What role for environmental public health practitioners in promoting healthy built environments?

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ABSTRACT

Spaces that encourage better health are increasingly seen as key to reducing the burden of chronic disease: many larger Canadian public health departments now include built environment (BE) teams, which work with municipalities and land use planners to promote and/or require the development of health-encouraging spaces. In many public health agencies, it is environmental health practitioners who have assumed the new healthy BE role, but at what cost to existing mandates? We argue that reinventing roles to increase BE capacities within environmental health practice would reinforce health protection mandates while building capacity in chronic disease prevention. Significant expansion into the design of healthier built environments may require some reallocation of resources. However, we anticipate that healthier built environments will reduce threats to health and so lessen the need for conventional health protection, while encouraging activities and behaviours that lead to greater population wellness.

KEY WORDS: Built environment; chronic disease; environmental health; health hazards; public health practice

La traduction du résumé se trouve à la fin de l'article.

Can J Public Health 2016;107(1):e126–e129
doi: 10.17269/CJPH.107.5221

While the built environment (BE) has long been of interest to public health practitioners, widespread engagement of public health agencies in community planning is a phenomenon of the last decade. In 1854, John Snow identified the Broad Street water pump as the source of a cholera outbreak in London.¹ Since then, public health authorities have championed introduction of sanitary and safe water infrastructures to control infectious disease.² Early efforts to separate urban residents from industrial pollution culminated in modern zoning bylaws.²⁻⁴ To address the roots of chronic diseases, many public health agencies now seek to reduce negative and augment positive attributes of our human-built physical surroundings through greater social connectedness, more physical activity, and improved access to affordable healthy food. While some agencies have partnered with and funded community organizations to initiate BE projects, most focus on advocacy and support for local government initiatives. Doing so involves injecting a population health focus into local government planning based on an understanding of how the BE influences health.

Historically, public health agencies sought to protect people from hazards in the BE, but increasingly they promote healthier BEs as a way to support healthy behaviours. A 2003 commentary in the *Journal of Law, Medicine and Ethics* reviewed the historical links between public health and urban planning and advocated for increased public health intervention in the built environment as a tool to both prevent illness and promote well-being.² Although the authors noted the value of BE interventions to protect communities from environmental toxins, they did not specify a role for environmental public health (EPH) practitioners per se.

EPH practitioners in North America have clear mandates to protect people from infectious or toxic agents in food, water and other environmental sources, including those mediated by the BE.

They are thus well situated to take a lead in advocating for – and implementing interventions in – BEs that both protect and promote health. With strong evidence for the influence of BE features on behavioural risk factors for non-communicable diseases (e.g., walkable communities reduce physical inactivity⁵), the time is right to explore the role of EPH and other public health professionals in supporting healthier built environments. In this paper, we use examples from the authors' experiences in British Columbia (BC) and New York City to show how EPH practitioners have begun to incorporate BE initiatives into their practice and suggest ways to expand this role across health departments in Canada.

Existing intersections between environmental public health and the built environment

Some environmental health agencies have integrated a BE focus into traditional mandates and practices of EPH; some have created parallel teams to promote healthier BEs; and others work with health promotion professionals on BE issues. Although not always framed specifically as BE work, their efforts fall into three main areas of practice. First, typical EPH roles include food premises

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Acknowledgements: The authors thank Sandra Gill, Claire Gram and Dr. Lisa Mu for clarifying how built environment teams were integrated into regional health authorities, and Tina Chen and Emily Peterson for comments on an earlier version of this manuscript.

Conflict of Interest: None to declare.

inspection and permitting, waste management, safe housing, and oversight of air and water, all of which impact the quality of the built environment. Second, EPH practitioners assess and respond to innovative local-level BE interventions that flag concerns for health protection, such as backyard poultry by-laws, standards for siting community gardens, active transportation networks and mixed land use zones. Third, some EPH professionals participate in community planning processes around land use and transportation, allowing them to raise awareness of the links between the BE and chronic disease prevention.⁶ In some jurisdictions, approval of local public health authorities is required for land-use plans,⁷ a powerful tool to ensure that both acute and chronic health considerations are incorporated into BE planning.

