HYPERTENSION

Abstract

Hypertension or high blood pressure is a chronic medical condition that is caused by a persistent elevation of the pressure inside the circulatory system. It is a very serious disease that has significant complications and consequences. There is no cure for most cases of hypertension but with lifestyle alterations and the proper medications when needed, hypertension can be controlled. Caring for someone with hypertension should start with recognizing the people who are at risk. The Certified Nursing Assistant is able to identify people at risk of developing hypertension and to help educate them on hypertension prevention and to encourage them to follow proper treatment.

Learning Goals:

1. State the components that create blood pressure.
2. Identify the signs and symptoms of hypertension.
3. Identify the risk factors for hypertension.
4. Describe the complications associated with hypertension.

Introduction

Hypertension is a chronic medical condition that is caused by a persistent elevation of the pressure inside the circulatory system. It is more commonly known as high blood pressure, and often abbreviated as HTN. Hypertension is a very serious disease that has significant complications and consequences. There is no cure for most cases of hypertension but with lifestyle alterations and the proper medications, if needed, it can be controlled.

Prevalence of Hypertension

Hypertension is one of the most common health problems in the world and in the United States. Approximately 30% or more of American adults have hypertension and many do not know they have the disease. Among people who know they have high blood pressure, many do not seek treatment. They ignore the disease, hoping it will go away. Many people being treated for high blood pressure do not comply with the treatment plan. Finally, some people who are being treated for hypertension are not able to control their blood pressure well.

Hypertension is sometimes informally called the "disease of thirds." These figures are not precise but one-third of the people who have hypertension do not know they have the disease. One-third of those who have hypertension, and are aware they have it, do not seek treatment. One-third of the people who have hypertension and *are* being treated do not comply fully with the treatment plan.

Blood Pressure Vital Sign

Blood pressure is one of the commonly measured vital signs. Blood pressure refers to the amount of force that is exerted against the walls of the blood vessels. Blood pressure is created and maintained by the three parts of the circulatory system: the heart, the blood vessels, and the blood volume. These three parts of the circulatory system function, independently and as a unit.

The circulatory system is a closed system, and includes the heart, the blood vessels, and the blood.

The Heart

The heart is a muscular pump that is divided into four chambers. It beats rhythmically, with an equal amount of time between each beat. For the average adult, the normal heart rate is approximately 72 beats a minute, and a normal heart rate is considered to be 60-100 beats a minute.

There are two phases to a heartbeat. In the first phase, *diastole*, the chambers of the heart fill with blood that is carrying oxygen. In the second phase, *systole*, the heart forcefully contracts and pumps a volume of oxygenated blood out to the body through the blood vessels. Both phases are important in understanding blood pressure, and will be discussed later on.

The Blood Vessels

The heart pumps the oxygenated blood out to the body through the blood vessels of the peripheral circulation. These blood vessels are the arteries, the capillaries, and the veins. The arteries and the capillaries take the oxygenated blood from the heart to the organs and tissues.

After the oxygen has been delivered, the veins carry unoxygenated blood and carbon dioxide from the body back to blood vessels in the lungs; these blood vessels are known as the pulmonary circulation.

When individuals exhale, the carbon dioxide is eliminated from the pulmonary circulation and out through the lungs. And, when individuals inhale oxygen is taken through the lungs, and the oxygen is delivered to the pulmonary circulation. The blood vessels of the pulmonary circulation then deliver the oxygenated blood to the heart, and the process continues.

The Blood

The blood volume for an average adult is approximately five liters, or about 5.2 quarts/1.3 gallons. (Blood volume is a little more for men, a little less for women). As explained above, blood carries oxygen to the body and carbon dioxide from the body to the lungs.

Normal functioning blood vessels, a normal functioning heart, and a normal blood volume are needed to create and maintain blood pressure. All three components are important.

Example #1: Myocardial Infarction (Heart Attack)

Without a strong, functioning heart, the blood would not move through the circulation. This can happen after a myocardial infarction, commonly referred to as a heart attack, in which part of the heart muscle has been damaged.

Example #2: Dehydration/Severe Hemorrhage

If the blood volume is low, then the pressure in the system will obviously be low, as well. This can happen if someone is dehydrated or if there is a severe hemorrhage.

