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Working with Public Health & Preventive Medicine to Address Obesity Through Improved Community Environments

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RETAIL EXPANSION to SUPPORT HEALTH





My Quest to Improve the World's

Health and Wellness—

Including Yours

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Faculty/Presenter Disclosure

- Faculty: Dr. Karen Lee
- Relationships with commercial interests (Jan 2020-Jan 2021):
 - Grants/Research Support: Novo Nordisk; Christenson Group of Companies
 - Speakers Bureau/Honoraria: UN Studio
 - Other: Penguin Random House (publisher)





Disclosure of Commercial Support

Potential for conflict(s) of interest:

- Dr. Karen Lee has received payment/funding from companies exhibiting in this program <u>AND/OR</u> companies whose product(s) are being discussed in this program.
- The exhibitors did not provide content for Obesity Update 2021 nor did they have any editorial input or involvement with the selection of Dr. Lee as a speaker.
- The Royal Alexandra Hospital Foundation and/or Centre for Advancement of Surgical Education & Simulation (CASES) has not developed /licensed / distributed/benefited from the sale of any product that is discussed in this program





Mitigating Bias

- The content has been developed based on needs assessment results
- The information presented is for educational purposes and includes balanced coverage of relevant therapies
- All data has been sourced from evidence that is clinically accepted
- All support used in justification of patient care recommendations conform to generally accepted standards, the 5A's of Obesity Management from Obesity Canada, and Canadian Clinical Practice Guidelines on the Management of Obesity in Adults
- Speakers are asked to clearly identify when they are making personal or off label recommendations as opposed to presenting information that is explicitly "evidence-based"
- Speakers have been informed that they must indicate all unapproved products and/or offlabel data to the audience during their presentation
- Speakers completed the CFPC Mainpro® Declaration of Conflict-of-Interest form evidencing compliance with Mainpro® requirements, a requisite for this program to be given accredited status.

Learning Objectives for This Session:

At the end of this session you will be able to:

- Explain how a community environmental approach can:
 - prevent & manage epidemics such as obesity and their associated risks
 - increase physical activity levels and establish healthier diets
- Employ practical everyday interventions to improve physical activity levels and healthy eating supports for patients with obesity
- Support community environment improvement initiatives for physical activity and healthier food access currently in place in this province

Over the last 40 years, prevalence of overweight and obesity in Canada:

- a) decreased by 10%
- b) increased by 10%
- c) increased by 20%
- d) increased by 30%

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Obesity and overweight rates in Canadians, 1978-2017

Adults

1978

N 1978/79, 49% OF ADULTS
OVER THE AGE OF 18 WERE
OVERWEIGHT OR OBESE.



IN 2004, **59%** OF **ADULTS**OVER THE AGE OF 18 WERE

OVERWEIGHT OR OBESE.



TODAY, **64%** OF **ADULTS OVER THE AGE OF 18** ARE
OVERWEIGHT OR OBESE.

Children



IN 1978/79, **23%**OF **CHILDREN AGED 2-17**WERE OVERWEIGHT OR OBESE.



IN 2004, **35%**OF **CHILDREN AGED 2-17**WERE OVERWEIGHT OR OBESE.



TODAY, **30%**OF **CHILDREN AGED 5-17**ARE OVERWEIGHT OR OBESE.

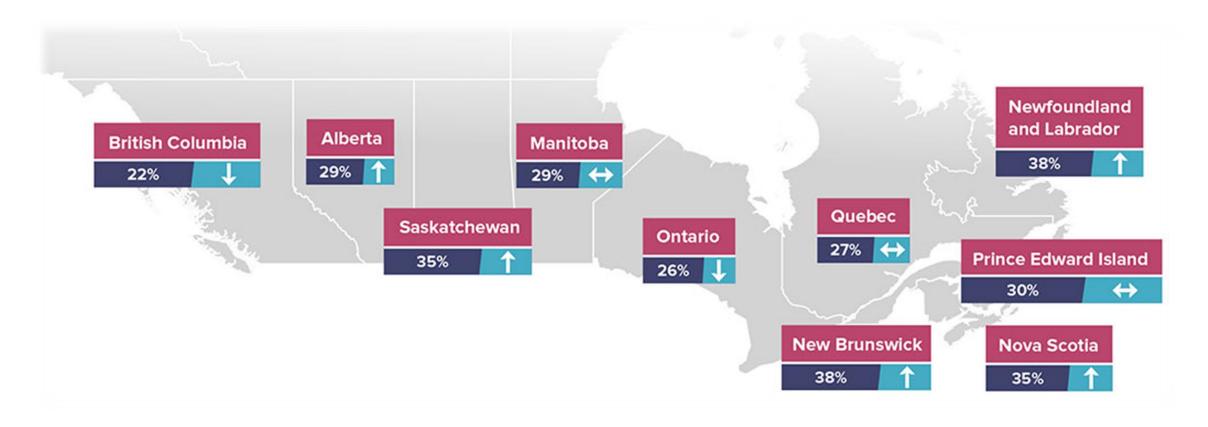
Obesity prevalence in Alberta compared to Canada as a whole is:

- a) lower
- b) the same
- c) higher

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- b) the same
- √c) highe

Obesity prevalence by province compared to Canadian average (27%), 2017



What are the physical health consequences of obesity?

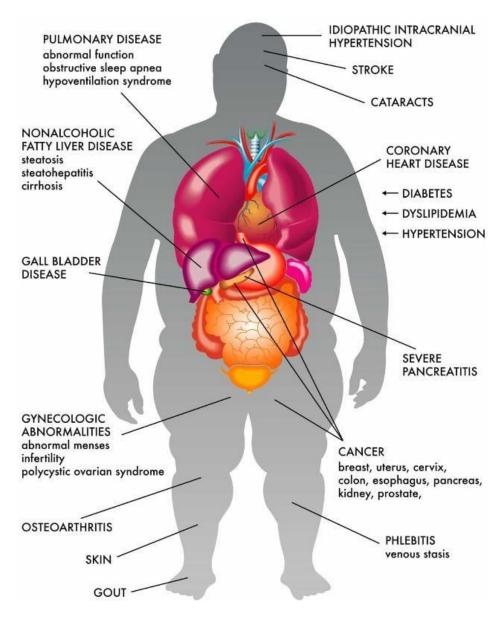
- a) cardiovascular diseases (coronary artery disease, stroke)
- b) diabetes
- c) musculoskeletal disorders, especially osteoarthritis
- d) cancer (endometrial, breast, ovarian, prostate, liver, gallbladder, cervix, kidney, colon, esophagus, pancreas)
- e) obstructive sleep apnea
- f) non-alcoholic fatty liver disease
- g) infertility and subfertility
- h) all of the above

What are the physical health consequences of obesity?

- a) cardiovascular diseases (coronary artery disease, stroke)
- b) diabetes
- c) musculoskeletal disorders, especially osteoarthritis
- d) cancer (endometrial, breast, ovarian, prostate, liver, gallbladder, cervix, kidney, colon, esophagus, pancreas)
- e) obstructive sleep apnea
- f) non-alcoholic fatty liver disease
- g) infertility and subfertility
- 1

h) all of the above and more...

Health consequences of obesity



Risk increases
with increase
in body weight

What are the psychological consequences of obesity?

- a) depression
- b) anxiety
- c) body image disorders (obese people often despise a body they find ugly)
- d) low self-esteem (guilt complex, self-aversion)
- e) weight-related perceived and self-stigma
- f) eating disorders
- g) feeling misunderstood or excluded because of the social and medical intolerance
- h) poor quality of life
- i) all of the above

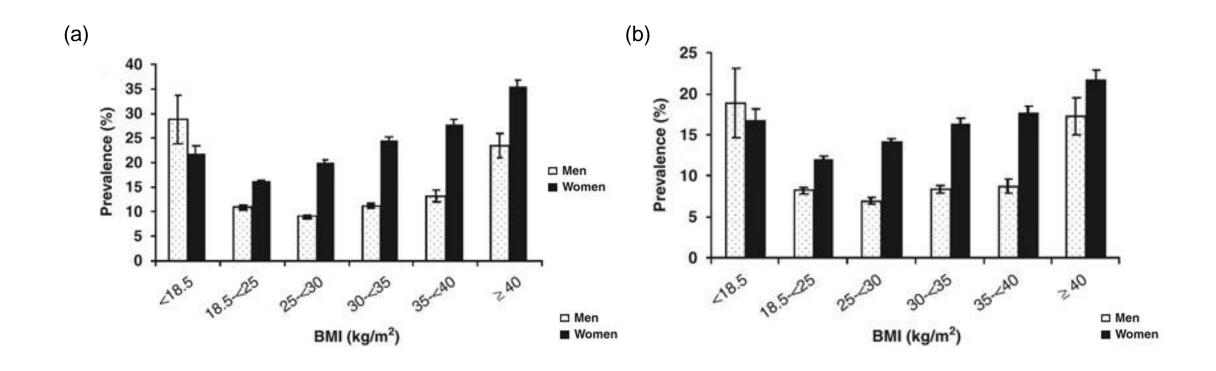
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- h) poor quality of life



all of the above and more...

