2008 THINK TANK

Active Living and Energy Balance

**Charting the Many Paths to Halt Childhood Obesity:
Towards Sustainable Economic, Environmental,
Cultural and Health Footprints**

Conference Report

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INTRODUCTION

The health of a society starts with the health of its children, and today's childhood obesity pandemic is one of the most serious and immediate threats to our children's health and well-being. In industrialized countries such as the United States, childhood obesity has tripled in the last two decades and shows no sign of slowing down. As industrialization spreads in the developing world, the prevalence of obesity in children is rising, even in places affected by hunger and malnutrition. While looking at how the obesity pandemic has progressed over the last 150 years, what has occurred is that there has been a significant decline in the calories we burn, which was accentuated over the last 20 years with the technological revolution. This has created sustainable positive energy balance. Over the course of the last 50 years, communities which used to be designed around community institutions and services, and used to be pedestrian friendly, have dramatically evolved in favor of suburban low-walkable communities and a more sedentary lifestyle. Services which were a walking distance from home now necessitate the use of a car. Schools which used to be at the heart of neighborhoods to which kids could walk or bike have become large institutions and have been placed at the edges of cities, mostly accessible by vehicles. Small livable streets were turned into mini highways because of the increased speed and less sidewalks. As roads grew larger, they grew faster which pulled away housing, retail and pedestrians, and highways were introduced at the heart of the cities. In general, public transportation has been taken out of the equation in favor of the car. Neighborhoods used to be multigenerational; today grandparents are placed in separate homes outside of the city. Neighborhoods were also filled with small corner stores, but these have been now replaced by large stores that are only accessible by car, hence it does not promote walking. Places or homes built with higher density commonly used to have many stairs; the home used to be a place in which a child would spend a great amount of energy. Newly designed homes have not been thought of in terms of the proximity between the play area and the common areas. Play has become organized through leagues and sport teams; it has become more sedentary and so, local play areas have been deserted by kids. All of these facts entail that today less calories are burned than 20 years ago. And it has been proven that more sedentary kids are more likely to become overweight or obese.

Over the years, the McGill World Platform for Health and Economic Convergence (MWP) has been committed to encouraging multi-level and multi-disciplinary research activities on the theme of obesity and chronic disease prevention. Between 2005 and 2008, experts gathered at the Health Challenge Think Tanks, a four-year initiative on Obesity and Chronic Disease Prevention. As part of that program in 2007 and 2008, the MWP held a two-year special program on childhood obesity. In 2007, experts identified the lever points for change along local and global food chains to shift the drivers of supply and demand away from the current focus on quantity, high-yield/high-caloric content and low-cost/low-price products, to an emphasis on quality and diversity. In 2008, experts focused on identifying lever points for change to promote active living and energy balance, specifically focusing on four themes: (1) Why kids and teenagers move or don't more; (2) Shaping individual behaviour and microenvironments; (3) Shaping homes, schools and communities; (4) Shaping cities and regional planning systems. This conference report highlights the levers for change identified during the 2008 Think Tank, sets out the rationale of why they were chosen, and recommends appropriate policy approaches.

LEVER POINTS FOR CHANGE

1. Revisiting the Way Communities are Shaped and Built to Promote Physical Activity

Conceiving communities that generate opportunities for physical activity is a lever point for change because substantial research clearly indicates that physical activity plays an important role in the prevention of chronic diseases and obesity. Physical activity is a fundamental means of improving physical and mental health. It encompasses leisure modes – which have evolved as parks are now competing with videogames – activity, both planned and incidental, and transportation – which has become more and more inactive. And there are a growing number of examples to show that changing the built environment can lead to increased physical activity. Providing access to exercise facilities, walking and cycle ways, along with compact urban planning, increase the opportunities for and reduce barriers to physical activity. In addition to influencing opportunities for physical activity, the way communities are designed will also dictate the types of food available to residents, affect air quality, determine likelihood of injury, and provide varying opportunities for social capital formation, all of which may have short- and long-term effects on health, including the risk for development of chronic diseases. There was a consensus among the experts at the conference on the factors which constitute a well-planned community which promotes physical activity. These include measures of neighbourhood walkability, safety from traffic, increased levels of land use mix, residential density, street network connectivity and retail site design, which all have an impact on one's physical activity behaviour. In order to make communities more health-promoting, there are two avenues, to transform current places (by adding bike lanes or to transform vacant places into play areas) or to redesign new places. The avenues to prioritize in making the necessary changes such as making communities more pedestrian-friendly, increasing the density and diversity of neighbourhoods, and finally revisiting the paradigms of the urban and transport planning industry are identified next.

1.1 Making Urban Design More Pedestrian-Friendly

Planners often label neighbourhoods as 'pedestrian-oriented' if they have relatively high densities of development, a mix of land uses, a street network with high connectivity, human-scale streets, and desirable aesthetic qualities all of which makes walking both more viable and appealing. Areas with the opposite characteristics are labelled as 'automobile-oriented' in that they make walking, transiting, and other alternatives to the car impossible or at least a significant challenge. Making urban design more pedestrian-friendly is a lever for change because it can promote physical activity and pedestrians' safety. Several aspects of urban design have shown to have an effect on walking for activity, leisure and transportation. These include block size, street design, speed, parking, sidewalk coverage, building orientation, landscaping, pedestrian amenities and other streetscape features. As the North American cities started widening their roads, the pedestrians left, the retail pulled away, the housing also pulled away toward lower density areas.