Example #3: Vasodilation

The blood vessels transport the blood. If the blood vessels are abnormally enlarged, the blood pressure will drop; this condition is called vasodilation. If the blood vessels become abnormally narrowed, the blood pressure will increase; this condition is called vasoconstriction. The prefix *vaso* means *of or pertaining to, a blood vessel*.

In order to maintain blood pressure, there must be: 1) a normal, functioning heart, 2) normal, healthy blood vessels, and 3) a normal volume of blood. When a patient's blood pressure is abnormally high or abnormally low, it is indicative of a problem with one of the three constituents of the circulatory system.

Blood Vessels, Blood Pressure, and Hypertension

The blood vessels transport blood through the body but they are more than simple passive conduits. The initial force of systole as the heart pumps out a volume of blood is quite strong. However, the volume of blood that leaves the heart must travel a relatively long distance, and the initial force of systole is *not* powerful enough by itself to move the blood from the heart, out to the tissues and organs, and back to the heart. Circulating the blood requires active participation of the blood vessels, and the process works as follows.

The arteries, capillaries, and veins are more than flexible tubes. The blood vessels, particularly the arteries, have muscular tone. They can actively contract and expand, and they can *forcefully* contract and expand. When the heart pumps a wave of blood out to the circulation, the blood vessels expand to accommodate the increased volume but because they have muscular tone or tension, they also contract down in response and that force of contraction moves the blood along and out through the body.

Systole, the second phase of a heartbeat, is strong enough to send a volume of blood out through the arteries but systole is *not* strong enough to send that volume of blood from the heart, out to the body and back to the heart. The muscular tone of the blood vessels *must* be maintained or blood pressure would fall below the normal limit.

In the beginning of this section, blood pressure was defined as the measurement of the amount of force that is being exerted against the walls of the blood vessels. This force or pressure varies. It rises sharply when the heart pushes out a volume of blood, and then it goes back down to a steady state that represents the pressure inside the blood vessels between each heartbeat.

The first of those two pressures, the pressure in the blood vessels as the heart is contracting is called the *systolic blood pressure*. The steady state of pressure in the circulatory system between heartbeats is called the *diastolic blood pressure*. Both are very important. The systolic pressure starts the movement of the blood volume, and the diastolic maintains the movement of the blood volume and ensures that circulation functions properly.

Diastolic pressure is vital for making sure that the body is well-supplied with blood and oxygen. The steady diastolic pressure within the circulation is constantly "pushing" blood into the organs and tissues; however, diastolic blood pressure is like any other pressure. If it is too high it can cause damage, and that is what happens in hypertension. The diastolic pressure is elevated above normal and the constant high pressure over time causes damage to the blood vessels, the heart, the eyes, the kidneys and other parts of the body.

Hypertension Defined

Blood pressure is measured using a system of units called *millimeters of mercury*, and this is abbreviated as *mmHg.* Normal blood pressure is defined as a systolic pressure less than 120 mmHg, and a diastolic pressure less than 80 mmHg; this would be recorded as 120/80. Blood pressure will go up and down through the day, and what is normal varies from person to person. Some people who are slender and people who are athletic will often have a blood pressure that would traditionally be considered low (*i.e.*, 94/50) but this would be normal and acceptable for them.

However, a blood pressure that is consistently elevated is potentially dangerous, and would be considered abnormal. The definition of a normal blood pressure is somewhat arbitrary but the definition of hypertension is not because hypertension is associated with very serious complications. Hypertension is defined as a chronic condition in which the systolic blood pressure is higher than 140 mmHg and/or the diastolic blood pressure is higher than 90 mmHg.

Hypertension is usually discovered when someone has the blood pressure checked during a routine physical examination. This is not unusual as blood pressure can be elevated for years without producing any signs or symptoms.

A person has hypertension if that person has a blood pressure with a systolic greater than 140 mmHg and/or a diastolic greater than 90 mmHg, measured on at least two, preferably three separate *occasions*, with each occasion separated by several days or more. The *average* of the separate blood pressure measurements is used as the true value of the patient's blood pressure. If the average is greater than 140 mmHg systolic and/or 90 mmHg diastolic, the patient has hypertension. More than one reading is needed to confirm a person's blood pressure because blood pressure can be briefly elevated without the presence of hypertension; so, three readings should be obtained, with each reading separated by at least five minutes.