Depression and anxiety, by sex and BMI level



Age-standardized prevalence of lifetime diagnosed (a) depression and (b) anxiety by sex and BMI levels

What is the annual cost of obesity in Canada, CAD\$?

(direct and indirect costs)

- a) 2.6 billion
- b) 4.9 billion
- c) 7.1 billion

What is the annual cost of obesity in Canada, CAD\$?

(direct and indirect costs)

- a) 2.6 billion
- b) 4.9 billion



c) 7.1 billion and increasing...



PUBLIC HEALTH CRISES

THE 19th & 20th CENTURIES:

Infectious Diseases (IDs)

Reproductive Health (Maternal/Infant Health)

Safety Issues

THE LATE 20th & 21st CENTURIES:

Chronic Diseases

Aging Populations

Mental Health

Climate Change/

Environmental Pollution

[Emerging IDs (e.g. Antibiotic resistance)

Preventable Injuries]



Today's Leading Causes of Death:

Non-Communicable Diseases

(including Heart Disease & Strokes, Cancers, Diabetes, Chronic Lung Disease)

Chronic Diseases - #1 cause of death globally (41 million deaths/y; 71% of deaths).

Leading Risk Factors accounting for large % of deaths:

- Tobacco (6m deaths/y)
- Physical Inactivity (3.2m deaths/y)
 - Unhealthy Diets
- Harmful Use of Alcohol (2.3m deaths/y)
- High Blood Pressure (7.5m deaths/y)
- Overweight and obesity (2.8m deaths/y)
 - High Cholesterol (2.6m deaths/y)
- Cancer-associated infections (2m deaths/y)

WHO, 2016 - http://www.who.int/kobe_centre/measuring/urban-global-report/ugr_full_report.pdf
WHO, 2018 - https://www.who.int/nmh/publications/ncd-profiles-2018/en/



OBESITY is a GLOBAL EPIDEMIC

"Worldwide obesity has nearly tripled since 1975...

In 2016, more than 1.9 billion adults, 18 years and older, were overweight (39%). Over 650 million were obese (13%)...

Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016."



HIGH LEVELS OF PHYSICAL INACTIVITY IN CANADA

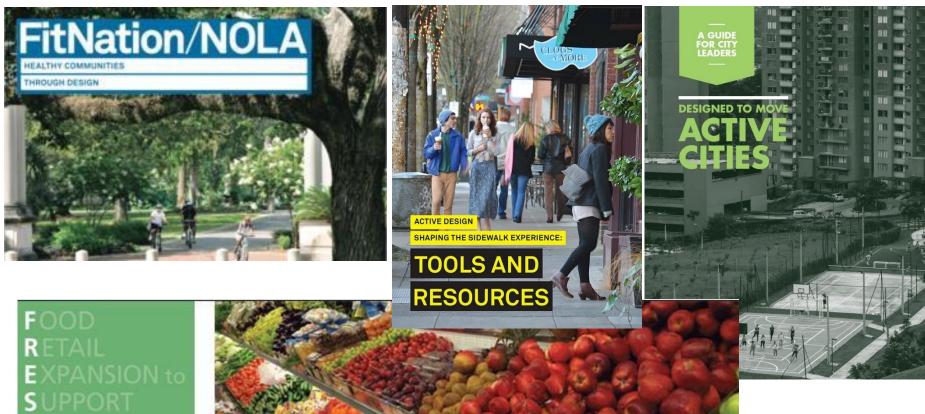


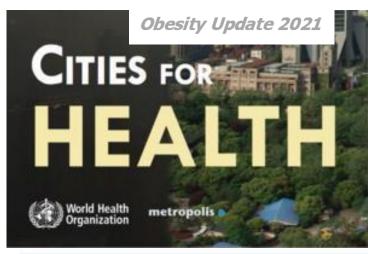




21st Century Needs for

Public Health & Preventive Medicine Collaborations







My Quest to Improve the World's Health and Wellness— Including Yours

International Health and Built Environment Advisor



NEEDED PUBLIC HEALTH & PREVENTIVE MEDICINE (PHPM) COLLABORATIONS ON OUR 21st CENTURY HEALTH CRISES

- 1. We can apply the lessons learned from previous PHPM successes to help us structure our approach.
- 2. Within that structure, there is now an evidence base for key risk and protective factors, and pathways, on which to intervene.
- 3. We can learn from innovations in other jurisdictions globally and adapt them to our local context.



Key Lessons from Previous PHPM Success

- 1. Identify key preventable risk and protective factors, and pathways of propagation on which to intervene.
- 2. Intervene using a standard set of pillar activities.
- Use a settings-based approach for monitoring, prevention and control activities.



Applying Lessons Learned to 21st Century Health Crises

- 1. Identify key preventable risk and protective factors, and pathways of propagation on which to intervene:
 - Obesity, physical inactivity, sedentariness, unhealthy diets, social determinants (working conditions, social isolation & lack of social support)
 - Pathways of Propagation for Risk and Protective Factors, including Community Neighbourhoods, Streets, Buildings, Physical and Social Environments of Different Settings such as worksites, schools, etc.











Community Design



• Design elements:

Closeness of residential areas to stores, jobs, schools, and recreation

areas

- Continuity and connectivity of sidewalks and streets
- Aesthetic appeal and safety of the physical environment

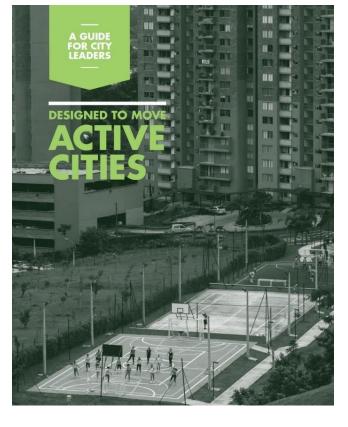
Policies:

- Zoning regulations
- Building codes
- Builders' practices
- Government policies

Associated Outcomes:

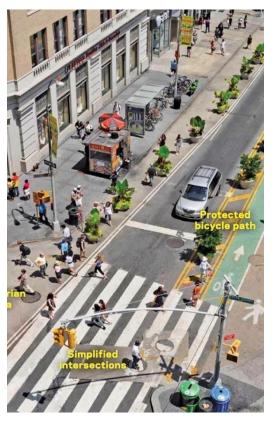
- 161% median improvement in Physical Activity
- Increased sense of community and decreased isolation
- Reduced crime and stress



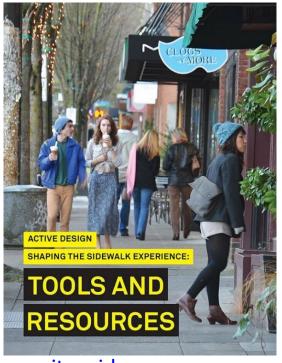




Street Design



- Design elements:
 - Improved street lighting
 - Infrastructure to increase safety of street crossing
 - Traffic calming approaches (e.g., speed humps, traffic circles)
 - Enhancing landscaping
- Policies:
 - Building codes
 - Roadway design standards
 - Environmental changes
- Associated Outcomes:
 - 35% median improvement in Physical Activity
 - Increased sense of community and decreased isolation
 - Reductions in crime and stress



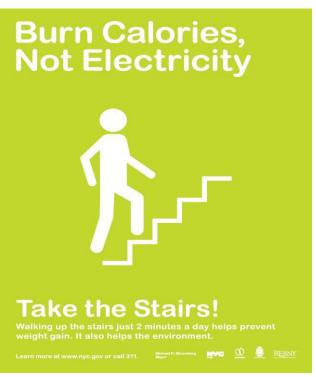
US Task Force on Community Preventive Services, 2004 - www.thecommunityguide.org Active Design Guidelines - https://www.drkarenlee.com/resources/usa



Building Design



- Point-of-Decision stair prompt signage
 - Signs placed at elevators & escalators encouraging stair use, w/ info on benefits of stair use
 - Median 50% increase in stair use/physical activity
- Skip-stop elevators
 - 3300% increase in stair use/physical activity
- Design and aesthetic interventions
 - Music & art in stairwells
- Design stairs to be more convenient and visible
- Natural lighting in stairwells & stair visibility



- US Task Force on Community Preventive Services, 2005 - www.thecommunityguide.org;



Social Support Mechanisms



US Task Force on Community
 Preventive Services, 2015, 2016 www.thecommunityguide.org

- Interventions focused on strengthening social networks that provide supportive relationships for behavior change
 - e.g., setting up buddy activities, walking groups or other groups to provide friendship and support
 - Associated Outcomes: Increased physical activity
- Community Health Workers that provide support to CVD and Diabetes patients

Associated Outcomes: Improvements in blood pressure, cholesterol,

triglycerides and blood sugar control







Worksite Factors

- Information and education
 (e.g., lectures, written materials, educational software)
- Activities that target awareness & self-efficacy
- Social factors that affect behavior change
 - behavioral counseling, skill-building activities, rewards or reinforcement, and inclusion of co-workers or family members to build support systems
 - Changes to physical or organizational structures that make healthy choices easier and target the entire workforce
 - making healthy foods more available, providing more opportunities to be physically active, changing health insurance benefits, or providing health club memberships
- Associated Outcomes:
 - In RCTs, participating employees lost an average of 2.8 pounds (9 studies) and reduced their average BMI by 0.5 (6 studies) compared to control groups







School Factors

- Implement well-designed Physical Education curricula taught by trained teachers
- Combine enhanced school-based PE with other school- and community-based interventions (such as
 activities that foster family involvement, and community partnerships to increase opportunities for
 physical activity)
- Neighbourhood walkability, and proximity to homes and route connectivity
- Availability of indoor and outdoor physical activity facilities
- Proximity to other recreational facilities
- Design of playgrounds
- Standing desks; moving furniture
- School meal policies that ensure school breakfasts or lunches meet specific nutrition requirements
- Fresh fruit and vegetable programs that provide fresh fruits and vegetables to students during lunch

or snack

- Associated Outcomes:
 - Reduction or maintenance of obesity rates
 - Improved moderate-vigorous physical activity
 - Improved academic achievement





US Task Force on Community Preventive Services, 2013, 2016 - https://static1.squarespace.com/static/54f740aee4b084d1ef906988/t/5818a562e3df282e87ed0946/1478010211565/Lois.IHT.Handout.pdf; Brittin, Sorenson, Trowbridge, Lee, Breithecker, Frerichs, Huang, 2015 - http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132597



Available Types of Food Retail - Supermarkets vs Fast Food

- Supermarket availability is associated with lower rates of neighborhood obesity
- High density of fast food restaurants is associated with increased weight and obesity in area residents

<u>Point-of-Decision Information</u> in Food Retail – Menu labeling on items such as calories

<u>Trans Fat Exposure</u> in Food - <u>associated with increased cardiovascular risk</u>

Community Gardens

- People with a household member who participated in a community garden ate more fruits and vegetables per day
- Garden-based nutrition education improved adolescent fruit and vegetable intake

Access to Tap Water vs Caloric Beverages

- Big source of calories in the diet (9% of calories in U.S.) are from carbonated and non-carbonated soft drinks; Children & Adolescents are getting 10-15% of total calories from sugar-sweetened beverages and 100% fruit juice
- •Water fountain installation + education in elementary schools in deprived neighborhoods reduced risk of overweight in children

Sources: Moreland K et al., Supermarkets, other food stores, and obesity. AJPM 2006; 30(4): pp. 333-339.

Mehta NK, Chang VW. Weight status and restaurant availability: a multi-level analysis. AJPM 2008; 34(2): pp. 127-133.

Alaimo K, Packnett E, Miles RA, Kruger DJ. Fruit and vegetable intake among urban community gardeners. J Nutr Educ Behav. 2008; 40(2): pp. 94-101. McAleese JD, Rankin LL. Garden-based nutrition education affects fruit and vegetable consumption insixth-grade adolescents. J Am Diet Assoc. 2007 Apr;107(4):662-5.

Block G. Foods contributing to energy intake in the US: data from NHANES III and NHANES 1999–2000. J Food Comp Anal. 2004;17: pp. 439–47.

Wang Y, Bleich S, Gortmaker S. Increasing caloric consumption from sugar-sweetened beverages and 100% fruit juices among US children and adolescents, 1088-2004. Pediatrics 2008; 121(6): pp.1604-1614. Muckelbauer R et al. Promotiona and provision of drinking water in schools for overweight prevention: randomized, controlled cluster trial. Pediatrics 2009; 123(4): pp. e661-7.

www.thecommunityguide.org; www.healthveatingresearch.org; https://www1.nyc.gov/site/doh/health/health-topics/trans-fat-in-new-vork-city.page;



RECENT INNOVATIONS THE EXAMPLE OF NEW YORK CITY





Using a <u>settings-based approach</u> for monitoring, prevention and control activities Children's Settings

Daycare Policy Development & Public Health Inspections to Monitor and Enforce

- New Daycare Regulations:
 - New food and beverage standards e.g. provision of drinking water, limits to juice, no sugary drinks
 - 60 minutes of physical activity daily
 - Limits to TV viewing to 60 min or less daily
- Monitoring & Enforcement by Public Health Inspectors during inspection visits





School-based Surveillance for Childhood Obesity, and Interventions on Food and Physical Activity

- Obesity Surveillance: Annual measurements of children's weights and heights, and fitness + report card
- School lunch improvements salad bars; provision of drinking water; low-fat milk only
- School physical activity facility improvements School Construction Authority policies on gymnatoriums vs auditoriums; partnership with Transportation & Schools on School Play Streets





Use a <u>settings-based approach</u> for monitoring, prevention and control activities:

Adult Settings

Improving Worksite Environments for Physical Activity, Food and Social Factors

Key Opportunity: Using Government, Academic & Healthcare Sector Worksites as Demonstration Sites

- Examples of Demonstration Projects:
 - Painting walking meeting routes in government worksites
 - Ensuring stair access by cardkey for employees and stair prompt posting in government buildings
 - Provision of standing desks
 - Improving drinking water access in government buildings
- Policies include NYC Government Mayoral Executive Orders under Mayor Bloomberg:
 - Food Standards for Meetings, Vending & Procurement by City Agencies
 - Assessment of Government construction and major renovation projects for physical activity promoting design features

(See www.drkarenlee.com/resources/usa)





Use a <u>settings-based approach</u> for monitoring, prevention and control activities:

Vulnerable Populations

Improving Access to Healthy Amenities, and Mobility and Social Factors for <u>Aging Populations</u> and <u>High Needs Populations</u>

Partnerships with Dept of Housing Preservation and Development (HPD) & Developers of

Affordable Housing to Improve <u>Affordable Housing</u> Designs

- Pilot Projects recreation spaces; rooftop farms
- HPD Request for Proposals incorporating Health Criteria
- Studies to address key concerns like cost
- Food Retail Expansion to Support Health (FRESH)
 - partnership with City Planning & Economic Development to create zoning and tax incentives for supermarket development & expansion in <u>food deserts</u>
- New permits for fruit & vegetable carts in underserved neighbourhoods

(See www.drkarenlee.com/projects_and www.drkarenlee.com/resources/usa)





Use a <u>settings-based approach</u> for monitoring, prevention and control activities:

Healthcare Settings

Physical Activity, Food and Social Factor-related Policies and Practices in Hospitals

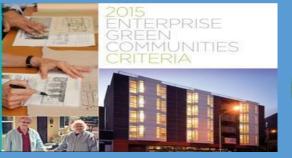
- Key Opportunity #1: Using <u>Healthcare Setting as Demonstration Sites for Healthy Designs & Amenities</u>
- Key Opportunity #2: Hospitals/Healthcare Sites <u>as Community Resources for Health-Supporting</u>
 <u>Amenities</u>

E.g. Working with NYC Architecture Firm to use LEED Design for Active Occupants credit, including to create walking paths for patients, families, staff and community to use at Stanford Children's Hospital

Laboratory Reporting of New Diseases

<u>Diabetes AIC</u> test results are now <u>Reportable by Laboratories</u> to Health Dept in NYC









Use a <u>settings-based approach</u> for monitoring, prevention and control activities:

Community Settings

Reviews of <u>New Developments</u> for Designs Promoting Physical Activity and Social Interaction, and Healthy Food and Beverage Access; Healthier <u>Buildings</u>

- Assisting Non-Health Sectors in using <u>Guidelines for Healthier Developments & Buildings</u>:
 - Active Design Guidelines and Supplements
 - LEED Green Building Certification System Credits for Design for Active Occupants & for Urban Agriculture
 - Enterprise Green Communities Criteria for Active Living, Healthy Eating, Indoor Air Quality in Affordable Housing Developments
 - Plumbing Code Updates requiring Water-Bottle Refilling Stations in New Buildings
 - Building Code bill to improve stair visibility and accessibility
 - (Beyond NYC: WELL Healthy Building and Community Rating Systems; Healthy Community Guidelines in Alberta and Canada, anticipated 2021)
- Improving Food Settings Menu Labelling and Trans Fat Bans in Restaurants (See www.drkarenlee.com/resources/usa)









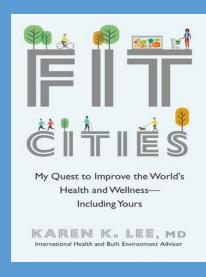
SUCCESSES IN NEW YORK CITY

Health-related Outcomes include:

- -Childhood obesity trends reversed
- -Bicycle travel increased 126%
- -Transit ridership into CBD increased 11.3%
- -Traffic fatalities decreased almost 30%
- -Air pollution levels decreased at pedestrian plazas
- -"No Physical Activity in Last 30 Days" showed significant decline after no change in previous decade
- -Life expectancy 2.2 years longer and increasing faster than the rest of the U.S.

Positive Economic Outcomes also:

- -Retail sales increased around pedestrian plazas and bike lanes
- -Record numbers of tourists (>50 million annually and growing)





Times Square Pedestrianization

Columbia University
(NYC) –
Designing Healthy Cities
(2day course, June 2021)
www.drkarenlee.com



HOUSING FOR HEALTH at University of Alberta

HforH@ualberta.ca

- 1) Partnership Working Group (and Subcommittees)
 - >150 partners in Canada from health, planning, development, design, community and academic sectors
 - Developing Healthy Community Guidelines (anticipated 2021)
- 2) 2 Pilot Developments Edmonton and Whitecourt (pop. ~10,000), AB
- 3) Community Engagement
 - Partnering with community residents on creating healthier environments to increase political support and industry demand
- 4) Research and Evaluation
- 5) Knowledge Sharing and Dissemination
 - 1st ANNUAL CONFERENCE FEBRUARY 24, 2021 (virtual) Early Bird Registration until Feb. 12, 2021 (\$10)



Fit Cities Fit Towns Canada

1st Annual Conference

PRESENTED BY HOUSING FOR HEALTH



Registration details https://app.groupize.com/e/fit-cities-fit-towns-canada-conference
Contact info: HforH@ualberta.ca





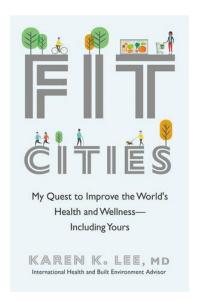




ADDITIONAL RESOURCES FOR THOSE INTERESTED IN LEARNING MORE

1. www.drkarenlee.com/resources

2.



For more ideas and the stories behind them,

FIT CITIES is now available in Bookstores or Online.

- 3. Columbia University Mailman School of Public Health (NYC) *Designing Healthy Cities* Course (2 days, June 2021)
- 4. University of Alberta Faculty of Extension *Creating Healthier Communities*Continuing Education Course (EXLUP 4109, 2d dates TBD) and future webinars

Additional References

- 1. PHAC, 2017. Tackling Obesity in Canada: Obesity and Excess Weight Rates in Canadian Adults. https://www.canada.ca/en/public-health/services/publications/healthy-living/obesity-excess-weight-rates-canadian-adults.html
- 2. PHAC, 2017 Tackling obesity in Canada: Childhood obesity and excess weight rates in Canada. canada.ca/en/public-health/services/publications/healthy-living/obesity-excess-weight-rates-canadian-children.html
- 3. World Health Organization. Obesity: Preventing and Managing the Global Epidemic. Report of a WHO Consultation. Geneva, Switzerland: WHO, 2000; 0512-3054
- 4. Statistics Canada, 2017. Canadian Community Health Survey. Ottawa. Available at: https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018033-eng.htm
- 5. http://walkingoffpounds.com/overweight-obesity-or-overfat/
- 6. Feingold KR, Anawalt B, Boyce A, et al., editors. South Dartmouth (MA): MDText.com, Inc.; 2000. https://www.ncbi.nlm.nih.gov/books/NBK278973
- 7. Schmidt M, Johannesdottir SA, Lemeshow S, et al. BMJ Open 2013;3:e002698. doi:10.1136/bmjopen-2013-002698
- 8. Angelantonio E. et al. Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents. The Lancet, Vol. 388, Issue 10046, 2016, p. 776-786, ISSN 0140-6736, https://doi.org/10.1016/S0140-6736(16)30175-1
- 9. Zhao, G., Ford, E., Dhingra, S. et al. Depression and anxiety among US adults: associations with body mass index. Int J Obes 33, 257–266(2009) doi:10.1038/ijo.2008.268
- 10. Bramming, M., Jørgensen, M.B., Christensen, A.I., Lau, C.J., Egan, K.K. and Tolstrup, J.S. (2019), BMI and Labor Market Participation: A Cohort Study of Transitions Between Work, Unemployment, and Sickness Absence. Obesity, 27: 1703-1710. doi:10.1002/oby.22578
- 11. Garver WS, Newman SB, Gonzales-Pacheco DM, Castillo JJ, Jelinek D, Heidenreich RA, Orlando RA. The genetics of childhood obesity and interaction with dietary macronutrients. Genes Nutr. 2013 May;8(3):271-87. doi: 10.1007/s12263-013-0339-5. Epub 2013 Mar 8.
- 12. CDC. Childhood Obesity Causes & Consequences, 2016. https://www.cdc.gov/obesity/childhood/causes.html
- 13. Cote AT, Harris KC, Panagiotopoulos C, et al. Childhood obesity and cardiovascular dysfunction. J Am Coll Cardiol. 2013;62(15):1309–1319.
- 14. Lloyd LJ, Langley-Evans SC, McMullen S. Childhood obesity and risk of the adult metabolic syndrome: a systematic review. Int J Obes (Lond). 2012;36(1):1–11
- 15. Bacha F, Gidding SS. Cardiac abnormalities in youth with obesity and type 2 diabetes. Curr Diab Rep. 2016;16(7):62. doi: 10.1007/s11892-016-0750-6.
- 16. Mohanan S, Tapp H, McWilliams A, Dulin M. Obesity and asthma: pathophysiology and implications for diagnosis and management in primary care. Exp Biol Med (Maywood). 2014;239(11):1531–40.
- 17. Narang I, Mathew JL. Childhood obesity and obstructive sleep apnea. J Nutr Metab. 2012; doi:10.1155/2012/134202.
- 18. Pollock NK. Childhood obesity, bone development, and cardiometabolic risk factors. Mol Cell Endocrinol. 2015;410:52-63. doi:10.1016/j.mce.2015.03.016.
- 19. Africa JA, Newton KP, Schwimmer JB. Lifestyle interventions including nutrition, exercise, and supplements for nonalcoholic fatty liver disease in children. Dig Dis Sci. 2016;61(5):1375–1386.
- 20. Morrison KM, Shin S, Tarnopolsky M, et al. Association of depression and health related quality of life with body composition in children and youth with obesity. *Journal of Affective Disorders* 2015;172:18–23.
- 21. Halfon N, Kandyce L, Slusser W. Associations between obesity and comorbid mental health, developmental, and physical health conditions in a nationally representative sample of US children aged 10 to 17. Academic Pediatrics. 2013;13.1:6–13.
- 22. Beck AR. Psychosocial aspects of obesity. NASN Sch Nurse. 2016;31(1):23–27.
- 23. Gordon-Larsen P, The NS, Adair LS. Longitudinal trends in obesity in the United States from adolescence to the third decade of life. Obesity. 2010;18(9):1801-804.
- 24. Jensen MD, Ryan DH, Apovian CM, et al, for the American College of Cardiology/American Heart Association Task Force on Practice Guidelines; Obesity Society. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *J Am Coll Cardiol*. 2014;63(25 Pt B):2985–3023. doi:10.1016/j.jacc.2013.11.004.
- 25. Bass R, Eneli I. Severe childhood obesity: an under-recognized and growing health problem. Postgrad Med J. 2015;91(1081):639-45. doi:10.1136/postgradmedj-2014-133033
- 26. Gotay CC, Katzmarzyk PT, Janssen I, Dawson MY, Aminoltejari K, Bartley NL. Updating the Canadian obesity maps: an epidemic in progress. Can J Public Health. 2012 Nov 8;104(1):e64-8. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.856.337&rep=rep1&type=pdf



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QUESTIONS?



Discussion

Are we doing enough around NCD and risk factor surveillance for NCD prevention and control? E.g. Obesity monitoring at the population level

Are we addressing key risk factors using a settings-based approach? E.g. Daycares and schools for childhood obesity surveillance and interventions; worksites

Are Clinical MDs working with Public Health & Preventive Medicine MDs to address community supports for chronic disease prevention and management?

E.g. Neighbourhood improvements to support active living, healthy eating and social supports

Does the public demand that our communities support the prevention & management of their chronic diseases (like they demand support for infectious disease prevention)?

E.g. Does the public find it unacceptable that their restaurant food should lead to heart disease (just as they find it unacceptable that they would get E.coli or salmonella food poisoning)?

What can we do now within our own clinical and hospital facilities for our staff, patients and their families, and how are these facilities intersecting with our communities?

E.g. Walking Paths, Outdoor Exercise Equipment, Playgrounds, Community Gardens, Farmer's Markets on Hospital Grounds



THANK YOU

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