Designing smaller streets. Designing smaller streets, designing them to be contact sensitive and to cater to pedestrians and cyclists in transit rather than prioritizing car circulation is one avenue. Replacing highways by contact sensitive street designs is another alternative because it will enable putting back the public transit at the heart of the equation. In doing so, the cities will respond accordingly through land use change, and finally people's habits and housing choices will change: they will shop closer, work closer, and play closer.

Improving connectivity. Measures of connectivity evaluate levels of accessibility of different travel modes: they include the number of blocks or of intersections within an area. Grid-like street networks can improve walking and transit access by offering relatively direct routes and alternatives to travel along the high-volume and high-speed roads. Ensuring better connectivity will not only facilitate active transportation, but it will also create places for people to meet and socialize, thus foster social capital formation.

Reducing speed. Speed is an important determinant of a neighbourhood's safety or perceived safety, and thus is related to parents' decision to send their children to school by walk. Reducing speed will enable pedestrians to get around safely again and for the retail and housing to come back so to shorten distance to community services. The speed not only spreads cities out but also creates barriers within the city. Diminishing transit time by increasing the speed ultimately increases urban sprawl because city services become easily accessible to the suburban communities. Thus, speed-oriented roads need to be replaced by city-friendly alternatives.

Improving safety features. How individuals use an environment will not only depend on the ability of the environment to encourage physical activity but also on their perception of the environment. Barriers to physical activity can consist of perceived or real threats that do relate to the quality of the living environment. The placement of buildings, streets and other components of the built environment can not only have an impact on a person's sense of attachment to a community but can also affect one's sense of isolation and connection to other members of a community, their sense of physical safety and connectedness to nature. Through the creation of the well-lit and well-designed places, communities will become more vibrant, natural surveillance will increase which will in turn generate self-policing and a stronger sense of community.

1.2   Increasing Density and Diversity of Urban Developments

Land use patterns affect travel behaviour by altering each transportation mode's relative costs for the user and convenience levels, such as accessibility and transit time. Land use mix and higher density are associated with reduced levels of automobile-based travel, less single-occupant vehicle travel and the increase of walking and cycling behaviour. Meanwhile, transit use has shown to be correlated primarily with local densities and secondarily, with the degree of land-use mixing, taking into consideration that travel behaviour may be directly influenced by variables correlated with density such as centrality of location and good transit service.

Increasing land use density. Density is defined as the number of residents, households, or employees per unit, within one area, and includes the proportion and types of housing. Increasing density will facilitate the movement of people from place to

place. When density declines, one tends to use the car more often; when density increases, active transportation increases.

Increasing land use diversity. Diversity is an inherent characteristic of modern cities. To be healthy, cities need diverse age groups, ethnic groups, different housing types, and different price points. Thus, a better diversity of land use is needed. Land use mix describes the composition of uses of land within a geographic area. Mixed use or heterogeneous zoning will allow compatible land uses to locate in close proximity to one another and thereby will decrease the travel distances between activities. Promoting land use diversity will enable shorter trips and promote diversity of transportation modes providing a sustainable alternative to the car.

1.3 Revisiting the Paradigms of the Urban and Transportation Planning Industry

In the past few years, many features that promote health through physical activity have been erased from communities: these features will need to be prioritized again. Health will need to be an integrative feature of the way that neighbourhoods and cities are developed. Revisiting the paradigms of both the urban and transport planning sectors, through the integration of health preoccupations, will be important to promote urban development that promotes physical activity and active living.

Revisiting the paradigms of the transportation industry. Fundamentally, cities exist to maximize the efficiency of the exchange of goods and services, entertainment, and social contact. They also exist to minimize the transportation needed to access these services. The theories that are currently used by transportation specialists were developed in the 1940's and 1950's and have not been actualized despite the evidence of negative health outcomes and pollution. One particular myth is the one of efficiency: while a lot of people understand that "efficient" means fast, it is an efficiency myth that a car free of congestion burns less fuel than a car in congestion. Consequently, transportation planners believe that if they widen the road and keep a stream of cars moving free of congestion, it burns less fuel than a congested stream of cars, which has proven to be untrue. As a consequence, the rise of public transit declined dramatically and the car use increased sharply. These theories need to be revisited.

Putting the pedestrian back at the center of the planning process. Several specialists contribute to conceiving cities: urban planners, architects, traffic engineers, parks specialists, housing firms. Economic assessments are a common part of their professional life. They see economic valuation (primarily cost-benefit analysis) as an essential pre-requisite to funding any new scheme, program or policy. Of interest to urban planners are the costs and benefits of one pattern versus another. Consequently, traffic engineers have placed a car at the center of their preoccupations. There needs to be a paradigm shift to put the pedestrian back at the center of the process. As change starts to happen to get off the car and highway habit, people will change and the cities will respond accordingly through land use change. People move every 5 to 10 years, so they will eventually move closer, shop closer, work closer, play closer, and the city and its residents will become healthier.