When measuring a person's blood pressure, care should be taken to ensure that the readings are accurate.

- The patient should be sitting.
- The arm should be properly positioned at the level of the heart.
- The proper size cuff should be used.
- Do not place the cuff over a shirt or a sweater, and do no place a stethoscope over a shirt or a sweater.
- The patient should be resting for at least five minutes before the blood pressure is checked.
- The patient should have refrained from exercising, smoking, or drinking coffee for at least 30 minutes prior to the blood pressure measurement.

It is important to remember that hypertension is a chronic condition; a single elevated reading does not constitute high blood pressure. If someone is ill or in pain, that person's blood pressure may well be above normal but this is not hypertension. It is also not uncommon for someone's blood pressure to be high when he or she is anxious or stressed. One of the more common situations in which this can happen is during a visit to a physician. This phenomenon is called *white coat hypertension*, and it affects about 20-30% of all patients.

Although one measurement greater than 140 mmHg systolic or 90 mmHg does not define hypertension, an abnormally high measurement should not be ignored and follow-up with a physician should be done. A lower than normal blood pressure measurement is usually less worrisome than one that is abnormally high but this should also be followed up.

Primary and Secondary Hypertension

As mentioned in the introduction, there is no known or identifiable cause for 95% of all cases of hypertension; this type of hypertension is called *essential hypertension* or *primary hypertension.* There are certainly risk factors and lifestyle issues that can increase the chances that someone will develop the disease, but it has never been determined why most people develop essential hypertension. Other cases of hypertension do have an identifiable cause, and this is called *secondary hypertension*. Some cases of hypertension are due to kidney damage, hormonal disease, or other medical problems.

Secondary Hypertension

Secondary hypertension is a chronically elevated blood pressure for which there is an identifiable cause, and it is very uncommon. For some people, kidney disease can cause secondary hypertension.

Another cause of secondary hypertension is a disease called Cushing's disease. People with Cushing's disease produce too much of a hormone called cortisol that increases blood pressure. An overactive thyroid gland can also cause secondary hypertension.

There is a condition called pre-eclampsia that can happen during pregnancy that can cause high blood pressure, and a tumor of the adrenal gland called pheochromocytoma can also be a cause of secondary hypertension. The causes of secondary hypertension can be drugs, endocrine, neurological, renal, and vascular.

Drugs

Commonly used drugs that can cause secondary hypertension include amphetamine, cocaine, ecstasy, the MAO antidepressants, methylphenidate (commonly known by the brand name Ritalin), nicotine, and pseudoephedrine and phenylephrine. Pseudoephedrine and phenylephrine are decongestants found in over-the-counter cough and cold and allergy relief medications. Drug withdrawal from alcohol, amphetamine, benzodiazepines (*i.e.*, Valium, Klonopin) and cocaine can also cause hypertension.

Endocrine

Secondary hypertension can be caused by abnormalities in different glands and/or hormones. Abnormalities of the adrenal glands, the parathyroid gland, or the thyroid gland can all be causes of secondary hypertension.

Neurological

Some brain tumors can cause secondary hypertension, as can a cerebrovascular accident (CVA), more commonly called a stroke.

Renal

Tumors of the kidney, vascular disorders in the kidneys, and certain types of chronic kidney disease are common causes of secondary hypertension.

Vascular

A narrowing of the aorta called coarctation can cause secondary hypertension. Another vascular disorder called vasculitis, which is an inflammation and destruction of blood vessel, has also been known to cause secondary hypertension.

There are other causes of secondary hypertension but these are relatively rare, as are the medical conditions listed above. If someone has secondary hypertension, the cause will usually be obvious.

Primary Hypertension

Primary hypertension is very common. Approximately 75 million American adults have primary hypertension, and this number will probably increase.

The incidence of hypertension is significantly different in different ethnic groups. Primary hypertension affects approximately 33.5% of non-Hispanic blacks, 28.9% of non-Hispanic whites, and 20.7% of Hispanic Americans. Up to age 45, hypertension is more common in men than in women. Increasing age increases the risk of developing hypertension, and 75% of all adults in the United States 70 years and older have hypertension.

