

# **MANAGING HYPERTENSION BEYOND MEDICATION:**

## **An Integrative Health Approach to Lower Blood Pressure**

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and on behalf of, the Samueli Foundation.*

## LETTER FROM DR. WAYNE JONAS

High blood pressure (hypertension) is the largest preventable and treatable risk factor for chronic disease in the world. More than 85 million people (1 in 3 adults) in the United States and more than 1 billion (40% of adults) in the world have hypertension. It is a major risk factor for stroke, heart attack, heart failure and kidney failure. However, because it rarely produces symptoms, many people don't know they have it, while many who have it do not control it adequately.

Lifestyle is an important contributor to hypertension and equally important in managing it. In addition, medications are also effective for preventing and treating hypertension when they are properly integrated.

No one wants to hear the doctor say, "You have high blood pressure." Receiving this diagnosis can seem overwhelming. When I tell a patient he or she has hypertension, it's often received with a bit of fear, confusion and frustration. Some patients think I am telling them they are tense or stressed, but while stress can contribute to hypertension, the condition is actually an indication of the pressure of blood flow through their blood vessels as well as stiffness of those vessels. Hypertension affects so many areas of a person's life, including what to eat, how to move, how to sleep and how to manage stress.

The number of people receiving the diagnosis is increasing. New 2017 guidelines from the American Heart Association define a normal blood pressure of 130/80 mmHg, down from the previously accepted level of 140/90 mmHg. If these guidelines are widely applied, estimates are that an additional 30 million adults in the United States would now qualify as having high blood pressure. Other organizations, such as the American Association of Family Physicians, however, do not support this number.

To help sort through the confusion, we provided this guide to hypertension. Regardless of the number used, it can help keep your blood pressure under control and your health intact.

It focuses the use of integrative health, a combination of medication, complementary approaches and self-care to manage hypertension and potentially reverse this chronic condition. Just make sure you involve your health care provider in any changes you make.



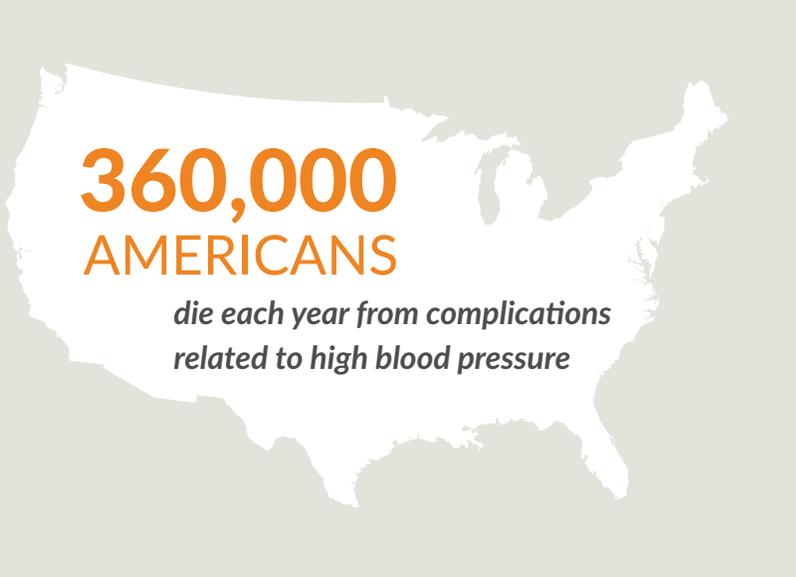
Be well,  
Wayne Jonas, MD

# HYPERTENSION

**T**hey call hypertension “the silent killer” for a reason: there are no symptoms, yet it is a major contributor to deaths from cardiovascular and kidney diseases and stroke.<sup>1</sup> Indeed, more than 360,000 Americans die each year from complications related to high blood pressure.<sup>2</sup>

Hypertension is epidemic. According to new guidelines issued in 2017, an estimated 45.6 percent of adults in the United States have hypertension, about 103 million people.<sup>3</sup>

And it’s only going to get worse: within the next 30 years, that number is expected to skyrocket by 50 percent.<sup>4</sup> Even middle-aged adults with normal blood pressure have a 90 percent lifetime risk of developing hypertension if they don’t change their lifestyle.<sup>5</sup>



