

08/14

New Brunswick Disease Watch Bulletin

Office of the Chief Medical Officer of Health

Introduction

Welcome to the 19th issue of the *New Brunswick Disease Watch Bulletin*.

This issue provides an overview of the impact of the 2013-2014 New Brunswick influenza season as well as new surveillance data collected this season on influenza-associated hospitalizations, intensive care unit admissions and deaths. An article on new recommendations for pneumococcal vaccination for individuals at high risk of invasive pneumococcal disease and a summary of the pneumococcal vaccine eligibility criteria for children and adults is also included. This issue contains two articles that address the importance of healthy environments – one examines the connection between health and community planning, and the other reviews the Office of the Chief Medical Officer of Health (OCMOH) position statement on improving the food environment in New Brunswick's health-care facilities.

Furthermore, we have an announcement that the public health component of the *Early Childhood Initiatives* program has a new name. Lastly, for your reference, we update you on recently released reports from the OCMOH which can be found on our website.



Staff with the Office of the Chief Medical Officer of Health (OCMOH) would like to thank Dr. Denis Allard for his many contributions to the Disease Watch Bulletin, and wish him a happy well-deserved retirement in September, 2014. Dr. Allard has worked in various capacities at the OCMOH over the years and will be fondly remembered by his colleagues for his grace under pressure and his dedication to the health of all New Brunswickers. Thank you and all the best!

As usual, we welcome feedback and suggestions for topics. Please submit them to our new editor Dr. Cristin Muecke, Medical Officer of Health – Provincial Programs at dr.cristin.muecke@gnb.ca.

Electronic copies of the Bulletin can also be found on the OCMOH website under Publications at: <http://www2.gnb.ca/content/gnb/en/departments/ocmoh/publications.html>.

Overview of 2013-2014 New Brunswick Influenza Season

(Data until week 18, May 3rd 2014)

Background

The influenza A (H1N1) pdm09 virus was first identified as causing human influenza infections in North America in the spring of 2009, with subsequent worldwide spread. Given that people had little or no natural immunity to this emerging strain of influenza and that it had the potential to cause serious and widespread illness, the World Health Organization (WHO) declared a pandemic on June 11, 2009.

On August 10, 2010 the WHO declared this pandemic over, based on epidemiological evidence that the virus was circulating at lower levels and behaving like a seasonal influenza virus. Since then, influenza A (H1N1) pdm09 virus has comprised a small proportion (<20%) of seasonal influenza virus detections each year in Canada and the United States (US) [1].

Starting in the 2010-2011 season, the trivalent influenza vaccine has contained the same A (H1N1) pdm09 (A/California/07/2009-like) strain every season as recommended by the WHO [2].

The 2013-2014 influenza season saw a resurgence of influenza A (H1N1) pdm09 activity in North America, comprising more than 90% of detected influenza strains in both Canada and the US. This profile is in contrast to that of the same period previous season when 90% of detected strains instead belonged to the A (H3N2) influenza subtype [1,3].

2013-2014 Canadian Influenza Season Overview

In Canada, similar to what was seen in previous seasons, the western provinces experienced an earlier peak in the proportion of positive influenza specimens compared to the eastern provinces. As the season progressed, an increase in the number and proportion of influenza B as compared to influenza A detections was observed.

Although the overall number of influenza cases reported in 2013-14 was not unusual, the dramatic resurgence of the A (H1N1) pdm09 virus after only low-level circulation in the years since the 2009 pandemic has raised questions about possible virus evolution (i.e. antigenic drift) and reduced vaccine effectiveness (VE, i.e. vaccine failure). The interim 2013/14 virological and VE analysis by Canada's sentinel surveillance network has provided timely

reassurance in both regards. This study has shown that circulating A (H1N1) pdm09 viruses were well-conserved based on genotypic and phenotypic characterisation, and that vaccine protection is substantial, reducing the risk of medically-attended laboratory-confirmed A (H1N1) pdm09 illness by about three quarters (74% - 95% confidence interval (CI):58-83) [4]. Another VE study was conducted in hospitals by the Public Health Agency of Canada/ Canadian Institutes of Health Research Influenza Research Network (PCIRN) to determine interim VE in the prevention of laboratory-confirmed influenza-related hospitalisation in Canada and it was estimated to be 58.5% (90% CI: 43.9–69.3) after adjusting for age and presence of co-morbidities [5].

According to the National Microbiology Laboratory, over 95% of the influenza viruses they characterized matched the strains contained in this season's influenza vaccine [6].

