



Measuring in support of early childhood development

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A child's early experiences and environments have a significant, measurable effect on later life trajectories of health and well-being. Each child's own world, especially parents and other caregivers, literally sculpts the brain and impacts stress pathways. Effective early childhood interventions exist that can improve adult and societal outcomes. In this statement, the Canadian Paediatric Society calls on federal and provincial/territorial governments to measure and monitor the developmental progress of children in Canada, which can vary widely among communities and demographic groups. The statement explores the objectives for collecting quality information about early child development, its determinants and long-term outcomes. It also examines four approaches to collecting population-based, person-specific and longitudinal data, both in young children and later in life. A key outcome of monitoring development is timely intervention. Linking individual data to the home and community levels is a critical step, so that communities and governments can monitor and take actions that support early child development.

Key Words: *Early childhood development; Longitudinal data; Population health; Social determinants*

Not everything that counts can be counted, and not everything that can be counted counts.
– Albert Einstein

The scientific evidence is clear: Early childhood counts. The impact of early childhood experiences and environments can be measured both in young children and throughout the lifespan. Yet not all Canadian children are doing well, despite living in a country with one of the highest standards of living in the world. Are we doing enough for our youngest children?

In 2007, Dr Kellie Leitch, then the federal Advisor on Healthy Children and Youth, reported that Canada fares poorly when compared with 29 OECD (Organisation for Economic Co-operation and Development) countries on measures of the health and wellness of our youngest citizens (1). Canada ranks 27th in childhood obesity and 21st in child well-being, including mental health. Dr Leitch urged Canada to invest in the health and wellness of children and youth in the same way that we invest in infrastructure or science and technology. The ability of children to reach their full potential is “fundamental to our nation's economic success in an ever more competitive world”, she wrote, recommending that we “set benchmarks and measure results”. In her five key recommendations, she requested a longitudinal cohort study to provide data on the health of Canadian children and youth, which could help to better understand environmental factors affecting children's health.

Les mesures, en appui au développement de la petite enfance

Les expériences et les environnements de la petite enfance ont un effet important et mesurable sur les trajectoires de santé et de bien-être. Le monde de chaque enfant, en particulier ses parents et les autres personnes qui s'occupent de lui, sculptent littéralement le cerveau et influent sur les voies du stress. Pendant la petite enfance, il existe des interventions efficaces qui peuvent améliorer les issues sociétales et à l'âge adulte. Dans le présent document de principes, la Société canadienne de pédiatrie demande aux gouvernements fédéral, provinciaux et territoriaux de mesurer et de surveiller l'évolution du développement des enfants au Canada, qui peut varier considérablement selon les collectivités et les groupes démographiques. Le document de principes traite des objectifs en vue de colliger de l'information de qualité sur le développement de la petite enfance, ses déterminants et ses issues à long terme. Il expose également quatre approches pour recueillir des données par enquête en population, par individu et par enquête longitudinale, tant chez les jeunes enfants que plus tard dans la vie. Une intervention rapide représente l'un des principaux résultats de la surveillance du développement. Il est essentiel de lier les données individuelles au domicile et à la collectivité pour que les collectivités et les gouvernements puissent assurer un suivi et prendre des mesures en appui au développement de la petite enfance.

The evolving science of brain and early child development (ECD) clearly demonstrates that what happens early lays the foundation for later health and learning. We now know that each child's own world, especially parents and other caregivers, literally sculpts the brain and impacts stress pathways. Early development is, in turn, linked with susceptibility to later disease. Children are launched on trajectories of health and development well before birth. These trajectories are further modified, for better or for worse, by subsequent experiences within their families, care environments and communities (2). We therefore need a comprehensive system of monitoring early childhood outcomes in Canada.

This statement outlines the possible components of such a system, and underlines the need for a cross-Canada commitment to monitor and analyze how young children are doing. The objectives of monitoring are to:

- understand the determinants of healthy child development;
- stimulate dialogue and problem solving;
- inform policy; and
- examine the effectiveness of interventions across jurisdictions.

Canada is a signatory to the United Nations Convention on the Rights of the Child, which commits us to ensuring that all children are provided with the opportunities they need to develop cognitively, physically, socio-emotionally and spiritually. The

ability to comply with this commitment requires a system that monitors early childhood outcomes (3).

How else can we guarantee that all children and their families have the support and resources they need to thrive?