**360,000  
AMERICANS**

*die each year from complications  
related to high blood pressure*

While most people with hypertension have been diagnosed, and about one in seven use medication, only about half have it under control.<sup>6</sup> However, if you treat hypertension with medication, lifestyle changes and complementary approaches, you can significantly reduce the risk of stroke, cardiovascular disease and other hypertension-related complications, including death. Lifestyle approaches alone are critical to preventing the development of hypertension in the first place.<sup>3,7</sup>

In 2010, the Institute of Medicine labeled high blood pressure “a neglected disease” and called for comprehensive strategies to improve prevention and treatment.<sup>8</sup>

Hopefully, this guide will help you understand your own risk of hypertension and, if you’ve been diagnosed, identify new opportunities to get your blood pressure to goal.

**B**lood pressure is the force of blood pushing against your arteries. There are two numbers used to determine your blood pressure: systolic, which measures the pressure your heart creates when it contracts and pushes blood out; and diastolic, which measures the pressure when your heart relaxes and fills with blood.<sup>9</sup>

When blood pressure is high, it forces the heart to work harder, eventually weakening it and leading to heart failure. High blood pressure also thickens blood vessel walls, restricting blood flow; increases the risk of blood clots; and weakens blood vessels, increasing the risk of rupture and internal bleeding. In addition, by restricting blood flow to the brain, hypertension increases the risk of stroke and dementia.

The damage to blood vessels also contributes to kidney disease and kidney failure, requiring dialysis or a kidney transplant. Other ramifications include damage to the tiny blood vessels in the eyes, increasing the risk of blindness; sexual dysfunction; and bone loss (by increasing the amount of calcium your body excretes).

### Risk Factors for Hypertension

Hypertension affects both men and women equally ([CDC NCHS data brief](#)). Being overweight is one of the greatest risk factors for hypertension. It also makes the condition far more difficult to treat, particularly since people who are significantly overweight often have other conditions such as diabetes, sleep apnea and inflammation.<sup>10</sup> Other risk factors include heavy drinking, lack of physical activity, older age, family history, diet and stress levels. High blood pressure is also more common in African Americans, who tend to have worse hypertension and develop it earlier in life than other ethnic groups.<sup>6</sup>

### Congenital Hypertension

So, you're not overweight, you exercise regularly and you follow a healthy diet. But you still have high blood pressure. The reality is that certain people simply have a genetic predisposition to hypertension. That doesn't mean you're doomed to have it. If you know that hypertension runs in your family, you must be extra vigilant about following an anti-hypertensive lifestyle and getting regular blood pressure checks. I recommend you buy a home blood pressure monitor and use it regularly.<sup>3</sup>

# BLOOD PRESSURE DEFINED

The American Heart Association and the American College of Cardiology, together with nine other major medical organizations, released new guidelines in late 2017 for the prevention, detection and treatment of hypertension. While similar to previous versions, the new guidelines base treatment not just on your blood pressure numbers, but also on your overall risk of atherosclerotic cardiovascular disease (you can learn more about your own risk [here](#)). They also call for a goal of less than 130 mmHg systolic and less than 80 mmHg diastolic for all individuals, regardless of any other medical conditions or age.<sup>3</sup> While not all medical professionals agree with this lower number, everyone agrees that no adult should have a blood pressure higher than 140/90 mmHg.

Table 1 highlights the definitions of hypertension and recommended management under the new guidelines.

**TABLE 1: 2017 Blood Pressure Management Recommendations**

BLOOD PRESSURE CATEGORY	BLOOD PRESSURE MEASUREMENT (mmHg)	RECOMMENDED MANAGEMENT
Normal	Systolic less than 120 and diastolic less than 80	None
Elevated	Systolic between 120 and 129 and diastolic less than 80	Estimated ASCVD risk less than 10%: lifestyle changes with blood pressure evaluation in 3 to 6 months
Hypertension stage 1	Systolic between 130 and 139 or diastolic between 80 and 89	Estimated ASCVD risk <b>less than 10%</b> : lifestyle changes with blood pressure evaluation in 3 to 6 months  Estimated ASCVD risk <b>more than 10%</b> : lifestyle changes and anti-hypertensive drug therapy with blood pressure evaluation in 1 month
Hypertension stage 2	Systolic 140 or higher or diastolic 90 or higher	Consider 2 anti-hypertension with 2 anti-hypertensive agents of different classes, coupled with lifestyle changes

ASCVD=atherosclerotic cardiovascular disease.