Primary hypertension usually develops between the ages of 30 to 60. Hypertension that develops before age 20 is almost always from a secondary cause such as an abnormal artery in the kidneys or a coarctation of the aorta. Primary hypertension is a progressive disease that develops in stages: pre-hypertension, stage one hypertension, and stage two hypertension.

Pre-hypertension

The blood pressure will be 120-139 mmHg systolic, and 80-89 mmHg diastolic.

Stage 1 Hypertension

Systolic blood pressure is 140-159 mmHg, diastolic blood pressure is 90-99 mmHg.

Stage 2 Hypertension

Systolic blood pressure is 160 mmHg or greater, and diastolic blood pressure is 100 mmHg or greater.

As mentioned above, the cause of primary hypertension is not known, and primary hypertension is most likely due to a combination of several factors such as genetics and lifestyle. Primary hypertension does affect some families more than others, but it does not appear that primary hypertension is inherited; it takes lifestyle factors *and* an inherited factor such as ethnic background to cause primary hypertension.

While no one knows why most people develop hypertension, there are lifestyle factors and some other issues such as age, race, gender, and certain medical conditions that increase a person's risk for developing the disease. The following factors can aggravate an existing case of hypertension.

- Age
- Depression
- Diabetes
- Ethnic background
- Excess alcohol consumption
- Family history of hypertension
- Male gender
- High salt diet
- Obesity
- Obstructive sleep apnea
- Oral contraceptives
- Post-menopause
- Sedentary lifestyle
- Smoking
- Stress

All of these can contribute to the development of primary hypertension. Some can be changed while others obviously cannot, and treatment of primary hypertension focuses on changeable lifestyle factors.

Signs and Symptoms of Hypertension

As mentioned above, hypertension has been called the silent killer because primary hypertension develops slowly, over the course of years, and the elevation of blood pressure increases over time. Primary hypertension, in almost all cases, will *not* cause early signs and symptoms because of the slow, progressive course of primary hypertension. Because signs and symptoms are absent, most people with primary hypertension will have the disease for quite some time before it is diagnosed. The damage that is caused by primary hypertension is also slow, progressive, and persistent.

It is usually only when the blood pressure gets to a dangerous level that someone will develop health problems that he or she can feel and notice. The signs and symptoms of seriously elevated blood pressure may include:

- Blood in the urine
- Blurred vision
- Chest pain
- Difficulty breathing
- Dizziness
- Dyspnea on exertion
- Fatigue
- Headache

- Rapid heartbeat

Unfortunately, most people have mild or moderate hypertension and there are no obvious warning signs or signals that the blood pressure is abnormally high. When someone is living with a blood pressure that is elevated month after month, year after year, that constant high force puts a serious strain on the blood vessels and some of the organs of the body. The result is that slowly but surely the blood vessels and the target organs become damaged. Combine that fact with the absence of signs and symptoms of mild to moderate hypertension and it becomes clear why hypertension has been called the *silent killer*.

Complications of Hypertension

There are numerous complications of hypertension, and most of them are very serious. These complications are caused by the persistent increase in pressure in the blood vessels of vulnerable organs. Over time, this elevated pressure irreversibly damages the brain, the kidneys, *etc.*, and it is also a primary cause of other diseases such as atherosclerosis.

Heart Disease

Hypertension, along with smoking and elevated serum cholesterol, is one of the *major* risk factors for developing heart disease. The higher the blood pressure is, the greater the risk of heart disease. A systolic blood pressure 20 mmHg or a diastolic blood pressure 10 mmHg above 115/75 mmHg doubles the chances of dying from heart disease.

People who have primary hypertension are seven times as likely to die from heart disease compared to people who have normal blood pressure. The presence of primary hypertension also increases the risk of developing atrial fibrillation (common heart arrhythmia), congestive heart failure (CHF), and peripheral vascular disease.

Kidney Disease

Primary hypertension is the second leading cause of kidney disease. African Americans are six times more likely to develop kidney disease from hypertension when compared to other ethnic groups.

Ocular Damage

Many people who have primary hypertension have damage to the blood vessels in their eyes.