Expanding the scope of environmental health

Many public health agencies have tasked EPH professionals with using BE initiatives (e.g., active and sustainable transportation, mixed-use neighbourhoods, green space, community gardens, safe and accessible housing) as a tool to support their ongoing role in health protection while contributing to chronic disease prevention.⁶ This is aligned with public health's increasing focus on the determinants of health and healthy communities,⁸ along with a recognition that hypertension, physical inactivity and overweight/obesity are the leading risk factors for mortality today (responsible for 7.5, 3.2 and 2.8 million annual deaths globally).⁹ In addition to support from health system management, assumption of this expanded responsibility demands that practitioners reimagine their roles, develop competency on BE issues related to chronic diseases, strengthen relationships with other public health professionals, and collaborate with other sectors.

We see four areas where EPH practitioners could leverage their skills and authority to operationalize a BE focus (see Table 1 for additional details and examples):

- *Inspections and/or Permitting.* BE interventions could be added to existing functions without requiring significant resource requirements. In BC and New York City, oversight of menu labelling and trans-fat restriction has been incorporated into routine restaurant inspections (Table 1). A similar application of public health authority could require building features that reduce pollutant and noise exposure (for example, through building permits and during inspections in response to health and safety complaints) as well as promote minimum physical activity time allotments in daycare licences.
- *Oversight of Land Use Planning.* Many health authorities review community or regional land use and transportation plans (Table 1).⁷ EPH professionals could further develop relationships with planners and leverage this opportunity to promote, or even require, healthy development that includes amenities for active transportation, gardening and healthy food access. Similarly, they could advocate for zoning bylaws or land development policies that ensure access to green space or healthier food options.
- *Health Hazards Legislation.* Public health officials have legal authority to enact special measures to safeguard the

public from health hazards. These measures typically address immediate or acute hazards associated with drinking water or the spread of communicable disease, but could be used to control hazards in the BE that lead to chronic disease outcomes. The BC Public Health Impediments Regulation was used to restrict trans fats in foods offered at licenced food premises (Table 1). EPH practitioners could work with provincial authorities to invoke health impediments regulations to require access to green space, prevent a high concentration of fast-food outlets in specific areas, or implement other health-based modifications to the built environment.

- *Collaboration and Advocacy.* EPH practitioners have worked with clients and partners within public health and in social services, education, local government planning and transportation on BE initiatives (Table 1), including advocacy for and implementation and evaluation of BE policies and interventions, and participation in community consultation processes. Together, their actions could encourage BE features or policies such as: neighbourhood designs that incorporate mixed land uses and complete streets to encourage walking and cycling; kitchens, exercise facilities, public transportation links, and secure bicycle commuting facilities in workplaces; low emissions building materials; social housing policies that protect residents from exposure to environmental tobacco smoke through better building construction and indoor air quality regulations; subsidized housing with healthy amenities, such as gardens and physical activity spaces, that are already present in many market rate housing developments; or messages to increase awareness and use of those features.¹⁰

While reorganization of financial and human resources may be necessary to enlarge the scope of environmental health to explicitly include the BE, early efforts have led to measureable health improvements. Dedicated pedestrian and cycling infrastructure has been associated with increased physical activity,⁵ decreased traffic injuries among pedestrians, cyclists and motorists,¹¹ and could lead to improved air quality.¹² Although not a modification of the *built* environment per se, BC's AirCare vehicle emission control program resulted in decreased traffic pollution and cardiovascular-related hospital admissions.¹³ Bans on smoking in public places throughout North America have lowered public exposure to environmental tobacco smoke.¹⁴ Such "big picture" interventions make healthy behaviours not just an easier choice,¹⁵ but the default choice. They expand traditional regulatory approaches for acute hazard control to include chronic health hazards, as well as advocacy and education to facilitate prevention and control of chronic diseases. A broadened scope for environmental health could 1) create BEs with fewer acute health hazards, decreasing the need for conventional health protection, 2) impact a wider range of population-wide behaviours needed to prevent and control the current chronic disease epidemics, thus realizing multiple health benefits with modest resource additions, and 3) increase access to resources for EPH through collaboration.

