



Take the Pressure Off, NYC!

INAUGURAL PLAN

NYC's First Citywide High Blood Pressure Initiative





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Letter From the NYC Health Department



Dear New Yorkers,

Hypertension, also known as high blood pressure, is a major risk factor for heart disease and stroke, which are leading causes of death in New York City (NYC). All New Yorkers are impacted by these diseases. Many may personally endure living with one of these conditions or have loved ones, friends or family members who do. Fortunately, preventing and controlling high blood pressure can help us avoid further heart disease and stroke.

We are making progress toward this journey by the founding of Take the Pressure Off, NYC! — a citywide high blood pressure initiative composed of a coalition of more than 100 organizations across 13 sectors. The initiative aspires to turn NYC into a place where organizations and communities work together to prevent and control high blood pressure.

The founding principles of this plan will ensure that all New Yorkers know and understand why high blood pressure is dangerous, live in environments that make it easy to prevent and manage high blood pressure, and have the right treatment, at the right time, to maintain an optimal blood pressure.

Too many New Yorkers die prematurely due to uncontrolled high blood pressure. Through coordinated citywide action, we will reach the OneNYC goal of reducing premature mortality by 25% by 2040, and create environments that improve health across the life course for all New Yorkers.

Let's Take the Pressure Off, NYC!

Sincerely,

A handwritten signature in black ink that reads "Oxiris Barbot, MD". The signature is fluid and cursive, with the letters "Oxiris" and "Barbot" being larger and more prominent than "MD".

Oxiris Barbot, MD
Acting Commissioner of Health



Letter From the Chair of the Take the Pressure Off, NYC! Steering Committee



Fellow New Yorkers,

We are excited to present the Take the Pressure Off, NYC! Inaugural Plan, the first report on comprehensively addressing high blood pressure in NYC through a citywide, coordinated effort. This plan — created with collective input from a multisector coalition of stakeholders — will serve as the foundational framework to reduce the burden of high blood pressure and its related health inequities in NYC.

More than one in four New Yorkers, or an estimated 1.8 million adults, report having high blood pressure. Prevalence and control of this disease have remained unchanged in recent years. While prevalence rates are high among all populations, some New Yorkers, such as Black and Latino adults and those living in high-poverty neighborhoods, have even higher rates. The aging population, New Yorkers living with depression and those with other chronic health conditions also report higher rates. Additionally, high blood pressure increases the risk for maternal and fetal complications among pregnant women.

Sustainable improvements in high blood pressure prevalence and control across the entire city take time, but we can make meaningful progress if we activate and unify stakeholders across all sectors.

High blood pressure is a major threat to New Yorkers that is far too common and must be addressed. This plan will pave the way for NYC to reduce the dangerous rates of high blood pressure in our most neglected neighborhoods and address the inequities affecting underresourced communities, including communities of color and those living in high-poverty neighborhoods. It's time for New York City to Take the Pressure Off!

A handwritten signature in black ink, appearing to read 'Sonia Angell', written in a cursive style.

Dr. Sonia Angell

Chair, Take the Pressure Off, NYC! Steering Committee
Deputy Commissioner, Division of Prevention and Primary Care
New York City Department of Health and Mental Hygiene



Executive Summary

More than one in four New Yorkers report having hypertension, also known as high blood pressure, and many do not know they have it.

High blood pressure is a key contributor to heart disease and stroke, two conditions that make up more than one in five premature deaths among adults in NYC.^A In addition to early death, uncontrolled high blood pressure can lead to many health complications, including kidney disease, sexual dysfunction and vision loss.¹ Despite gains in other chronic disease-related areas — such as reductions in smoking rate — high blood pressure prevalence and control rates have stayed the same.^{B,C}

Common risk factors that cause high blood pressure, such as poor diet, inadequate physical activity and excess alcohol use, are influenced by the conditions in which people are born, live, learn, work, play and age. While all New Yorkers are at high risk for high blood pressure, certain populations are more heavily impacted, including Black and Latino New Yorkers and those in high-poverty neighborhoods.^B These populations bear a disproportionate burden of disease due to conditions caused by unjust social and structural systems. Underresourced and low-income neighborhoods may have environments that create unhealthy conditions, such as limited access to healthy foods and safe opportunities for physical activity, further increasing risk for high blood pressure. As a result, many New Yorkers are on an accelerated trajectory toward poor health.

High blood pressure also places an avoidable and substantial strain on the health care system. High blood pressure costs the United States \$53 billion each year in health care services, medications and missed days of work.² In 2014 alone, New Yorkers spent half a million days in the hospital due to high blood pressure, heart disease and stroke.^D

All New Yorkers, including institutions and organizations, must work together to effectively address high blood pressure and its related inequities. Toward this end, the NYC Health Department launched the first citywide, multisector high blood pressure initiative, Take the Pressure Off, NYC! (TPO, NYC!). This initiative brings together a coalition of more than 100 stakeholders from faith- and community-based organizations, employers, health care systems, pharmacies, organized labor, health insurance payers, government and many other sectors. The coalition's recommendations outlined in Pages 28–34 of this report lay the foundation for NYC's first coordinated response to high blood pressure, and focus on collaborating in three key areas:

- Raising New Yorkers' awareness of high blood pressure, understanding of the disease and individual risk
- Creating environments that promote heart-healthy behaviors
- Supporting treatment adherence, including medication and health behavior modification

TPO, NYC! Coalition members will advance these recommendations with a unified vision of reducing premature mortality from heart disease and stroke, while eliminating persistent health inequities.

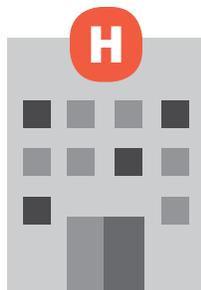


High Blood Pressure in New York City

High Blood Pressure is a Major Threat to New Yorkers

Hypertension, also known as high blood pressure, is a major risk factor for heart disease and stroke, which are leading causes of death in NYC.^A An estimated 25 to 50% of all cardiovascular deaths can be attributed to high blood pressure,³ which often has no symptoms. Uncontrolled high blood pressure damages blood vessels and organs, resulting in other serious complications, such as kidney disease, vision loss and sexual dysfunction.¹ In pregnant women, it can lead to preterm birth and increase risk for maternal and fetal complications, including low birth weight and infant death.⁴

High blood pressure, and the damage it causes, presents an enormous burden to New Yorkers, their families and their communities. In 2014, there were nearly 8,000 hospitalizations for high blood pressure and 90,000 hospitalizations for heart disease and stroke combined, totaling half a million hospital days.^D In 2016, there were nearly 18,000 deaths among adults (about 3,000 among adults younger than 65) due to heart disease and stroke, making these the first and fourth leading causes of death in NYC, respectively.^A Finally, high blood pressure costs the United States \$53 billion every year, including the cost of health services, medications and missed work days.²



8,000

NYC hospitalizations for
high blood pressure



90,000

NYC hospitalizations for
heart disease and stroke

Definition of Hypertension⁵

Hypertension, also known as high blood pressure, occurs when the force of blood pushing against the walls of your blood vessels is consistently higher than it should be.

Blood pressure is reported with two numbers, one written over the other. The top number, systolic blood pressure, reflects the amount of pressure in your arteries when your heart squeezes to pump blood. The bottom number, diastolic blood pressure, reflects the amount of pressure in your arteries when your heart relaxes between heartbeats.

Example:

140 Systolic Blood Pressure
90 Diastolic Blood Pressure

Blood Pressure Levels⁶

NORMAL

Systolic: less than 120 mmHg
Diastolic: less than 80 mmHg

ELEVATED

Systolic: 120–139 mmHg
Diastolic: 80–89 mmHg

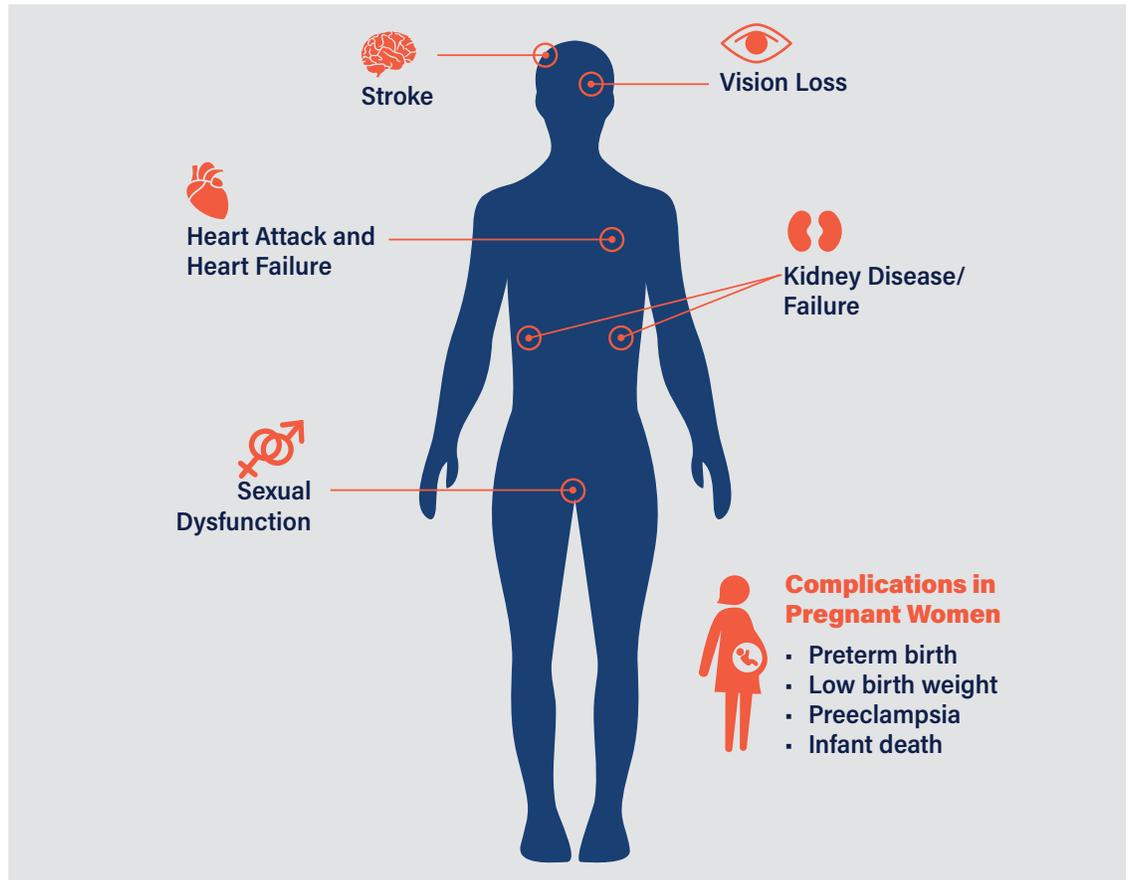
HIGH

Systolic: 140 mmHg or higher
Diastolic: 90 mmHg or higher

Note: The 2017 Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults* lowered the threshold for diagnosis of hypertension to systolic blood pressure (SBP) \geq 130 or diastolic blood pressure (DBP) \leq 80 mmHg (millimeters of mercury).⁷ Some health care providers may use different numbers to diagnose high blood pressure.

*Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol.* 2017.

Figure 1. How High Blood Pressure Can Affect Your Body¹



Note: Adapted from the American Heart Association.

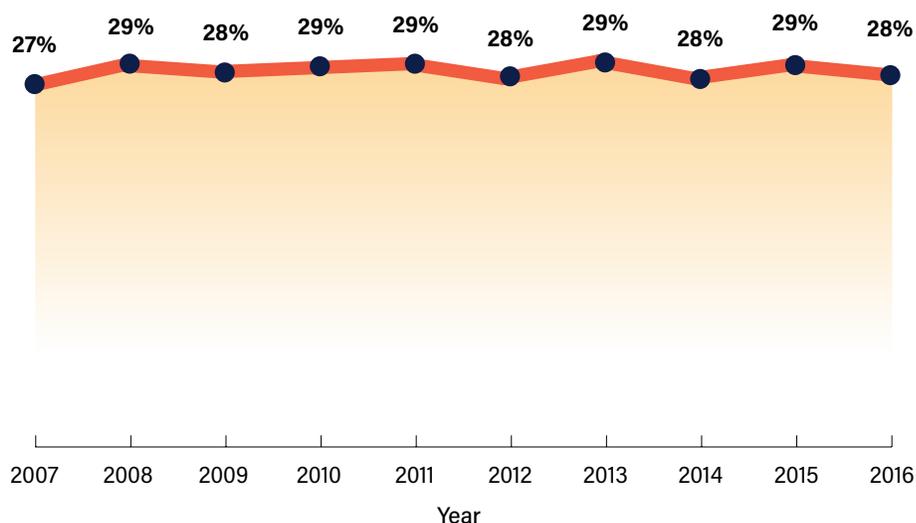
Too Many New Yorkers Have High Blood Pressure



More than one in four NYC adults report having high blood pressure

In 2016, more than one in four NYC adults, an estimated 1.8 million, reported having high blood pressure;^b many more do not even know they have it. High blood pressure is far too common, and between 2007 and 2016, there was no decrease in high blood pressure prevalence rates in NYC (Figure 2). In addition, high blood pressure usually has no symptoms, so it may easily go unnoticed.⁸ It is vital to bring awareness to the issue of high blood pressure so New Yorkers understand their individual risk.

Figure 2. Percent of Adult New Yorkers With High Blood Pressure^b



Many New Yorkers With High Blood Pressure Do Not Have It Under Control

Definition of Controlled Blood Pressure⁹

Systolic:
< 140 mmHg

Diastolic:
< 90 mmHg

For those who have high blood pressure, identifying and controlling are essential. A treatment regimen that combines health behavior modification and medications can reduce the risk of complications from uncontrolled blood pressure.⁷ Despite the availability of effective medication, the level of controlled high blood pressure remained largely unchanged at about two-thirds, between 2012 and 2016, based on data from several hundred primary care practices.^c Many factors contribute to a person's ability to control their blood pressure, including access to quality health care and medications, neighborhood conditions, and social supports.

Note: New high blood pressure treatment guidelines were published in 2017.⁷ Some health care providers may use different numbers to define controlled blood pressure.

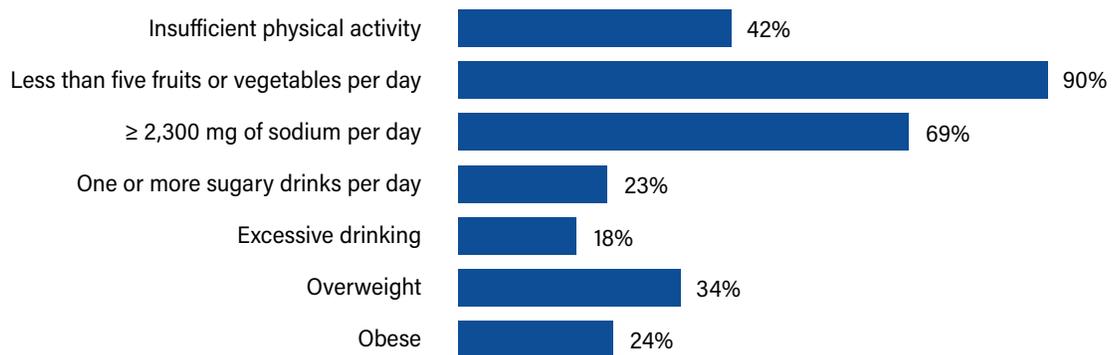
Causes of High Blood Pressure

There are many risk factors that contribute to the onset of high blood pressure over the course of one’s lifetime. Individual risk factors include eating an unhealthy and high-sodium diet, not getting enough physical activity, drinking excess alcohol, and being overweight or obese.¹⁰ Figure 3 displays common risk factors that contribute to high blood pressure in NYC. These risk factors can also make it hard to keep blood pressure controlled once diagnosed.¹¹

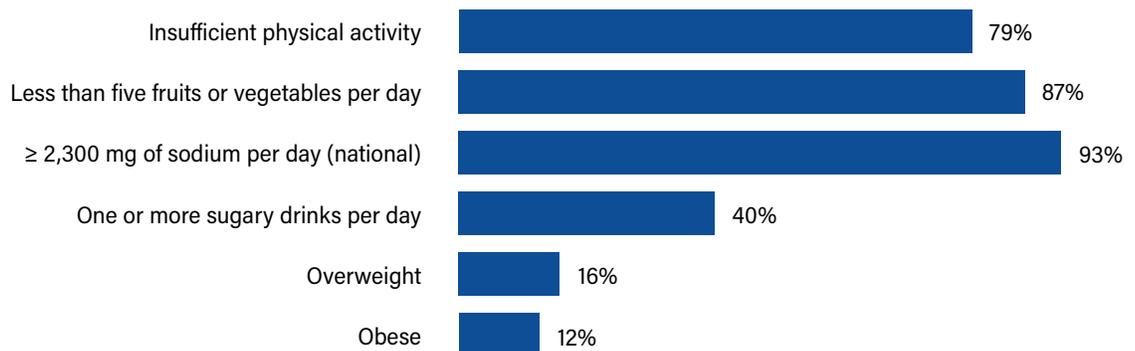
- 90% of adults and 87% of youth do not eat enough fruits and vegetables.^{B,E}
- 42% percent of adults and 79% of youth do not engage in enough physical activity.^{B,E}
- 58% of adults and 28% of youth are overweight or obese.^{B,E}
- Two-thirds of adults consumed more sodium than the recommended limit per day (< 2,300 mg/day) for the general population, with Black and Latino New Yorkers consuming more sodium per day than White New Yorkers.^F
- 23% percent of adults and 40% of youth consume one or more sugary drinks a day.^{B,E}

Figure 3. High Blood Pressure Risk Factor Distribution in NYC

Risk Factor Prevalence Among NYC Adults^{B,F}



Risk Factor Prevalence Among NYC Youth^E / National Youth^G



Heart-healthy behaviors have been shown to lead to a reduction in blood pressure. Figure 4 shows how much change can result when individuals follow these recommended health behavior modifications.

Figure 4. Recommended Health Behavior Modifications for Improving Blood Pressure¹²

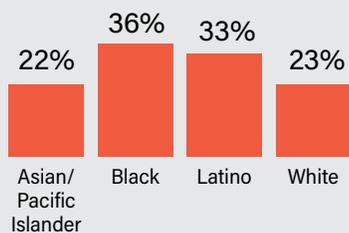
Health Behavior Modification	Recommendation	Approximate Systolic BP Reduction
Weight reduction	Maintain a normal body weight (body mass index 18.5–24.9 kg/m ²). If overweight or obese, weight loss of 5 to 10% can improve blood pressure.	3–4 mmHg/5kg
Dietary Approaches to Stop Hypertension (DASH) eating plan	Consume a diet rich in fruits, vegetables and low-fat dairy products, with a reduced content of saturated and total fat.	8–14 mmHg
Dietary sodium reduction	Reduce dietary sodium intake to less than 2,300 mg of sodium per day.	2–8 mmHg
Physical activity	Engage in at least 30 minutes of moderate physical activity (such as a brisk walk) at least five days per week.	4–9 mmHg
Moderation of alcohol consumption	Limit alcohol consumption to no more than two drinks per day for most men, and no more than one drink per day for women (one drink = 12 oz. beer, 5 oz. wine or 1.5 oz. spirits).	2–4 mmHg

Smoking cessation is recommended for overall cardiovascular risk reduction.

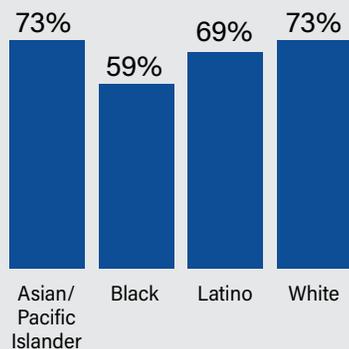


Figure 5. Prevalence and Control of High Blood Pressure by Race and Ethnicity

Percent of NYC Adults Self-Reporting High Blood Pressure by Race and Ethnicity, 2016



Percent of Adults in Care With Controlled Blood Pressure by Race and Ethnicity, 2016^c



Health Inequities Across NYC: High Blood Pressure, Heart Disease and Stroke

Although high blood pressure is prevalent across the city, higher rates are seen among certain populations. Individuals with specific conditions have increased rates of high blood pressure, for example:

- Adults who report being depressed were nearly twice as likely to report having high blood pressure than those who did not report being depressed. (48% vs. 26%).^B
- Among adults who have diabetes, 70% had high blood pressure.^B
- Among adults who are obese, 43% had high blood pressure.^B

Other differences in high blood pressure rates are observed in race and ethnic groups and neighborhood poverty level. In NYC, Black and Latino adults and those living in high-poverty neighborhoods are more likely to report having high blood pressure, as compared to other race and ethnic groups.^B In addition, Black adults in treatment for high blood pressure are less likely to have controlled blood pressure compared with White, Asian and Latino New Yorkers in treatment (Figure 5).^C The prevalence of high blood pressure is 1.4 times higher among adults living in very high-poverty neighborhoods than those living in low-poverty neighborhoods (34% vs. 24%).^B

People in high-poverty neighborhoods have higher exposure to risk factors that cause high blood pressure. Uncontrolled high blood pressure can lead to premature mortality or early death. Racial, ethnic and poverty-related differences in prevalence and control of high blood pressure mean that some populations experience a higher rate of premature mortality due to heart disease and stroke (Figure 6).