Stroke

An elevated blood pressure is the most important modifiable risk factor for developing an ischemic stroke, which is a stroke caused by a blood clot. An elevated blood pressure is considered the primary cause of 60% of hemorrhagic stroke (strokes caused by bleeding in the brain). A systolic blood pressure greater than 160 mmHg and/or a diastolic blood pressure greater than 100 mmHg are considered significant risk factors for stroke.

Except for stroke, these complications are similar to hypertension. They often develop slowly without noticeable signs or symptoms. When the person with hypertension begins noticing changes in the way

he or she feels, these issues of heart disease or kidney damage, *etc.*, are already advanced and damage has been done.

Prevention and Treatment of Hypertension

There is no cure for primary hypertension. Also, primary hypertension will usually appear in a certain segment of the population. These facts can cause some people to decide that it is not worth the trouble, expense, and inconvenience of changing their lifestyle or trying to treat the disease. Moreover, in the healthcare community, hypertension has been known informally for years as a disease that is resistant to treatment and even people who are compliant may not have complete success in controlling primary hypertension.
In spite of these difficulties, hypertension may be prevented or treated in some people. Clinical trials have clearly shown that controlling primary hypertension will 1) reduce the risk of stroke by 35-40%, 2) reduce the risk of heart attack by 20-25%, and 3) reduce the risk of developing congestive heart failure by more than 50%.

Primary Hypertension: Life Style Factors

The first step in the prevention of hypertension is for individuals to have their blood pressure checked several times a year. For some people with risk factors such as a strong family history of hypertension or African-American males, blood pressure should be checked regularly starting in a person's early 20s. People who are over the age of 60 should also have their blood pressure checked regularly.

The next step in preventing hypertension involves making lifestyle changes. Many people find these changes difficult to accomplish. Hypertension has been associated with obesity, smoking, a high-salt

diet, and a sedentary lifestyle. It is well known that losing weight, stopping smoking, eating a "healthy" diet, and exercising regularly are habits that many people find difficult to start and continue. Current recommendations for making lifestyle changes are listed here.

Alcohol

For prevention of primary hypertension and/or treatment of primary hypertension, it is recommended that men should not consume more than 1-ounce of alcohol a day and women should not consume more than half-ounce of alcohol a day. One ounce of alcohol would be approximately the amount of two 12-ounce bottles of beer, two 5-ounce glasses of wine, or a little more than one shot of hard liquor.

Diet

Diet should include reducing the daily intake of cholesterol and saturated fats. Make sure that the daily intake of sodium is less than six grams of sodium chloride, and make sure that the diet contains adequate amounts of calcium, magnesium, and potassium. Include lots of fruits, vegetables, and whole grains in the diet.

Exercise

It is recommended to engage in some form of aerobic exercise for at least 30 minutes five to seven days a week.

Smoking

Smoking should be stopped. Smoking greatly increases the damage caused by primary hypertension, particularly the development of cardiovascular disease.

Weight Loss

Losing weight is a critical part of preventing and treating primary hypertension and preventing the complications associated with primary hypertension. Most people who have primary hypertension are overweight or obese.

It has been shown that a low-salt diet, losing weight, stopping smoking, staying active, and other healthy lifestyle habits will lower an elevated blood pressure. Patients should be informed about these changes and the health benefits they impart, such as preventing diabetes and heart disease. Over time, making these changes is simpler, less expensive, and easier than taking medications. Patients should also be informed that the complications of untreated hypertension can be devastating since primary hypertension is one of the leading causes of heart disease, kidney disease, stroke, and damage to the eyes.

Activity, diet, and lifestyle changes can dramatically decrease the risk of developing primary hypertension, and they are important steps for treating primary hypertension, as well. Individually, they have been proven to help reduce blood pressure and the incidence of complications, and when combined they can have a very powerful preventive effect.

Primary Hypertension: Medications

In addition to the lifestyle changes mentioned above, anti-hypertensive medications may be part of a treatment plan for hypertension. Medication may be necessary because a patient is not able or willing to exercise, eat properly, lose weight, or stop smoking;

or, it may be necessary because a person's hypertension is resistant and more difficult to treat.

There are a variety of oral medications that are used to treat primary hypertension. