



COVID-19 GROUPE DE TRAVAIL IMMUNITY SUR L'IMMUNITÉ TASK FORCE FACE À LA COVID-19



Seminar Series | Research Results & Implications Risks and impacts of the COVID-19 pandemic on Canada's kids, their parents, and teachers: Latest research results and policy implications



September 29, 2021 | 1 p.m. to 2:30 p.m. EDT

Moderator

Dr. Upton Allen, O.ONT., MBBS, MSC, FAAP, FRCPC, HON FRCP (UK), FIDSA

Bastable-Potts Chair in Infectious Diseases Research, Professor, Paediatrics and Institute of Health Policy, Management & Evaluation, Senior Associate Scientist and Chief, Division of Infectious Diseases, The Hospital for Sick Children, Interim Head, Transplant and Regenerative Medicine Centre, Department of Paediatrics, University of Toronto

Speakers

- Dr. Timothy Evans, Executive Director, COVID-19 Immunity Task Force
- **Dr. Meghan Azad**, CHILD Cohort Study (children & parents, Alberta, British Columbia, Manitoba, Ontario)
- Dr. Jonathon Maguire, TARGetKids! (children & parents, Ontario)
- Dr. Manish Sadarangani, The SPRING Study (children, teens, young adults, BC)
- Dr. Kate Zinszer, EnCORE Study (children & teens, teachers, Montreal)
- **Dr. Brenda Coleman**, COVID-19 Education Study (CCS-2) (education workers, Ontario)
- **Dr. Pascal Lavoie**, Tracking COVID-19 for Safer Schools (education workers, British Columbia)
- Dr. Jim Kellner, CITF Leadership Group, Leader CITF Pediatric Network



Dr. Timothy Evans

COVID-19 Immunity Task Force Executive Director

COVID-19 Immunity Task Force mandate

Established by the Government of Canada in April 2020

Mandate:

- To support the **implementation of relevant research** projects
- Aligning studies across Canada
- Seeking to provide useful information to federal, provincial, and territorial decision-makers as they oversee responses to the COVID-19 pandemic to best protect Canadians.

CITF: Priority areas of research



SEROPREVALENCE STUDIES

Assess the extent of SARS-CoV-2 infection across Canada



IMMUNE SCIENCE

Understand the nature of immunity arising from infection



IMMUNE TESTING

Develop improved antibody testing methods



VACCINE SURVEILLANCE

Help monitor the effectiveness and safety of vaccines

CITF supports studies across Canada



CITF-funded studies: children, parents & teachers



Unanswered questions regarding SARS-CoV-2 & children

Infection. How many children are infected? Why are they less likely to get seriously ill than older age groups? Why do some children get very sick (MISC-C or Long COVID-19)?

Protection from infection: What are the options for protecting children from infection? Masks? Physical distancing? Shutting down schools, day cares? Keeping parents and teachers infection-free? Vaccination? What are the risks and benefits of these for the child, their parents/families, and their teachers?

With schools open, the **Delta variant** raging, and vaccines on the doorstep, imperative to try to answer these questions now!!



Kristin, 8 years old, Richmond, BC



Winnipeg Edmonton Toronto Vancouver

Dr. Meghan Azad

Associate Professor, Pediatrics and Child Health at the University of Manitoba

Research Scientist at the Children's Hospital Research Institute of Manitoba Manitoba Deputy Director for the CHILD Cohort Study

















CHILD COVID-19 Research



Study Population & COVID-19 Cases (Sept 2021)

Cases determined using serological blood analysis and self-report (biweekly and quarterly questionnaires)



Changes in children's daily routines











Children's* Perceptions

★ or a child's parents, on behalf of the child





Parent report, n=1079 | Child report, n=764







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POSITIVE OUTCOMES resulting from the pandemic









What's Next?



Which **PUBLIC HEALTH MEASURES** are associated with reduced SARS-CoV-2 infection?



