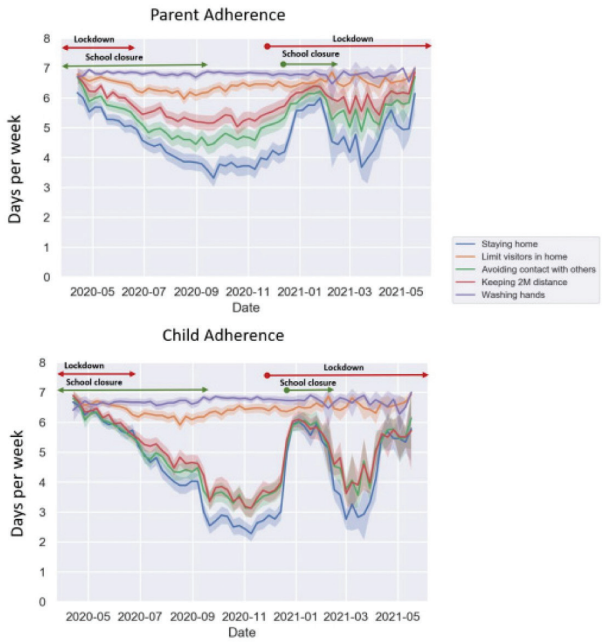
Figure 1. Adherence to public health measures over time (n=819 families)



91

THE IMPACT OF NON-PHARMACEUTICAL PUBLIC HEALTH INTERVENTIONS ON HOSPITAL ADMISSIONS AND MORTALITY FROM COMMON CAUSES OF PEDIATRIC RESPIRATORY DISTRESS: A SINGLE CENTER PERSPECTIVE

Madeline Parker[1], Olivia Griffin[1], Félix Lévesque[2], Ayisha Kurji[2], Erin Woods[1]

[1]University of Saskatchewan, [2]Royal University Hospital

BACKGROUND: In response to the COVID-19 pandemic, jurisdictions around the world implemented policies to reduce COVID-19 transmission through public masking, travel restrictions, and closure of non-essential businesses. Collectively known as non-pharmaceutical interventions (NPI), these strategies reliably reduce the spread of COVID-19. International data suggests NPI also reduce hospitalizations for pediatric respiratory infections and their consequences, particularly asthma exacerbation. However, few Canadian studies have examined the impact of NPI on hospitalizations for common causes of pediatric respiratory distress.

OBJECTIVES: This study describes the impact of NPI on admissions for bronchiolitis, pneumonia, and asthma at a Canadian pediatric tertiary care centre.

DESIGN/METHODS: A retrospective chart review was conducted including all pediatric patients <18 years admitted to the general pediatric and pediatric intensive care units with bronchiolitis, pneumonia, or asthma. Data regarding diagnosis, length of hospitalization, and mortality were collected before (September 2016-March 2020) and in the 6 months after provincial NPI implementation (March 2020-September 2020). NPI were present throughout this period, however, specific measures varied due to evolving public health orders. Chi-squared testing was conducted to describe the impact of NPI on number of admissions, length of hospitalization, and mortality.

RESULTS: Participants (n=1631) included 111 (6.8%) patients <1 month, 878 (53.8%) patients 1-23 months, 331 (20.3%) patients 24 months-4 years, and 311 (19.1%) patients ≥5 years. A mean of 205 patients were admitted every 6 months with respiratory distress (bronchiolitis, pneumonia, and/or asthma) prior to NPI implementation. During this timeframe, the 6-month mean admissions due to asthma, pneumonia, and bronchiolitis were 48, 56, and 101, respectively. In the 6 months following NPI implementation, there were 56 admissions for respiratory distress, including 15 for asthma, 19 for pneumonia, and 22 for bronchiolitis. Mean length of stay increased following the implementation of NPI from 8.49 to 11.68 days, whereas 6-month mean mortality decreased from two to zero deaths. Results did not attain statistical significance ($p>0.05$).

CONCLUSION: Results suggest NPI reduce hospitalizations and mortality from bronchiolitis, pneumonia, and asthma. Given the similar seasonality of these conditions, periodic use of NPI beyond the COVID-19 pandemic may reduce pediatric morbidity and mortality from common causes of respiratory distress. However, additional research is needed to describe the relationship between NPI and length of hospitalization. Future studies should also examine the impact of NPI on other pediatric infectious diseases to better characterize their utility.

