LEARNING FOR A SUSTAINABLE FUTURE

2011 What's Worth Knowing: Health & Environment Symposium

Background Paper

INTRODUCTION

Preventable environmental health issues such as asthma, obesity and heart disease are affecting the sustainability of our healthcare system and the overall well-being of Canadian citizens. Current healthcare spending rates are challenging other areas of governmental responsibility, namely education. This is a tremendous concern given the key role that education plays in helping citizens to lead healthier lives. Education not only secures positive health outcomes by influencing lifestyle choices and understanding of health issues, it also yields substantial socio-economic benefits for citizens and their communities. Focusing on the most pressing environmental health concerns currently faced by children and youth in Canada, this report demonstrates how prevention-based health and wellness education for young citizens can mitigate the demand for healthcare and serve as a long-term investment in the national economy.

The context of this paper is informed by Learning for a Sustainable Future's (LSF) mission to promote, through education, the knowledge, skills, perspectives and practices essential to a sustainable future. This commitment to preparing youth for responsible citizenship is illustrated by LSF's role in the UN Decade of Education for Sustainable Development (The Decade) which began in 2005 and runs until 2014. The goal of The Decade is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. Implementation of the Decade is dependant on the collaboration of international stakeholders. LSF, in partnership with Environment Canada and Manitoba Education is leading the Canadian response to the UN Decade through the implementation of a series of initiatives including the *2011 What's Worth Knowing: Health and Environment Symposium*.

This background paper serves as the starting point from which diverse stakeholders - grounded in health, the environment, the economy and education - can begin responding to the question: What's worth knowing?

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HOW ARE HEALTH OUTCOMES SHAPED BY ENVIRONMENTAL IMPACTS?

The following pages contextualize the most pressing environmental health issues facing young Canadians within the frame of sustainability - linking social, economic and environment considerations. The selection of these issues was guided by their representation in current academic, governmental and non-governmental literature.

In order to highlight interconnections, the issues have been grouped within three broad themes: food & physical activity, mental health & technology and toxins, air quality & climate change.

Physical Activity & Nutrition

In Canada, two thirds of deaths are from cardiovascular and respiratory diseases, cancer and type 2 diabetes; all of these diagnoses have preventable risk factors including lack of physical activity and diet. These risk factors are typically informed by social determinants such as income, education and physical environment (Health Canada, 2005).

The number of overweight teenagers has tripled in the last 25 years increasing risks for high blood pressure and other chronic diseases including diabetes (Statistics Canada, 2006). With regards to young citizens, recent studies find that if current health trends continue, this current generation of children will be the first to experience a shorter life span than their parents. From hospital care, clinicians, drugs and lost earnings, the lack of physical activity in 2001 amounted to an economic burden of $5.3 billion (Katmarzyk & Janssen, 2004).

The Latin phrase *mens sana in corpore sano* - healthy mind in a healthy body - illustrates that the positive relationship between physical and mental health is well established. Yet only 7% of Canadian children and youth are meeting the Canadian Physical Activity Guidelines of at least 60 minutes of exercise per day (Active Healthy Kids Canada, 2011). In their review of provincial health and physical education curricula, Physical and Health Education Canada (PHE) found that meeting activity targets was a challenge. Provinces such as British Columbia, Saskatchewan and Ontario allocate 150 minutes per week to physical education for students in elementary and secondary school (Physical and Health Education Canada, 2009). This allocation, which is understood as a national standard, involves learning about healthy living in the broadest sense. Physical and health education are treated as components of the same curriculum requirement. There is no stipulation for physical and health education for students in upper years.

It is important to note that students' physical activity at school is affected by teacher workloads. Large classroom sizes and pressure to focus on subjects that are perceived to yield greater academic benefits interfere with teachers' abilities to meet minimum physical education requirements. This obstacle is illustrated by Newfoundland and Labrador where teachers struggle to meet Department of Education's recommended six percent of curriculum time for physical education (Physi-

cal and Health Education Canada, 2009). The benefits of physical activity cannot be ignored - recent studies find that exercise improves academic performance and mental activity in children and youth. "Physical fitness is positively linked to attention, memory and executive functions (e.g., abstract thinking, planning) in pre-adolescent children" (Active Healthy Kids Canada, 2011: 15).