Source: 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. *Hypertension*. 2018;71(6):e13-e115. Epub November 13, 2017.

## ANTI-HYPERTENSIVE MEDICATIONS

There are literally dozens of anti-hypertensive drugs available, many of which have been used for decades. The most commonly prescribed blood pressure medications fall into six categories:

- **Angiotensin-converting enzyme inhibitors (ACEI).** These drugs dilate your blood vessels to improve blood flow and reduce pressure and strain on the heart. Examples include benazepril (Lotensin), captopril, enalapril (Vasotec), fosinopril, lisinopril (Prinivil, Zestril), moexipril, perindopril (Aceaon) and quinapril (Accupril).
- **Angiotensin II receptor blockers/antagonists (ARB).** These drugs also dilate your blood vessels to improve blood flow and reduce pressure and strain on the heart. They include candesartan (Atacand), irbesartan (Avapro), olmesartan (Benicar), losartan (Cozaar), valsartan (Diovan), telmisartan (Micardis) and eprosartan (Teveten). Recently, the FDA recalled valsartan due to issues with contamination.
- **Direct renin inhibitors.** These drugs work similarly to ACEIs and ARBs in relaxing blood vessels but through a different mechanism. Just one has been approved in the United States so far: aliskiren (Tekturna).
- **Calcium channel blockers.** These drugs slow the movement of calcium into the heart and blood vessel walls, keeping blood vessels dilated and improving the heart's pumping ability. Examples include amlodipine (Norvasc), diltiazem (Cardizem, Tiazac, others), felodipine, nifedipine (Adalat CC, Afeditab CR, Procardia) and verapamil (Calan, Verelan).
- **Diuretics.** The oldest and cheapest of all blood pressure medications, they work by making the kidneys get rid of extra salt, which pulls more water from your body, reducing blood volume and, hence, the pressure on artery walls. There are three main types: loop diuretics such as furosemide, potassium-sparing diuretics such as spironolactone and thiazide diuretics such as chlorothiazide and hydrochlorothiazide.
- **Beta blockers.** These drugs act on the sympathetic nervous system, which is responsible for the fight-or-flight, adrenaline-fueled response to stress. They also lower your heart rate. Commonly prescribed beta blockers include acebutolol (Sectral), atenolol (Tenormin), metoprolol (Lopressor, Toprol-XL) and propranolol (Inderal LA, InnoPran XL). Beta blockers are usually not the first category of medication used to control blood pressure.

The most common side effects from these medicines are a dry cough, headache, dizziness and fatigue, depending on the medication. A rare side effect with an ACEI or ARB is angioedema, or sudden swelling of the tongue, lips, throat, hands or feet. Call your doctor or 911 immediately if this occurs.

# INTEGRATIVE HEALTH AND HYPERTENSION

Whether you need medication or not, you should embrace an integrative approach, including diet, exercise and complementary interventions such as stress management (Figure 1).

## What is Integrative Health?

**Integrative health** is the pursuit of personal health and wellbeing foremost, while addressing disease as needed, with the support of a health team dedicated to all proven approaches – conventional, complementary and self-care.

Optimal health and wellbeing arise when we attend to all factors that influence healing, including medical treatment; personal behaviors; mental and spiritual factors; and the social, economic, and environmental determinants of health.

**Conventional medicine** is the delivery of evidence-based approaches for disease prevention and treatment currently taught, delivered and paid for in the mainstream health care system.