2.   Leveraging the School and Health Systems

Schools are often the child's first critical interface with the broader society and as such schools find themselves at the core of any effort to promote societal change. Most importantly, schools have the people and the capacity to promote change. The people who run schools have incredible influence over children; they are trusted by parents. Schools are institutions with immense capacity. They have been expected to take more and more responsibility for children's health and those expectations on schools are not misplaced. They have been successful in developing children's literacy, social responsibility and have adapted to a changing society. .To date, the efforts to include health on the school agenda have been deployed in several countries; however, the scale and scope of these changes is far from the desired results needed to stop the progression of childhood obesity. In a similar way, modern society has assigned the responsibility to manage the health of its individuals to organizations specialized in public health and health care. The main interface with the health and healthcare system is the primary care system, through which physicians deliver primary care. Leveraging the health system will mean to harness its competencies and scope toward better prevention of childhood obesity. To do so, below are the broad recommendations which were formulated by experts.

2.1   Leveraging Behavioural Change at School

The school setting is a simple but profound way to teach children about food, nutrition and physical activity, and thus has been recognized as an important environment to shape lifetime patterns of healthy behaviour such as healthy eating and active living. Schools are great catalysts for behavioural change as they are closely interrelated with the rest of the community. The people who run schools have incredible influence over children, because they are trusted by parents. In addition to playing an important role within the community in providing youth with knowledge and in enabling them to grow as healthy adults, schools are the setting in which every child spends a significant portion of the day from 180 to 190 days per year. Thus, schools should be the most effective vehicle to reinforce not only the educational achievements, but also a lifetime pattern of healthy eating and exercise. Changing people's behaviours is most effective if you start young.

Encouraging educators to promote healthy behaviour. There is a considerable body of evidence which indicates that healthy students learn better and that improving knowledge, competencies and the health status of young people can improve learning outcomes. In addition, schools must be viewed as a means or setting through which several sectors can promote health, academic achievement and social development. Educators will be the willing partners in the promotion of health for their students and will be motivated since they know that healthy and active students learn better. In addition, educators will be moved by the moral imperative to make sure that youngsters have the best chance for success in all areas of their lives intellectually, socially, emotionally and of course physically.

Reinventing schools physical education programs. School-based physical education programs are among several means through which young people stay active during the day. Physical education programs are correlated with the likelihood of adolescents to engage in moderate to vigorous physical activity, which is a health-promoting activity

that at the same time has a positive influence on a child's ability to socialize. Moreover, they must be reinvented and revisited to better encompass learning, through activities (e.g. dancing). There exists many small-scale initiatives, but the challenge is to be able to scale up these programs and apply them to a larger population base. Those programs will need to be flexible enough to be tailored to different population groups, age, gender, and ethnic groups.

Developing health literacy programs. A "health literacy" program would help better equip children to navigate the modern world of plenty. Educators will have to be involved in the early crafting of programs as well as of policy discussions to make sure that these go off in the right direction, as well as through the implementation process.

2.2   Improving the School Physical Activity Environment

The school physical activity environment is also a key to determining opportunities for physical activity as school-based physical activity accounts for 20% to 40% of youth's total activity. In addition, studies have shown that most common places in which kids can be active are neighbourhoods' parks and school grounds, before and after school.

Designing schools that facilitate movement. Schools should be designed or redesigned in order to better promote movement. There is no need to rebuild schools: current schools can be reorganized in order to facilitate children's movement. When rebuilding schools, community should at least build two schools that promote healthy choices, in order to evaluate the effectiveness learning and health outcomes and to allow for comparisons with traditional schools.

Improving schools' neighbourhood safety. To explain inactive commuting and physical inactivity, the local environment intuitively seems likely to be of important influence. Effectively, elements of the built environment can have an effect on neighbourhood safety. Common reasons provided by parents to explain the reason why they do not promote active commuting to school include long walking distances, traffic safety and fear of attack. Central to the issue of the road and pedestrian safety is the urban design of neighbourhoods and the degree to which they are pedestrian-friendly.

Facilitating active commuting to school*.* Active commuting to school contributes to higher levels of total physical activity and can help counter childhood obesity. Children and adolescents who walk to school are more active than those who do not. In some cases parent transportation is related to total activity of a child. Unfortunately, active commuting to school has declined dramatically. The average a child walks during one day has declined from five miles, 40 years ago, to 500 yards today. In many North American cities, many neighbourhoods do not permit children to walk to school. When they do, parents are worried for their security. For children to walk or bike more to school, environments must provide the necessary opportunities: it has been found that shorter distances between home and school as well as availability of sidewalks along busy roads were associated with a greater percentage of children using active commuting modes to school.

