October 2022

Government of Canada
Children's Healthcare Canada
The House of Commons Standing Committee on Health (HESA)

Re: Children's Health Brief: The House of Commons Standing Committee on Health (HESA)

Dear Committee Chairs of the Children's Healthcare Canada, the House of Commons Standing Committee on Health (HESA),

On behalf of The Applied Research Group for Kids! (TARGet Kids!) we fully support establishing new priorities for the 44th Parliament 1st Session on Child Health and herein enclose a summary of our program objectives and accomplishments to highlight priority areas for consideration.

Background

Early childhood is an important period in human development. The science underpinning the Developmental Origins of Health and Disease (DOHaD) hypothesis indicates that healthy growth and developmental trajectories established in the first 5 years of a child's life are strongly associated with health outcomes throughout the life course.[1,2] Many adult chronic diseases have origins in early childhood development, mediated by nutrition-related risk factors such as obesity, micronutrient deficiencies and related health outcomes including poor cognitive and mental health outcomes and impaired social well-being.[3] Treatment of established chronic disease in adults places an enormous burden on our health care system. [4] Preventing chronic diseases by focusing on early childhood is a promising strategy to optimize the wellbeing of Canadians.[5]

Research Program

TARGet Kids! launched in 2008 as a multidisciplinary collaboration between child health researchers and children's primary healthcare providers from funding received from the Canadian Institutes of Health Research (CIHR). TARGet Kids! aims to understand how early life exposures, such as feeding patterns, sleep patterns, screen time and the context of use, physical activity, and early education result in future risk of cardiometabolic disease such as heart disease and diabetes, obesity, mental health disorders, and suboptimal school performance in childhood and adolescence. We expanded our study to collect information on health behaviours of parents, caregivers including parenting skills and practices with a more recent focus of health and mental

health implications of COVID-19 infection as well as impact of social isolation and virtual school on child and family outcomes. We establish connections through primary care practices to understand the context of the child and their parents, caregivers and siblings, the physician and health care providers. These relationships and collaborations have been vital in sustaining participation in this longitudinal cohort. Recruitment ranges from 0-5 years and we follow participants and families through adolescence. We achieve these goals by embedding research team members directly in primary care clinics to meet participants during their routine well child visits. Our interdisciplinary collaboration brings together Child health researchers, Children's primary care clinicians (paediatricians, family physicians, and nurse practitioners), Parents, Teachers, Public health professionals, Dietitians, Nurses, and Psychologists.

Presently, our network has collected data on over 12,000 participants from 15 primary care practices in Ontario and Quebec, and we collaborate with >40 investigators from various disciplines including child health, psychology, nutrition, child development, obstetrics, kinesiology, education, economists, biostatistics, infectious disease, artificial intelligence, and others. Data collection includes numerous validated survey tools, anthropometric measurements and biospecimens including blood, saliva, nasal secretions, and DNA. We have developed expertise in collecting detailed information across many years including cultural ethnicity, family income, dietary patterns, and health behaviours.

Our aim is to develop a wholesome understanding of how various exposures in early childhood result in suboptimal physical and mental health, developmental problems and school issues which are excellent proxies for reduced health and productivity in later life. Integrated in this primary based research network in primary care in Canada, we have now developed cohort embedded clinical trials to test interventions to promote health and development in children. We have been successful at demonstrated effectiveness in micronutrient treatments in children, parenting efficacy and skills, and prevention of obesity. We are now embarking on clinical trials on access to lactation consultants within the first few weeks of life, improving access to early childcare services, public health led parenting skill support.

We strongly value the expertise from our participants and families in co-design. Our Parent and Clinician Team (PACT), meets regularly to advise on study areas, comment on grant applications, assist with knowledge mobilization and provide insights on the experience of families who participate in TARGet Kids!. Families are renumerated based on their level of involvement respecting the valuable role that parent partners play in the research process. Parent partnerships have been essential to ensuring that

equitable and inclusive principles are incorporated into all aspects of the research process.

Thanks to continued investments from CIHR, and other agencies, this work continues, and we can address these pressing questions on child health, but further investment and focus is needed.

Challenges and Recommendations

We have consistently shown that families with lower socioeconomic status, lower education and minority ethnicity are at highest risk of poor health and developmental outcomes. Yet, families with greatest need for health services tend to be least involved in the process of knowledge generation to improve outcomes. This is the biggest limiting factor for improving access and delivery of culturally sensitive care for these populations.

Research on early childhood remains a barrier to increasing the depth and breadth of the research that we conduct and the resources that we can devote to maximizing the generalizability of our findings. We have demonstrated that our model of imbedding research personnel in primary healthcare practices and learning from children and families through their healthcare journey provides powerful data and is highly efficient. However, our major limiting factor is funding to increase our network's outreach in terms of size and geography

As our societal environments have shifted resulting in communities being more sedentary, and screen dependent we recommend this initiative consider the following:

Early risk factors for later physical and mental health outcomes:

1. Digital media health strategy to address obesity risk factors, and impacts on cognitive development**:** Health research studies, including ours on cardiovascular risk factors, have struggled to keep up with the ever-expanding role of digital media.[6] As technology continues to evolve, and become more integrated into our daily lives, evaluating the impacts on young children will be paramount to ensuring that negative health and developmental implications are prevented.

2. Focused studies on early childhood nutrition. Our research has demonstrated that early nutritional issues including food insecurity manifest in lasting differences in growth and development. Both early underweight and early overweight are highly associated with under and overnutrition through adolescence which are excellent proxies for poor health through the life course. Micronutrient deficiencies in early childhood such as iron and

vitamin D are associated with lower cognitive scores and suboptimal school performance. Research is needed to develop strategies to optimize nutrition for all Canadian children. There is no excuse for suboptimal nutrition among children in Canada in the 21st century.

3. Prioritizing research on Black, Indigenous, and marginalized children. Establishing dedicated research streams for these populations with meaningful community engagement through research partnerships and co-building is important for creating health research expertise within minority populations and providing a voice through data generation to advocate for the needs these vulnerable populations of children.

4. Develop and test interventions to directly address child and family outcomes through directly addressing novel approaches to social and structural determinants of health with a focus on novel approaches including financial empowerment and unconditional cash transfers.

Deep Data Development and Use:

5. Create more opportunities to link new and existing data across sectors which will enhance the value and impact of existing datasets. Examples include data from big cohort studies like TARGet Kids!, educational data, social services data, and census data. Providing opportunities for scale-up and intersectoral collaboration will help researchers increase the representation, scope, and impact of big data.

Engagement:

6. Enhance opportunities to engage parents as partners in research design, implementation, and knowledge mobilization. Engaging parents and families in the knowledge generation process results in more effective designs and more relevant and generalizable findings that facilitate greater empowerment and connection of Canadians to research the outcomes that emerge. Current funding sources for parent engagement activities are highly limited and are needed to ensure ongoing participation of these important knowledge users.

We strongly believe that investment made by the Canadian Government specifically in early childhood health research and focused on minority and underserved populations will yield remarkable returns. We have the expertise and the experience to understand and eradicate the multiple chronic physical, mental, and educational issues working directly with parents and children.

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Healthy Children Together

Thank you for your consideration.

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References

1 Barker DJ Osmond C . Infant mortality, childhood nutrition, and ischaemic heart disease in England and Wales. Lancet1986;1:1077–81.

2 Hales CN Barker DJ . The thrifty phenotype hypothesis. Br Med Bull2001;60:5–20.

3 Sarah Carsley, Cornelia M Borkhoff, Jonathon L Maguire, Catherine S Birken, Marina Khovratovich, Brian McCrindle, Colin Macarthur, Patricia C Parkin, on behalf of the TARGet Kids! Collaboration, Cohort Profile: The Applied Research Group for Kids (TARGet Kids!), International Journal of Epidemiology, Volume 44, Issue 3, June 2015, Pages 776–788, https://doi.org/10.1093/ije/dyu123

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[4] Sarah Carsley, Cornelia M Borkhoff, Jonathon L Maguire, Catherine S Birken, Marina Khovratovich, Brian McCrindle, Colin Macarthur, Patricia C Parkin, on behalf of the TARGet Kids! Collaboration, Cohort Profile: The Applied Research Group for Kids (TARGet Kids!), International Journal of Epidemiology, Volume 44, Issue 3, June 2015, Pages 776–788, https://doi.org/10.1093/ije/dyu123

[5] Sarah Carsley, Cornelia M Borkhoff, Jonathon L Maguire, Catherine S Birken, Marina Khovratovich, Brian McCrindle, Colin Macarthur, Patricia C Parkin, on behalf of the TARGet Kids! Collaboration, Cohort Profile: The Applied Research Group for Kids (TARGet Kids!), *International Journal of Epidemiology*, Volume 44, Issue 3, June 2015, Pages 776–788, https://doi.org/10.1093/ije/dyu123

[6] Mary Aglipay, Leigh M. Vanderloo, Katherine Tombeau Cost, Jonathan L. Maguire, Catherine S. Birken, The Digital Media Environment and Cardiovascular Risk in Children, Canadian Journal of Cardiology, Volume 36, Issue 9, 2020, Pages 1440-1447, ISSN 0828-282X, https://doi.org/10.1016/j.cjca.2020.04.015.