COVID-19 VACCINE uptake and hesitancy



Follow-up **SEROLOGY** Results



Understand the role of **SOCIOECONOMIC STATUS** on the direct and indirect effects of the COVID-19 pandemic



Linkage with **CANUE** Data – e.g. Active Living Index



COVID-19 pandemic **PSYCHOSOCIAL IMPACTS** on Canadian families









News & Media For scientists

People & Partners

Contact

CHILDREN FIRST



www.childstudy.ca/covid-rapidresults/

*** CHILD

COVID-19 Rapid Results









Myrtha Reyna

Geoff Winsor



Marshall Beck

















Natalie Rodriguez Kaitlyn Hansen Merilee Brockway Nicole Fiorentino Sarah Turner Kelsey Fehr Larisa Lotoski Rilwan Azeez Tricia Choquette



PJ Subbarao, **Aimee Dubeau**, **Tyler Freitas**, Kim Wright Myrtha Reyna, Maria Medeleanu Stuart Turvey & Linda Warner (UBC) Piush Mandhane & Joyce Chikuma (U Alberta) Theo Moraes & Yaminee Charavanapavan (SickKids) Elinor Simons & Scarlet Salas (U Manitoba)

Collaborators

Leslie Roos & Emily Cameron (U Manitoba)

Terrie Moffitt (Duke University) Jay Onyosko (Public Health Agency of Canada) Shelley Bolotin (Public Health Ontario) David Patrick (BC CDC) Deborah McNeil (Alberta Health Services) Jared Bullard (Manitoba Shared Health)

www.azadlab.ca | @MeghanAzad









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CIHR Canadian Institutes of Health Research Instituts de recherche en santé du Canada







CIFAR **ICRA** CANADIAN INSTITUTE INSTITUT CANADIEN DE FOR ADVANCED RECHERCHES AVANCÉES













Ontario

Dr. Jonathon Maguire

Professor, Department of Pediatrics, University of Toronto

Pediatrician, Department of Pediatrics, St. Michael's Hospital, Unity Health Toronto









TARGetKids! The Applied Research Group

- The largest primary care research network in Canada
- Ongoing longitudinal data collection at well-child visits
- Over 11,500 children and their parents enrolled since 2008
- ▶ 14 large practices across GTA, Montreal and Kingston

Visit us at **www.targetkids.ca**









COVID-19 Hot Spots by Neighborhood











Objectives

How does COVID-19 infection and vaccination impact health, well-being, and learning in children and their families?

- Serology tests for children and parents
- Vaccination for children and parents
- Surveys:
 - > Child's health, health behaviours, and wellbeing
 - Compliance with mitigation strategies (social distancing, wearing masks, hand washing etc.)
 - > Stress and well-being of both the child and parent
 - School and learning













TARGet Kids! COVID-19 Study of Children and Families

- Launched April 2020
- 1021 families, 1345 children
- 593 COVID-19 serology tests
- >10,000 surveys completed









TARGet Kids! COVID-19 study population









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COVID-19 Seropositivity

April 2020 - July 2021

12.6% seropositive parents2.8% seropositive children

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Unpublished data









COVID-19 Vaccination



April 2020 - July 2021

10.6% of parent's 1st dose

3.4% of parent's 2nd dose

0% of children received COVID-19 vaccine

Unpublished data



















Adherence to public health guidelines



Can J Public Health. 2021 Aug;112(4):552-565.

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How has the Pandemic has affected children and families?

- **Socio-economic factors** affected families' ability to follow public health guidelines
- Adherence to public health guidelines:
 - Lower outdoor playtime
 - Higher screen time
- **Social isolation** impacted children's well-being



Can J Public Health. 2021 Aug;112(4):552-565 Can J Public Health 2021 Jul 7:1-11 Eur Child Adolesc Psychiatry 2021 Feb 26;1-14









Screen time











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Mean daily screen time 2.8h

COVID-19 School Impacts

- ▶ 75% in person learning
- 25% remote learning













Income gradient



Study Team

TARGet Kids! Leads

Dr. Catherine Birken Dr. Jonathon Maguire

Site Investigators:

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Trainees:

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Thank you to all participating families for their time and involvement in *TARGet Kids!*





SickKids





www.targetkids.ca

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Joannah & Brian Lawson Centre for Child Nutrition UNIVERSITY OF TORONTO





COVID-19 GROUPE DE TRAVAIL IMMUNITY SUR L'IMMUNITÉ TASK FORCE FACE À LA COVID-19









The **SPRING** Study

British Columbia

Dr. Manish Sadarangani

Director, Vaccine Evaluation Center, BC Children's Hospital Research Institute

Associate Professor, Department of Pediatrics, University of British Columbia



THE UNIVERSITY OF BRITISH COLUMBIA

Faculty of Medicine




The SPRING Study

<u>Severe acute resPiratory syndrome-Related coronavirus 2 prevalence In</u> children and you<u>NG</u> adults in British Columbia: an observational study