92

CONFIRMATORY GENETIC TESTING FOR ALL CF SCREEN POSITIVE NEWBORNS: A 12-YEAR ANALYSIS

Steven Zhang[1], Erin Fleischer[2], Tara Mullowney[2], Stephanie Ho[2], April Price[3]

[1]Schulich School of Medicine & Dentistry, [2]London Health Sciences Centre, [3]Children's Hospital, London Health Sciences Centre

BACKGROUND: Cystic fibrosis (CF) is an autosomal recessive disease that can present with multisystem manifestations based on mutations in the CF transmembrane regulator (CFTR) gene. Screening for CF was added to the Newborn Screening Ontario (NSO) program in 2008 using immunoreactive trypsinogen and genetic testing with a panel of 39 + 3 polymorphisms. From 2008-2020, our centre had all referred screen positive individuals undergo confirmatory genetic testing with an expanded panel of 70 + 4 polymorphisms, occasionally identifying a second mutation of varying clinical consequence. If an individual had a second mutation identified on our panel, prospective follow-up was offered.

OBJECTIVES: The aim of the study is to evaluate the utility of our expanded panel and subsequent identification of individuals with possible CFTR dysfunction.

DESIGN/METHODS: We conducted a retrospective descriptive analysis of our database of screen positive individuals, focusing on the subset who had a second mutation identified through expanded panel and whom we have offered clinical follow-up for 12 years.

RESULTS: From 2008 to 2020, 718 screen positive individuals were referred to our CF Canada-accredited centre. 566 had one mutation identified by NSO. 94 of these had a second mutation identified on expanded panel. Of these, 13 had a sweat chloride between 30-60 mmol/L and 7 had a positive sweat test. Of those with borderline or negative sweats, 9 individuals continued to be followed. Two have converted to positive sweats, with 1 of these individuals requiring antibiotics for pulmonary exacerbations and the other remaining asymptomatic. Another 2 individuals are trending toward positive sweats (> 50 mmol/L). All spirometry values (FEV1, FVC) have been normal to date, and none have grown *Pseudomonas aeruginosa*.

CONCLUSION: Use of a confirmatory expanded panel identified a second mutation in 94 newborns referred with a positive screen. Offering follow-up has allowed us to monitor clinical progression, including conversion to positive sweats in 2 individuals. While spirometry and cultures have been unremarkable, more sensitive measures such as lung clearance index could be considered for future study. As of 2020, NSO moved to the use of extended sequencing and analysis of this change is ongoing.

93

MAPPING MOBILE HEALTH CLINICS IN CANADA: DELIVERING EQUITABLE PRIMARY CARE TO CHILDREN AND VULNERABLE POPULATIONS

Anne Xuan-Lan Nguyen[1], Alexander Kevorkov[2], Patricia Li[3], Rislaine Benkelfat[4]

[1]McGill University, [2]McGill University, [3]Montreal Children's Hospital, [4]Hôpital de Montréal pour enfants

BACKGROUND: Low-income and racially diverse populations often have multiple barriers in accessing healthcare and are at increased risk of poor health outcomes. COVID-19 exacerbated these health inequities:

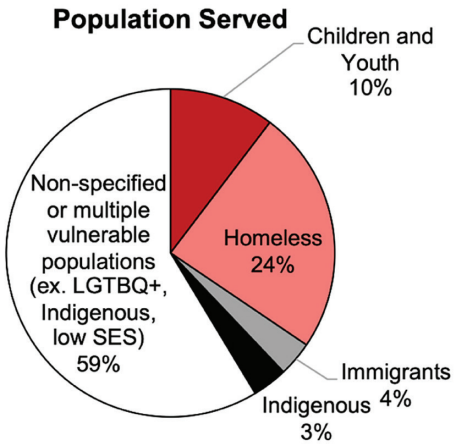
decreased in-person appointments, difficult access to virtual care and deprioritization of elective clinical activity led to delays in well-child visits and vaccination. This public health emergency highlighted a need to develop alternative models to enable access to primary care for vulnerable children. While mobile clinics are well-established in the United States, little is known about them in Canada.

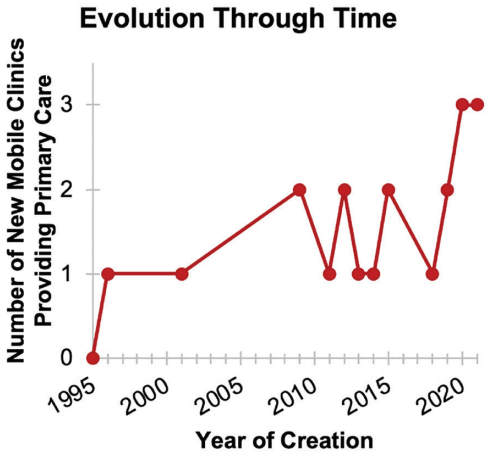
OBJECTIVES: This study aims to characterize Canadian mobile clinics providing primary care health services to vulnerable populations, including children, and seeks to inform the implementation of a pediatric mobile clinic under development.

DESIGN/METHODS: This environmental scan screened scientific databases and the grey literature using a combination of terms designating mobile health clinics and Canadian locations. Relevant Canadian primary care mobile clinic initiatives were subsequently included. We defined primary care mobile clinics as movable health care units providing primary healthcare services delivered by general medical practitioners (pediatricians and family physicians). Examples of excluded initiatives were mobile clinics focused on education/literacy, dental care, vision care, endocrinology, cancer screening, safe injection sites, vaccination, physical rehabilitation and urgent care. Descriptive statistics and qualitative analysis were performed.

RESULTS: 29 clinics were identified, of which 26 are still active. Most clinics were located in Ontario (n=11), followed by British Columbia (n=8), Alberta (n=5), Quebec (n=2) and the Maritimes (n=2). The first mobile clinic in Canada was launched in 1996, with an increasing number of new clinics in 2021. While all clinics served vulnerable populations, some targeted specific groups, such as children, people experiencing homelessness, immigrants, LGBTQ+ individuals and Indigenous peoples. We identified three pediatric mobile clinics, two of which targeted teenagers. Onboard the clinics, physicians often worked with nurses, outreach workers and social workers. These professionals provided primary care services, as well as healthcare navigation, sexual education, mental health care, harm reduction supplies, vaccination and emergency care. All mobile clinics partnered with their local government, charities or businesses to fund their initiative.

CONCLUSION: Mobile health clinics are a growing model of primary care in Canada. They are the result of a multidisciplinary collaboration between healthcare providers, social workers and outreach workers. To this date, Canadian pediatric mobile clinics remain a handful and represent an interesting avenue to address health inequities in children, during the pandemic and beyond.





94
COMMON SOCIAL DETERMINANTS OF HEALTH AS INDEPENDENT PREDICTORS OF ADVERSE CHILDHOOD EXPERIENCES AND THE DERIVATION OF A CLINICAL PREDICTION RULE: FINDINGS FROM A LONGITUDINAL QUALITY IMPROVEMENT STUDY

Matthew Carwana[1], Sara Oberg[2], Christine Loock[3]
[1]BC Children's Hospital, [2]Harvard University, [3]University of British Columbia BC Children's Hospital

BACKGROUND: Adverse Childhood Experiences (ACEs) are a group of early life events that lead to toxic stress and adverse adult health outcomes. Screening for ACEs can be challenging due to sensitivity and re-traumatization. There is a paucity of evidence regarding whether other social determinants of health (SDoH) might be independent predictors of an ACE score >=4. Likewise, no effective prediction rule exists for an elevated ACE score based on SDoH in children.

OBJECTIVES: 1) Identify independent predictors of elevated ACE score from commonly screened SDoH.
2) Derive a clinical prediction rule based on the available data.

DESIGN/METHODS: Data were drawn from a longitudinal quality improvement SDoH study in pediatric surgical clinics at a provincial children's hospital. Primary outcome of interest was an ACE score >=4. Multivariable logistic regression was utilized to identify independent predictors among other SDoH. Prediction methods and ROC analyses were completed to derive a prediction rule.

RESULTS: 515 respondents answered ACE screening; 63 (12.2%) reported >=4 ACEs. SDoH that were strong independent predictors of ACE score >=4 included poverty (OR 2.34, 95% CI 1.19-4.91), parental education (OR 2.76, 95% CI 1.17-6.54), and household income (OR 2.17, 95% CI 1.09-4.32). Housing status, Indigenous status, and disability status were not associated with elevated ACE score. A clinical prediction rule derived using four SDoH questions with a cut-off score of 1 had 96.67% sensitivity but only 21.54% specificity for an ACE score >=4 (AROC 0.75, 95% CI 0.69-0.81).

CONCLUSION: Several adverse SDoH were identified as independent predictors of an ACE score >=4 in children. A clinical prediction rule based on SDoH screening was sensitive but poorly specific for ACE >=4. Further research is required.