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HYPERTENSION THE SLEEPING GIANT

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KEY TAKEAWAYS

- Almost **one in three men** and **one in four women in NB** has diagnosed hypertension.
- For every ten people with a hypertension diagnosis, seven more affected people are undiagnosed.
- Hypertension is a major risk factor for several negative health outcomes, including several ***cardiovascular diseases, stroke, vision loss, vascular dementia, and death.***
- Hypertension and related illness add substantial strain to the healthcare system.
- Hypertension leads to lost productivity through absenteeism, presenteeism, disability and premature death.
- The economic impact of hypertension in Canada:
    - **Healthcare system – More than $20 billion**, annually.
    - **Employers – More than $4 billion**, annually.

The Institute of Population Health (IPH) proposes the development of a **Hypertension Framework** to enhance prevention, early detection and management of hypertension would include several cross-cutting strategies, including:

- **Implementing Healthy Public Policies**
- **Creating Supportive Environments**
- **Strengthening Community Action**
- **Reorienting Health Services, and**
- **Enhancing Surveillance and Monitoring**

This framework would be a **multi-sector collaboration** between government, academia, healthcare providers, employers, and community members. The IPH would support the framework by developing a detailed roadmap that outlines each:

- Policy/intervention,
- Inputs required,
- Who is responsible for implementation,
- Intended impact (outputs and outcomes).

INTRODUCTION

Impacting 1.6 billion people worldwide, and often referred to as the "silent killer," **hypertension** is a global health crisis with far-reaching personal, economic, and societal implications (1,2). Hypertension, or high blood pressure, is one of the leading contributors to stroke, heart disease, kidney failure and other life-threatening conditions. In addition to its crippling impact on the healthcare system, hypertension is linked to reduced productivity in the workplace, leading to billions of dollars in losses annually. On a personal level, hypertension reduces overall quality of life and can lead to devastating illness and disability.

A population health approach could effectively address the underlying issues contributing to hypertension, in addition to improving detection and management strategies. New Brunswick has a unique opportunity to lead the way in hypertension prevention and management through a coordinated, community-driven model. The Institute of Population Health (IPH) is ready to take the lead in developing a Hypertension Health Promotion Framework that unites government, employers, and communities to implement impactful policies and interventions. Now is the time to act. By prioritizing hypertension prevention, we can create healthier communities, reduce economic strain, boost productivity, and improve overall population health in our province. Let's tackle the Silent Killer - together, we can make a lasting difference.

THE IMPACT AND PREVALENCE OF HYPERTENSION

In Canada, nearly one in four adults are diagnosed with hypertension, and for every 10 people that are aware of their condition, it is estimated that another seven remain undiagnosed (3,4). Hypertension rates in New Brunswick are even higher than the rest of Canada, due to an aging population, high obesity rates, and lifestyle factors that further drive the prevalence of the condition. In 2023, 31.5% of men and 26.6% of women in NB reported a hypertension diagnosis (5).

Steadily increasing rates of hypertension and related illnesses are straining an already struggling healthcare system. In Canada, healthcare costs associated with hypertension were expected to exceed $20 billion annually in 2020, up from $14 billion in 2010 (6). The indirect costs are even greater, since hypertension is the leading cause of strokes, a major cause of heart attacks, and is tied to numerous other conditions including vascular dementia (7,8). Collectively, these illnesses occupy a huge proportion of hospitals beds and surgical time, add to the ever-growing population of alternate level of care (ALC) patients, and increase the demand for long-term care placement, especially related to dementia and disability.

Hypertension also negatively impacts our workforce, as employees with hypertension experience cognitive fatigue, diminished work performance and high rates of absenteeism, leading to an estimated $50 billion in global economic losses each year (9). Workers with high blood pressure

have higher rates of lost productive time than their colleagues, and these rates are even higher if their condition is not well-managed (10,11). One study found that lost productivity due to hypertension is equivalent to about 20% of the associated healthcare costs, amounting to $4 billion annually in Canada (11).

The personal impacts of hypertension can be devastating. Without proper management, hypertension can lead to cardiovascular disease, kidney failure, stroke, vision loss, vascular dementia and premature death (3,8,12). In addition to increasing health risks, hypertension also impacts quality of life. Studies have shown that people with hypertension are at higher risk of experiencing anxiety, poor physical functioning, cognitive decline, and poor social functioning (13).

HYPERTENSION

What is Hypertension

Hypertension is a chronic medical condition where the force of blood against artery walls is consistently too high. Blood pressure is measured using two numbers: systolic pressure (top number), which represents the pressure within the blood vessels when the heart contracts, and diastolic pressure (bottom number), which is the pressure when the heart relaxes between beats (3,14). While guidelines vary, a normal reading is generally considered to be below 120/80 mmHg, while consistent readings above 135/85 mmHg are considered to be high risk (7).