Study design

- 4 separate cross-sectional snapshots over a 12-18 month period
- Longitudinal follow-up of COVID-19 positive cases
- Mostly healthy children
- Aim to be representative across BC in terms of geographic distribution, sex and ethnicity

Inclusion:

- Parent/legal guardian/participant is willing and able to give informed consent and/or assent
- Age <25 years
- Resident in BC

Exclusion:

 No specific exclusion criteria

• Samples: dried blood spots; MSD V-Plex pan-CoV panel







Data collection

COVID-19 in children and young adults in BC



We are looking for: Children and young adults aged under 25 years living in BC.



The study involves:

Participants will receive:

- A link to a short online survey with questions about basic demographics, health history and COVID-19 symptoms
- Kits to collect a finger prick blood sample AND a saliva/nasal swab sample at home

Data Colle Instrumer	Survey options: IIII Survey Queue ♀ Survey Loging IIIII Survey Notifications ♀ Upload or download Auto Invitation	n ons 🔺	Add ne Crea Unput O Uplo	w instrumen te a new inst ort a new ins ad instrume	t: trument from scratch trument from the off nt ZIP file from anoth	icial <u>REDCap Shared Library</u> ? eer project/user or <u>external libraries</u> ?
Instrum	ent name	Fields	View PDF	Enabled as survey	Instrument actions	Survey-related options
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Househ	old Members	12	Ø	Enable	$\fbox{Choose action \bigtriangledown} \bigtriangledown$	
Househ	old Members 2	12		Enable	Choose action \bigtriangledown	
Househ	old Members 3	12	Ø	Enable	Choose action \bigtriangledown	
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Househ	old Members 7	12	Ø	Enable	Choose action \bigtriangledown	
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Medical	History	45	Ø	Enable	Choose action \bigtriangledown	
COVID-1	9 Exposures	9	Ø	Enable	Choose action \bigtriangledown	
COVID-1	9 Symptoms	9	Ø	Enable	Choose action \bigtriangledown	
COVID-1	9 Testing and Treatment	12	D	Enable	Choose action \bigtriangledown	
COVID-1	9 Impact	9		Enable	Choose action 🗢	









Snapshot #1

10th November 2020 – 2nd March 2021

Target sample size	2,500 (n=500 per 5-year age band) ▶ 0-4, 5-9, 10-14, 15-19, 20-24 years
Enrolled	2,535 (n ≥500 per 5-year age band)
Samples tested	 2,131 Samples collected November 27th 2020 – May 21st 2021 Mostly Jan – Mar 2021

• Snapshot #2 currently in progress





Age-specific analysis







Hospita

Vaccine confidence

- 2,405 parents/children (Dec 2020 Mar 2021)
 - 76% intended to receive a COVID-19 vaccine
 - ▶ 7% did not
- Key facilitators to increase vaccine confidence
 - Focus on vaccine safety and benefits
 - Leverage trusted voices (BC Provincial Health Officer)
 - Encourage individuals to promote vaccination among friends/social networks

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Vaccine confidence

	Descriptive Statistics (N = 2,405)		Likely to receive COVID-19 vaccine –Bivariable comparisons (N = 1,984)		Likely to receive COVID-19 vaccine - Multivariable model (N = 1,984)	
	Mean score (SD)	a [95% CI]	OR [95% CI]	Р	OR [95% CI]	Р
Lack of Confidence in Vaccines	1.188 (0.44)		1.36 [1.30, 1.42]	<0.0001		
Vaccine Risks	2.824 (1.04)		0.62 [0.56, 0.67]	<0.0001	0.79 [0.70, 0.90]	0.0002
Attitudes toward the COVID-19 Vaccine	36.08 (4.13)	0.84 [0.83, 0.85]	1.42 [1.37, 1.49]	<0.0001	1.21 [1.15, 1.28]	<0.0001
Perceived Behavioural Control	15.31 (3.10)	0.69 [0.67, 0.71]	1.17 [1.11, 1.24]	<0.0001	1.08 [0.99, 1.17]	0.0714
Direct Social Norms	15.70 (3.02)	0.67 [0.65, 0.69]	1.57 [1.48, 1.67]	<0.0001	1.23 [1.14, 1.33]	<0.0001
Indirect Social Norms:	124.80	0.90 [0.89, 0.90]				
Total	(30.77)					
Family Doctor/PHCP	20.19 (5.16)		2.47 [2.19, 2.80]	<0.0001		
BC PHO	21.03 (4.86)		2.44 [2.16, 2.76]	<0.0001	1.25 [1.04, 1.50]	0.0165
Coworkers	14.59 (6.07)		1.75 [1.58, 1.95]	<0.0001		
Employer	15.82 (6.00)		1.76 [1.59, 1.95]	<0.0001		
Educational Institution	16.91 (5.61)		2.11 {1.88, 2.38]	<0.0001		
Friends	16.93 (5.71)		2.17 [1.94, 2.43]	<0.0001	1.24 [1.05, 1.47]	0.0107
Family	19.42 (5.53)		2.18 [1.96, 2.44]	<0.0001		
Change in Valuation of Vaccines	0.1875 (0.53)	0.72 [0.70, 0.74]	1.70 [1.21, 2.47]	0.0031		

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Study team

Name	Institute			
Manish Sadarangani (PI)				
Bahaa Abu-Raya				
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Vivek Gill				
Laura Sauve				
Sarah Silverberg				
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Soren Gantt	VEC, BCCH; Centre de recherche du CHU Sainte-Justine, Montreal			







Montreal

Dr. Kate Zinszer

Assistant Professor at l'École de santé publique, Université de Montréal

Researcher at the Centre for Public Health Research

EnCORE

Study objective: Estimating seroprevalence of SARS-CoV-2 in children and staff members from selected schools of 4 Montreal neighborhoods.



Children 2 – 17 years old

Round 1 collection: Oct 2020 – Mar 2021 Round 2 collection: May 2021 – Aug 2021

School and daycare staff

Mar 2021 - Aug 2021









Methods

Participation consisted of:

Completing an online questionnaire & at-home dried-blood-spot (DBS) collections











Children and adolescents (age 2-17)

Overall antibody seroprevalence due to infection

10.1%

from latest round, compared to **5.8%** in the first round of collection

Seroprevalence by age category for each study round



Seroconversion (n=842)

Positive seroconversion	6.9%	
Negative seroconversion	5.5%	









Seroprevalence

Children and adolescents (age 2-17)

Estimated study seroprevalence over time and compared to overall daily confirmed COVID-19 cases in Quebec, March 2020 to May 2021



Household members of seropositive children

	ROUND 1	ROUND 2*
Number participating	202	111
Number of samples	202	45
Antibody seroprevalence	11.9%	6.7%

*Only household members of newly seropositive children were eligible to participate.









Vaccine acceptance and hesitancy

Children and adolescents (age 2-17)











Lifestyle & emotions

Children and adolescents (age 2-17)



>90 minutes of social media use significantly associated with **psychological distress** (1.71, 95% 1.05-2.77)

Adolescents' emotions over the past 2 weeks, self-reported and parentally-assessed (n=198)









Université 🖬

School and daycare staff

Antibody seroprevalence by workplace (n=360)

Staff burnout (n=382)

Proportion of staff who experienced these thoughts at least once per week



Overall seroprevalence: 7.2%



de Montréa

2+ doses Vaccine acceptance 1 dose 12% 71% 17% (latest available data, n=382) Not known to be vaccinated Ċ CHU Sainte-Justine ÉTUDI Le centre hospitalier Centre de recherch n santé publique Université n L'ÉCOLE DE SANTÉ PUBLIQUE

DE L'UNIVERSITÉ DE MONTRÉA

Conclusions

- Seroprevalence increasing in time for children and teens
- IgG waning over time
- Increased risk of seroprevalence and vaccine hesitancy associated with visible minority status of parent
- Daycare and primary school staff had higher levels of seroprevalence compared to children
- High levels of vaccine acceptance in study population
- Less physically active, less time outdoors, more time online
- Detrimental impact of social media use
- Next steps:
 - > 3rd round of data collection for October-December
 - > Vaccine-hesitancy project in Montreal to improve inequities in vaccine acceptance
 - Enhanced follow-up of a subset of seropositive children







Acknowledgements

Children and parents of EnCORE, daycares, schools, and school boards



Laura Pierce Adrien Saucier Noémie Bourque Islem Cheriet Margot Barbosa Da Torre

Co-Investigators

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Hôpital de Montréal pour enfants Centre universitaire de santé McGill Montreal Children's Hospital McGill University Health Centre



centre intégré et de services sociaux du Centre-suit de l'Île-de-Montréal Québec III de III Direction régionale de santé publique