If teachers are able to access support services such as workshops, in-class facilitators and funding from the provincial level, their students benefit tremendously. Action Schools! BC has yielded encouraging results. Here schools apply for workshop instruction and free equipment to implement 'action plans.' These types of programs emphasize access to healthy choices and are facilitated in a manner that supports both the students and the teacher (Action Schools! BC, 2006). Encouragingly, some high schools are experimenting with mandatory physical activity at the start of each day in an attempt to enhance mental acuity.

Beyond the classroom, physical activity for both students and adults is greatly influenced by community design. Communities that are designed for cars – such as suburbs – limit the opportunity to meet daily exercise targets with 'active' transportation such as walking or cycling. A study of Ontario elementary schools found that while 75% of students preferred to walk or cycle to school only 3.5% were actually engaging in active commutes. These figures are in large part attributed to parents' negative perceptions of their physical environment, thereby underscoring the need for parents to engage as central stakeholders in the development of youth-friendly, active transportation policies (O'Brien, 2001).

When healthy choices are not easy to make – due to access or affordability – there is an established tendency to opt for detrimental 'supersize' or 'value' fast food choices.

Living in close proximity to supermarkets is associated with a higher intake of fresh produce (Sallis & Glanz, 2009), however proximity alone does not influence intake of healthy foods. In minority or lower income communities, access to fresh fruits, vegetables and low-fat dairy products is often limited or of poor quality. When healthy choices are not easy to make – due to access or affordability – there is an established tendency to opt for detrimental 'supersize' or 'value' fast food choices.

A lack of healthy food habits increases the risk of type 2 diabetes. By 2020 diabetes will cost the Canadian healthcare system $16.9 billion per year (Canadian Diabetes Association, 2011). Of Aboriginal youth aged 12-17 years, 41% are overweight and 20% are obese, making this population highly susceptible to type 2 diabetes (Ng, Young, Corey et al, 2010). Currently, rates of diabetes among Aboriginals in Canada are three to five times higher than the general population (Sharp, 2008). While certain groups are at a greater risk, diabetes is a concern for the general population. According to the WHO, "over 90% of type 2 diabetes and 80% of coronary hearth disease could be avoided or postponed with good

nutrition, regular physical activity, the elimination of smoking and effective stress management" (Health Canada, 2005: 1).

Food security, which is defined by the World Health Organization (2011) as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life," has emerged as an area of public concern in recent years. According to the Canadian Public Health Association, "the ability to access adequate food on a regular basis is a challenge for a significant number of Canadian households" (Canadian Public Health Association, 2011). In 2004, 8.8% of the population, or approximately 2.7 million Canadians, lived in households experiencing food insecurity (Health Canada, 2004). The financial challenges that constrain access to adequate food are linked to rising food prices and concerns about safe and sustainable food systems. Health problems related to food insecurity include diabetes, heart disease and anemia. Additional impacts pertain to infant health and mortality, child development and related mental health concerns for parents or caregivers such as stress. Key indicators of vulnerability to food security include low or inadequate income, single motherhood and lack of home ownership (Kirkpatrick & Tarasuk, 2008).

Food security is a concern in remote northern communities where environmental changes affect the availability of traditional foods and importing other foods has high costs. According to the Arctic Health Research Network-Yukon, "all of northern Canada can expect to see food security increasingly threatened by fuel and transportation costs, and by environmental and economic changes linked to climate change" (Butler-Walker, Kassi & Eamer, 2009: 3). Many environmental toxins are present in wild game and fish - food sources that comprise traditional Aboriginal diets. It is arguable that this instance has damaged natural weight-control mechanisms (Sharp, 2008), adding yet another risk factor - in addition to lifestyle and genetics - to the obesity and diabetes epidemic faced by the Aboriginal population (Dyck, Osgood, Lin et al, 2010).

Food literacy can be improved through "simple educational tools" that "enhance learning about appropriate food and physical activity levels".