Epidemiology of influenza, NB, 2013-2014

Counts of Influenza cases by strain

- Up to May 3, 2014, there have been 1,424 lab confirmed cases of influenza: 1,325 Influenza A (93%) and 99 Influenza B (7%) (Figure 1). This number of reported cases is comparable to the previous season where 1,456 cases were reported for the same period of time, 1,384 influenza A (95%) and 72 (5%) influenza B.
- Among the subtyped Influenza A specimens, 99.8% have been (H1N1) pdm09 whereas 96% of specimens subtyped last season were (H3N2).

Distribution of cases by sex, age group and Region

- 53% of the cases have been females, compared to last season where 56% were females.
- Cases were predominately in the 20-44 age group (37%) followed by the 45-64 age group (29%) which is somewhat different from 2012-13 where the predominant age group were persons over 65 years old (29%), followed by the 20-44 age group (25%) (Figure 2). 11% of the cases were under 5 years old; this is 2% higher than those reported the previous year.
- The majority of the cases reported this season resided in Region 1 (Moncton), as seen in previous seasons.

Time trends in influenza detection in Dr. Georges-L. Dumont University Hospital lab:

- Peak of positivity was reached during Week 3 of the 2013-2014 season (46% positive detections) which is similar to last season, where the peak was observed in Week 4 (55% positive detections). (Figure 1)

Influenza outbreaks in nursing homes:

- The number of influenza outbreaks in nursing homes reported this season (n=3) were much less than the previous season (n=25). This is consistent with the national picture as well and reflects the shift in affected age groups. (Figure 2)

In early January 2014, the Office of the Chief Medical Officer of Health, New Brunswick Department of Health, implemented a new provincial surveillance system in collaboration with the regional health authorities (RHAs) to monitor influenza-associated hospitalizations¹, intensive care unit (ICU) admissions and deaths². The objectives of this new system are to track hospitalization and mortality outcomes and highlight associated risk factors (e.g. lack of seasonal flu vaccination and co-morbid conditions).

Influenza associated hospitalizations and outcomes, NB, 2013-2014

Influenza hospitalizations¹

- 260 hospitalizations have been reported, of which 52 were admitted to the ICU.
- Hospitalizations occurred between the period of October 24, 2013 and April 25, 2014.
- The median age for hospitalization was 59 years (range three weeks old-99 years).
- 19 hospitalized cases were under five years of age, of which two were admitted to the ICU.
- The median length of stay was four days (range one-145 days).
- The majority of hospitalized cases were from Region 1 (Moncton) (32%), followed by Region 2 (Saint John) (25%) and Region 3 (Fredericton) (18%).

Influenza deaths²

- Of the 14 reported deaths associated with influenza, nine were males and five were females.

1 Hospitalizations (including ICU admissions) are influenza associated; they may or may not be due to influenza.

2 Deaths are influenza associated; influenza may not be the direct cause of death.

- The median age for deceased cases was 59 years (range 43-91 years).
- 12 had at least one risk factor³. Risk factors were unknown for one case.
- 13 were considered meeting the high risk eligibility criteria for publicly funded influenza vaccine.⁴
- Six were not vaccinated with the current seasonal influenza vaccine, six were vaccinated and the vaccination status is unknown for two.

Influenza Hospitalization and vaccination status/eligibility

- 2013-14 seasonal influenza vaccination status was known for 190 out of the 260 hospitalized cases. Of those with known vaccination status, 68% (129/190) had not received the 2013-14 seasonal influenza vaccine; whereas for those admitted in the ICU, vaccination status was known for 39 out of 52 cases and 72% of those (28/39), had not received the vaccine.
- Most of the cases (79%) who received the vaccine and were hospitalized had two or more risk factors.
- Among cases hospitalized and not vaccinated (n=129), 85% (n=110) were considered meeting the high risk eligibility criteria for publicly funded influenza vaccine⁴.
- Among cases admitted to the ICU and not vaccinated (n=28), 93% (n=26) eligible to receive publicly funded seasonal influenza vaccine.

In summary, the 2013-2014 influenza season is comparable to the previous season in terms of case counts, however this season, the influenza A (H1N1) virus has mostly affected adults 20-64 years of age whereas influenza A (H3N2) had a greater impact on adults 65 years of age and older during the previous influenza season. This was also reflected by the lesser number of nursing home outbreaks reported this season. Another important finding to highlight is that for hospitalized cases with known vaccination status, the majority were not vaccinated but were eligible to receive publicly funded seasonal influenza vaccine.

3 Having at least one risk factor includes having any co morbid condition/ chronic health problem, being pregnant, being First Nation, being a current smoker, or residing in a nursing home.

4 Meeting the high risk eligibility criteria for publicly funded influenza vaccine includes: children between 6 months and 18 years old, people 65 years and older, having any co morbid condition, being pregnant, being First Nation or residing in a nursing home. It does not include people capable of transmitting influenza to those at high risk. Link to eligibility criteria can be found in [SEASONAL INFLUENZA VACCINE \("Flu shot"\) FACTSHEET](#)

Figure 1. Number of laboratory positive influenza tests in New Brunswick by week, and percent positive, for 2013-2014 season (up to May 3, 2014), compared to the same period for 2012-2013 season.