2.3   Engaging the Health Sector to Promote Healthy Behaviour

Focusing on prevention rather than cure. There is a common premise that having the science, technology and skills, health organizations know best what to prescribe for maintaining and restoring the health of individuals, and that compliance with such prescriptions is possible and is the key to the success of interventions. In the case of chronic disease, however, several decades of health research suggest that it is the anatomy, physiology and pathology of the whole society - and not only of the human brain and body – that has to be factored into a prescription for a course of action. It keeps priority of the health systems on treating disease more so than on prevention mainly through healthy eating and physical activity. In the Netherlands, since 2002, there is a chronic disease prevention strategy in place, an approach to get preventive measures and policies into the mainstream healthcare system, not only primary care but also secondary and tertiary care. The strategy involves communities because they are the ones who will develop their own public health and preventive measures. The strategy's partners include the Ministry of Health, the Ministry of Education, the Dutch Food Industry Federation, the Royal Association of Business, the hospitality and retail sectors, the Food Retail Board, foundations and associations, the catering industry, and the Confederation of Netherlands Industries and Employers. As part of the strategy, the projects focus on prevention within different domains, the home domain, the school domain, and the leisure/recreation domain.

Becoming more entrepreneurial. Health organizations, as the catalyst in galvanizing action, must work to shift individuals and society toward a healthy lifestyle. Becoming more entrepreneurial in galvanizing action among all agents means contributing to the production of a healthy lifestyle, and putting the prevention of chronic disease on the strategic agenda of civil society, media, businesses and government. The health community should promote health-oriented environments in municipalities, schools and kindergartens and health-oriented lifestyles in partnering with local governments, community organizations and schools.

Involving family physicians. Family physicians are important gatekeepers because they build a relationship with all the members of the family that they treat. They also have a great influence on their patients. Thus, they are important conduits of knowledge for children and parents to engage in an active lifestyle, from an early stage of the patient's life. Family physicians can also become a role model for their patients. To do so, they need to diagnose the obesity predisposition or risk at an early stage in the child's development. They must be proactive in identifying the overweight child before he or she becomes obese, and propose the appropriate interventions. Initiatives should be conducted to encourage the children at risk to become more proactive. One of the challenges to having physicians becoming more involved is the fact that if they provide healthy living counselling, they are not remunerated to do so.

3.   Leveraging Children, Parents and Home Environments

When analysing the patterns of children's behaviour, one witnesses that time spent outdoors by children has declined dramatically and that the play in general has become more sedentary. One factor which has been a determinant of this phenomenon is that since the late 1970's and early 1980's more mothers have entered the workforce. As a result, children spend less time at home and more time at a daycare or in after-school programs. Thus, they have less discretionary time, which is time that is not spent as part of a schedule. Today, television is the most important discretionary activity for kids and there has been a major increase in the time children, especially young boys, spend playing videogames. Between 1997 and 2002, it doubled. For boys and girls, electronic play and media use have increased over the same period of time. It is important to understand the implications that this behaviour will have on their relationship with technology and physical activity in their adult lives. In addition, kids have fewer opportunities for social interaction in their neighbourhoods: they tend to be isolated. Thus, actions are needed to inspire them, to engage their parents as well as the whole community to which they belong, and also to do the necessary changes to the environment in which they evolve.

3.1   Engaging and Inspiring Kids

Inspiring kids with role models. Inspiring children to engage in physical activity is important and the role models have a unique ability to affect behavioural change in children. Role models may be leaders within community, parents, family physicians, or even Olympic champions. Role models should be aware of the positive influence they have on a child's behaviour and harness it toward health promotion.

Engaging kids in activities that promote health. Kids want to learn and they want to participate in joyful activities and have fun; the more they enjoy the activities they become engaged in, the more they learn. Engaging children in repetitive joyful activities rather than simply supplying them with information will better affect their behaviour. For instance, health messages can be integrated into activities to teach children about healthy behaviours.

Engaging kids into the decision-making processes. Kids must be integrated into the decision-making processes. Before elaborating strategies to engage children, it is necessary to question their motives. In addition, adults and children may have very different motives and so these must become aligned. For instance, kids should become part of the process of developing toys because they are the end-user.

Tailoring activity programs to different ethnic and gender groups. Different ethnic groups will have different values and belief systems. Thus, the idea of cultural identity, which is strengthened during adolescence, is a powerful determinant of the type of activity an individual will engage in. Physical activity needs to enter into the vocabulary of the social culture of kids. To prescribe an activity that is outside of a person's identity is very likely to be counterproductive. While delivering programs, culture and ethnicity will need to be taken into account to ensure optimal participation. For example, in some cultures physical activity has been associated with being poor. Designing an intervention that is culturally relevant to the population that it targets is important because then the whole family, including parents, and perhaps the whole community will become involved.

3.2 Creating Environments that Promote Play and Children's Development

Imaginative play is one of the most important exercises of the childhood. Children want to play and if they get the opportunity to play in an early stage of life, chances are they will repeat that behaviour while growing up. Denying it may generate less interest in play at a later stage. Movement and joy are fundamental to play. Play is a means of improving a child's development. The desire to play and engage into a physical activity is built into the way the brain works. The way the brain is wired up to engage in play and to derive benefits from play can be used to great effect to get kids engaged in a more dynamic activity. Creating environments for kids to engage in play, environments that will cultivate children's awareness of their surroundings, and environments that will promote their physical development is thus a lever point for change.