Food literacy, which plays a key role in ensuring good health, refers to knowledge about quality ingredients and nutritious food preparation. Nutrition labels that are easy to locate and interpret contribute to food literacy. Industry sponsored initiatives such as the President's Choice Blue Menu and Heart and Stroke Foundation's Health Check$_{TM}$, system help consumers identify healthy products. While useful to an extent, it is important to note that these examples are not regulated. The need for label regulation is of particular relevance with the increased emphasis on the benefits of organic foods. Canadian Food Inspection Agency responded in 2009 with certification processes that deem a product organic when its organic content is greater than or equal to 95%. Products with multiple ingredients and 70-95% organic content are labeled with the declaration "contains x% organic ingredients"(Canadian Food Inspec-

tion Agency, 2010). Food literacy can be improved through "simple educational tools" that "enhance learning about appropriate food and physical activity levels" (Standing Committee on Health, 2007: 6). Engaging with such tools at a young age both at home and at school is critical to forming positive, long-term, healthy behaviours.

Mental Health & Technology

The Mental Health Commission of Canada found that 1 in 4 children have at least one mental health problem. Of children aged 4-17, 14% have clinically important mental health disorders, of these only 25% receive treatment (Merrifield, 2007). Research shows that the earlier the intervention in mental health, the better chances of success. The need for an effective response has never been greater given that "mental health problems are arguably the leading health problems children face after infancy" (Ministry of Children and Family Development, 2008). If reached, the majority of children and youth can avoid lifelong challenges as adults; the related costs to society are also spared. The highest rates of suicide are among Aboriginals and young Canadians; this circumstance is highlighted by the recent call in the House of Commons for a national suicide prevention strategy (Canadian Press, 2011).

Nature is important to children's development intellectually, emotionally, socially and physically.

Mental health disorders in children and youth can in part be attributed to the combination of 'screen time' and nature deficit disorder. 'Screen time' refers to prolonged engagement with computers, television and video games. Canadian children are getting six hours of screen time on weekdays and more than seven hours on weekend days (Active Healthy Kids Canada, 2011) According to the Children's Health Policy Centre, 'screen time' is a major contributing factor in the psychological difficulties faced by obese children (Children's Health Policy Centre, 2010). According to Louv (2005), nature deficit disorder occurs when children have a sedentary lifestyle that leaves them disconnected from the natural world. This limited exposure to nature and the outdoors has been associated with increased levels of anger, anxiety, energy, fatigue and sadness (Active Healthy Kids Canada, 2011). Nature is important to children's development intellectually, emotionally, socially and physically (Charles & Louv, 2009). However, Charles and Louv (2009) find that 'discretionary time' - time not spent in scheduled institutional settings such as school or daycare - is in decline with fewer opportunities for unstructured outdoor play.

Recently the WHO announced the "possibility of adverse health effects resulting from exposure to radiofrequency electromagnetic fields, such as those emitted by wireless communication devices" (World Health Organization International Agency on Cancer, 2011). The classification of these items as possible carcinogens is of particular relevance for young adults and children, the most avid users of cell phones and most vulnerable to environmental agents. In response, Health Canada recently upgraded warnings and advised parents to limit the length of calls made on cell phones (Health Canada, 2011).

Toxins

Communities located near hazardous waste disposal and industrial facilities are "more likely to affect low-income areas, minority and Aboriginal communities (including reserves)" (Environmental Defence, 2006: 10). Exposure to these sources of air pollution can lead to heart attacks, strokes and chronic lung diseases. "These health effects contribute to lost productivity, doctors' and emergency room visits, hospital admissions and mortality" (Environment Canada, 2010). In a recent report, Environment Canada (2010) posits that the net social welfare from a 10% reduction in fine particles and ozone levels would yield $4 billion.

Studies show that we are regularly exposed to carcinogens throughout our daily lives - at work, school, in consumer products and our environment in general.

The link between cancer and exposure to environmental toxins has emerged as a major concern amongst researchers and policy makers. Studies show that we are regularly exposed to carcinogens throughout our daily lives - at work, school, in consumer products and our environment in general (Epstein, 1998). Exposure to toxic chemicals in the home has been associated with incidents of brain cancer and leukemia in children (Canadian Association of Physicians for the Environment, 2000). Due to their "physical, physiological and cognitive immaturity, children are often most vulnerable to adverse health effects from environmental hazards" (Shea, 2007). The most common environmental toxins include pesticides, Bisphenol A (BPA), polychlorinated biphenyls (PCBs) and lead.

Pesticides are associated with a number of potential serious health hazards such as neurological impairment, cancer, reproductive problems, birth defects and asthma. Direct costs of asthma in Canada are estimated at $600 million per year, with the disease affecting at least 12% of Canadian children (Asthma Society of Canada, 2005). For Canadian children, asthma is the second leading cause of chronic illness and "continues to be a major cause of hospitalization" (Public Health Agency of Canada, 2007). Incidences of this disease are rapidly rising among children less than five years old due to environmental factors such as air pollutants, allergens and pollen (Portier, Thigpen, Carter, et al., 2010).

BPA found in metal and plastic food containers, is linked to fertility problems, cancer, early onset of puberty in girls and neurobehavioural problems such as attention deficit disorder. Health Canada recently moved to make such consumer products for children safer. Polychlorinated biphenyls (PCBs) - a large family of bioaccumulative substances found in industrial materials – is highly toxic. PCBs are associated with toxic effects to the endocrine, reproductive and nervous system (Canadian Environmental Law Association, 2011). In addition they have been linked with causing cancers in animals. Exposure to lead through paint and plumbing in housing built before the mid 20th century has been associated with learning and behavioral problems in children. A neurotoxicant, it is extremely harmful to young children and developing fetuses.

HOW CAN WE MAINTAIN HEALTHCARE AS ONE OF CANADA'S CORE SOCIAL PROGRAMS WHILE ALSO ENSURING A SUSTAINABLE FUTURE FOR GENERATIONS TO COME?

According to a recent study, "Provincial spending on healthcare will consume more than half of total revenues from all sources in six of ten provinces by the year 2020" (Stuart & Adams, 2007). Similarly, the Canadian Institute for Health Information found that Canada spent an estimated $191.6 billion on health care in 2010 - up $9.5 billion from the previous year (Canadian Institute for Health Information, 2010).

Healthcare spending at these rates challenges other areas of provincial responsibility such as education, social services and physical infrastructure. Beyond the political spectrum, sustainability concerns about health care stem from the front lines – clinicians, healthcare professionals – where there is pressure to provide quality care with limited resources. The consequences of an unsustainable healthcare system will affect Canada's global competitiveness. The failure to attend to investments in education will come at the cost of long-term economic development and result in major opportunity costs (Stuart & Adams, 2007).

The recent explosion in healthcare costs is attributed to many factors including an aging population, new and expensive treatments, demanding consumer-patients and in increase in preventable, chronic illnesses. The gradual rate of growth for these items has made it easy to avoid making difficult, long-term decisions to stem growth (Stuart & Adams, 2007). However, merely increasing spending on healthcare alone does not translate into better health outcomes.

Investing in citizens through education effectively harnesses and leverages national potential. By addressing health as a social cost, the benefits are diverse, extending beyond economic gains. "Because governments are almost always looking for immediate returns on the public investments they make – or at least within the short government mandate – they tend to under-invest in programs like early childhood development even though the benefits from such programs are lasting and large" (Laurie, 2008: 21). Similarly, addressing environmental health concerns will take years to show results, however the benefits will last generations.

HOW DOES EDUCATION REDUCE HEALTH EXPENSES AND HELP CITIZENS TO MAKE GOOD HEALTH AND ENVIRONMENTAL DECISIONS?

Physical inactivity and obesity related interventions must address the multiple levels at which behaviour is influenced. Schools and workplaces are the ideal location to create environments where healthy choices are easy to make (Sallis & Glanz, 2009). In addition to being where children and adults spend the majority of the day, these organizational settings have the capacity to implement policies, educate and motivate.

