



# Hypertension and Mental Illness

*Comprehensive Monograph*

Casey Williams, MD


# Hypertension and Mental Illness

## Introduction

Blood pressure is the force of blood pressing against the walls of arteries (blood vessels that carry blood). This is analogous for example, to the pressure exerted on a garden hose by the water traveling through that hose. Two numbers are used to measure blood pressure. The top number is known as the systolic blood pressure, the bottom number is the diastolic blood pressure. The systolic blood pressure measures the force (pressure) exerted on blood vessels when the heart contracts (pumps blood through out the body). The diastolic blood pressure measures the force exerted when the heart relaxes. A normal systolic blood pressure for most adults should be below 120 mm Hg., while a normal diastolic blood pressure should be below 80 mm Hg. The condition of 'Pre-hypertension' exists in persons whose blood pressure is between 120/80 and 139/89. However, persons with diabetes mellitus or kidney disease are considered at higher risk and the threshold for defining hypertension is lower: a person with diabetes mellitus or kidney disease has hypertension if the blood pressure is higher than 130/80.

A person's blood pressure reading may vary from day-to-day and from hour-to-hour on any given day. Factors such as stress, exercise, caffeine may temporarily raise someone's pressure and the body can accommodate such temporary elevations in blood pressure. However, if the blood pressure is consistently elevated (i.e. on more than three different occasions) then the consumer should be considered diagnosed with hypertension (high blood pressure).

Hypertension is common; it is estimated that one in every four Americans has hypertension. In some racial groups, such as African Americans, hypertension is even more common. Unfortunately, despite the fact that hypertension is common in this country and the fact that there are several effective medications to treat hypertension, it still remains significantly undetected and under treated. For example, over 40 percent of consumers with hypertension are not receiving any treatment for their blood pressure and only 34 percent of those that are being treated actually have adequate control of their blood pressure.



Although consumers with mental illness have several factors putting them at risk for developing hypertension, such as obesity, smoking, and alcohol abuse, several studies have failed to demonstrate an increased rate of hypertension in consumers with mental illness. However, due to the fact that hypertension is very common in the general population with rates continuing to rise, and due to the fact that several studies have demonstrated poor medical care in consumer with mental illness, the case manager taking care of any consumer with mental illness needs to: (1) assure that every consumer with mental illness is screened for hypertension, (2) assure that every mentally ill consumer with hypertension is appropriately managed, (3) monitor adherence to anti-hypertension medications as well as the presence of any side effects from these medications, (4) educate the consumer about hypertension, (5) provide any relevant information about the consumer's hypertension to his/her provider. Additionally, since some pharmaceutical treatments for mental illness can negatively affect risk factors, such as worsening diabetes or increasing weight gain in some consumers, diagnosis and treatment of hypertension in such consumers may have greater importance.

## Screening for Hypertension


Hypertension is also known as the silent killer, because most of the times, most consumers with hypertension will have no symptoms. Thus, as opposed to other chronic illnesses such as diabetes or asthma, there are no signs or symptoms for the case manager to look out for as a screen for hypertension.

The best way to screen for hypertension is to perform multiple blood pressure readings during different times of days. Nowadays blood pressure can also be measured at home or in pharmacies with blood pressure machines. Although it is possible to measure blood pressure either manually (via a person taking the blood pressure using a stethoscope and a blood pressure meter) or via a machine, the only one that can actually diagnose hypertension is a physician.

Sometimes, a consumer may have elevated blood pressure readings that are not necessarily due to hypertension, but other factors that influenced the blood pressure reading at the time the blood pressure was taken.

Such factors may include:

- Cuff size too small
- Caffeine ingestion prior to measuring the blood pressure
- Physical exertion (such as rushing to the doctor's office) prior to measuring the blood pressure.
- Taking the blood pressure in a cold room
- White Coat syndrome (anxiety when measurements taken) If the case manager is actually taking the blood pressure him/herself that case manager should make sure that none of the factors listed above are influencing the blood pressure reading obtained.



The initial evaluation of someone first diagnosed with hypertension should focus on determining if some other more serious disease is causing the hypertension. This occurs only in a small percent (less than 10 percent) of people with high blood pressure and is known as secondary hypertension. Every consumer with hypertension should have a thorough physical and lab work documented in the chart. Some clues that an elevated blood pressure may be secondary to some other more serious condition include:

- Severe hypertension that is difficult to treat
- A rapid rise in a blood test known as the creatinine
- Occasional rapid elevations in blood pressure, especially if associated with headaches, palpitation and sweating.
- Unexplained elevated blood potassium levels
- The presence of thyroid disease (both low thyroid levels and high thyroid levels can elevate blood pressure).

There are three goals for managing hypertension and these include: (1) screening and reducing risk factors that may cause or exacerbate hypertension, (2) using medications to lower blood pressure, (3) preventing future health complications of hypertension.

## Managing Hypertension

There are three goals for managing hypertension and these include: (1) screening and reducing risk factors that may cause or exacerbate hypertension, (2) using medications to lower blood pressure, (3) preventing future health complications of hypertension.

### Risk factor reduction

There are several factors that may place a mentally ill consumer at an increased risk for developing primary hypertension. These include:

- Significant family history for hypertension
- Obesity
- Alcohol use
- High sodium (salt) diets
- Cigarette smoking
- Sedentary life style (i.e. the classic “couch potato”)
- Excess stress

The case manager should counsel such consumers on weight reduction, moderate exercise, low salt diets, smoking cessation and stress reducing techniques.

## Non-Drug Therapy for Hypertension

There are a number of steps that persons with pre-hypertension or hypertension should consider, depending on their lifestyle and risk factors. Most people with hypertension benefit from reducing salt in their diet. Daily sodium (just sodium, not sodium chloride) intake should optimally be less than 2400mg. This is difficult to accomplish for many Americans, as it requires eating very little fast food, prepared food, or commercial snack products. Another important lifestyle modification may involve restricting use of alcohol to not more than 30ml (1 oz) of ethanol each day. Every 12 ounces of beer or 4 ounces of wine has about 12ml of ethanol. Use of recreational stimulant drugs such as methamphetamine, cocaine or others should be avoided totally. Other non-drug therapies that can be helpful include relaxation therapy. This may already be indicated for persons with anxiety and may be useful in treating both conditions.

## Drug Therapy for Hypertension

There are many different types of blood pressure medicines that work by different mechanisms. One medication may not be adequate to control a consumer's blood pressure and as such a combination of different medications are often required. Increasingly, medications are prescribed that put together combinations of these types of medicines, so that the consumer still only takes one pill. Long term success is based on finding the right combination of medications that 1) maximize consumer adherence (optimally with once/day dosing), 2) has few side effects, and 3) is effective at controlling blood pressure. Because there are a wide variety of drugs available for hypertension, a successful regimen can usually be achieved.

This section will describe the different classes of blood pressure controlling medications as well as their mechanism of action.

Blood Pressure controlling medications fall into the following categories:

- Diuretics: work by causing the kidneys to get rid of excess water and salt from the body. As such, these medications are also commonly referred to as "water pills".
- Beta-blockers: work on the heart causing it to beat slower and with less force. As a result, these medications reduce the pressure exerted on the blood vessels.
- Angiotensin converting enzyme (ACE) inhibitors: these medications cause blood vessels to widen and thus decrease the pressure in the vessels. This class also changes how the kidneys affect blood pressure.
- Angiotensin receptor blockers (ARBs): like ACE inhibitors, these medications cause blood vessels



to widen and change how the kidneys affect blood pressure.

- Calcium channel blockers: causes blood vessels to widen. Some in the class also provide beneficial changes to the heart that effect blood pressure.
- Alpha-blockers: reduce nerve impulses to the blood vessels, causing such vessels to relax.
- Vasodilators: open blood vessels by relaxing the muscles in the vessel walls. This class of drugs is generally the most powerful and is used for those that have not responded to combinations of the medicines above.

The case manager will need to keep track of not only which medications the consumer currently is taking to control his/her blood pressure, but also what medications have been tried in the past and the reason they were discontinued. Unsatisfactory control is frequently because the consumer is not taking the medications as prescribed. It is vital to have accurate information regarding whether or not the consumer is taking the medications, as a dose increase to attempt control might not be appropriate (and could lead to harm) if the real issue is that the consumer is not consistently taking the medication. Consumers failing to take medications as prescribed aren't always being irresponsible—a careful history must be attempted to learn if there are side effects that the consumer experiences, causing them to dislike the treatment. Additionally, many consumers may need ongoing education about their hypertension in order to understand the need for continued adherence even when they feel fine. Additionally, adherence problems might reflect a prescribed medication schedule that is unnecessarily complex and which could be simplified.

Although there is no general rule as to what anti-hypertension medication to start any particular consumer on, there are certain consumers that can benefit from very specific classes of medications. These include:

- Diabetic consumers: angiotensin-converting enzyme (ACE) inhibitors have been shown to have a protective effect on the diabetic consumers' kidneys.
- Heart Failure: there appears to be good clinical evidence suggesting that ACE-inhibitors, cardioselective beta blockers, and aldosterone antagonist diuretics are effective in preventing and reversing certain types of heart failure.
- Older consumers with isolated systolic hypertension: low-dose diuretics have been shown to be effective in the treatment of isolated systolic hypertension in these consumers.
- After myocardial infarction (heart attack): there is overwhelming evidence suggesting these consumers should be treated with a beta-blocker and ACE inhibitors, because they reduce the risk for a subsequent myocardial infarction (heart attack) or sudden cardiac death.

The case manager should also assure that certain laboratory values are followed when certain medications are being used. These include:


- Diuretics: these medications can cause dehydration, especially in the elderly consumer. Thus serum sodium levels and renal function, such serum creatinine blood values, need to be monitored periodically. These medications can also raise the blood uric acid level, which in certain consumers may cause or exacerbate a gout attack. Thus, uric acid blood levels need to be monitored in those with prior gout attacks.
- Beta-blockers: no blood tests are required, but since these medications can lower the heart rate (pulse), the pulse or heart rate should be carefully monitored in these individuals. These medications should also be used cautiously in consumers with asthma (and avoided if possible) since they may exacerbate an asthma attack.
- ACE-inhibitors: may in certain cases worsen renal function or elevate blood potassium levels. Thus, the serum creatinine and potassium levels should be monitored.

## Preventing future health complications of hypertension

Five major complications have been associated with hypertension. These include: (1) Heart Disease: Left Ventricular Hypertrophy (enlarged left ventricle of the heart), Coronary Artery Disease and/or Myocardial Infarction (Heart attack), Heart Failure. (2) Stroke or Transient Ischemic Attack; (3) Kidney damage; (4) Peripheral Artery Disease (damage to vessels supplying legs and toes); (5) Damage to the blood vessels in the eye, which may lead to blindness. Initial evaluation of the hypertensive mentally ill consumer should also look for any of these complications.

The case manager taking care of such consumers needs to assure that the following have been done:

- Baseline ECG should be obtained when the consumer is first diagnosed with hypertension to evaluate the presence of an enlarged left ventricle of the heart or the presence of a previous heart attack.
- Other risk factors for cardiovascular disease should be pursued and if present, managed aggressively (these include: high cholesterol, smoking, diabetes, obesity and sedentary lifestyles).
- Serum creatinine and urinalysis should be obtained to evaluate for presence of kidney damage.
- Thorough eye exam should be done annually (preferably by an ophthalmologist) to screen for any damage to the vessels in the back of the eye (retina).
- Peripheral pulses (pulses in the legs) should be examined and consumers should be questioned about calf pain when walking that resolves at rest, to screen for the presence of peripheral vascular disease (3)



Monitor adherence to anti-hypertension medications as well as the presence of any side effects from these medications

The case manager may consider asking all mentally ill consumers with a history of hypertension the following series of questions (aimed to serve only as a guide):


- Do you know which of your medications are being used to control your blood pressure? (Correct any misconceptions)
- Can you tell me when and how often you are supposed to take each of these medications? (Correct any misconceptions)
- Everyone tends to miss taking his/her medication every now and then. Has that happened to you? How often do you miss taking each of your blood pressure pills within a given week?
- Have you experienced any side effects from your medications that you wish to tell me about?

The American Heart Association has published: “Ten Ways to Control Your High Blood Pressure”

1. Know your blood pressure. Have it checked regularly.
2. Know what your weight should be. Keep it at that level or below.
3. Don't use too much salt in cooking or at meals. Avoid salty foods.
4. Eat a low in saturated fat diet according to American Heart Association recommendations.
5. Control alcohol intake. Don't have more than one drink a day for women or two a day for men.
6. Take your medicine exactly as prescribed. Don't run out of pills even for a single day.
7. Keep appointments with the doctor.
8. Follow your doctor's advice about physical activity.
9. Make certain your parents, brothers, sisters and children have blood pressure checked regularly.
10. Live a normal life in every other way.

Source: <http://www.americanheart.org/presenter.jhtml?identifier=578>





They also provide the following checklist to consumers: “Checklist for Living with High Blood Pressure”

- Don’t be scared of high blood pressure. It can be treated.
- Do the simple things that your doctor suggests. Simple measures, such as losing weight or eating less salt, may produce good results.
- Don’t go from one doctor to the next, looking for a quick, easy “miracle drug.” Stick to one reliable doctor or clinic and follow through with your treatment plan.
- If you’re on medication, be patient and don’t stop treatment. If you have side effects, tell your doctor.
- Give yourself a chance to adjust to a drug. It may take several weeks, but the results will usually be worth it.
- Death rates from heart and blood vessel diseases, stroke and kidney diseases have decreased significantly. This is probably due to earlier and better treatment of high blood pressure.

Source: <http://www.americanheart.org/presenter.jhtml?identifier=854>