Creating environments for children that cultivate imagination and desire to play. For children's imagination to be cultivated, they need to be encouraged and stimulated by healthy play environments. When encouraged by a healthy play environment, a child's imagination will thrive, improving his or her mind, thought processes and the child's potential. For example, children should be encouraged to play with loose elements such as dirt, twigs, cones and leaves; children develop skills in construction and creation. Thus, the ability to engage children in rough and tumble play should be the primary focus of outdoor spaces for children.

Creating well-designed outdoors spaces for children's awareness of their natural environment. Studies have found that kids are active in several settings. Well-designed outdoor spaces will contribute to children's awareness of their natural environment as more children today lack contact with their natural environment than ever before. These include: schoolyards, gardens and playgrounds that provide ample opportunities for children to explore and experience nature-based landscapes as well as healthier lifestyles through increased outdoor activity. While designing outdoor environments for children, what this involves as well as what attracts children in these spaces must be taken into consideration.

Creating environments that promote physical development in a non-threatening manner. Some children enjoy group activities while others prefer to play alone. Different children need different spaces for movement and physical play. It is important to allow physical development to occur in a non-threatening atmosphere in which a child has control over his or her involvement. Children who fear the ridicule of their peers in teen sport situations or groups' games can gain confidence before interacting in situations in which they must prove their skills. Thus, movement and activity should be enjoyable and comfortable for every child and spaces should be versatile to meet a variety of children's needs and skill levels.

3.3 Engaging Parents

Studies have shown that physical activity and exercise are to some extent inherited or influenced by genetic factors. In addition, some experts have pointed out the fact that the easiest way to change a child's behaviour is to work on changing the parent's behaviour. Thus, engaging parents is a lever point for change.

Educating parents on the importance of active living. Parental support for activity is important. Parents who understand the processes through which kids can become more active will be conduits of action for their kids. Now that children's play and discretionary time in general is becoming more and more sedentary, parental education will be crucial to changing those habits.

Empowering parents as agents for the promotion of healthy behaviour. Parental support for activity, siblings' activity, direct help from parents for kids to engage in physical activity are all important ways in which a parent can help a child engage in physical activity. In addition, the means of transportation a parents chooses is one important factor of improving a child's activity: studies have shown that for middle-school children, parental transportation was related to total activity as well as in participation in sports and activity lessons.

Choosing home environments that facilitate movement. Researchers have measured the activity that children undertake during the course of the day and have found that it is very different for those who are driven to school by their parents in comparison with those who use active transportation methods. Although, when the total daily activity is measured, the results indicate that there is a compensation occurring during the course of the day whereby those who are penalized of their physical activity by being taken to school by car make up for it if the household facilitates movement or if the child has access to parks and playgrounds.

4.   Leveraging Media, Communications and New Technologies

4.1   Leveraging Media and Communications

Communicating clear and simple messages. Depending on the audience and how the message is spun by the media, a message aiming to promote an active lifestyle can become a disempowering one. For instance, some communities are more walkable than others, while others are more disadvantaged and will not be able to offer many opportunities for children to have an active lifestyle. Messages might become disempowering and to some extend authorize the most vulnerable groups to remain inactive, to overeat and that obesity is an inevitable consequence of the context in which they live. Thus, media and communications is an important lever that must be used wisely and messages should be kept simple. For instance, an appropriate message should be: to remain active to maintain a healthy weight.

Creating of using social movements toward health promotion. Social movements have shown to be effective in promoting societal change. Thus, another avenue would be to create a social movement around health promotion or to take advantage of existing ideological movements that are currently showing success and use them toward health promotion. There are in fact many convergence points and overlaps between the behaviours that need to be promoted to curb the obesity pandemic and those that existing social movements are promoting. Examples of those issues include environmental sustainability and climate change, food safety and access to healthy foods, community safety and traffic reduction, and human rights and social justice.

4.2   Leveraging New Technologies to Promote Physical Activity

Using new technologies to track energy expenditure. There are three principal components of human energy expenditure, basal metabolic rate, thermic effect of food and activity thermogenesis. The basometabolic rate is the calories burned at complete rest and the basal state. It accounts for about 60% of the total daily energy expenditure. The thermic effect of food is the increase in energy expenditure associated with digestion, absorption, and storage of food, and accounts for 10-15% of the total energy expenditure. The remainder is activity thermogenesis. Activity Thermogenesis has two constituents, exercise-related activity thermogenesis and Non-exercise Activity Thermogenesis (NEAT). NEAT is the energy expended for everything that one does which is not sleeping, eating or sports-like exercise. Because most people don't exercise at all, the reason of one's ability to burn more calories is NEAT, which is mainly predicted by occupation. Over the last 150 years, the energy spent daily has dropped by 2000 calories because occupations and mobilization are chair-based and play has become chair-based too. Some researchers have integrated NEAT-sensing technology into an iPod to track one's energy expenditure. There are a lot of applications that currently exist to track children's improvements in terms of physical activity and this information could be used by policy-makers to inform their decision-making process.