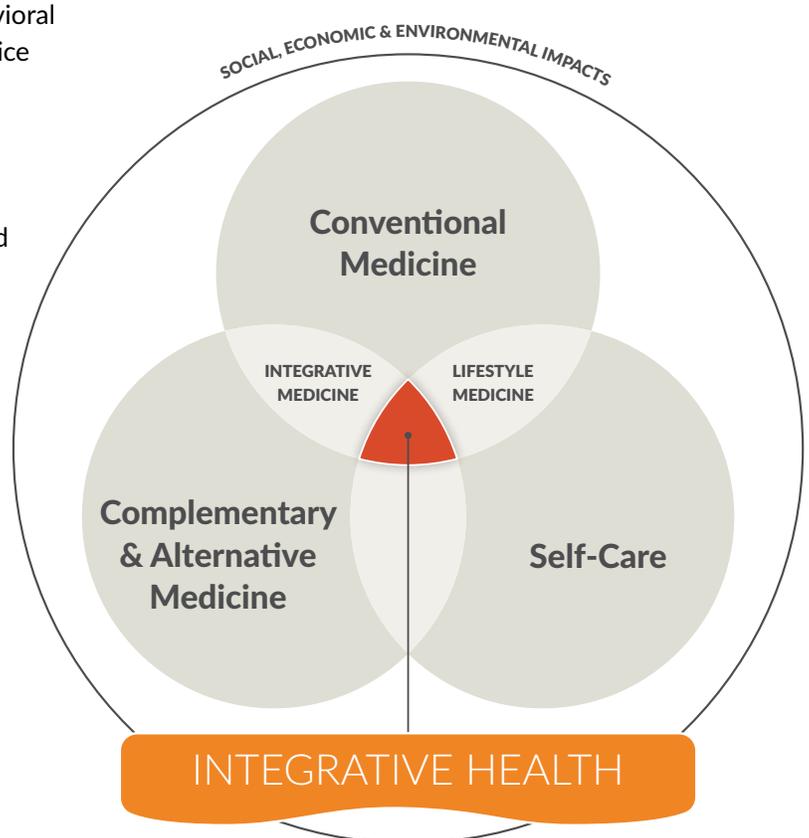
**Integrative medicine** is the coordinated delivery of conventional medicine combined with evidence-based complementary and alternative medicine designed to enhance health and wellbeing.

**Lifestyle medicine** involves the incorporation of healthy, evidence-based self-care and behavioral approaches into conventional medical practice to enhance health and healing.

Thus, integrative health redefines the relationship between the practitioner and patient by focusing on the whole person and the whole community. It is informed by scientific evidence and makes use of all appropriate preventative, therapeutic and palliative approaches; health care professionals; and disciplines to promote optimal health and wellbeing. This includes the coordination of conventional medicine, complementary/alternative medicine and lifestyle/self-care.

It's important to note that following these approaches doesn't mean giving up your medication; integrating it into medical therapy may enable you to reduce the amount of medication you take and, if your doctor agrees, possibly go off medication entirely.

FIGURE 1: Integrative Health



# INTEGRATIVE HEALTH AND HYPERTENSION

An integrative approach to blood pressure management should include the following:

## DIET

Hundreds of studies attest to the significant benefits of diet on blood pressure. The Dietary Approaches to Lower Hypertension (DASH) diet is the most tested and practical of the dietary approaches. It's not really a diet, per se, but a way of eating specifically designed for those with hypertension. While similar to any form of healthy eating, it also includes a greater emphasis on magnesium and calcium, both of which have been shown to reduce blood pressure, as well as reduce sodium.<sup>11</sup> It requires no special foods, just meeting daily and weekly nutritional goals. The plan recommends:

- Eating vegetables, fruits and whole grains
- Including fat-free or low-fat dairy products, fish, poultry, beans, nuts and vegetable oils
- Limiting foods that are high in saturated fat, such as fatty meats, full-fat dairy products and tropical oils such as coconut, palm kernel and palm oils
- Limiting sugar-sweetened beverages and sweets

Table 2 highlights what you'd eat if you were eating 2,000 calories a day:

**TABLE 2: Number of Servings Based on Daily Consumption of 2,000 Calories**

DAILY	
Grains	6-8
Meats, poultry and fish	6 or less
Vegetables	4-5
Fruit	4-5
Low-fat or fat-free dairy products	2-3
Fats and oils	2-3
Sodium	1,500 mg - 2,300 mg
WEEKLY	
Nuts, seeds, dry beans and peas	4-5
Sweets	5 or less

Oh, and cut back on the alcohol. Heavy drinking is a known risk factor for high blood pressure.

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## STRESS REDUCTION

Stress, both acute and chronic, contributes to high blood pressure by ramping up the sympathetic nervous system, which contributes to the fight-or-flight reaction, including increased heart rate and the release of inflammatory stress hormones such as cortisol.<sup>12</sup> Thus, I recommend relaxation techniques such as those described below.

- **Slow, controlled breathing.** Simply breathing slowly – defined as six breaths in 30 seconds, can reduce systolic blood pressure by 3.4 mmHg to 3.9 mmHg within minutes compared to just resting.<sup>5</sup> A review of five studies involving 356 individuals with hypertension found that four out of five demonstrated a significant reduction in blood pressure with slow, controlled breathing. The fifth trial was in people with diabetes, with the researchers concluding that the effects of the diabetes on the autonomic nervous system (which controls body functions such as breathing, heartbeat and digestive processes) likely prevented any benefit.<sup>13</sup> Improving your diabetes with lifestyle changes and medications could restore this responsiveness. Numerous complex mechanisms are believed to contribute to the blood pressure-lowering effects of deep, slow breathing.<sup>5</sup>
- You can buy wearable devices, including some Fitbits, which monitor your breathing and remind you to take deep breaths or even start a guided breathing session.
- **Meditation.** Meditation involves focus and quieting your mind for several minutes or longer. An analysis of nine trials on meditation found a 4.7 mmHg reduction in systolic blood pressure and a 3.2 mmHg reduction in diastolic blood pressure in people who regularly meditate.<sup>14</sup> It's not clear just how meditation lowers blood pressure, but it's likely related to its ability to reduce the physical effects of stress, thus affecting the autonomic nervous system.<sup>5</sup>
- **Biofeedback.** In biofeedback, you learn to control your parasympathetic nervous system (which slows heart rate and breathing) by receiving immediate feedback on blood pressure, heart rate and other stress indicators via small electrode patches placed on your body. As you use relaxation techniques, you can see those indicators change. Eventually, you are able to initiate the calming sense without the sensor feedback.<sup>15</sup>
- One study of 65 people with high blood pressure who were randomized to either biofeedback training with behavioral relaxation or to visualization to induce relaxation found blood pressure reductions of 2.4 mmHg systolic and 2.1 mmHg diastolic. Meta-analyses also show small, but statistically significant reductions in those who learn biofeedback versus those who don't.<sup>5</sup>

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## EXERCISE

Put simply, exercise improves hypertension. Indeed, there is just no substitute for physical activity when it comes to blood pressure control. Numerous studies attest to the benefits of regular physical exercise on blood pressure. The benefits appear to be related to the effects exercise has on nitric oxide production, which helps dilate blood vessels, and through the production of anti-oxidants, protects against damaging oxidative stress. Exercise also reduces levels of inflammatory chemicals that can further damage blood vessels.<sup>16</sup>

The greatest benefits come with aerobic activities, including walking, running, swimming and biking, but isometric exercise designed to build strength, like push-ups, pull-ups and working with weights, can also help.<sup>16</sup> Other forms of exercise shown to be beneficial in people with hypertension include:

- **Tai chi.** There is substantial evidence that the ancient Chinese martial art of tai chi can lead to blood pressure reduction.<sup>17-30</sup>
- In one study of 40 individuals with hypertension, in which 24 were assigned to practice tai chi for an hour a day, six days a week for 12 weeks, found those in the tai chi group had significantly lower systolic, diastolic and total blood pressure levels compared to those with hypertension who did not participate, and when compared to a control group of healthy individuals. In addition, levels of HDL cholesterol (good cholesterol) increased in the tai chi group while levels of LDL (the bad cholesterol) dropped.<sup>19</sup> A similar study in 58 individuals, 27 of whom participated in tai chi three times a week for eight weeks, also found dramatically lower blood pressures in the exercise group.<sup>23</sup> Studies find that tai chi enhances nitric oxide production and blood vessel function, as well as improving mood.<sup>27</sup>
- **Qigong.** This traditional Chinese medicine approach combining movement, breathing and meditation also demonstrates benefits in people with hypertension. One analysis of four trials found that adding qigong to medication led to greater blood pressure reduction than when using medication alone. One study even found a lower risk of stroke and death in the qigong group.<sup>31</sup>
- **Yoga.** Numerous studies find that yoga combined with medication can have a significant impact on blood pressure, with meta-analyses of multiple studies finding an overall average of 10 mmHg systolic reduction and about 8 mmHg diastolic reduction.<sup>32-37</sup> As with other relaxation techniques, the benefits of yoga are attributed to its ability to increase parasympathetic activity, such as slowing the heart rate and decreasing sympathetic activity, primarily through the use of yogic breathing and meditation.<sup>33</sup>

