	80.7%	72.5%
Elementary school, %		63.7%	58.9%	54.3%
Tested +ve for COVID-191, % ever		1.4%	15.8%	63.4%
Close contact with a COVID-19 case ² , by type (%):	Colleague	7.9%	54.9%	63.6%
	Student	8.6%	51.5%	53.2%
	Household member	3.0%	23.0%	78.8%
Wear a mask in public places, % always/often		98.5%	99.2%	36.9%
Co-workers wear masks, % always/often		97.2%	97.3%	
Students wear masks, % always or usually	Elementary	33.9%	85.5%	
	Secondary	92.7%	94.2%	

¹Self-reported PCR or Rapid Antigen tests since the start of the pandemic; ²within 2 m for > 2 min with a positive COVID-19 case.

Table 2. SARS-COV-2 Seroprevalence

	2021 (n=1556)	2022 (n=1620)	
School Staff*	2.3% [95%CI: 1.6 to 3.2%]	26.5% [95%Crl: 23.9 to 29.3%]	
Blood Donors	2.6% [95%CI: 2.2 to 3.1%]	32.4% [95%Crl: 30.6 to 34.5%]	

*only Vancouver district staff in 2021 and Vancouver, Richmond and Delta district staff in 2022; 2023 collection not yet completed

Conclusions

- Data support that most SARS-CoV-2 infections were acquired in the community rather than within schools.
- An overall decline in mental health was reported and warrants continued monitoring and support.
- Strong partnerships between academics, schools and public health are key in promoting engagement and translation of findings.





statistically significant decline (p<0.05) from 2021 to 2022 among staff who responded to these questions at both time points. Anxiety symptoms were increased with increased close contact time with students (p=0.01).



Contact Tracing Sub-Study (phase 1)

Contact tracing sub-study from Apr-Jun 2021 among close contacts of positive cases found in the school setting including following asymptomatic contacts.

Mental Health

Of 229 school close contacts, 3 tested positive (1.3%), of which 2 were detected through asymptomatic testing. Most secondary transmission (90%) occurred in households.

*Flow diagram of close contacts who became cases and who did not by contact type. Other contacts comprise 48% social (N = 22). 7% extracurricular (N = 3), 35% mixed school and social (N = 16), and 10% unidentified (N = 5).

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