Figure 6. Premature Death Rate from Heart Disease and Stroke, New York City, 2012–2016^A

2.3x Adults living in **very high poverty neighborhoods** were 2.3x more likely to die prematurely due to heart disease than those in very low-poverty neighborhoods (354.9 vs. 154.8 per 100,000).

1.9x **Black adults** were 1.9x more likely to die prematurely due to heart disease than White adults (78.4 vs. 41.7 per 100,000).

3.1x **Black adults** were 3.1x more likely to die prematurely due to stroke than White adults (9.9 vs. 3.2 per 100,000).

1.9x **Latino adults** were 1.9x more likely to die prematurely due to stroke than White adults (6.2 vs. 3.2 per 100,000).

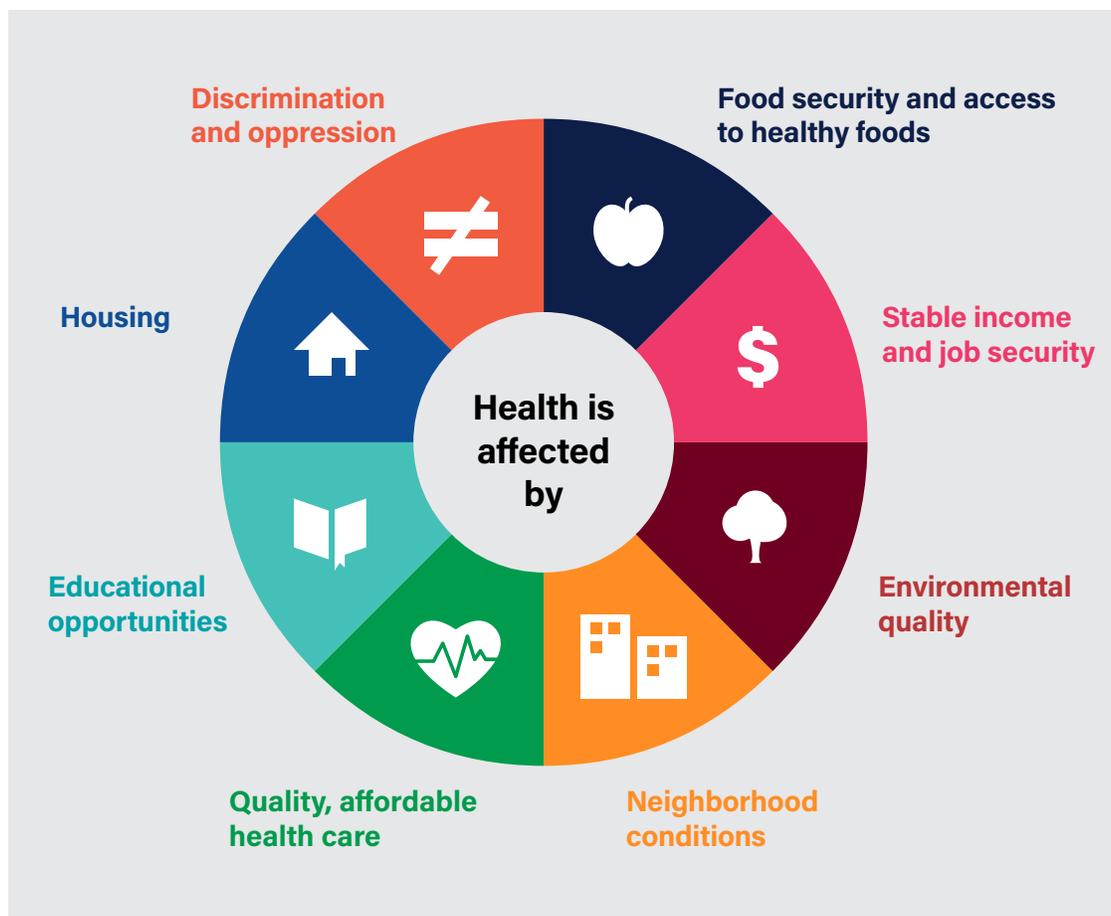
What Causes Inequities

Common risk factors for high blood pressure (Figure 3) and the ability to make recommended health behavior modifications (Figure 4) are influenced by the conditions in which people are born, live, learn, work, play and age. These latter conditions are called social factors that influence health, often referred to as social determinants of health (Figure 7).¹³

All individuals are exposed to risk factors for high blood pressure at different levels, but some have higher exposure than others because of the social factors that influence health. For example, a person who lives in a neighborhood with few parks that are safe to exercise and play in may not engage in physical activity, which is a risk factor for high blood pressure.

Greater exposure to risk factors can create differences in health outcomes. Differences in health outcomes that are rooted in social and structural injustices, such as structural racism or racial bias across institutions, are referred to as health inequities.¹⁴ These inequities result from historical policies that have been made.

Figure 7. Common Social Factors that Influence Health¹⁵



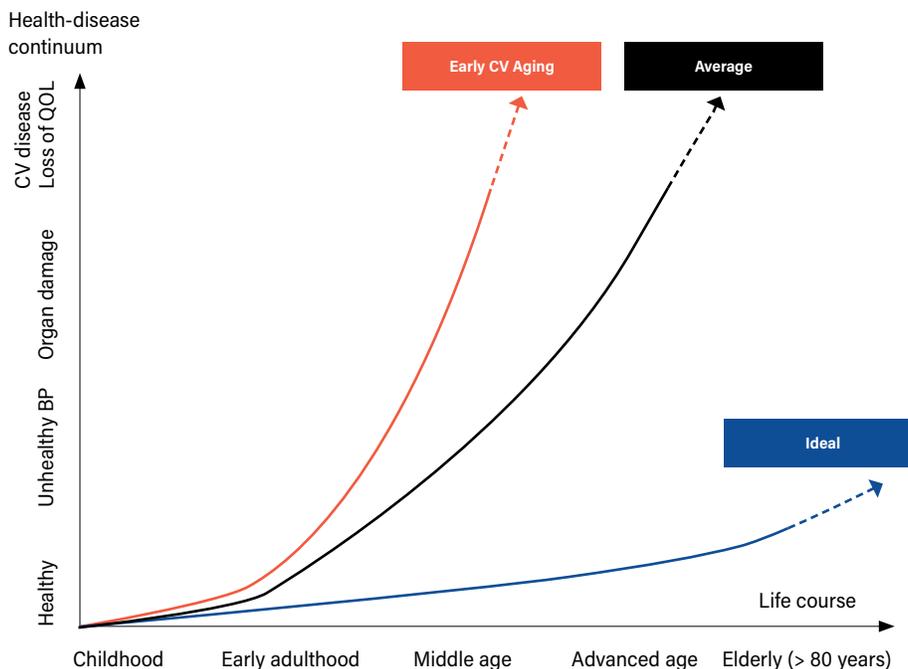
High Blood Pressure Over the Life Course

These social factors can influence risk for high blood pressure in the short and long term.

In Figure 8, the ideal life course (blue curve) represents the trajectory of an individual who maintains a healthy blood pressure throughout their life. The black curve is the average life course for an individual. The accelerated life course (red curve) represents the life course of an individual who experiences higher exposure to risk factors for high blood pressure. Individuals on the accelerated life course have worse outcomes earlier and over the course of their lives.

Those on the average and accelerated courses experience negative consequences of high blood pressure, such as a decrease in quality of life. The ideal trajectory allows for a longer and healthier life. To eliminate the difference between the red and black curves, and bend both toward the blue, NYC has to reduce high blood pressure, equitably, across the life course.

Figure 8. High Blood Pressure Over the Life Course



Adapted from The Lancet Commission on Hypertension.¹⁶

CV: Cardiovascular

QOL: Quality of life

BP: Blood pressure

The Environment and Prevention of High Blood Pressure

A New Yorker's environment — such as the food environment and the physical or built environment — can influence their exposure to risk for high blood pressure over their life course:

Food environment. A healthy diet is rich in fruits, vegetables, whole grains and low-fat dairy products, with limited consumption of alcohol and foods high in sodium, saturated fat and added sugars.¹⁷ The availability of food products, specifically those high in added sugars and sodium, which are two major nutrients of concern, are influenced by the food supply and choices made by the food industry. Sodium is readily available in processed and restaurant foods, and individuals often underestimate sodium content in restaurant foods.¹⁸ In most people, when salt is reduced, blood pressure decreases.¹⁹ Sugary drinks are a leading source of added sugars in the diet.²⁰ Having fewer sugary drinks can help people maintain a healthy weight and a heart-healthy diet.²⁰ In some neighborhoods, unhealthy foods are easier to get and more widely promoted by the food industry than in other neighborhoods. This can make it more difficult to make the heart-healthy choice. Removing unhealthy foods, such as sugary drinks and high-sodium products, from environments such as schools and workplaces can support healthier choices.

Physical or built environment. Neighborhood and workplace conditions affect opportunities for physical activity. The availability of parks and worksite wellness programs, as well as the safety of a neighborhood, can influence health outcomes. Engaging in regular physical activity is an important component of maintaining a healthy weight and reducing risk for heart disease and stroke.²¹ A lack of physical activity opportunities, particularly those that are safe and accessible, may negatively influence a person's ability and decision to engage in physical activity.



The environments where New Yorkers are born, live, learn, work, play and age influence their choices and their ability to engage in heart-healthy behaviors. A single-sector approach will not result in large-scale impact. A multisector approach is needed to influence and improve the food and physical environment and support New Yorkers in leading a heart-healthy life.

Medication Adherence, a Key Factor in Controlling Blood Pressure

Medication adherence — taking medicine as prescribed by a doctor — is essential for the control of any chronic disease, including high blood pressure.²² While comprehensive medication adherence data for all New Yorkers with high blood pressure is not available, data on NYC Medicaid enrollees with high blood pressure demonstrates that fewer than two-thirds (63%) take their medication as prescribed by their health care provider.^H Many factors, across the clinical, community and individual levels make it difficult for people to take their medications regularly. These factors include barriers to understanding medication regimen, unwanted side effects and lack of affordability, among others (Figure 9).

Differences in access to quality and affordable health care can also create worse outcomes. Individuals with limited access to this resource may not be able to obtain necessary medications. For those in care, provider behavior — such as inadequate communication about the purpose of medications or the out-of-pocket costs of health care coverage policies — can create obstacles to medication adherence. Specifically, this can make it difficult for an individual to understand how to take medications, obtain them at a low cost and get an adequate supply — increasing the likelihood they will miss doses. For this reason, it is particularly important that sectors that influence the barriers outlined in Figure 9 address medication adherence.



Figure 9. Barriers to Medication Adherence^{23,24}

Patient



- Knowledge and beliefs about the disease and medications
- Comprehension and literacy level
- Physical limitations and living conditions
- Time (getting medications, seeing the provider, etc.)
- Coexisting medical and mental health conditions
- Medication acceptability (number of medications, complexity of regimen, cost, side effects)

Provider



- Inadequate knowledge regarding ways to improve adherence
- Prescribing complex regimens
- Lack of patient-provider trust
- Lack of incentives or time to provide counseling
- Inadequate communication about the purpose of medications, side effects, cost challenges, etc.

Pharmacy



- Prescriptions filled at different times and pharmacies
- Lack of incentives or time to provide counseling

System



- Out-of-pocket costs (medications, visits, devices)
- Limited and changing medication availability through insurers
- Fragmented care and data systems that hinder communication and information transfer between providers
- Limited availability of qualified providers
- Approval requirements to get services

A Two-Pronged Approach for NYC to Prevent and Control High Blood Pressure

To optimize New Yorkers' health across their life course and protect their hearts, a two-pronged approach is needed to prevent and control high blood pressure. It combines a population-wide approach to reduce blood pressure with a targeted-treatment approach for those at high risk. The population-wide approach can reduce New Yorkers' risk of developing high blood pressure, while the targeted-treatment approach addresses control in those who already have high blood pressure.

Figure 10. Opportunities for Intervention

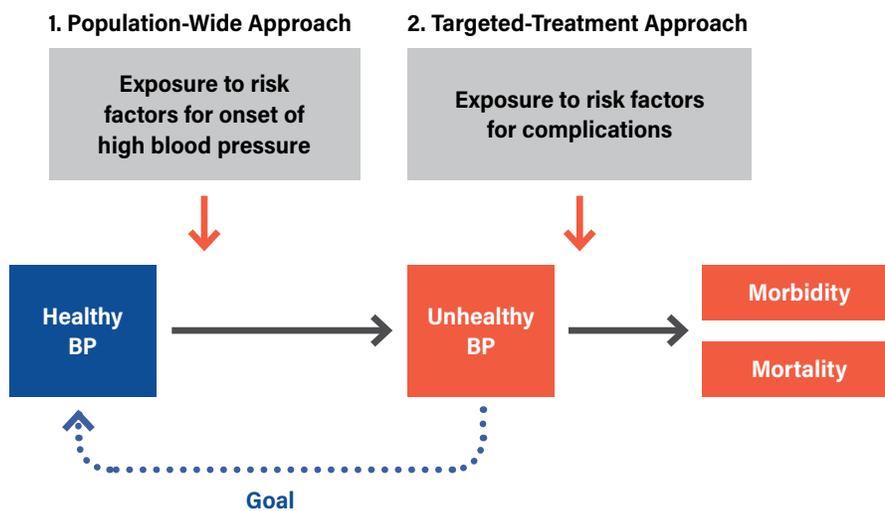


Figure 10 shows two critical opportunities for intervention, which can be made at the individual, community or systems level.

1. Intervening *before* blood pressure becomes unhealthy can help a person stay at a healthy blood pressure and avoid unhealthy blood pressure altogether.
2. Intervening *after* blood pressure becomes unhealthy can help a person avoid complications or death due to uncontrolled blood pressure — ideally, moving them back to a healthy blood pressure.





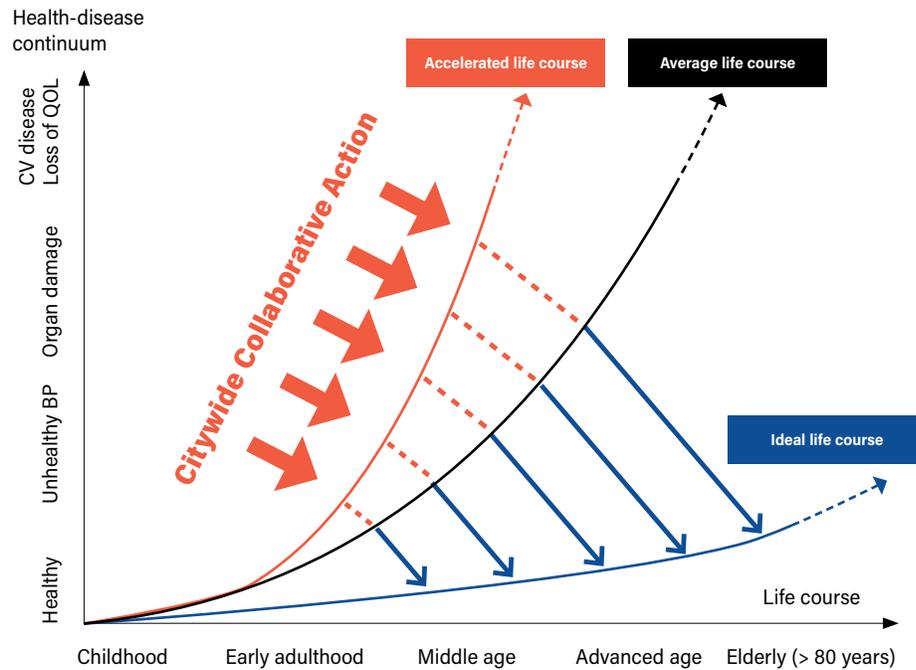
Building the First Citywide High Blood Pressure Initiative

Take the Pressure Off, NYC!

NYC Needs Citywide, Collaborative Action to Address High Blood Pressure

No one organization or sector can single-handedly address the problem of high blood pressure in NYC. Only a coordinated, multisector effort can ultimately drive all New Yorkers toward the ideal life course (Figure 11), free of high blood pressure and its complications. To achieve this population-wide impact, New Yorkers and the organizations that serve them must work together to change high prevalence rates, improve control and address related health inequities.

Figure 11. Citywide Coordinated Action and the Life Course



Adapted from The Lancet Commission on Hypertension.¹⁸
 CV: Cardiovascular
 QOL: Quality of life
 BP: Blood pressure

A Model for Success in NYC: A Case Study on the Reduction of the Smoking Rate

NYC has the power to effectively take on high blood pressure as shown by successful approaches in other areas of public health, such as smoking. Smoking and high blood pressure are leading causes of death in the United States.²⁵ While NYC has greatly reduced smoking rates, high blood pressure prevalence remains high. Sustained, comprehensive tobacco control efforts over the last decade have significantly reduced smoking rates.

These efforts made it harder to smoke and easier to quit by increasing excise taxes and passing smoke-free air laws, using population-wide cessation services and running hard-hitting media campaigns (Appendix 1 – NYC Case Study: Reducing Smoking).²⁶

These coordinated efforts also applied a two-pronged approach, encouraging current smokers to quit while discouraging others from using tobacco products in the first place. The city's combined response resulted in a one-third reduction in the adult smoking rate between 2002 and 2016, from 19.2% to 13.1%.^B

Preparing for Action

To address high blood pressure in NYC, the Health Department considered how stakeholders could work together to create a multisector, citywide initiative. In addition to consulting experts within the Health Department, the following foundational research and analyses guided this process:

1. Focus groups with New Yorkers to understand perspectives on high blood pressure awareness, attitudes and beliefs
2. Research about successful population models to reduce high blood pressure across the country and around the world, including their metrics and goals (see Appendix 2)
3. Analysis of existing data to further detail the burden of high blood pressure, its magnitude and opportunities to intervene in NYC
4. Interviews with experts, researchers and leaders from various sectors, including but not limited to, government agencies, health care organizations, pharmacies, organized labor, community- and faith-based organizations and academic institutions

Building the City's First Multisector High Blood Pressure Coalition

In December 2016, the Health Department announced it would convene stakeholders and develop a citywide plan to reduce high blood pressure (Appendix 3). The Health Department identified the sectors needed to create change where New Yorkers live, learn, work, play and age (Figure 12). While each sector actively contributes to addressing high blood pressure in their own areas of work (Appendix 4), by working together they can make a larger impact on health outcomes for all New Yorkers.

Figure 12. Sectors Identified for Citywide, Collaborative Action



The Health Department first formed a steering committee made up of 34 representatives from 10 sectors (see Acknowledgments on Page 37 for the list of members and their organizations). This expert committee met three times over two months to determine how to achieve the following:

- Build a framework for a citywide initiative to address high blood pressure
- Convene a multisector coalition of stakeholders for coordinated action
- Develop an inaugural plan for the initiative



Photo of the first convening of the steering committee.

From left to right: Lawrence Krakoff, Ilana Aminov, Roger Paganelli, Dave Chokshi, Amanda Parsons, Lorraine Ryan, Hermon Darden, David Shih, Susan Beane, Joseph Ravenell, Vincent Marchello, Brian Bobby, Deepa Kumaraiah, Craig Hersh, Robert Kaplan, Amanda Dunker, Robin Vitale, Van Dunn, Claire Levitt, Lorraine McDonald, Eduardo Sanchez, Sonia Angell, Paul Zagami, Diane Ferran, Meryl Weinberg, David Siscovick, Nancy Shannon, Kimberly Henderson, Richard Park

Three Key Areas for Collaboration

Foundational research and steering committee input both made clear that even though there was a broad range of existing activities to reduce high blood pressure, most occurred in isolation. This established the need to focus collective action on three key areas, with an underlying principle of advancing health equity.

Key Area	Rationale
<p>Raise awareness of high blood pressure</p>	<p>High blood pressure is a dangerous public health threat and is often underrecognized because it usually presents no symptoms. New Yorkers should know about the dangers of high blood pressure and how to prevent or control it. High blood pressure messaging by organizations tends to be intermittent, limited in reach and not aligned. No organization or sector can single-handedly and effectively reach the diverse communities of NYC. By sharing, coordinating and aligning messaging, organizations can amplify their reach with messages about high blood pressure that are clear, actionable and culturally competent. This will help increase awareness of high blood pressure, and how to prevent and control it, among <u>all</u> New Yorkers.</p>
<p>Create an environment that promotes heart-healthy behaviors</p>	<p>Most New Yorkers do not meet heart-healthy behavior recommendations. Improving the food and built environments, and ensuring equitable access to resources such as health care services, is necessary to make the healthy choice the easy choice for <u>all</u> New Yorkers. No sector is able to accomplish this change on its own. This can only be accomplished through targeted efforts across sectors, with the goal of making changes where New Yorkers are born, live, learn, work, play and age.</p>
<p>Support treatment adherence</p>	<p>Too many New Yorkers with high blood pressure do not have it under control. Treatment includes heart-healthy behaviors and medication, both of which require long-term adherence to ensure blood pressure control. Adherence can be impacted by many barriers at the individual, community and systems levels. Stakeholders across these levels must work together to ensure that <u>all</u> New Yorkers have the understanding and resources they need to adhere to their treatment plan.</p>

Convening the Coalition

Following the guidance of the steering committee and internal experts, the Health Department created and convened the first-ever citywide high blood pressure coalition on March 29, 2017. The event brought together more than 100 participants from 13 sectors. Participants split into work groups to brainstorm strategies to advance the three key areas for collaboration. Each work group included broad representation from all sectors and was co-chaired by a steering committee member and a leader from the Health Department.

The work groups met regularly over seven weeks to develop strategic recommendations, including parallel work streams for a strategic payer initiative (health insurance coverage) and monitoring and metrics (surveillance and evaluation). The result is a unified vision, outlined in Pages 28–34, that will guide Take the Pressure Off, NYC!

Figure 13. Coalition Structure

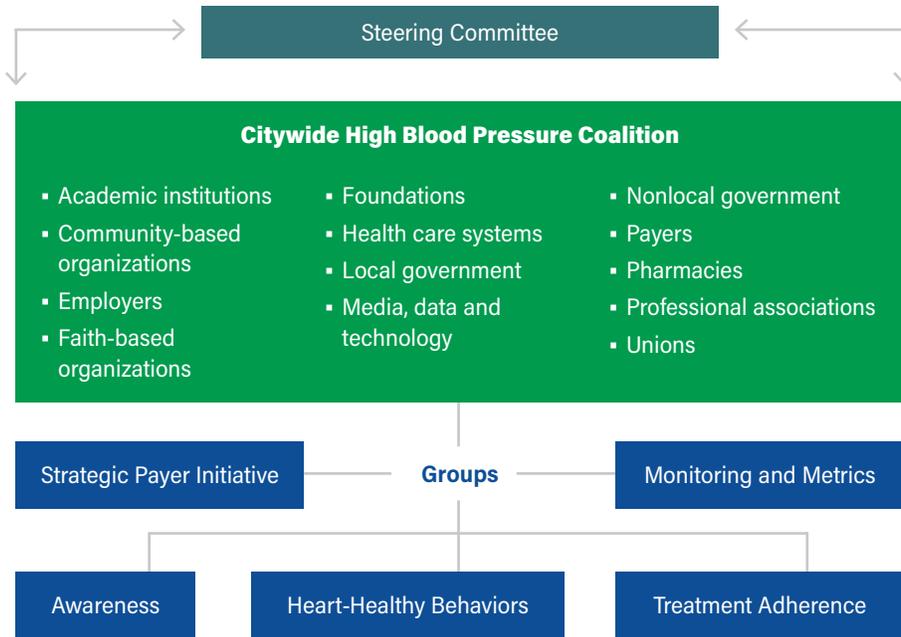


Photo of March 29, 2017, Citywide High Blood Pressure Coalition Meeting.

From left to right: Mark Broadhurst, Suleiman Konate, Ted Anastiou, Verna DuBerry Ademu-John, Laena Orkin-Prol, Jody Stoll, Devin Madden, Mary T. Bassett, Allan Wright, Howard Beckman, Debbie Lester, Mark Broadhurst, Jonathan Hayes, Natalie Dabney, Amanda Ascher, Grace Chung, Celia Shmukler, Chris Pernel, Andrew Moran, Lawrence Krakoff, Hang Pham-Singer, Ronnie Moore, TPO, NYC! Coalition, Allan Wright, Patrick Tindana, April Koehler, Karla Granado, Abena Maranga, Sarah Shih, Susan Beane, Howard Beckman, Sonia Angell, Craig Hersh

The Citywide, Collaborative Plan to Take the Pressure Off, NYC!



Vision

Reduce premature mortality from heart disease and stroke, and eliminate related health inequities.



Mission

New Yorkers across all communities will come together to prevent and control high blood pressure.



Objective

Reduce raised blood pressure^E in NYC by 15% by 2022.

The vision, mission and objective will be advanced through three key areas and two intersecting work streams:

Key Areas:

- 1) High blood pressure awareness
- 2) Heart-healthy behaviors
- 3) Treatment adherence

Intersecting Work Streams:

- 4) Strategic payer initiative
- 5) Monitoring and metrics group

1. High Blood Pressure Awareness

Vision for Key Area

All New Yorkers will know and understand their blood pressure numbers, why high blood pressure is dangerous and how to get care for high blood pressure.

Strategies

1. Increase awareness among New Yorkers about why blood pressure matters and what to do about raised blood pressure numbers.
2. Empower New Yorkers to check their blood pressure and know their numbers.
3. Empower New Yorkers with high blood pressure to seek care.

Initial Activities	Sectors	Strategies
Coalition members will use existing internal and external communication channels to widely distribute high blood pressure messaging.	City agencies • Community-based organizations • Faith-based organizations • Health care systems • Pharmacies	1, 2, 3
Coalition members will increase opportunities for New Yorkers to check their blood pressure in the community by placing free-to-use kiosks or providing free blood pressure checks in the community.	City agencies • Foundations • Pharmacies • Professional societies and associations	2, 3



2. Heart-Healthy Behaviors

Vision for Key Area

All New Yorkers will live, work, learn and play in environments where preventing and managing high blood pressure is the easy choice.

Strategies

1. Increase New Yorkers' knowledge of heart-healthy behaviors that can help prevent high blood pressure.
2. Increase availability and access to healthy foods and decrease access to unhealthy foods, such as those high in sodium and sugary drinks.
3. Increase access to services that support heart healthy behaviors (Figure 4) by strengthening community and clinical linkages.

Initial Activities	Sectors	Strategies
Coalition members will promote healthier workplace food environments, which can include adopting standards for food served at meetings, events, and other places, or sold in vending machines.	City agencies • Community-based organizations • Employers	1, 2
Coalition members will promote farmers markets and incentivize and prescribe fruits and vegetables through programs such as Health Bucks.	City agencies • Community-based organizations • Foundations • Health care systems	1, 2, 3
Coalition members will promote Dietary Approaches to Stop Hypertension (DASH) practices as part of other activities, including nutrition education, food access programming and guidance on modifying health behaviors.	City agencies • Community-based organizations • Foundations • Health care systems • Pharmacies	1, 2, 3



3. Treatment Adherence

Vision for Key Area

All New Yorkers will have the right treatment, at the right time, to achieve and maintain their goal of optimal blood pressure.

Strategies

1. Build and improve infrastructure to create equitable access to treatment, medications and adherence support.
2. Ensure that New Yorkers can choose heart healthy behavior services in their preferred setting.
3. Ensure that New Yorkers understand and engage in their treatment plan, and feel comfortable communicating with their providers.
4. Build the ability of health care teams to overcome barriers to treatment adherence.

Initial Activities	Sectors	Strategies
Coalition members in clinical and community environments will use tools and data to better promote medication adherence for patients (e.g., reminder aids, language comprehension rules).	Academic Institutions • City agencies • Community-based organizations • Faith-based organizations • Health care systems • Pharmacies • Professional societies and associations	1, 2, 3
Coalition members will promote self-management programs in the clinical and community settings (e.g., chronic disease self-management programs, heart healthy behavior program referrals).	Academic Institutions • City agencies • Community-based organizations • Faith-based organizations • Health care systems • Pharmacies • Professional societies and association	2, 3, 4
Coalition members will facilitate clinical and community partnerships that enable community-based education and counseling (e.g., connecting community-based organizations with medical schools to administer blood pressure checks at community sites, referrals from clinical offices to community organizations and vice versa).	Academic Institutions • City agencies • Community-based organizations • Faith-based organizations • Health care systems • Pharmacies • Professional societies and associations	1, 2, 3, 4
Coalition members will use a standardized clinical protocol that includes a process for diagnosis, treatment and referring of hypertension patients.	Academic institutions • City agencies • Health care systems • Professional societies and associations • Pharmacies	1, 3, 4
Coalition members will design and disseminate a protocol for hypertension management, based on the clinical protocol model, that can be used in the community, non-clinical setting.	Academic institutions • City agencies • Community-based organizations • Faith-based organizations • Health care systems • Pharmacies • Professional societies and associations	1, 4
Coalition members will target providers with best-practice education and training to facilitate provision of optimal treatment and support.	City agencies • Health care systems • Pharmacies	1, 4



4. Strategic Payer Initiative

Key Contribution

To complement the work around the three key areas for collaboration, stakeholders highlighted the need for cross-sector coordination to improve health insurance benefits (medications, interventions and services) for prevention and control of high blood pressure. Although nearly 90% of New Yorkers with high blood pressure have health insurance, local data suggests that there are still one-third of individuals without controlled blood pressure.^c For these reasons, the TPO, NYC! Coalition will continue to evaluate which health insurance-related barriers exist and how to work toward a redesign of health insurance benefits to improve access to health behavior resources and medications for New Yorkers with high blood pressure.

Three types of benefits were identified for targeted efforts, based on evidence-based research, clinical best practices and alignment with national and local initiatives. These three benefits include: coverage of fully automated home blood pressure monitors, health behavior modification services and medication formulary enhancements.* By having the ability to remove barriers to benefits, payers have an opportunity to play a key role in improving access to resources and ultimately reducing blood pressure prevalence and increasing control.

BRIEF GLOSSARY:

- **Health insurance benefits:** The health care items or services covered under a health insurance plan.²⁷
- **Formulary:** A list of prescription drugs covered by a prescription drug plan or another insurance plan offering prescription drug benefits. Also called a drug list.²⁷
- **Payer:** In health care, an entity that assumes the risk of paying for medical treatments. This can include self-insured employers, health plans, unions and government agencies.²⁸

Initial Activities	Sectors
Implement strategies to increase and standardize key benefit coverage across all payers.	City agencies • Employers • Health care systems • Insurance companies • Pharmacies • Unions • Community-based organizations
Implement efforts to educate patients and providers about insurance coverage of key benefits.	City agencies • Employers • Health care systems • Insurance companies • Pharmacies • Unions • Community-based organizations

Key Benefits*

Fully automated home blood pressure monitors without a prior authorization and no cost share.

Health behavior modification services:

- Counseling and programs within and outside the clinical setting to support heart healthy behaviors (Figure 4): disease self-management; maintaining a healthy diet; weight management and physical activity

Medication formulary enhancements:

- All classes of antihypertension medications in no- or low-copay tiers
- Ninety-day supply of high blood pressure medications with at least one refill
- Once-a-day, combination medications (fixed-dose) for high blood pressure

*These key benefits are supported by and/or align with national and state level initiatives and recommendations. This includes American Medical Association, Centers for Disease Control and Prevention Million Hearts Initiative, Centers for Disease Control and Prevention 6118 Initiative, New York State Delivery System Reform Incentive Payment Program, and U.S. Preventive Services Task Force recommendations.

5. Monitoring and Metrics Group

Key Contribution

The multisector nature of the TPO, NYC! Coalition provides a unique opportunity to share data and knowledge to better understand causes of high blood pressure and evaluate the impact of the coalition. The Monitoring and Metrics Group's role is to create the framework for monitoring overall progress of the initiative. The framework will address measures related to coalition engagement and long-term outcomes, such as blood pressure control, hospitalizations and early death. In addition, the group will support development of activity-specific metrics to track implementation progress.

This evaluation will inform future coalition activities and annual TPO, NYC! progress reports, which will be created and disseminated to coalition members and key stakeholders. These progress reports will allow the coalition to track outcomes and set new goals for itself over time.

Activities

Propose metrics and new data sources (where applicable) for monitoring coalition engagement and reach, activity implementation and health outcomes.

Meet with activity groups as they develop their activity-specific metrics.

Advise on the format of reporting feedback.

Potential Sectors

Academic institutions • City agencies • Community-based organizations • Employers • Faith-based organizations • Foundations • Health care systems • Media, data and technology • Nonlocal government • Organized labor • Payers • Pharmacies • Professional societies and associations



Next Steps

The coalition has moved into implementation of activities. The Health Department has assembled activity groups for each key area, the strategic payer initiative, and monitoring and metrics to guide this process. The structure of the coalition (Figure 13) allows for multisector collaboration to advance activities across the key areas (awareness, heart-healthy behaviors, treatment adherence), with the Health Department serving as the convener and coordinator. To better understand the communities and neighborhoods served by the coalition and identify gaps in coverage, the Health Department is routinely assessing coalition composition. An open invitation and focused outreach to nonparticipating organizations, institutions and sectors continues to engage others in TPO, NYC! to maximize reach and impact.

The Health Department will offer technical support, foster relationship building and resource sharing by regularly convening the coalition, publishing annual progress reports and updating the citywide plan as the movement grows.

Conclusion

The TPO, NYC! Coalition is committed to decreasing prevalence and improving control of high blood pressure, and eliminating related health inequities for more than 8 million New Yorkers. By 2022, the TPO, NYC! Coalition aims to reduce raised blood pressure by 15% in NYC. The recommendations in this TPO, NYC! plan are a first step in achieving this goal.

High blood pressure is a leading risk factor for heart disease and stroke, and this plan is a key component of Mayor de Blasio's OneNYC vision to reduce premature mortality. TPO, NYC! not only aligns City priorities, it will influence and advance each of them. High blood pressure affects all New Yorkers at various levels, whether directly or indirectly. As we move closer to our TPO, NYC! goals, we help move the city toward improved health while supporting populations served by other city initiatives. For example, this citywide effort aligns across ThriveNYC, a comprehensive mental health initiative, as New Yorkers with a history of mental health problems are disproportionately affected by high blood pressure. The Health Department's initiatives directly link to the populations impacted by high blood pressure, including strategies for improving health equity and maternal and infant health outcomes and Take Care New York 2020 (TCNY). TCNY is focused on giving all New Yorkers the chance to live a healthier life.

The strategies outlined in this plan acknowledge that many New Yorkers have exposure to different risk factors at different levels. Stakeholders across all sectors must be involved in improving the environments where New Yorkers are born, live, learn, work, play and age.

Through this multisector effort, we will make a citywide impact.

We invite all New Yorkers and organizations to join in this collaborative effort to curtail the dangerous problem of high blood pressure in our communities, and to make NYC a fair and equitable city.

Let's Take the Pressure Off, NYC!



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We thank the following 89 TPO, NYC! Coalition members and stakeholders for contributing ideas and comments during the TPO, NYC! plan development process. We look forward to continued engagement with stakeholders to prevent and control high blood pressure citywide. The opinions expressed in this report should not be construed to be those of any one coalition member.

1199SEIU	Con Edison*	Masjid Aqsa Salam	NYC Health + Hospitals*
1199SEIU Benefit and Pension Fund*	Cornell Tech	Mayor's Office of Labor Relations*	NYC Parks
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Academy of Nutrition and Dietetics	CVS Health*	MetroPlus*	Rite Aid*
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American College of Physicians	Federation of Protestant Welfare Agencies	Mount Sinai Health System	Shared Value Media
American Heart Association*	Fidelis Care*	National Hispanic Medical Association	Sidewalk Labs
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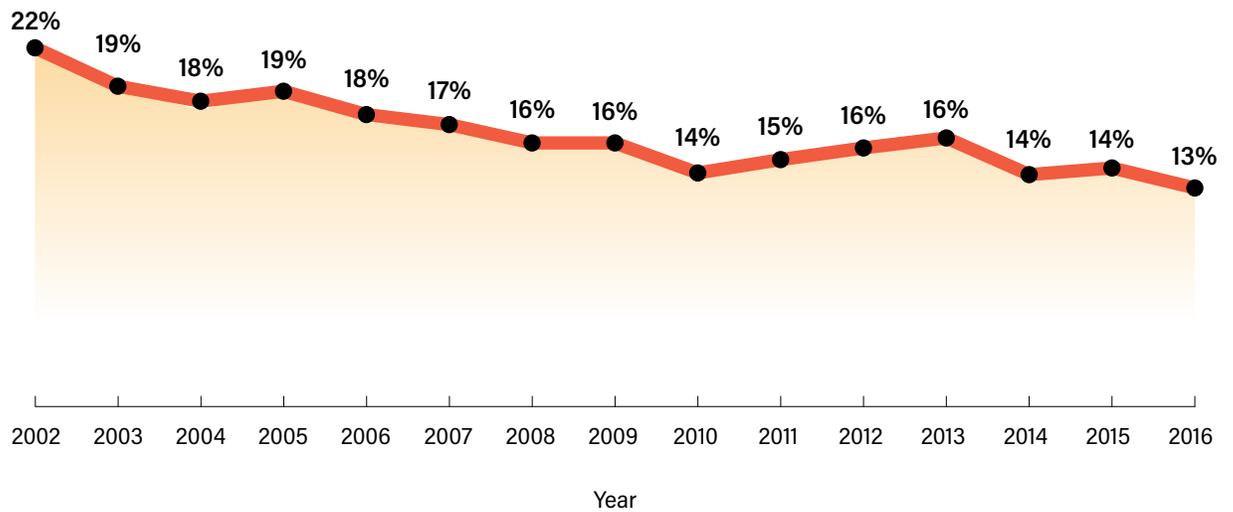


Appendices

Appendix #1

NYC Case Study: Reducing Smoking

Smoking Prevalence Among NYC Adults, 2002-2016^B



Appendix #2

Large-Scale Models for Addressing High Blood Pressure

Across the country and the world there have been successful, large scale models implemented to address high blood pressure. Three themes are evident across these various models: including multisector coordination, addressing and linking community and clinical environments, and working on quality improvement within the clinical setting. Below is a brief summary of select models, including information that was available at the time of this document's development.

Million Hearts

The Centers for Disease Control and Prevention and the Centers for Medicare and Medicaid Services Million Hearts® program provided the cross-sectoral framework for how to address heart disease, stroke and high blood pressure, and highlighted the evidence-based areas to address for highest impact.²⁹

Public Health England

Public Health England in the United Kingdom has created a cross-cutting collaborative group that includes local government, health care commissioners, health care providers and organizations, individuals, community organizations and employers. Their vision and priorities focus on three key areas — prevention, detection and treatment — and highlighted how all sectors could contribute to these priorities.³⁰

Common Ground Health

Through their multisector high blood pressure collaborative and clinical approaches, Common Ground Health, located in Rochester and in the Finger Lakes region of New York, increased blood pressure control rates in one of their target counties from 63% to 71% over the course of their five year program.³¹

Additional models have been implemented in northern California,³²⁻³⁴ Canada,³⁵ Minnesota,³⁶ North Carolina³⁷ and South Carolina.³⁸ Many focused on the clinical aspect of high blood pressure, highlighting the need and benefit of engaging the health care delivery system in prevention and control efforts. These initiatives illustrate that making strides to reduce high blood pressure and improve control rates are possible on a large scale.

Appendix #3

December 2016 Press Release

NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Mary T. Bassett, MD, MPH
Commissioner

FOR IMMEDIATE RELEASE
Monday, December 19, 2016
(347) 396-4177

HEALTH DEPARTMENT RELEASES NEW DATA SHOWING AN INCREASE IN HIGH BLOOD PRESSURE RATES ACROSS NEW YORK CITY

Over one in four New Yorkers report having hypertension (high blood pressure)

As part of Mayor de Blasio's OneNYC plan and Take Care New York 2020, the Health Department will convene key stakeholders and develop a citywide plan to reduce hypertension, a leading contributor to premature mortality

December 19, 2016—The Health Department today published two Epi Data Briefs that point to an increase in hypertension rates across New York City. Hypertension, or high blood pressure, is a leading contributor to heart disease and stroke, two diseases which together account for one in five premature deaths (under age 65) in New York City. In the past decade, the prevalence of hypertension in New Yorkers has increased by 11%. Today, over one in four adults in New York City (estimated 1.8 million people) report having hypertension.

The first Epi Data Brief, "Hypertension in New York City: Disparities in Prevalence," highlights populations that have a greater burden of hypertension and describes how many New Yorkers are not meeting healthy lifestyle recommendations that are important in preventing hypertension and its complications.

The second Epi Data Brief, "Hypertension Hospitalizations and Related Morbidity in New York City," shows that there were nearly 100,000 hospitalizations for hypertension, heart disease or stroke in 2014, totaling over half a million days in the hospital. Both Epi Data Briefs are available [here](#).

As part of [Mayor de Blasio's OneNYC](#) goal of reducing premature mortality by 25% by 2040 and the Health Department's Take Care New York 2020 target of reducing sodium intake among New Yorkers, the Health Department will convene key stakeholders in 2017 to discuss and develop a citywide response to reduce hypertension rates.

"Hypertension is a leading cause of heart disease and stroke. It's a condition the majority of New Yorkers either have or are on track to develop, but it doesn't have to be our destiny," said **Health Commissioner Dr. Mary T. Bassett**. "The reports we released today also highlight the striking disparities in burden of hypertension, in particular among the Black and Latino populations and those living in high-poverty neighborhoods. We have made significant gains in reducing smoking prevalence over the past decade, and we want to see the same in hypertension. The Health Department will be launching a citywide hypertension response to ensure every New Yorker, regardless of race or neighborhood they reside in, has access to the resources and knowledge they need to prevent and control this disease."