THE ROOTS OF DEVELOPMENTAL VULNERABILITY

A very low percentage of children are born with biological conditions that would be expected to undermine their prospects for thriving, regardless of the socioeconomic conditions they are born into. Yet the environments in which children live, play and grow create inequalities in development that emerge early in childhood (3). These disparities are evident across cultures, communities and socioeconomic groups by the time children start school. Children who are already trailing their peers when they enter school are unlikely to catch up; in fact, they are more likely to fall further behind (4). However, it is also clear across many studies that early interventions make a difference (5).

Hertzman and Williams (6) emphasized the need for a robust monitoring system with an ongoing flow of high-quality information about the state of early child development, its determinants and long-term developmental outcomes. Canada needs a coordinated system of population-based, person-specific and longitudinal data. The ability to link individual data to the home and community levels is critical, so that both communities and governments can monitor and take actions that support early child development. One of the key outcomes of such monitoring would be timely intervention, which is a key activity in the success of a modern, developed society.

FOUR APPROACHES TO A MEASUREMENT SYSTEM

A **population-based survey approach** is the best way to measure and track the state of ECD in Canada. A quality survey implements efficient, population-wide, multidimensional assessments of ECD. One such instrument is the Early Development Instrument (EDI). The EDI is efficient because it is completed by kindergarten teachers, one for each student (population-wide), over the course of approximately one working day. It reports on five key domains of a child's early development: physical, social, emotional, language/cognitive and communication skills (multidimensional). When collected for all kindergarten children within a jurisdiction, the EDI provides detailed information at the local community level, where both the key determinants of development and the best opportunities for early intervention are found. The EDI has been used extensively in most regions of Canada. Work is also underway to create a parallel population-based survey tool at 18 months of age, and a Grade 4 MDI (middle years development instrument) is being piloted. Once these platforms mature, Canada will have early (18-month), transition to school (EDI) and middle childhood (MDI) measures of the state of child development from which to judge our commitments to children.

The **longitudinal survey approach** involves direct follow-up, in this case, of a representative sample of a given population of children and their families, through questionnaires and biological testing. Per child, it is much more expensive than the population-based survey approach, but it is better suited to studying children's individual developmental trajectories and their personal, familial and environmental determinants. The longitudinal approach is also better for establishing the timing and sequencing of key developmental events, and for evaluating causal claims. Two Canadian examples are the Quebec Longitudinal Study of Child Development (QLSCD) and the National Longitudinal Survey of Children and Youth (NLSCY). While the QLSCD is ongoing and properly resourced, the NLSCY is not being sustained.

A **linked data approach** is being used by the Manitoba Centre for Health Policy, the Human Early Learning Partnership in British Columbia and the Population Health Research Unit in Nova Scotia. This method involves creating a person-specific, population-based, longitudinal data set by linking administrative records from a range of sources. When health care, developmental and education records are brought together, it is possible to create developmental trajectories for an entire childhood population, thus bringing a high level of efficiency to the tracking of child development (7). At present, work on linking birth records to EDI and school records to medical services records has been approved in British Columbia and Manitoba, allowing the creation and tracking of "normative developmental trajectories" in these jurisdictions.

The essence of the **social indicators approach** is the skillful collation of routinely collected data from a wide variety of sources that, when combined, can provide a national and regional snapshot that may be repeated, inexpensively, over time and place to follow trends. A common example is the Consumer Price Index, which tracks the cost of living anywhere in Canada at any given point in time, with results credible enough to be a touchstone for policy (eg, pension payments are tied to it). In the context of early child development, an index should include data on determinants of child development (eg, the percentage of families with children living below the poverty line, the number of hours per year parents are in the labour force), investments in the early years, as well as outcome information from a variety of sources. When it was in operation, the Canadian Council on Learning initiated the Composite Learning Index, which shared some of these properties. A Canadian Index of Well-being is being developed, with a child learning and development component. This tool deserves consideration as a social indicator for ECD.

RECOMMENDATIONS

The Canadian Paediatric Society recommends the following:

- That federal and provincial/territorial governments commit to creating an enhanced and robust monitoring system, with data accessible to Canadians for bona fide research and analysis. Such a system is crucial to informing policy affecting the health and well-being of young children. This system must be coordinated, include measures to fill existing gaps in data collection, and integrate research, best practice and knowledge exchange.
- That provinces and territories fully implement use of the EDI, making the collated data available to policy-makers and researchers with a view toward improving community outcomes.
- That provinces and territories support the development of other population health measures to monitor the progress of children at other key points in their development (notably at 18 months of age [8] and in Grade 4).
- That governments invest in effective early child development interventions that maximize the health, well-being and education of all Canadian children, regardless of where they live, their socioeconomic status or cultural origins.
- That governments participate in the analysis of, dialogue and problem-solving around childhood outcomes data, with financial support.

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