Developing computational technology to promote healthy behaviour. Technology can be developed in a scalable way to have a positive impact on one person's health-related behaviour. Simple messages can be provided at the point of decision, at the right time, tailored to the right place, in a non-disruptive way. If they are repeated and consistent, they can have an impact on behaviour change. For example, it has been proven that providing the right messages at the point of decision encouraged higher compliance to the desired behaviour. For example, carrying a phone that has the functions of GPS and accelerometer can enable one person to gather data about his or her activity levels.

Exploring opportunities related to exergaming. Children's screen time has gone up to over 35 hours a week, out of which 12% of the time is spent playing on video games. In order to tackle the childhood obesity pandemic, one avenue will be to leverage the toys that are already used by kids in order to promote healthy choices instead of reinventing the wheel. Exergaming is an innovative approach to accomplishing physical activity that uses video game hardware and software to facilitate energy expenditure while the game is played. Videogames can become a tool in the battle against childhood obesity, because they can increase a child's motivation, and provide strong role orientation, through clear learning goals, broad experiences and practice operations. In addition, they have a proven heritage of helping people do things in a more accomplished manner.

POLICY ACTIONS

Overarching Policy Approaches

1.   Building Synergies between Stakeholders at Different Governance Levels

Obesity is a societal issue. People are actively fighting against a lot of forces that they find themselves exposed to. The obesity is a complex dynamic systematic problem; the main drivers of it are abundance, convenience and choice which are part of their everyday behaviour. There are much more complex versions of those types of compensatory behaviours going across the system – if you change one thing, the system will adapt. In understanding activity and sedentary behaviour, several levels of influence must be looked at, including biological, psychological, social and cultural factors. Behavioural change will follow policy and environmental change. Thus, to generate health outcomes, change has to be undertaken at several levels within the whole system, so it is not only about personal intervention, but about reaching out to families, communities, companies, and the different levels of government. Thus, not-for-profit organizations as well as economic and political actors must join their efforts with the governments taking the lead as they have the jurisdiction, the resources and the responsibility. In this regard, the Government of Quebec has been innovative in adopting in 2006 a broad societal plan to tackle childhood obesity through the promotion of healthy living. The Plan is comprised of 75 actions that are aimed at improving the quality of life of Quebecers through providing access to environments which promote the adoption and retention of a healthy lifestyle, active living and healthy eating. Under the stewardship of the Ministry of Health, seven ministries are involved in this plan, whose governance and funding mechanisms engage government, private sector and community organizations from health and non-health systems.

1.1   Partnering with Stakeholders at Multiple Decision-Making Levels

Achieving healthy cities will require all the specialists that contribute to conceiving cities - urban planners, architects, traffic engineers, parks specialists, housing firms - to work together, as well as with public health actors, with the same set of priorities and an aligned vision. These specialists are currently working in silos, within their own discipline. The city planners must work together with landscape architects, traffic engineers, developers, but also with city residents and governments. Also, in order to link policies, particularly when looking at chronic diseases, it is necessary to develop them in an integrated manner and not in silos, to collaborate with multiple stakeholders, especially the industry, and to work at multiple decision-making levels. Thus, for policy-makers to work with multiple stakeholders including industry, NGO's and health experts as well as at multiple decision-making levels is a lever for change.

Collaborating with communities. A great amount of creativity emerges from community-based initiatives as well as from low-middle income countries which are learning opportunities for developed countries. Some countries are taking the lead on collaborating with communities to scale up their efforts through broad government action

plans. Iceland has a program called *Everything Affects Us, Especially Ourselves*, an interdisciplinary project led by the Public Health Institute of Iceland and developed in collaboration with 25 municipalities in Iceland. Each municipality formulates its own policy and action plan regarding children's lifestyle, with emphasis on increased physical activity and improved diet. The European Union initiated, under the leadership of Denmark, *Shape-Up*, a participatory project in which 26 municipalities all over Europe are involved. *Shape-Up* involves the school and community, including families, from the start, jointly with a child. It also welcomes partnerships with the public, non-profit and private entities. The following suggested actions could be undertaken:

- Organizing community forums to solicit ideas and input, plan the network and supervise the project implementation
- Financing local programs, to see the results and then scale up if they are positive in improving youth physical activity.
- In delivering programs, design programs that are mainstreamed to community context, train local organizations to deliver those programs, provide training to community leaders and resources to parents.
- An important number of community players are involved in health issues and so it was highlighted that one action item is to encourage them to join their voices. In addition, partnering and collaborating with community voices is a way of reaching the population.

Partnering with the industry. The industry recognizes the challenges related to overweight and obesity. The industry can proactively work with the government, NGOs and health experts to reach workable solutions that allow the industry to continue making money but to do it in a way that is more responsive to social and health issues. In fact, more and more industry voluntary moves are being witnessed. Companies will work with governments because they are affected by welfare costs; declining productivity caused by disease and lack of physical activity. Having the industry partners on board is important as they have access to resources and to their customers, and employees whom they can easily reach. Partnering with the transportation industry may for example entail looking at how some of the transport policies to reduce congestion might also improve physical activity. Landscape architects also have a role to play as they are the ones who design parks, gardens and playgrounds, so they should be made aware of health issues related to their actions. In landscape architecture, sustainability is the primary issue, and it is directly related to health.