Table 1. Opportunities to expand the scope of EPH action on health and the built environment

Existing roles	Examples in current practice	Suggestions/ opportunities for expanded mandate	Public health roles	Opportunities and co-benefits	Limitations and challenges
Inspections and/or permitting	Food premises: In BC and New York City, inspectors enforce restrictions on trans fats in foodservice operations.*† Daycares: In New York City, daycare inspections include a review of daily lesson plans for exercise periods (60 min/day is mandated) and of menus and purchase orders to ensure food and beverage options meet standards for daycares.‡	Enforce standards or regulations for features such as healthy food and beverages and scheduled physical activity time for children.	Public health inspectors or licensing officers can incorporate into existing inspection procedures. Population health professionals (e.g., dietitians and physical activity professionals) or childcare professionals can identify levers for action, develop policies and/or provide implementation guidance. Bylaw officers can aid in enforcement.	Front-line inspectors have access to indoor areas, and can identify challenges and barriers to compliance. Research on public response and behaviour change can inform more effective approaches.	Inspections may require more time and thus moderate increases in personnel. Field staff and supervisors need training and capacity building to understand, implement and interpret new regulations.
Oversight of land use planning	In BC's Interior Health Authority, public health officials, including dietitians and environmental health officers, review development applications to assess impacts on health.§ The New York City Department of Health and Mental Hygiene created a new category of permits for street food vending that are faster to obtain if selling fresh fruit and vegetables in neighbourhoods with insufficient availability of fresh produce.¶	Include impacts such as food security, food access, walkability, etc. in land use/development assessment/approval processes. Develop zoning bylaws and incentives to foster voluntary initiatives that create healthier environmental supports.	Specific BE teams within EPH take responsibility for healthy planning. Alternatively, staff involved in reviews and approvals of land use plans could be trained to include considerations for environments that protect health comprehensively. Health inspectors can promote minimum standards for comprehensive health and/or voluntary initiatives when new businesses apply for permits. Planners, engineers, local governments, and private sector developers can work with public health staff in planning processes.	Public health participation in development processes will directly influence determinants of health in the BE and highlight how the built environment influences health. Evaluation of uptake of incentives and outcomes with respect to behaviour change will inform future programs. Opportunity for public health professionals to collaborate with other sectors to create BEs that better support health.	Mandated requirements are needed to support the authority of public health officials in review and approval of development applications; to start, voluntary checklists to assess and make suggested improvements to healthy food access, walkability, etc. can be incorporated into development application reviews. Public health officials will need to engage across sectors and with multiple levels of government.
Health hazards legislation	In BC and New York City, trans fat is considered a health impediment and therefore is not permitted in food served by licensed food premises.*†	Declare BE features as health hazards, e.g., neighbourhoods without walkable connections or stairwells that are locked or not clearly marked, and require that the public not be exposed to such hazards.	Officials such as medical health officers can declare evidence-based health impediments. Specific BE teams within EPH can enforce through inspection, planning or permitting processes.	Enforcement activities are also opportunities to engage in health promotion. Using legislation in this way provides an opportunity for a cross-jurisdictional approach to public health.	Inspections may require more time and thus moderate increases in personnel. Field staff and supervisors need training and capacity building to understand, implement and interpret new regulations.
Collaboration and advocacy	The New York City Department of Health and Mental Hygiene worked with 11 other departments to produce the <i>Active Design Guidelines</i> for the city¶ as well as supplements addressing safety, affordable housing and sidewalk design.** By working with the Department of Buildings, building code changes were also made to allow magnetic hold open devices on stair doors to increase visibility of stairwells in buildings while maintaining fire safety.†† In BC, a group of public health, local government, research and planning professionals collaborated to produce the <i>Healthy Built Environment Linkages Toolkit</i> to highlight evidence for the links between BE features and health outcomes.‡‡	Advocate for policies that support healthier BEs, e.g., smoke-free policies or childcare services in social housing developments. Develop guidance and regulations that are designed to impact current disease epidemics and/or encourage healthy behaviours.	EPH and other public health professionals can work together to plan and advocate. Inspectors can enforce or engage in protection of health comprehensively during inspection and permitting processes. Dedicated BE teams within EPH can work with planners, engineers, local governments, architects, financiers, industry, schools, park officials and others.	Policy, regulations or institutionalized guidelines create universal change for more equitable approaches to addressing the determinants of health, and are resilient to changes in government priorities. Public health can influence non-health policies by partnering within public health and with non-health sectors. Intervention research can clarify how BE changes impact health.	Support from non-health jurisdictions is required to enact legislation outside health.