Children are a priority; Canada's economic health depends on their academic success, optimal

health and well-being (Ontario Ministry of Health Promotion, 2010). By engaging schools, a guaranteed connection with this key population is ensured. Due to their capacity to support student health, schools have tremendous influence on the lives of children. This is underscored by the fact that childhood is when healthy habits and positive behaviours are learned. The value of health lessons learned in school extends beyond children to benefit their families and communities. The World Health Organization (WHO) finds that "an effective school health program can be one of the most cost-effective investments a nation can make to simultaneously improve education and health" (WHO, 2011). Schools are a community asset with the capacity and infrastructure to address community specific concerns.

Children are a priority; Canada's economic health depends on their academic success, optimal health and well-being.

Education and health are not mutually exclusive; education is a social determinant of health and good health increases the likelihood of educational success. Unhealthy children are less likely to succeed in school, cementing a generational cycle of limited advancement and gain in adulthood. Children become the "heirs to the impediments" (Laurie, 2008).

Emphasizing a comprehensive approach to health promotion has a cascading effect that improves awareness and knowledge in the general population. These efficient social links ensure sustainable development and underscore the important connections between health, education, responsible citizenship and a good quality of life (Public Health Agency of Canada, 2008). Educating about health as early as possible is imperative to ensuring sustainable and long-term implementation of programs.

Changing societal expectations about wellness and the environment through formal, non-formal and informal education will affect demand for healthcare. Researchers are increasingly emphasizing the need for integrated, community specific policies that address knowledge gaps and provide tools for more effective health and environment literacy.

Much of Canada's health discourse, which is premised on short-term responses to health concerns, ignores the bigger picture of sustainability challenges (Conference Board of Canada, 2011). In order to improve health outcomes this discourse needs to shift towards reducing disparities and improving overall health outcomes through intersectoral collaboration. Greater incorporation of environmental health across sectors can address uneven representation and better reflect the multidimensional reality that informs our health and healthcare system.

A review of curriculum across Canada indicates inconsistent or weak links between health, the economy and the environment. Key issues such as the ones outlined in this report –physical activity & nutrition, mental health & technology and

toxins – are rarely addressed. However, there are several promising initiatives that have the potential to enhance health curriculum and advance students' ability to understand such 'big picture' connections.

Alberta is currently developing a Wellness Education Framework for students from Kindergarten to Grade 12 (Alberta Education, 2011). The plan has a comprehensive school health approach and is oriented towards achieving improved learning and wellness outcomes that appreciate the broad concept of wellness. Quebec is responding to health based concerns at the individual and societal level through its Wellness Oriented School Program (Ministère de l'Éducation, 2011). Key areas of learning that will be addressed include Health and Well-Being; Personal and Career Planning; Citizenship and Community Life; Environmental Awareness and Consumer Rights and Responsibilities; and Media Literacy. Manitoba has had a combined Kindergarten to Grade 10 Physical Education/ Health Education Framework since 2000, aimed at developing student knowledge, skills and attitudes for physically active and healthy lifestyles. In 2008, Physical Education/Health Education was further mandated for students in Grades 11 and 12. While these efforts are notable for their thorough approach, a broader commitment to health and wellness in curriculum remains to be seen across Canada.

CONCLUSION

Sustainability in Canadian healthcare is less about 'fixing' a broken system and more about a collaborative, inter-sectoral response to the "ongoing deterioration in the economic and social conditions that promote health" (Black & MacKinnon: 2011: 1). As the themes examined in this report underscore, emphasis on prevention and consideration of the social, physical, natural and organizational environment has never been more critical.

The way forward begins with responsible citizens who are capable of producing enduring solutions that connect the economy, the environment and society. It is from this platform that this report has advocated for education-based responses to concerns about sustainability in healthcare. It is time to make the long-term health and well-being of young citizens a priority on Canada's policy agenda.

When young people develop positive lifestyle habits, it increases the chances that they will continue to be healthy as adults. More importantly these choices can help prevent the onset of serious chronic diseases" (Government of Manitoba, 2004: 7).

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