Partnering with the scientific community. Scientists need to generate a dialogue with society to inform their research through partnering with government, private sector, and non-governmental sector. While researchers are aiming to take rigorous science and apply it in an effective way to guide policy and programs, attention should be put on making sure that areas that are explored and approaches that are pushed have a practical use, that research questions are well targeted and that research takes into consideration current approaches and interventions that have proven to be effective. For example, PepsiCo while investing in R&D to lower sugar and fat content of its portfolio of products, has appointed a physician as its head of the R&D department and a public health official as a head of public policy and public health, thus has initiated a transformation in its vision. The company believes that developing relationships with the scientific world will help bridge the current gap. Scientists need to become more active in

the conversation of the ways in which the communities are shaped and built, and the extent to which they promote or discourage physical activity.

1.2   Improving the Collaboration between Different Governance Bodies

Mainstreaming health into the preoccupations of all non-health systems. Because health is a societal challenge and a shared preoccupation, while working multisectorially, public health should be the conduit: all parties should align their actions and priorities with those of public health, and focus on prevention. The political agenda does speak of health but in its curative aspect, not in its prevention aspect. Meanwhile, the health sector does not give value to non-health sectors, so new approaches need to be defined in order for the health and non-health sectors to work together and not against each others. The UK government, for example, has done some work with their department of transportation so that their policies to reduce congestion would be advantageous in terms of increasing physical activity. A first step to establishing a joint agenda to address the burden of childhood obesity would be to start by an assessment of the sectional policies that currently exist and look at their impact, before establishing new policies. In addition, because many decision-makers do not have a health background, another step would be to generate forums for them to talk to each other and align their visions.

Enabling communication between the urban and transport planning departments. The urban and transport planning systems have traditionally been dealt with separately within government bodies which reflects institutional and professional divisions. Different government agencies are typically responsible for transportation and land use planning, and they tend to be staffed with people possessing different professional backgrounds and world views. Provincial governments have not yet adopted an integrated approach to land use and transportation planning which yields ineffective results. Congestion for instance is usually viewed as a transportation problem in most Canadian cities and so transportation solutions are sought such as increasing roadway capacity or real-time traffic control while more effective solutions could be implemented (e.g. to make better land use decisions through higher-capacity transit lines that would encourage shorter or fewer trips).

Building synergies between the health and education systems. In most developed countries, the education and healthcare systems share similar values about what underpins educational experiences at school, so they should be natural partners. Education and health have similar mandates which are to provide universal care, but they speak very different languages and operate through different paradigms. Each has its own professional credentials, its own culture, its own bureaucracy and its own language. While education is solely the jurisdiction of the provinces and territories, healthcare is a shared responsibility with the federal government. Both have very different relationships with their stakeholders. There are challenges to overcome: health and education have their own professional credentials, culture and bureaucracy. Education is solely a jurisdiction of the provinces while health responsibility is shared with the federal government. In addition, there is sensitivity to comparing one school to another and from one jurisdiction to another, whereas for the healthcare sector there are regional and provincial territorial comparisons routinely made.

Creating multi-level governance bodies. One of the dilemmas that is faced by regional or larger scale planning is that each level of government has different

competencies. Municipalities have significant power over the form of the built environment. Through general plans, taxation policies, zoning codes and subdivision regulations, cities and other local government entities make decisions on land use policies, plan and design street layouts and locations, including requirements for sidewalks and allowable street widths, maintain parks and playgrounds, and finally set the requirements for developers. Through these actions, local governments create – or restrict – opportunities for physical activity. Local governments, whether regional or municipal, and thus planning, are under provincial and territorial jurisdiction. The role of the provincial governments within planning activities is to set policy, monitor activities, oversee municipal capital borrowing, and engage in development activities in a multitude of different ways, but the importance of provincial governments goes beyond their jurisdiction: provincial highways are crucial for transportation services and their development often determines the future direction of urban development. In addition, provincial policies in relation to subsidization of housing, sewage treatment or public transit can have implications on large-scale strategic land use decisions made at the local level. The federal government has very little contact with municipalities, but has control over economic, fiscal policy and major transportation policies. Forums are needed to have all of these government levels oriented toward collective decisions and decision-making that promote health. There also needs to be a shift toward understanding good processes, thus moving beyond good practices, which a governance body could enable.

Specific Policy Actions

1.   Revisiting Current Governance Tools and Frameworks

1.1   Promoting the Use of Health Impact Assessment tools

Health assessments should be attached to all major construction and transportation projects. Current tools that are used at the regional and the local level to evaluate the impacts of both transportation and land development policies, programs and projects do not integrate health. In addition, the evaluation tools that are currently available are either local/municipal, site- or neighbourhood-based. The fiscal impacts of the investments are being evaluated in terms of tax revenues, the traffic impact, and the impact on municipal utilities, may it be water demand or sewer demand, but health is not part of the equation. The two approaches that are currently being used are the cost benefit analysis or cost effectiveness analysis and the environmental impact reports. In Canada, for example, cost benefit analysis is used to follow the building of roads. They could include health with, for instance, proximal effects like changes in physical activity or changes in exposure to polluted and dirty air, and in correlation with life expectancy. Health impact assessments can become a tool to look at health consequences of policies and programs. Done by a health person, these assessments could predict the health consequences of a proposal, encourage those that will generate a positive impact, and offer recommendations to mitigate some of the adverse consequences of these proposals. These could be done on a voluntary basis, but they should become part of the existing governance structure. For instance, the US National Environmental Policy Act does allow health to be included in environmental impact assessments. A model to follow would be the environmental impact assessment which looks at air, water

and other environmental aspects. One challenge remains when it comes to implementing a health impact assessment tool: many health impacts are difficult to quantify, such as physical activity, mental health.

1.2   Establishing Performance-Based Funding for Municipalities

Throughout the discussions that took place during the Think Tank, the experts identified the following lever for change, specifically, the need to revisit municipal financing and to move toward performance-based funding. Performance-based funding would enable municipalities and regions to obtain their funding only if infrastructure and transportation projects respond to the established performance criteria, which would be tailored to health outcomes. There would be a need to track over time how they are building their communities and their vision, and to what extent their decisions are health-promoting in order to secure their funding.

1.3   Supporting the Integration of the Comprehensive School Health Framework

Comprehensive school health is an internationally recognized educational framework which emphasizes the provision and coordination of support and services. It recognizes that teaching and learning involves both direct learning in the classroom as well as indirect learning, and that health and learning are interdependent. It also recognizes that children must feel safe at school, have a sense of belonging there, and must have access to healthy food choices. The four pillars are the social and physical environment, teaching and learning, partnerships in services and healthy school policies. Research has shown that when action is taken across all these areas, embedding health within all aspects of the school setting, and when those actions are harmonized, students are thus supported to achieve their full potential as learners and as members of society. There is currently a consortium for school health in Canada, an undertaking by the ministries of health and education in 12 of the 13 provinces and territories plus the federal government. In addition, there is the *ActNow BC* program which offers the *Dial-A-Dietician* program, through which schools get advice on how to implement food and nutrition guidelines from dieticians. In terms of school-level interventions, BC has a Network of Performance-Based Schools, a network of healthy schools where they gather as a group, agree on common goals, measure their achievements, and depending on the results, decide on a strategy. Alberta has a similar program called Ever Active Schools. Let us not forget that promoting health is one of the many things that schools are asked to tackle which extends beyond their core mandate. There is a cost attached implementing such programs, thus more financing is needed.

2.   Supporting Health-Promoting Initiatives and Developments

2.1   Providing Incentives for Companies to Provide Healthy Working Environments

Enterprises understand the implications of low mobility and poor health for the employees. Thus, the idea of health-promoting work environments as a profitable investment for employers has now gained broad recognition, with return translating in reduced absenteeism, lower staff turnover, enhanced recruitment and improved

productivity. Health benefits as well as wellness and family/work balance programs are now part of employment conditions in good number of companies worldwide. This is particularly the case for medium and large businesses operating in industrialized countries and at the global level, typically with middle- to high-income level staff. Governments should become involved as to ensure that cost effectiveness issues are moving into decision-making arena beyond health, to ensure that businesses that invest in health get return on investment.

2.2   Promoting Pedestrian- and Transit-Oriented Developments

When compared to traditional neighbourhood developments, transit-oriented and pedestrian-oriented designs offer higher densities and possess a distinct focus toward transit accessibility. People drive less in more walkable communities because the distance between destinations, which can be affected by land use, is positively associated with vehicle miles traveled. Transit-oriented developments can create hubs, community points, places in which community members can interact and play. Motorized transportation decreases the likelihood and appeal of active transport and the true health costs of motorized transport are hidden through the discouragement of physical activity rather than necessarily drivers' inactivity.

2.3   Promoting Agricultural Production in the Cities

Cities and communities should be perceived as places to live and work but also as places to grow. Many municipalities and local health and social welfare departments have already started agricultural production in the cities. Many cities which are characterized by high population density, especially cities where a high percentage of population are migrants, are currently doing so. Cities such as Rosario in Argentina have taken this type of challenge, enabling use of roads and sidewalks for growing, providing washing areas, pick-up services, transportation, and kiosks for produce sale. Cities can promote urban agriculture by providing opportunities for traditional composting, growing organic fertilizer, by providing access to markets and kiosks, and by providing access to washing areas and pickup services. Agricultural production in the cities can also engage citizens and increase their awareness of food security. They can be involved in designing the facilities that will serve to grow the crops, for instance roads and sidewalks can be used as spaces for growing.

2.4   Supporting Safe Routes to School Programs

As part of active commuting programs, *Safe Routes to Schools* programs are spreading across Canada, the U.S., Europe and Australia, to decrease traffic and pollution and increase the health of children and the community. *Safe Routes to School* programs typically encourage children to walk and bicycle to school by lobbying for improved street design, calming traffic and creating traffic-free zones around schools. The establishment of such a zone (approximately 2 blocks) would hopefully increase children's active commuting by discouraging short-distance chauffeuring and by reducing hazardous local traffic. Safe Routes to School Programs is a typical example of a collaborative effort between different policy levels to build infrastructure to promote active transportation: they go beyond government governance and embrace community leaders, parents and schools.