* Yandel M, Cadenhead K, Pawa B, Cramb L. BC's new trans fat regulation. *BC Medical Journal* 2009;51:268.† New York City Health Code, Section 81.50: <http://rules.cityofnewyork.us/tags/section-8150>.‡ Notice of Adoption of Amendments to Article 47 of the New York City Health Code: <http://rules.cityofnewyork.us/tags/article-47>.§ Interior Health – Subdivision of Land. Available at: <https://www.interiorhealth.ca/YourEnvironment/HBE/Pages/Subdivision-of-Land.aspx> (Accessed May 16, 2016).¶ New York City Department of Health and Mental Hygiene – Green Carts: <https://www1.nyc.gov/site/doh/health/health-topics/green-carts.page>.† Active Design Guidelines: Promoting Physical Activity and Health in Design: <http://centerforactivedesign.org/guidelines/>.** Active Design Guideline Supplements: 1. Active Design Supplement: Promoting Safety, 2. Active Design: Affordable Designs for Affordable Housing, 3. Active Design: Shaping the Sidewalk Experience: <http://www.drkarenlee.com/resources/usa>.†† The New York City Council, Hold-open devices and automatic closing of exit doors serving vertical exit enclosures: <http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=1687949&GUID=CE583810-3E77-452C-966F-CCDD9AFC8B74&Options=&Search>.‡‡ Healthy built environment linkages: A toolkit for design, planning, health: http://www.phsa.ca/Documents/linkagestoolkitrevisedoct16_2014_full.pdf.

Beyond removing the pump handle: Long-term improvements to public health

A broadened environmental health mandate would mean a shift from safeguarding health merely through control of immediate hazards and infectious disease agents to protecting people from environments that do not broadly support health. While John Snow protected Londoners from an ongoing cholera outbreak by removing the Broad Street pump handle, clean water infrastructure is a contemporary BE intervention that supports health by preventing water-borne disease. Just as North Americans have come to expect protection from food- and water-borne illness, residents of BC and New York now expect to have access to separated bike routes in busy urban neighbourhoods and to dine out in environments protected from trans fats. Shouldn't that combination of environmental health protection and promotion be the case everywhere?

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Received: July 15, 2015

Accepted: September 27, 2015

RÉSUMÉ

Les espaces qui favorisent la santé sont de plus en plus perçus comme étant essentiels à la réduction du fardeau des maladies chroniques : bon nombre de grands services de santé publique canadiens ont maintenant des équipes axées sur le milieu bâti (MB), qui travaillent avec les municipalités et les responsables de l'aménagement du territoire pour promouvoir et/ou exiger l'aménagement d'espaces favorisant la santé. Dans de nombreux organismes de santé publique, ce sont les praticiens de la santé environnementale qui assument ce nouveau rôle à l'égard du MB, mais à quel coût pour les mandats existants? Nous faisons valoir qu'une réinvention des rôles pour perfectionner les capacités en matière de MB dans la pratique de la santé environnementale renforcerait les mandats de protection de la santé et les capacités de prévention des maladies chroniques. Une expansion importante dans la conception de milieux bâtis plus sains pourrait exiger une réaffectation des ressources. Nous croyons cependant que les milieux bâtis sains vont réduire les menaces pour la santé, et donc le besoin des mesures classiques de protection de la santé, tout en encourageant les activités et les comportements qui favorisent le mieux-être des populations.

MOTS CLÉS : milieu bâti; maladie chronique; santé environnementale; dangers pour la santé; pratique en santé publique