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## OTHER APPROACHES

- **Acupuncture.** Studies are mixed on acupuncture, but one analysis of two randomized clinical trials comparing real acupuncture to sham acupuncture, both coupled with anti-hypertensive medication, found that acupuncture plus medication was more effective at reducing blood pressure than medication alone, with an average 7.5 mmHg drop in systolic blood pressure and 4.2 mmHg drop in diastolic blood pressure.<sup>38</sup> A pilot study at the University of California, Irvine, found that electrical stimulation of 8 acupoints (the Longhurst points) weekly for 8 weeks and then just monthly could produce durable reductions in blood pressure for many people.<sup>39</sup> However, we need more research on this non-drug approach to hypertension.
- **Massage.** Several studies point to the beneficial effects of massage on blood pressure. In one, 10 women with hypertension (ages 60 to 68) who were taking anti-hypertensive medication received a two-hour massage every day for 10 days. Their average systolic and diastolic blood pressures dropped by several points each day, for an average decline of 6.8 percent in systolic pressure and more than 10 percent in diastolic pressure. Researchers suspect the effects are due to the increase in blood and lymph flow massage creates, which reduces strain on the heart.

## What About Salt?

We used to consider sodium the “bad boy” in hypertension and order a salt-free diet. And it’s true that certain people are genetically sensitive to salt. However, the majority of us are not. So should you cut out salt? The research is mixed. But what is clear is that the average American consumes far too much sodium anyway – a daily average of 3,400 milligrams, most of it from processed foods (just take a look at the difference in sodium in low-salt versus regular canned tomatoes in Figure 2). Even your breakfast cereal has added salt! So beware of hidden salt! Make sure you read the labels if you have high blood pressure! Reducing sodium consumption to 2,300 milligrams a day could lead to 11 million fewer people with hypertension and save more than \$18 billion a year in health care costs.<sup>2</sup>

Those whose blood pressure is under control or normal do not need to eliminate salt.

**FIGURE 2: Sodium Content in Low-Salt Versus Regular Canned Tomatoes**

Nutrition Facts		Nutrition Facts	
Serving Size 1/2 cup (130g) Servings Per Container 3 1/2		Serving Size 1/2 cup (130g) Servings Per Container 3 1/2	
Amount Per Serving		Amount Per Serving	
Calories 25	Calories from Fat 0	Calories 25	Calories from Fat 0
% Daily Value*		% Daily Value*	
Total Fat 0g	0%	Total Fat 0g	0%
Saturated Fat 0g	0%	Saturated Fat 0g	0%
Trans Fat 0g		Trans Fat 0g	
Cholesterol 0mg	0%	Cholesterol 0mg	0%
Sodium 10mg	1%	Sodium 150mg	6%
Potassium 270mg	8%	Potassium 230mg	6%
Total Carbohydrate 5g	2%	Total Carbohydrate 5g	2%
Dietary Fiber 1g	4%	Dietary Fiber 1g	4%
Sugar 3g		Sugar 3g	
Protein 1g		Protein 1g	
Vitamin A 5%	Vitamin C 30%	Vitamin A 5%	Vitamin C 20%
Calcium 4%	Iron 4%	Calcium 4%	Iron 6%

\*Percent Daily Values are based on a 2,000 calorie diet.

But it’s not just salt...Potassium and Magnesium Matter too!

For those with high blood pressure, making sure you have high levels of potassium and magnesium may be more important than watching your salt. These minerals primarily come from fruits, vegetables, nuts and whole grains, which are the core components of the DASH and Mediterranean diets. Because most Americans don’t eat enough vegetables and fruits, we are low in potassium and magnesium. These minerals all work together in the body to control blood pressure.

In my book, *How Healing Works*, I tell the story of Trevor. He taught me what can happen when we don't integrate the various aspects of healing.

His story begins with his diagnosis of hypertension. After college, the former healthy football player had stopped exercising, began eating whatever he wanted and gained weight. When he finally went in for a long-overdue checkup, his blood pressure was alarmingly high. The doctor prescribed two medications initially, then a third a week later when Trevor's pressure remained high. After a few weeks, Trevor's blood pressure was under control, but he felt terrible. The medications made him tired, interfered with his sexual function and made it hard to sleep. His doctor assured him he would adjust.

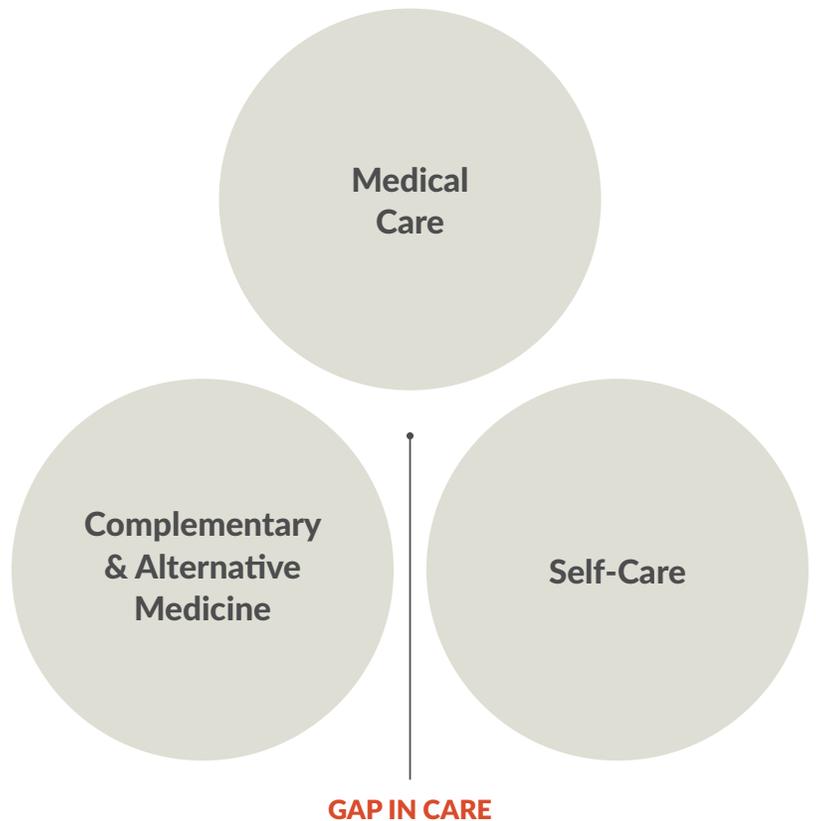
He also recommended exercise and the DASH diet (but didn't give Trevor any advice on how to integrate either into his life) and told Trevor he would always need medication. Where his doctor went wrong, however, was in failing to provide empathy and build the trust needed to motivate Trevor to change his life, something current guidelines say should be a standard part of practice. He also didn't recognize something important about Trevor – a strong preference for “natural” treatments and an inherent optimism that everything would be fine.

Trevor left his visits alarmed and skeptical. He had felt fine before. Now he felt terrible. Plus, his insurance did not cover the entire cost of drugs.

A friend recommended a local “natural” practitioner who encouraged Trevor to follow not the DASH diet, but the “Rice Diet for Hypertension.” Trevor, optimistic as always, thought this sounded good and began to work with her. He stopped his medications and started the diet plus supplements. He immediately felt better. After three weeks on the diet and supplements, he checked his blood pressure. It was almost normal. He was back to his old self—or so he thought.

The problem is that unlike the DASH diet, the rice diet was very difficult to follow long-term without substantial professional monitoring and support. In addition, the supplements he was taking did not work to control his hypertension. Since there are no signs or symptoms of hypertension, Trevor thought he was fine. He didn't see another doctor for ten years—until his feet began to swell.

**FIGURE 3: Gaps in Today's Health Care System**



## THE STORY OF TREVOR

*It turned out that after 10 years of “silent” and poorly treated high blood pressure, he was now in kidney failure. He needed dialysis and was put on the transplant list.*

Trevor fell into the gap between alternative and conventional medicine and self-care (Figure 3). He needed an integrative health care approach—one that bridged and coordinated the treatments between his biology and the rest of him, between drugs and self-care, between medical treatment and the social and personal determinants of health and between the treatment “agents” and his own “agency”—his inner capacity to heal.

Don't be like Trevor and fall into the gap between different healing approaches. Understand the limitations of all approaches and the importance of integrating conventional treatments with lifestyle and mind/body approaches. Find a physician you trust, one with empathy, who wants to work with you to integrate evidence-based alternative approaches with drug-based treatments for hypertension. A good way to start is give your provider a copy of my book *How Healing Works* and ask them to conduct a HOPE visit as described in the back of the book and on my website [www.drwaynejonas.com](http://www.drwaynejonas.com). You will not regret bringing integrative health into your life today.

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