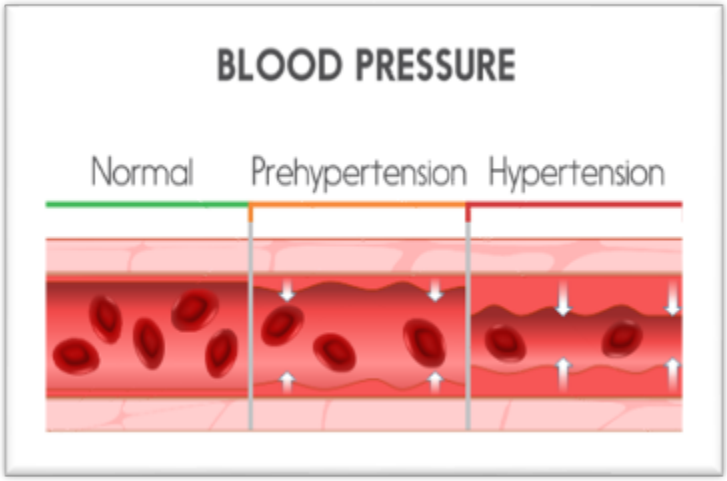

Figure 1. Illustration of normal blood pressure, prehypertension, and hypertension within an artery. As blood pressure increases, blood flow is disrupted, and artery walls may be damaged. Image credit: OMNI Family Health (14).

When blood pressure is too high it can disrupt blood flow to organs, create additional strain on the heart muscle, and can cause blood vessels to burst, as with a stroke. Healthy blood flow is essential to the functioning of the human body, making blood pressure a vital health indicator. A comprehensive strategy to address hypertension should include three primary components: prevention, early detection, and effective management.

Prevention

Figure 2. Modifiable Risk Factors for Hypertension.

As with many health conditions, prevention is the best line of defence against hypertension. While genetics, gender, age, and other non-modifiable risk factors are important considerations at the individual level, evidence shows that addressing the modifiable risk factors at the population level can be highly effective at reducing overall blood pressure (15).

Many factors increase the risk for hypertension including carrying extra bodyweight, physical inactivity, alcohol consumption, poor diet and food insecurity, chronic stress, smoking, socioeconomic status and poor sleep (Figure 2; 13). While these factors can, in theory, be addressed through lifestyle changes, they are often difficult to manage at the individual level due to systemic factors and the realities of modern life. Many people face challenges that limit their ability to make healthier choices, while others turn to unhealthy behaviors as coping mechanisms in response to financial strain, workplace stress, or mental health challenges. Meanwhile, poor quality sleep is a risk factor for hypertension, while hypertension is known to negatively impact sleep quality, further complicating the issue (16).

Preventing hypertension requires upstream interventions that can reduce blood pressure levels at the population level, which can be achieved most effectively by improving access to healthy food and promoting an active lifestyle. However, this approach also recognizes the importance of mitigating health inequities among high-risk sub-populations as a key strategy in improving outcomes (17). For instance, socio-economic status (SES) is a known risk factor for hypertension. It is also widely recognized that lower SES populations are more likely to experience food insecurity, alcohol-use disorder, smoking, physical inactivity and obesity, thus compounding their risk factors (18). Similarly, Indigenous populations in Canada face an inordinate number of health and social disparities. Policies and interventions for this population must be Indigenous-led and tailored to community needs (19,20).

A population with lower blood pressure has a higher quality of life, lower workforce absenteeism, improved productivity, and reduces the strain on healthcare systems. Investing in blood pressure reduction is not just a health initiative—it's an economic imperative.

Detection

When prevention isn't possible, early detection of hypertension can help to mitigate the health impacts. Unfortunately, many affected individuals are unaware of their condition due to its lack of noticeable symptoms (21). Alternately, symptoms such as dizziness, nausea, and headaches may be overlooked due to their non-specific nature (22). Further complicating early detection is the fact that blood pressure can vary throughout the day, and be influenced by stress, physical activity and sleep quality (23,24). Hypertension Canada Guidelines recommend that diagnosis should be based on at least three separate readings, taken at a single visit or across multiple appointments (24). Since diagnosis is not a quick and simple process, the detection process itself can add to the strain on the system, or, more likely, result in missed diagnoses until health complications occur.

As access to family physicians continues to be a major challenge in most communities, several technological and community-based innovations are emerging to aid in the detection of hypertension. In addition to improving access, many of these alternatives can be implemented at a much lower cost than traditional primary care models, while reducing the burden on the system. Increased public awareness, routine blood pressure screenings and community-based monitoring programs can play a crucial role in identifying at-risk individuals and ensuring timely intervention.

Management

Effective hypertension management requires lifestyle changes, medication, and ongoing monitoring (24). Strategies to support prevention and detection of hypertension will also enhance condition management with added supports for lifestyle changes and monitoring. Fortunately, pharmacological interventions are also highly effective in hypertension management. However, evidence indicates that adherence to prescribed medications remains a significant challenge, with 50–80% of individuals failing to follow their treatment regimens consistently (25).

Since hypertension is largely symptom-free, missed doses often have no immediate or obvious consequences to the patient, perhaps diminishing the perceived importance of the medication (2). This is especially true over longer periods of time. Once prescribed, most people are required to take this medication for the duration of their life. Evidence shows that compliance can vary greatly across different time periods but generally tends to decline over time (2). This is troubling since age is an important non-modifiable risk factor that may worsen the condition as treatment compliance simultaneously wanes.

Primary health care providers can help to establish realistic management plans with their patients if they have a strong understanding of the factors that will influence compliance. Screening for potential barriers, including socio-demographic factors or diminished cognition, can help providers ensure that patients are well-supported in their treatment plan (2,25). Consistency of care and positive patient-provider relationships are essential tools in the ongoing management of hypertension.

Tackling Hypertension

Globally, people are eating more unhealthy food, engaging in less physical activity, and are more overweight (26–28). In fact, the World Health Organization posits that virtually every population is consuming too much sodium (26). Among young people, less than a quarter are meeting the recommendations for physical activity, and only 38% eat fruit or vegetables daily (29). The cost of doing nothing to reverse these trends is enormous. We will continue to see declines in population health, increased disease burden, an overwhelmed healthcare system, a less productive workforce, and a completely unsustainable future.

In contrast, the benefits of taking action are substantial and far reaching. A modest population-level reduction of 5mmHg in systolic blood pressure could result in an additional 32% of hypertensive individuals controlling their blood pressure (15). A 10mmHg reduction would cut the rate of stroke by 27%, coronary heart disease by 17%, and heart failure by 28%, and all-cause mortality by 13% (30,31). Likewise, employees and employers would collectively benefit from increased productivity and improved financial security.

Since so many chronic illnesses are related to lifestyle factors, policies and interventions that address hypertension will also reduce the risk for other conditions, like diabetes, many types of cancer, arthritis, and several respiratory illnesses (32). Likewise, the extended benefits of workplace and community-based activities may include an enhanced sense of belonging and community, improved mental health, and a collective accountability to achieve important cultural shift.

There is a wealth of existing evidence to support the development and implementation of a comprehensive Hypertension Health Promotion Framework. State of the art research and innovation is happening right here in New Brunswick to improve our population health. For instance, Dr. Jalila Jbilou developed remote health monitoring technology for long-haul truckers, an essential, yet high-risk population in NB, with half reporting a diagnosed chronic illness (33). Dr. Said Mekari has done extensive work studying the links between physical activity, mental health, cognition, and aging (34). NB epidemiologist Dr. Dan Dutton has a deep understanding of how the social determinants of health impact our province (35). The Institute of Population aims to become a resource and support to the researchers that are driving change in this province by leveraging their collective work to push for greater change through initiatives like the Hypertension Health Promotion Framework.

KEY STRATEGIES FOR HYPERTENSION PREVENTION AND CONTROL IN NEW BRUNSWICK

Implementing Healthy Public Policies

Sodium Reduction: Excessive dietary sodium is a major contributor to hypertension. Implementing mandatory policies to reduce sodium content in processed foods, including the taxation of unhealthy foods and subsidization of fresh meat and produce, while promoting public awareness about the benefits of low-sodium diets are essential steps (7,15,19,21,36).

Nutrition Labeling: Mandating clear and informative nutrition labels can empower consumers to make healthier food choices, thereby aiding in hypertension prevention (19).

Restricting Unhealthy Food Marketing: Limiting the marketing of high-sodium and high-fat foods, especially to children, can reduce the consumption of such products and promote better dietary habits (19,36).

Address Alcohol-Use: Similar strategies can support a collective reduction in alcohol-use. For instance, policies that increase taxation, limit availability and improve awareness are key to changing cultural acceptance of alcohol. However, there is also an opportunity to support businesses and groups that offer alcohol-free alternatives for social interaction, and community-building activities.

Creating Supportive Environments

Enhancing Urban Design: Urban design can support these initiatives with walkable neighbourhoods, parks, walking trails, and bike lanes to encourage natural movement and regular physical activity, which are vital for blood pressure control (19,36,37).

Promoting Access to Healthy Foods: Encouraging local markets and food outlets to provide affordable, fresh produce can facilitate healthier eating patterns through strategic placement and promotion. Enact public procurement policies to ensure that hospitals, schools and other public buildings are providing healthy food options (19).

Strengthening Community Action

Community-Based Programs: Support local organizations to implement prevention programs that support positive lifestyle changes, food literacy and cooking skills, as well as hypertension awareness in a supportive community environment (19,36).

Workplace Wellness Initiatives: Encouraging employers to adopt wellness programs that improve availability of healthy food choices, provide onsite fitness programs, and establish blood pressure monitoring and stress management can reach a significant portion of the adult population (3,9,19).

Public Awareness and Engagement: Develop diverse educational resources that delineate key messages to improve awareness of the issue, outlines available tools and resources, and directs individuals on how to access supports (3,15,19).

Reorienting Health Services

Team-Based Care Models: Integrating pharmacists, nurses, and dietitians into primary care teams ensures a multidisciplinary approach to hypertension management (3,15,19,38).

Expanding Access to Care: Utilizing telehealth services, home-based digital monitoring, and community-based clinics can improve access to hypertension diagnosis and treatment, particularly in underserved areas (3,9,19,24).

Enhancing Surveillance and Monitoring

Standardized Surveillance: Enhanced data collection and monitoring of administrative health data and population health surveys would improve overall data quality, allow the ongoing evaluation of intervention effectiveness, and inform ongoing policy development in this area.

Digital Integration: Implementing integrated health information systems facilitates the tracking of patient outcomes and supports clinical decision-making.

MOVING FORWARD TOGETHER

Population health is integral to the overall prosperity and sustainability of our province. Healthier populations are more engaged in the workforce and the local economy, less reliant on health and government resources, and experience a higher quality of life. Shifting the focus from extending lifespans to enhancing health-spans (i.e., staying healthy longer, not just living longer), will benefit systems and individuals alike (39). A Hypertension Framework would delineate an innovative and responsive population health approach to addressing hypertension through evidence-based policy, community-embedded interventions, and continuous evaluation.

By aligning efforts between government, employers, and community organizations, a Framework would ensure a coordinated response that addresses both individual and systemic factors.

Government agencies can drive policy changes to improve access to healthy food and facilitate more active communities. Employers can support workplace wellness programs, on-site health screenings, and employee engagement initiatives. Community organizations can enhance public awareness and accessibility to wellness services. Together, these partners can foster a culture of prevention and early detection, reducing the burden of hypertension on the healthcare system and improving overall population health.

The return on investment for a population health approach to hypertension management is substantial. Reducing hypertension rates can lead to fewer hospitalizations, lower healthcare costs, and increased workforce productivity. With fewer employees experiencing hypertension-related fatigue and illness, employers will benefit from reduced absenteeism, higher engagement, and overall improved workplace performance. Additionally, a healthier population translates to long-term savings for the healthcare system, easing financial strain on public resources. Investing in a data-driven, population-wide strategy not only benefits individuals but also strengthens the economic and social fabric of New Brunswick. By taking proactive steps today, we can create a healthier, more resilient province for future generations.

A multi-sector collaboration between government, academia, healthcare providers, employers, and community members can lead to transformative action. The Institute of Population Health (IPH) stands ready to lead the charge in driving meaningful, equitable improvements in population health. With proven expertise in public health, research, and clinical practice, the IPH is prepared to design a detailed roadmap that outlines each:

- Policy/intervention,
- Inputs required,
- Who is responsible for implementation,
- Intended impact (outputs and outcomes).

Key indicators, and how these will be measured/tracked/reported

In collaboration with the New Brunswick Institute for Research, Data, and Training (NB-IRDT), a vital resource and legislated data custodian, we will harness data-driven insights to inform policy and healthcare strategies. Together, our institutes will establish robust oversight, set realistic and measurable goals, and design targeted interventions to monitor key health indicators, assess intervention effectiveness, and optimize resource allocation—ensuring our response to hypertension is both effective and equitable.

Now is the time to act. Join us in this collective mission to shape a healthier future for New Brunswick. Embrace the power of evidence, collaboration, and decisive leadership—be a part of the change that makes a real difference.

CONCLUSION

Hypertension is a preventable yet growing public health challenge that demands urgent action from policymakers and business leaders alike. The failure to address this crisis will result in escalating healthcare costs, decreased workplace productivity, and increased mortality rates. By implementing population health strategies and corporate wellness programs, governments and employers can significantly reduce the economic and human toll of hypertension. The time to act is now—because the true cost of inaction is far greater than the investment required to combat this silent epidemic. Hypertension prevention and management must be elevated to a national priority to safeguard both public health and economic stability.

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