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COVID-19 GROUPE DE TRAVAIL IMMUNITY TASK FORCE FACE À LA COVID-19 Study of the epidemiology of COVID-19 in teachers and education workers

Ontario

Dr. Brenda Coleman

Researcher at Sinai Health System in Toronto and Assistant Professor, Dalla Lana School of Public Health, University of Toronto





Background

Objectives

- Incidence of SARS-CoV-2 infection (symptomatic and asymptomatic)
- Workplace, community, household, and individual risk factors associated with infection
- Psychological impact of working during a pandemic
- Describe changes in anti-SARS-CoV-2 antibodies
- Intent to be vaccinated
- Incidence of re-infection
- If vaccines available: vaccine effectiveness estimates

Recruitment start: February 18, 2021

Number consented as of September 10: 3,429





Methods

- Eligibility: education workers, aged 18-74, who work for ≥8 hours/week for an Ontario school or school board
- Online questionnaires completed at enrollment, every 2nd week (for timevarying exposures), if/when symptomatic or tested for COVID, & every quarter (K-10)
- Dried blood spot samples collected at enrollment, ≤48hrs before COVID-19 vaccine, 30 days (±10) after 2nd dose, and every 13 weeks thereafter
- Samples tested at the National Microbiology Lab for IgG antibodies to spike (S1), receptor binding domain (RBD) of the spike, and nucleocapsid (NP)





Interim Results

- Objective of interim analysis
 - To estimate the cumulative incidence of COVID-19 in Ontario's education workers during the first 18 months of the pandemic and to identify risk and protective factors for COVID-19 in this population (to July 17, 2021)
- 2834 participants: mean of 45 years old; 85% female, 81% teaching position, 59% worked in/for an elementary school, 57% had received two doses of vaccine
- The cumulative incidence of infection was 3.6%
- Risk factors for infection included:
 - exposure to household member with COVID-19 (adult IRR: 13.6; child IRR: 2.3),
 - student with COVID-19 (IRR: 1.9), and
 - travel outside Ontario (IRR: 6.0)





Conclusion

Despite high vaccination rates, it is necessary to continue protective practices like mask-wearing, physical distancing, hand hygiene, and cohorting over the next months of the pandemic - including when exposed to **close contacts** like a household member who has symptoms or is known to have been exposed to someone with COVID-19







ΡΙ

Brenda L. Coleman

Co-ls

Robert Maunder, John Kim, Sharon Straus, Susan Bondy, Allison McGeer

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COVID-19 GROUPE DE TRAVAIL IMMUNITY SUR L'IMMUNITÉ TASK FORCE FACE À LA COVID-19





Do you work in a school in Ontario?

Sinai Health is seeking research participants for a large online study on the impacts of COVID-19 on elementary and secondary education workers in schools in Ontario.

What do you have to do?

- Online questionnaires
- A few finger-prick blood samples

By participating in the study you can find out if you have antibodies to COVID-19 and receive a \$20 gift card!





Tracking COVID-19 for Safer Schools

British Columbia

Dr. Pascal Lavoie

Investigator at the BC Children's Hospital Research Institute Pediatrician and Associate Professor in the Department of Pediatrics at the

University of British Columbia



Tracking COVID-19 for Safer Schools

Determine the prevalence of SARS-CoV-2 infection among school staff

- Three school districts VSB, Delta and Richmond
- Serology and questionnaires in school staff
- COVID-19 case data from 48,578 students + ~7,071 staff
- Serology in 1556 school staff Feb 10 May 15, 2021



Serology testing period



Courtesy: Alex Choi, VCH

Key result #1

High perceived COVID-19 risk among school staff

- High perceived risk and mental stress indicators
- 1689 school staff surveyed
- 363 / 1689 (21.5%) reported close contact (<2 meters; >2 min) with COVID-19 case
- 278 (16.5%) of those close contacts felt to have occurred within school setting
- 24 viral test-confirmed infections
- 5 have likely acquired infections in school



Key result #2

Considering asymptomatic infections (using serology testing)

- **1556** school staff tested
- 35 positive serology tests (infected; 46% asymptomatic)

Adjusted seroprevalence = 2.3% of school staff [95%CI 1.6 - 3.2%]

Seroprevalence of 2.6% [95%CI: 2.2 – 3.1%] among a reference blood donor group, weighted geographically, by age, sex and time period (N = 5,417)

Seroprevalence of **4.0%** [95%CI: 2.6 – 5.4%] within 643 school staff from the combined Richmond/Delta school districts



Conclusions

We found no detectable increase in seroprevalence among staff of this school district above a representative sample of blood donors from the same community.

These findings confirm that in-person schooling is possible without significantly increasing risk for school staff in the context of mitigation measures, but widespread community transmission.



Measuring Vaccine Hesitancy "perception"





Key results #3



Key messages:

- 1. Authority recommendation strongest predictor: Experts (highest), Healthcare providers, Government (lowest)
- 2. People need to understand the Pros & Cons of vaccines (routine & COVID-19)
- 3. Need approaches to counteract misinformation and support health literacy
- 4. Need to educate about susceptibility

Research team







Lauren Muttucomaroe Research Coordinator



Louise Masse Co-Principal Investigator



Sarah Hutchinson Post Doctoral Fellow



David Goldfarb Co-Investigator



Tisha Montgomery Research Assistant



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Dan Coombs Math modelling



Sadaf Sedigi







Study was funded by the Federal Government of Canada via



COVID-19 GROUPE DE TRAVAIL IMMUNITY SUR L'IMMUNITÉ TASK FORCE FACE À LA COVID-19

Tracking COVID-19 for Safer Schools




Dr. Jim Kellner

Pediatric Infectious Diseases Specialist, Professor, Pediatrics, University of Calgary CITF Leadership Group member CITF Pediatric Network leader

Key findings: immunity & transmission

- Acquired immune response from COVID-19 infection remains low among Canadian children, so vaccination and mitigation measures such as mask wearing, etc., remain essential.
- Although school staff have feared acquiring COVID-19 infections through school contacts, mitigation measures seem to have worked at least in some settings, as few have been found to have caught the virus at school.

Key findings: mental health & wellbeing

- **In-person schooling is better** for the health & wellbeing of most children, teens and parents.
- Up to 80% of kids and youth surveyed **increased their non-educational screen time** during the pandemic: two studies.
- Almost all children and youth spent **less time doing physical activity**: two studies.
- Parents experienced high levels of **pandemic-induced stress** and anxiety: several studies.

Key findings: vaccine confidence

- Most parents and teachers agree that **vaccination is important**.
- Most **parents intended to get their children vaccinated**, when vaccines become available to them (if not already).
- Key facilitators **to increase vaccine confidence**: focus on vaccine safety and benefits, leverage trusted voices, and encourage individuals to promote vaccination among friends/social networks: SPRING Study



Implications – COVID-19 in children

- Severe COVID-19 infections in children are **uncommon**
- Low risk of hospitalization, ICU admission and myocarditis
- Extremely low risk of death
- Lower risk (seemingly) of **post-COVID conditions**
- Where testing is abundant, the proportion of children diagnosed with COVID-19 is **proportionate to that of the local population**
- In settings where **vaccination rates are low** and public health measures are not widely in place, the number of children with severe outcomes increases e.g., numerous states in USA

Implications - schools

- Regular school experience was disrupted for >90% of children globally early in the pandemic
- Closures/online schooling have had **variable impact** since
- Key **public health measures vary** across Canada this school year:
 - Vaccination
 - Masking, handwashing, limited class sizes, reduced mixing and gathering, staggered schedules, increased outdoor teaching, online learning options, ventilation, indoor air filtering, etc.
 - > Approaches to testing, contact tracing, outbreak controls

Implications – Vaccines

- Vaccine uptake by teachers, staff and volunteers, as well as by children and youth aged 12-17 y/o, will **influence safety of schools** this year
- Children <12 y/o **represent ~15%** of Canadian population
- Approval and implementation of lower dose mRNA vaccines for children <12 y/o depends on:
 - Evolving knowledge of benefits vs. risks
 - Regulatory approval
 - Advisory recommendations
 - Availability
 - Public interest

Policy implications

- Delta & other VOCs = continued mitigation measures necessary
- Although vaccine coverage is very high in Canada, it is uneven, leaving **pockets of people not adequately protected**.
- Vaccines will be important for **children under 12** (roughly 4.9 million Canadians).
- Although intent to vaccinate children was high in these studies, it will be **important to continue to monitor** vaccine coverage and levels of vaccine-induced immunity to ensure safety for all involved in the educational sector.



Questions?

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