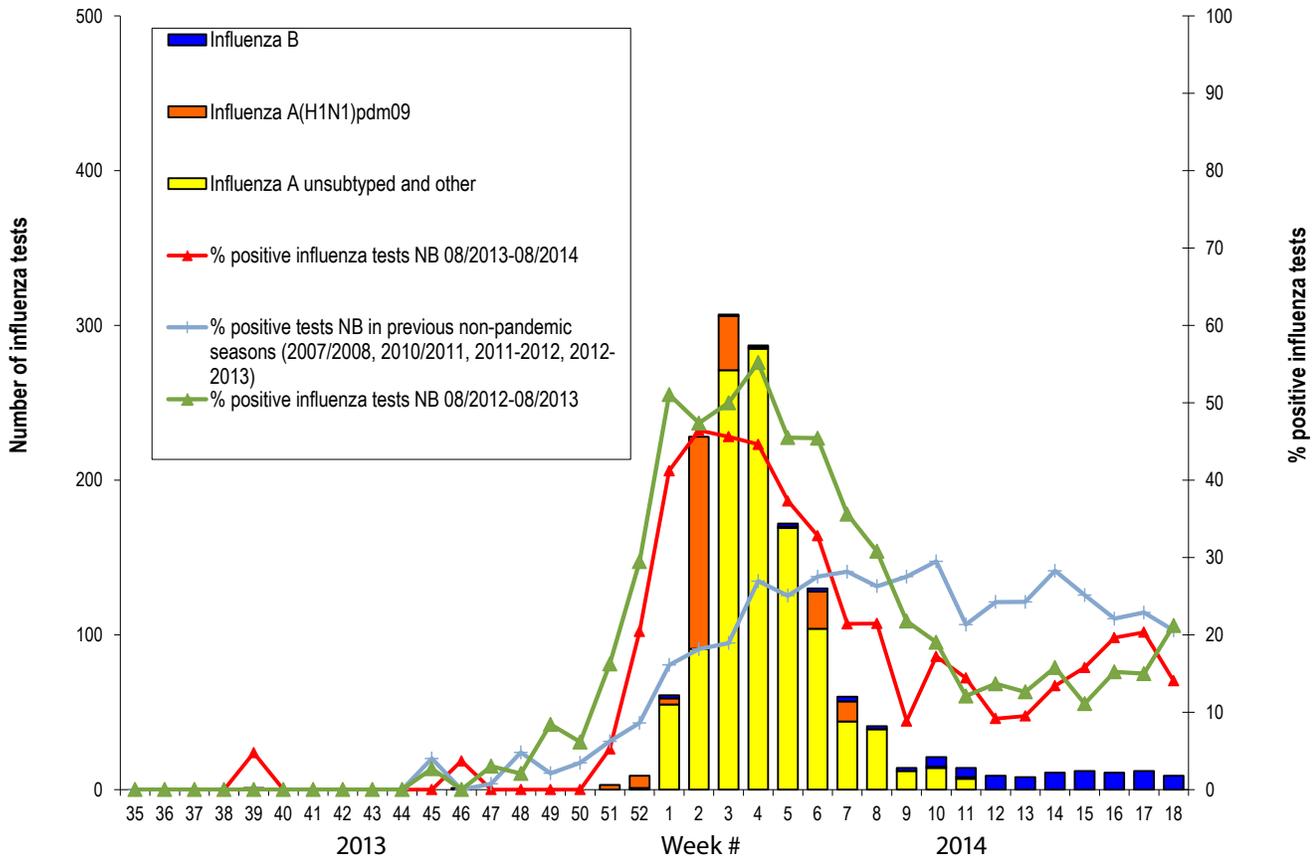
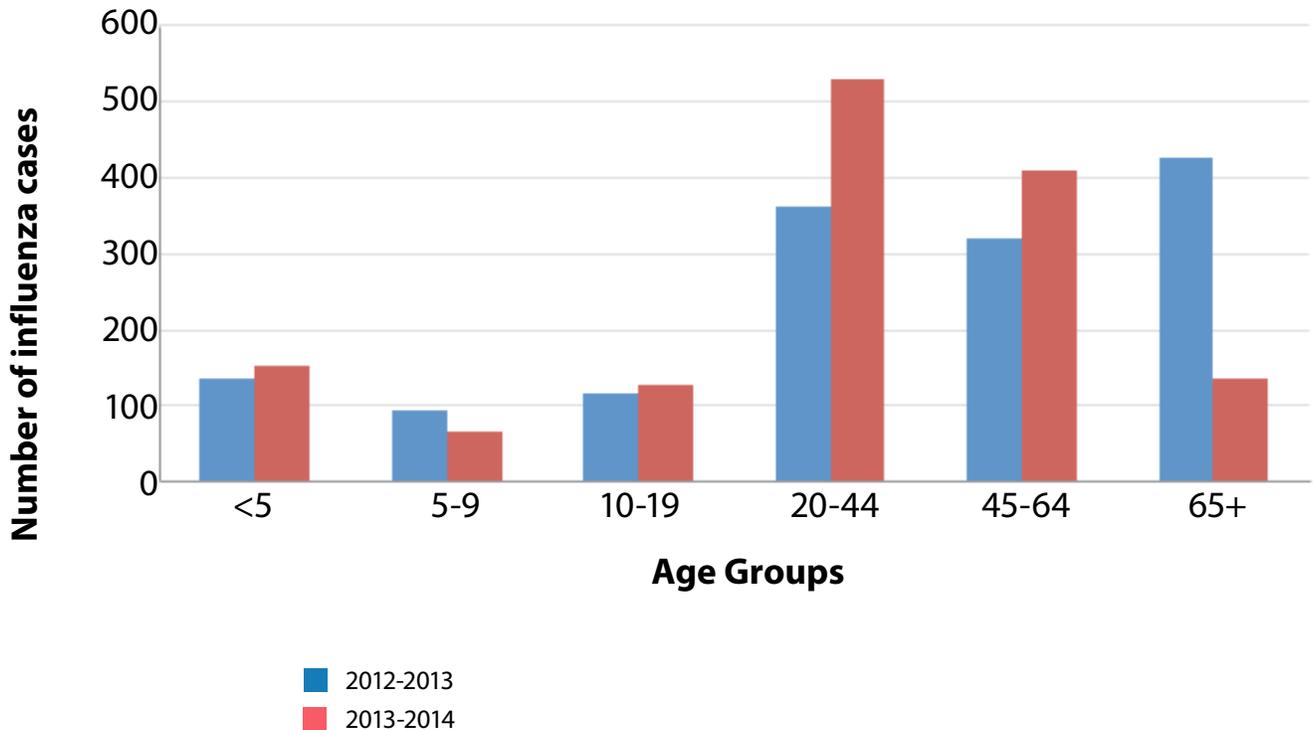


Figure 2. Number of positive influenza detections in New Brunswick, by age group, for 2013-2014 season (up to May 3, 2014), compared to the same period for 2012-2013 season.



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Early Childhood Initiatives name change

The Office of the Chief Medical Officer of Health is pleased to announce that the public health component of the *Early Childhood Initiatives (ECI)* program has a new name! Going forward, this program will be known as **Healthy Families-Healthy Babies (HFHB)**. The program will continue to be comprised of prevention-focused childhood services that are available to young families province-wide.

As with *ECI*, **Healthy Families-Healthy Babies** services will continue to be delivered by public health nurses and dietitians working locally within the regional health authorities. Program planning, funding and monitoring is a responsibility of the Department of Health, while the Department of Social Development administers financial benefits for eligible families. Additional services, applicable to the early childhood period, are provided by the Department of Education and Early Childhood Development and family and early childhood agencies. Families continue to be able to self-refer to **HFHB**, and they may also be referred by community agencies and health professionals.

The **Healthy Families-Healthy Babies** program of services offers all New Brunswick families:

- A Public Health Priority Assessment (PHPA) screen at birth for risk of developmental delay;
- A set of *Loving Care* parenting booklets;
- A Healthy Toddler Assessment, for 18 month-old children.

The program also provides:

- Vitamin supplements and milk coupons to eligible prenatal clients;
- Support and professional visits to eligible pregnant women and their families;
- Support and professional visits to eligible postnatal women and their families, until a child is two years old;
- Postnatal financial benefit to eligible clients.

The terms *Early Childhood Initiatives* and *ECI* will remain on the **Healthy Families-Healthy Babies** documents during a transition period of up to two years. This will help to avoid confusion while the new name becomes more widely known.

New Recommendations for Pneumococcal Vaccination for Individuals at High Risk of Invasive Pneumococcal Disease

In New Brunswick, two pneumococcal vaccines (Pevnar®13, a 13-valent conjugate vaccine, and PNEUMOVAX® 23, a 23-valent polysaccharide vaccine) are currently publicly funded for routine and targeted high risk programs. More information on the eligibility criteria for publicly funded vaccines and biologics in New Brunswick can be found in the *New Brunswick Immunization Program Guide*. [1]

<http://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/CDC/HealthProfessionals/NBIPG-standard3-3-e.pdf>.

The National Advisory Committee on Immunization (NACI) and the Office of the Chief Medical Officer of Health (OCMOH) have recently changed recommendations on the use of pneumococcal 13-valent conjugate vaccine for individuals at high risk of invasive pneumococcal disease (IPD).[2]

As of June 2014, Pevnar 13 will be publicly funded for:

- older children and adolescents at high risk of IPD – eligible to receive 1 dose;
- adults with human immunodeficiency virus (HIV) or immunosuppressive conditions – eligible to receive 1 dose;
- hematopoietic stem cell transplant (HSCT) recipients – eligible to receive 3 doses.

For more information on the recommended schedules for HSCT recipients and selected high risk groups, refer to <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/13vol39/acs-dcc-5/assets/pdf/13vol39-acs-dcc5-eng.pdf>.

Infants and children

Infants: A pneumococcal 13-valent conjugate vaccine is recommended for routine infant immunization. For healthy infants, a three-dose schedule of Pevnar 13 is recommended with doses at two months, four months, and 12 months of age. A four-dose schedule is recommended for immunization of infants at high risk of IPD, if age of presentation for immunization is between two – six months. The number of doses required to complete a vaccination series for children with interrupted or incomplete schedules varies with the age of the child [3].

Children (Five-17 years of age): Children and adolescents at high risk of IPD are eligible to receive one dose of Pevnar 13, if not previously received [3]. Children up to 18 years of age with asthma should also receive Pevnar 13 [4]. Children 24 months of age and older and adolescents at high risk of IPD should receive one dose of Pneumovax 23 at least eight weeks after the Pevnar 13 [3].

Additional information regarding the conditions resulting in high risk of IPD and recommended schedules can be found at: <http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php>.

Adults

Pneumococcal vaccines are also approved by NACI for use in adults (19 years and older) meeting the appropriate eligibility criteria (Table 1).

Table 1: Adult Pneumococcal Vaccination Guide for Health Care Professionals

Prevnar 13 (pneumococcal conjugate) and Pneumovax 23 (pneumococcal polysaccharide) Eligibility for Adults Age 19 Years and Older by Risk Group				
	Underlying Medical Condition	Conjugate	Polysaccharide	
		Publicly Funded	Publicly Funded (one dose)	Revaccination 5 years After First Dose ¹
Immunocompetent	Chronic heart or lung disease		√	
	Cochlear implant		√	
	Diabetes		√	
	Chronic CSF leak		√	
	Chronic kidney disease		√	√
	Chronic liver disease		√	√
	Residents of long term care facilities		√	
	Homelessness		√	
	Alcoholism		√	
	Chronic neurological conditions that may impair clearance of oral secretions		√	
	Use of illicit drugs		√	
	All adults 65 years and older		√	
Splenic disorders	Hemoglobinopathies, including sickle cell disease, thalassemia	√	√	√
	Persons with functional or anatomic asplenia	√	√	√
Immunocompromised persons	Congenital or acquired immunodeficiency	√	√	√
	Human immunodeficiency virus	√	√	√
	Cancer	√	√	√
	Immunosuppressive therapy	√	√	√
	Solid organ transplant	√	√	√
	Bone marrow transplant	√	√	√

¹ Revaccination after five years is a one-time event (ie. not to be repeated every five years) and only recommended for those check marked.

NACI recommends both of these vaccines for certain adults at high risk of IPD (i.e. splenic disorders and immunocompromised persons). The number and timing of doses for these adults varies:

For adults with who have never received pneumococcal vaccine:

- These adults should receive one dose of Prevnar 13 first, followed by one dose of Pneumovax 23 at least eight weeks later.
- Only those adults age 19-64 years with splenic disorders, chronic renal or hepatic disease, or immunocompromising conditions should receive a second dose of Pneumovax 23 five years after the first dose of Pneumovax 23. This is a one-time booster and does not need to be repeated every five years.

For adults previously vaccinated with Pneumovax 23 :

- Those who previously received one or more doses of Pneumovax 23 should be given a dose of Prevnar 13 at least one year after the last dose of Pneumovax 23.
- For those who require an additional dose of Pneumovax 23 , it should be given at least eight weeks after Prevnar 13 and at least five years after the most recent dose of Pneumovax 23. [3]

Additional information regarding the use of Prevnar 13 and Pneumovax 23 can be found at:
<http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php>.