"These new data underscore the importance of efforts to better manage hypertension citywide," said **Stanley Brezenoff, Interim President and CEO of NYC Health + Hospitals**. "This is a clarion call to the health care community to better control blood pressure through high-quality outpatient care, which will help prevent avoidable hospitalizations for New Yorkers—an ongoing focus of our public health system. We look forward to partnering with the Department of Health and Mental Hygiene to find innovative solutions."

"Hypertension is a contributing cause to hospitalization for patients across the city," said **Dr. Steven J. Corwin, president and CEO of NewYork-Presbyterian**. "Although we have made some progress in terms of treatments, it remains a growing problem that we as New Yorkers have to work together to address. NewYork-Presbyterian looks forward to working with the Health Department to improve the health of our communities."

"Increasing rates of high blood pressure are of grave concern. We share a common goal with the NYC DOHMH to help people in our communities stay healthy and reduce the prevalence of hypertension," said **Dr. Robert Ostfeld, M.D., M.Sc., cardiologist, director of preventive cardiology at Montefiore Health System and founder and director of the Montefiore-Einstein Cardiac Wellness Program**. "Providers at Montefiore's Wellness Program work with individuals to help them make key diet and lifestyle changes under the care and guidance of our expert, multidisciplinary team. We look forward to continuing to partner with the NYC DOHMH to promote healthier lifestyles."

"The American Heart Association applauds the focus on hypertension in New York City," said **Mitchell Elkind, MD, MS, FAAN, FAHA, a neurologist and spokesperson for the American Heart Association / American Stroke Association**. "Diagnosing and treating high blood pressure with lifestyle counseling and with the right medications can prevent hospital admissions, heart attacks, strokes, heart failure, and premature death. The AHA welcomes any opportunity to work with the New York City Department of Health and Mental Hygiene to control high blood pressure in New York City and optimize cardiovascular and neurological health."

"Hypertension is at the core of more serious cardiovascular disease, a major ailment prominent in communities of color. As such, I believe that Faith-Based Institutions can lead a vital role in helping to curb this trend and can serve as a vehicle for life-sustaining education and information," said **Rev. Dr. Bruce C. Rivera, Chairperson, Bronx Multi-Faith Advisory Group**. "I want to thank DOHMH for its leadership in

advancing this effort and helping to bring about a partnership of organizations that are purveyors of trust and community activism. I look forward to lending a hand in ensuring the success of this initiative and the subsequent community partnership that is formed to promote the same.”

“One of our city government’s great strengths is the Department of Health and its predecessor agencies, which for more than two centuries have taken an active role in protecting New Yorkers from public health threats,” said **Manhattan Borough President Gale A. Brewer**. “I thank Commissioner Bassett and her team for identifying the troubling increase in hypertension and calling attention to this problem’s demographic disparities. I look forward to assisting the Department of Health as it pursues solutions for both.”

“Hypertension is a very common problem and is being identified in an increasingly younger population on Staten Island,” said **Ginny Mantello, MD, Director of Health and Wellness in the Office of Borough President James Oddo on Staten Island**. “Although genetics plays a role, it is clear that lifestyle and diet are a major component. It is often a silent manifestation of underlying untreated medical, behavioral or social conditions. Education, periodic early screening and lifestyle modification significantly delay and even prevent the onset of the disease.”

“High blood pressure is hard to detect, and only about half of all Americans with hypertension have it under control, putting them at greater risk for heart disease and stroke,” said **Assembly Member Richard N. Gottfried, Chair of the Assembly Committee on Health**. “With more and more New Yorkers experiencing high blood pressure over the last decade, the Health Department is right to launch a citywide prevention and awareness initiative to reduce hypertension among New Yorkers, similar to the successful campaign to reduce the number of city residents who smoke.”

“It’s no secret that hypertension causes heart attacks and strokes. I’ve been promoting healthy eating and lifestyles for many years. We must make everyone aware of the risks obesity, high salt content and lack of exercise creates. Let’s make sure every New York family follows a healthy diet and avoids the bad habits that threaten lives,” said **Assembly Member Felix W. Ortiz**.

Among the reports’ highlights:

- Hypertension was more commonly reported among adults who are Black or Latino compared with those who are White (35% and 33% vs. 24%) and those living in very high-poverty neighborhoods compared to those living in low-poverty neighborhoods (32% vs. 24%).
- While hypertension is typically more common among older adults, over one in ten adults younger than 45 years of age reported having hypertension in 2015.
- The report also describes how many New Yorkers are not meeting healthy lifestyle recommendations that are important in preventing hypertension and its complications. For example, in 2010, two-thirds of all adults reported consuming more sodium than the recommended daily limit (< 2,300 mg per day).

- There were nearly 100,000 hospitalizations for hypertension, heart disease or stroke in 2014. More than half (57%) of the hypertension hospitalizations, which are typically preventable with access to regular, high quality primary care, occurred in adults less than 65 years of age, with very high-poverty neighborhoods having 3.5 times the rate among adults living in low-poverty neighborhoods. An important step in decreasing the number of hospitalizations is preventing and controlling hypertension.

New Yorkers can prevent and control hypertension by taking steps to live a heart-healthy lifestyle, such as eating a healthy diet low in sodium (salt), getting active, maintaining a healthy weight, and if prescribed, taking medicines as directed. New Yorkers can also check blood pressure regularly at home or at a local pharmacy. For more information, call 311 to order free copies of our [High Blood Pressure Health Bulletin](#).

The average New York City adult consumes nearly 40% more sodium than the daily recommended limit. High sodium intake can increase blood pressure and the risk of heart disease and stroke. Over 75% of the sodium consumed by Americans comes from packaged and restaurant foods, and even similar foods can contain highly variable amounts of sodium, making it difficult for individuals to lower their sodium intake.

The Health Department this month launched the “[Look Before You Eat](#)” campaign, which reminds New Yorkers to look for the sodium warning icons on menus when dining in chain restaurants throughout New York City. The salt shaker icon — part of the city’s new mandated sodium warning rule for chain restaurants — must be posted next to menu items with 2,300 mg of sodium or more, the total daily recommended limit.

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Appendix #4

Potential Individual Sector Contributions

Health Care Systems

- Implement standard treatment workflows across your institution
 - ↳ Develop/update and implement a treatment protocol that includes:
 - Home (or out-of-office) blood pressure monitoring
 - Medication adherence supports (90-day supply, fixed-dose regimens, pill boxes, reminder aides)
 - Community resource referral including culturally accepted and preferred resources (farmer's markets, Health Bucks, Shape Up, blood pressure checks in the community, Chronic Disease Self-Management Program (CDSMP) and National Diabetes Prevention Program (NDPP) classes)
 - Sodium intake reduction education
 - Use of language appropriate labels and instructions for limited English proficient patients
 - ↳ Develop monitoring plans to track progress in blood pressure control
- Train clinician and nonclinician staff to improve health care delivery and break down barriers to adherence
- Participate in the Health Department's high blood pressure public health detailing
- Advocate for enhanced payer coverage of related benefits (Key Benefits, Page 33)
- Purchase and place blood pressure kiosks in your community including at pharmacies (the Health Department can provide guidance)
- Establish formal partnerships with pharmacists to support medication adherence
 - ↳ Pharmacists interact with consumers as they use the kiosks (all pharmacies eligible)
 - ↳ Institute Collaborative Drug Therapy Management (CDTM) policies as allowed by state law (CDTM allows pharmacists to work with clinical team to titrate medications)
- Adopt institutional food standards
- Strengthen community partnerships to increase channels for resources that support prevention and control of high blood pressure
- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Use a registry for high blood pressure and review by physicians and nonphysicians

Payers

- Assess and improve coverage of high blood pressure-related clinical services (Key Benefits, Page 33)
- Fully automated home blood pressure monitors without a prior authorization and no cost share.
- Health behavior modification services:
 - Counseling and programs within and outside of the clinical setting to support disease self-management; maintaining a healthy diet; weight management; and physical activity
- Medication formulary enhancements:
 - All classes of antihypertension medications in no- or low-copay tiers
 - Ninety-day supply of high blood pressure medications with at least one refill
 - Once-a-day, combination medications (fixed-dose) for high blood pressure

Pharmacies

- Place and promote kiosks in pharmacies when feasible
- Train pharmacists on blood pressure measurement technique and offer to clients
- Train pharmacists in Medication Therapy Management (MTM) through free Health Department training
- Track medication adherence rates for all patients and monitor pharmacy performance
- Create feedback loops with health care systems for out-of-office blood pressure checks (may include CDTM)
- Adopt policies and systems to promote 90-day supply of prescriptions
- Join in advocating for policy coverage priorities identified (Key Benefits, Page 33)

- Work toward reducing barriers to adherence such as promoting the use of language appropriate labels and instructions for limited English proficient patients

Local Employers

- Advocate for and provide benefits that incorporate coverage priorities (Key Benefits, Page 33)
- Implement a worksite wellness initiative on high blood pressure
- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Adopt institutional food standards
- Engage with communities where employees reside through corporate social responsibility initiatives

Community- and Faith-Based Organizations

- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Promote and provide health behavior modification support and resources. This can include becoming:
 - an NDPP or CDSMP site
 - a Shape Up site
 - a Health Bucks distribution site (purchase Health Bucks)
 - a blood pressure check site and providing information for how to seek care if appropriate.
- Assist individuals in overcoming adherence barriers by promoting provider-patient communication
- Strengthen partnerships with pharmacies and health care systems to increase channels for referrals and feedback loops, when appropriate
- Adopt institutional food standards

Organized Labor (Unions)

- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Negotiate terms of health insurance coverage with payers and employers (see payer section)
- Adopt institutional food standards

Foundations

- Adopt institutional food standards and consider worksite wellness programs
- Support high blood pressure related programs
- Build broader base of funders

Media and Technology

- Develop and implement cutting edge technologies and innovative strategies to engage consumers in high blood pressure prevention and control through:
 - High blood pressure awareness
 - Heart-healthy behaviors
 - Treatment adherence technology
- Provide innovative feedback on high blood pressure data collection and sharing

Academic Institutions

- Adopt institutional food standards
- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Provide needed research on evidence-based approaches to prevention and management of high blood pressure
- Support surveillance and evaluation needs to drive policy and program action
- Integrate relevant educational modules (e.g. MTM, effective hypertension management practices)

- Assist with training of health care professionals and primary care staff (e.g. BP measurement)

Professional Associations

- Activate membership as per sector suggestions listed above
- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Distribute Health Department training opportunities (MTM) and related education materials (detailing kits)
- Provide training opportunities (e.g. blood pressure measurement)

State and City Government

- Incorporate high blood pressure messaging into existing internal and external communications and programming
- Implement a worksite wellness initiative on high blood pressure
- Strengthen community partnerships to increase channels for resources that support prevention and control of high blood pressure
- Adopt institutional food standards
- Collect data on high blood pressure prevalence and other related indicators



References

Glossary of Terms

Blood Pressure. The force of blood pushing against the walls of your blood vessels, which carry blood from your heart to other parts of your body.⁶

Diastolic Blood Pressure. The second (bottom) number in your blood pressure measurement, which measures the pressure in your arteries when your heart rests between beats.³⁹

Cardiovascular Disease. Cardiovascular disease refers to a group of disorders of the heart and blood vessels. This includes: high blood pressure, heart attack, stroke, peripheral vascular disease, heart failure, rheumatic heart disease, congenital heart disease and cardiomyopathies.⁴⁰

Exposure. Having come into contact with a cause of, or possessing a characteristic that is a determinant of, a particular health problem.⁴¹

Formulary. A list of prescription drugs covered by a prescription drug plan or another insurance plan offering prescription drug benefits. Also called a drug list.²⁷

Health Disparity. Difference in the incidence, prevalence, mortality and burden of diseases and other adverse health conditions that exist among specific population groups.⁴²

Health Equity. When every person has the opportunity to realize their health potential — the highest level of health possible for that person — without limits imposed by structural inequities.⁴³

Health Inequity. Differences in health outcomes, rooted in social and structural inequities that are unfair and unjust.¹⁴

Health Insurance Benefits: The health care items or services covered under a health insurance plan.²⁷

Heart Disease. Heart disease describes a range of conditions that affect your heart. Diseases under the heart disease umbrella include blood vessel diseases, such as coronary artery disease; heart rhythm problems (arrhythmias); and heart defects you are born with (congenital heart defects), among others.⁴⁴

High Blood Pressure (Hypertension). When your blood pressure, the force of the blood flowing through your arteries, is consistently too high.^{5,6}

Payer: In health care, an entity that assumes the risk of paying for medical treatments. This can include self-insured employers, health plans, unions, government

agencies or uninsured patients.²⁸

Preeclampsia. A sudden increase in blood pressure after the 20th week of pregnancy.⁴⁵

Prevalence. The proportion of a population who have (or had) a specific characteristic in a given time period.⁴⁶

Rate. A measure of the frequency with which an event occurs in a defined population during a specified period of time.⁴⁷

Risk Factor. Any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury.⁴⁸

Self-Management. The ability of the individual (in conjunction with family, community and health care professionals) to manage symptoms, treatments, lifestyle changes, as well as psychosocial, cultural and spiritual consequences of health conditions.⁴⁹

Social Factors that Influence Health (also referred to as Social Determinants of Health). The conditions in which people are born, live, learn, work, play, and age. These conditions affect a wide range of health, functioning and quality-of-life outcomes and risks.¹³

Stroke. A condition that occurs when the blood supply to part of the brain is suddenly interrupted or when a blood vessel in the brain bursts, spilling blood into the spaces surrounding brain cells.⁵⁰

Structural Inequities. This refers to the systemic disadvantage of one social group compared to other groups with whom they coexist. The term encompasses policy, law, governance and culture. The term refers to race, ethnicity, gender or gender identity, class, sexual orientation and other domains.⁵¹

Structural Racism. Racial bias across institutions and society. It is the combination of ways in which racial bias and ideology are embedded and expressed through systems, policies and institutions.⁵²

Systolic Blood Pressure. The first (top) number in your blood pressure reading, measures the pressure in your arteries when your heart contracts to squeeze blood out.³⁹

Treatment Adherence. The extent to which a person's behavior — taking medications, following diet and/or executing lifestyle changes — corresponds with agreed upon recommendations from a health care provider.⁵³

Data Sources

A. NYC Vital Statistics: The Health Department's Bureau of Vital Statistics maintains administrative data on all births and deaths in NYC obtained from birth and death certificates. Indicators include preterm births, teen births (limited to births to women less than 20 years of age), prenatal care, leading causes of death and infant mortality. Mortality data on cause of death are defined by the International Classification of Diseases, Tenth Revision for heart disease (ICD10 = I00-I09, I11, I13, I20-I51) and for stroke (ICD10 = I60-69). In this report, mortality data are restricted to NYC residents. Unless otherwise noted, Vital Statistics data in this report is from 2016. For more information, visit: <https://www1.nyc.gov/site/doh/data/data-sets/vital-statistics-data.page>.

B. NYC Community Health Survey (CHS): The CHS is a telephone survey conducted annually by the Health Department with about 9,000 NYC residents ages 18 and older. Data are age-adjusted to the US 2000 standard population only when comparing groups. The CHS has included adults with landline phones since 2002 and, starting in 2009, has included adults who can be reached by cell phone. Unless otherwise noted, CHS data in this report is from 2016. For more information, visit: nyc.gov/health/survey.

Metric Definitions:

- **Insufficient physical activity:** Did not meet the recommendation of engaging in at least 150 minutes of moderate physical activity per week.
- **Excessive drinking:** Defined as either being a heavy drinker (more than two drinks per day for men or one drink per day for women) or a binge drinker (more than five drinks on one occasion for men or more than four drinks on one occasion for women).
- **Overweight:** Body mass index (BMI) is calculated based on respondent's self-reported weight and height. A BMI between 25.0 and 29.9 is classified as overweight.
- **Obese:** A BMI of 30 or greater is classified as obese.
- **Current depression:** Estimates of current depression were determined using the Patient Health Questionnaire, or PHQ-8, an eight item

screening instrument that assesses the frequency of depression symptoms over the past two weeks. A score of 10 to 24 points, indicative of moderate to severe depressive symptoms, was defined as current depression.

- **Insufficient Fruit and vegetable consumption:** Consumed less than five fruits and vegetables yesterday.
- **Average sugary drink consumption:** Consumed an average of one or more sodas plus sweetened drinks per day.
- **Serious psychological distress (2015):** Composite measure of six questions regarding symptoms of anxiety, depression, and other emotional problems in the past 30 days.
- **Smoking:** Smoking status is defined as being a current, former or never smoker (having smoked less than 100 cigarettes ever).
- **High blood pressure ever:** This is defined as having ever been told by a doctor, nurse or other health professional that they have hypertension, also called high blood pressure.

C. Hub Population Health System (Hub): The Hub is a distributed query network created in partnership between the eClinicalWorks Electronic Health Record vendor and the NYC Department of Health and Mental Hygiene's Primary Care Information Project (PCIP). The Hub allows PCIP to query aggregate data from more than 700 New York City ambulatory care practices that joined PCIP to receive Electronic Health Record implementation and quality improvement support. No patient-level or protected health information is obtained. For the measure of controlled high blood pressure, analysis was conducted among a subset of 300–400 primary care practices that serve ~1,000,000 patients age 18–85 that have had at least one visit for health care each year. Blood pressure control is defined as the proportion of adults age 18–85 who have a diagnosis of hypertension and had at least one visit in the measurement year with a blood pressure reading < 140/90 mmHg. For more information, visit: <https://www1.nyc.gov/site/doh/providers/resources/primary-care-information-project.page>.

Note: For the purpose of this publication, Latino includes people of Hispanic origin, regardless of reported race. Asian/Pacific Islander, Black, and White race categories do not include people categorized as Latino. There is variation in how information about race and ethnicity is gathered and reported across these data sources.

D. New York Statewide Planning and Research

Cooperative System (SPARCS): SPARCS is an administrative database of all hospital discharges reported by New York State (NYS) hospitals to the NYS Department of Health. Diagnoses were coded according to the International Statistical Classification of Diseases and Related Health Problems-9th Revision framework. For more information, visit: <https://www.health.ny.gov/statistics/sparcs/>.

E. NYC Youth Risk Behavior Survey (YRBS): The YRBS is a biennial self-administered, anonymous survey conducted in NYC public high schools by the Health Department and the NYC Department of Education. Indicators include smoking, tobacco and e-vapor product use, sugary drink consumption, fruit and vegetable consumption, physical activity, alcohol use, condom use, HIV testing, dental care, mental health and dating violence. YRBS data for this report is from 2015. For more information, visit: <https://www1.nyc.gov/site/doh/data/data-sets/nyc-youth-risk-behavior-survey.page>.

Metric Definitions:

- **Insufficient physical activity:** Not physically active for a total of at least 60 minutes per day on seven of the past seven days.
- **Insufficient Fruit and vegetable intake:** Consumed less than five fruits or vegetables per day over the last week.
- **Overweight:** \geq 85th percentile to $<$ 95th percentile for BMI, by age and sex (based on 2000 CDC Growth Charts).
- **Sugary drink consumption:** Consumed an average of one or more sugary drinks per day over the past week.
- **Obese:** \geq 95th percentile for BMI, by age and sex (based on 2000 CDC Growth Charts).

F. NYC Heart Follow Up Study (HFUS): The HFUS was a supplemental survey to the 2010 CHS among a subset of 1656 adults who agreed to provide additional self-reported health information, have their blood pressure measured and provide a 24-hour urine sample to determine sodium, potassium and creatinine values. For more information, visit: <https://www1.nyc.gov/assets/doh/downloads/pdf/cardio/hfus-clinical-protocol.pdf>.

Metric Definitions:

- **Raised blood pressure:** Reflects the proportion of individuals in a given population with an elevated blood pressure value, irrespective of previous diagnosis and medication use. It does not rely on health care-seeking behaviors or a diagnosis of hypertension and is a true population-based measure. HFUS 2018–2019 will be used as the baseline for this metric. Raised blood pressure is a core World Health Organization metric. For more information, visit: http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en.
- **Sodium intake:** Proportion of adults who consumed $>$ 2300mg of sodium per day as measured by a 24-hour urine sample.

G. National Health and Nutrition Examination Survey

(NHANES): The NHANES is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations. Data used is from the NHANES, 2009–2012 survey for sodium consumption using 24-hour dietary recall, and was representative of US youth ages 14–18 years of age. For more information, visit: <https://www.cdc.gov/nchs/nhanes/index.htm>.

H. Salient New York State (NYS) Medicaid System

(Salient): The Salient interface allows users with a data sharing agreement with NYS Department of Health to query and download adjudicated claims for professional and institutional services provided to NYC Medicaid recipients, including data elements such as service date, rendering provider, diagnoses, procedures, and prescriptions filled. Medication adherence was calculated using proportion of days covered (weighted mean) for Medicaid recipients in NYC with hypertension on antihypertensive medications in 2015. For more information, visit: https://www.health.ny.gov/health_care/medicaid/redesign/dsrip/performance_data/salient_performance_data.htm.

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For more information on Take the Pressure Off, NYC! or to learn how you can contribute to addressing high blood pressure, please contact bloodpressure@health.nyc.gov.