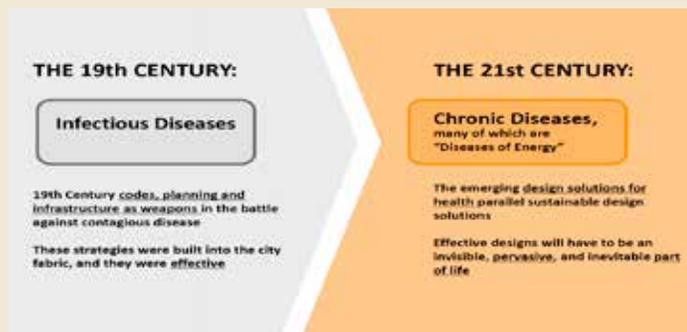
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Favouring Healthy Choices by Design: The Connection between Health and Planning

There has been a longstanding relationship between planning, public health, and health outcomes (Figure 1). In the 19th century, addressing sanitation and hygiene conditions through better municipal planning (clean water, waste disposal, food safety, housing quality, overcrowding) was a major contributor in the fight against infectious disease, well before the discovery and use of antibiotics. Similarly, chronic disease challenges in the 21st century can be addressed by effective community design solutions which make healthy lifestyles (physical activity, healthy food, health equity and social cohesion) the default and easy choice.

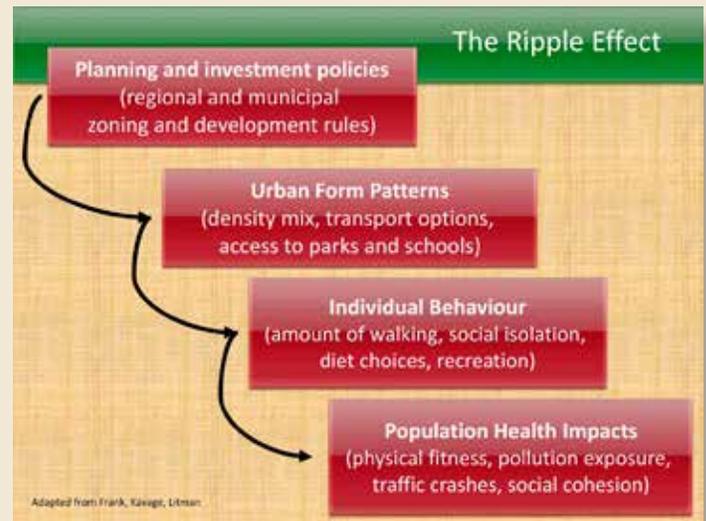
Figure 1: Evolution in the major sources of morbidity and mortality in North America, and role of planning and design in addressing them [1]



The built environment plays a critical role in shaping the physical, psychological and social health of individuals and their communities. The term ‘built environment’ refers to the urban and rural human-made surroundings that provide the setting for human activity. Built environments encompass buildings and spaces (e.g., homes, schools, workplaces, neighbourhoods, parks/recreation areas, industrial/commercial areas), the products they contain, and the infrastructure (e.g., transportation, energy, and agricultural systems) that links and supports them [2].

Rural and urban planning strategies, including land-use patterns, transportation networks, public spaces and natural systems are all factors that can promote increased physical activity, better food choices, psychological well-being and healthier outcomes for people (Figure 2).

Figure 2: The ‘ripple effect’: the impact of planning the built environment on population health outcomes [3]



Part of the strategy to reduce the burden of chronic diseases and improve the health of New Brunswickers needs to involve policy, planning, design and funding decisions that support a healthy built environment and healthy behaviours. Most of these decisions that fundamentally affect the population’s health currently occur outside of the health sector, and often without explicit consideration of their health impacts.

Low-density single-use neighbourhoods, car-focused travel networks, separation of land uses, strip malls and retail on community outskirts, poorly designed public realms and fragmented green spaces are just some of the issues that require rethinking. Our built environments can be improved for healthier living patterns at all spatial levels – lot, building, block, street, neighbourhood, community, region and province - and can contribute to making the healthy choice the easy choice.

Vincent Beswick-Escanlar is a family physician in Fredericton and previously a member of the City of Fredericton Planning Advisory Committee: “When

I moved to New Brunswick, I noticed that people here tend to drive more to get around and walk or bike less than in other parts of Canada. New Brunswickers seem to tend towards less-healthy lifestyles. But it's hard to encourage my patients to incorporate more activity in their daily lives, when their neighbourhoods are designed to push them into their cars rather than keeping on their own two feet."

So what can health care practitioners do? Dannenberg and colleagues [4] have several suggestions, including:

- Become informed by following local news to learn about proposed changes in your community that impact on health.
- Call attention to specific health effects of proposed projects or policies through letters to the editor, social media, and other channels.
- Work with your professional organizations (such as the NB Medical Society or the Nurses Association of NB) or health organizations (such as the Heart and Stroke Foundation of New Brunswick) to advocate for policies that promote healthy community design.
- Work with patients, community groups, and elected officials who are engaged in local efforts to promote healthier community design.

Dr. Beswick-Escanlar concludes, "We need to make healthy choices the path of least resistance. When it's easier for us to drive to work, or run our errands without getting active, of course we will. You need both a carrot and a stick - make healthy choices more attractive, and make unhealthy ones more inconvenient or more expensive. If we can build our communities in a way that we incorporate physical

activity in our daily lives as we work, live and play - and make sedentary lifestyles more difficult - keeping active will become second nature. And that's the best kind of prescription you can get!"

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*The normal physician treats the problem;
The good physician treats the person;
The best physician treats the community.*

Chinese proverb

Communicable Disease Control Branch Reports

For your reference, the Office of the Chief Medical Officer of Health (OCMOH) has recently released the following reports:

- *Communicable Disease Annual Report 2012*
- *Immunization Report – Public Health September 2013*
- *Syphilis Outbreak Investigation Report*
- *Pertussis Outbreak Investigation Report*

They can all be found on the health care professional section of the OCMOH website at:

http://www2.gnb.ca/content/gnb/en/departments/ocmoh/for_healthprofessionals/cdc.html

Improving the Food Environment in Health-care Facilities

Nutrition plays an important role in defining one's health. Substantial research has shown that diets low in vegetables and fruits have been associated with higher rates of overweight and obesity (among children and adolescents), as well as certain cancers and cardiovascular disease [1, 2]. Other diet-related components also influence cardiovascular disease risk, such as high salt and trans fat intake [2]. The Global Burden of Disease study, a collaborative project of nearly 500 researchers in 50 countries, indicates that diet is at the top of the list of the 15 leading risk factors responsible for burden of disease in Canada (see Figure 1) [3].

This said, New Brunswick (NB) has much to improve upon in the area of healthy nutrition. Numerous surveys have shown that New Brunswickers (both adults and children) rank below the national average for the consumption of five or more vegetables and fruit per day [4,5]. In addition, the 2010-2011 NB Student Wellness Survey indicates that 75 per cent of Grade 4 and 5 children reported eating non-nutritious foods (e.g., chips, candy, sweets, fries) at least once the day before completing the survey [6].

There are numerous factors that affect people's behaviors, including the choices that they make in regards to nutrition. Individual decision-making surrounding food choices is affected by a variety of factors, such as food preferences, culture, convenience, food preparation skills, marketing/advertising and price. However, research also indicates that the food environment in which people live, work and play has an important impact on the food choices they make every day; therefore changing individual behavior towards healthier food choices will be very difficult to achieve when the environments in which these decisions are being made are not supportive of healthy food choices [7, 8].

Health-care facilities are seen as important institutions in NB and elsewhere. A large number of patients, visitors and family members visit these facilities. New Brunswick's two regional health authorities (RHAs) also employ over 20,000 staff and work with over 1,500 physicians [9, 10]. When considering this large employee base and the volume of patients and visitors that pass through RHA facilities every day, it becomes clear that a substantial segment of our population is exposed to the food environment created within them. Yet, many of these facilities are not leading by example when it comes to promoting healthy lifestyles because the food and beverage options commonly available in these settings contradict the key healthy living messages provided by their own health-care providers and government programs. A health-care organization promoting well-being creates environments for its staff, patients and visitors that are supportive of healthy choices and supports the healthy living messages it promotes to its patients and communities.

In early 2013, discussions ensued between the Office of the Chief Medical Officer of Health (OCMOH), Horizon Health Network and Vitalité Health Network on how we could improve the food landscape in NB's healthcare facilities. One of the outcomes of this work was the production of a position statement from the OCMOH on this issue. The "Healthy Food Environments in Healthcare Facilities" position statement contains four sections where we address issues such as the importance of nutrition for health. We present data on nutrition patterns specific to New Brunswick. We make the case for the importance of food environments on individual food choices and how this work aligns with current governmental policies and guidelines. We also talk about the importance of health-care facilities as leading institutions in our communities that can have broad impact on the public and their employee base. We finish off by suggesting high level actions to help address the food environment within our facilities.

The anticipated purpose of this document is to clarify and formalize the OCMOH's position on this issue, to be used as a catalyst for garnering support and action across the health-care system. It has been shared initially with senior management of the two RHAs as well as the New Brunswick Medical Society (NBMS). However, a plan for its broader distribution has been developed to ensure that other relevant stakeholders are aware of this statement, including relevant government departments, non-governmental organizations and health care professional groups.

The OCMOH position aligns well with initiatives of the NBMS, such as *Make Menus Matter*, which focused on schools, and *Care First*, which focused on societal initiatives promoting health. "Physicians and other health care professionals play an important role in advocating for the conditions which encourage their patients to make healthy choices", says Dr. Lynn Hansen, president of the NBMS. "Advice on healthy eating habits will continue to fall short if we don't facilitate the availability of healthy foods in our health-care facilities."

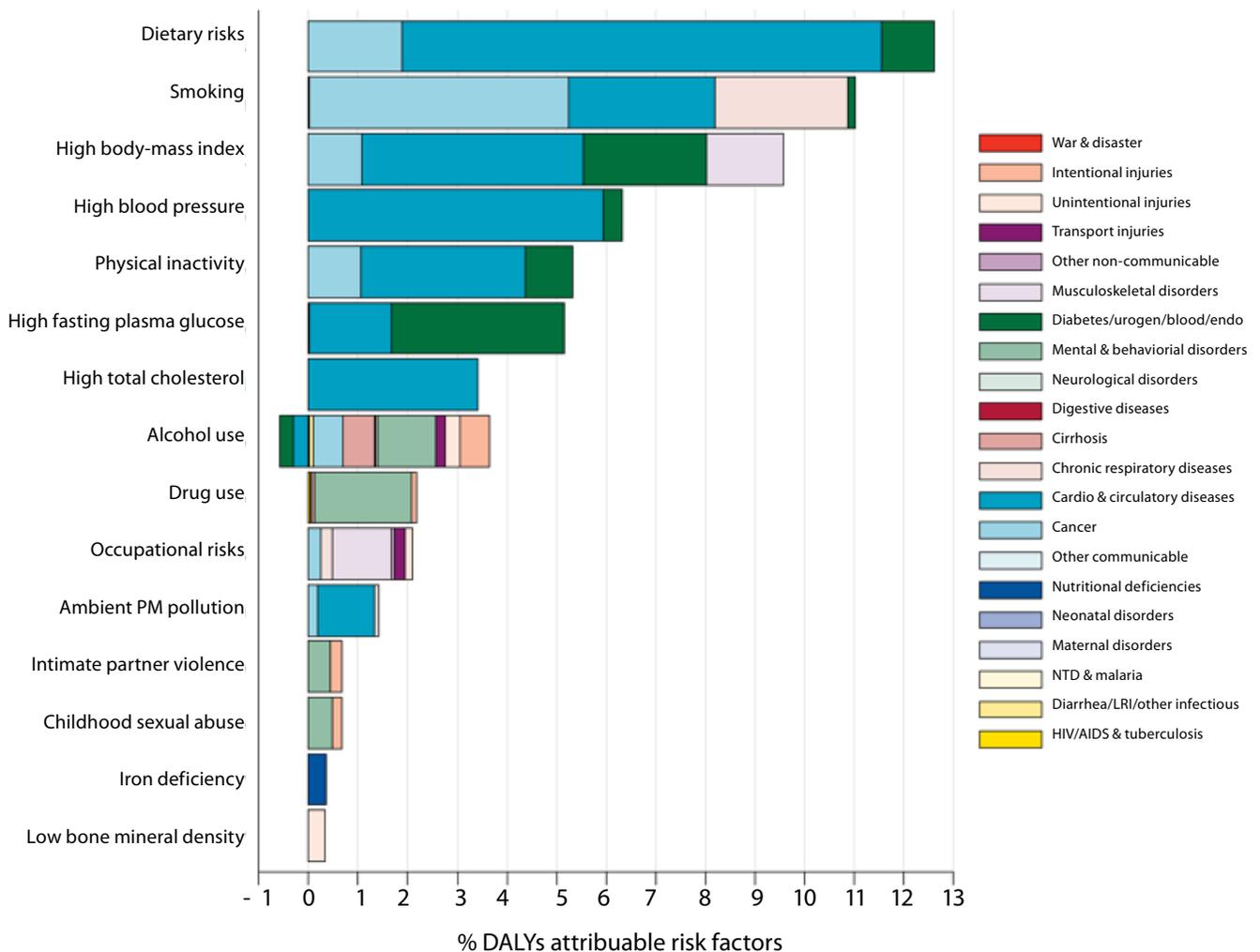
The OCMOH position statement can be used as a tool to further raise awareness of the issue, assist those wanting to advocate on this issue, and help reduce barriers to changing the food environments in our healthcare facilities. For example, in February 2014, the Nurses Association of New Brunswick board of directors endorsed the position statement and informed their members through their association's publications.

Physicians, nurses, and allied health care professionals all have significant influence within the healthcare system; as such they are encouraged to support initiatives within their facilities that are meant to improve the food environment for patients or staff, and to advocate on this issue where they feel it is appropriate.

The "Healthy Food Environments in Healthcare Facilities" position statement can be found in the publications section of the OCMOH website - http://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/Publications/PositionStatementOnHealthyFoodEnvironmentsInHCF_EN.pdf

Figure 1:

Burden of disease attributable to 15 leading risk factors in 2010, expressed as a percentage of Canada DALYs (Disability-adjusted life year)



The graph shows the top 15 risk factors for Canada. The colored portion of each bar represents the specific diseases attributable to that risk factor while bar size represents the percentage of DALYs linked to specific risk factors

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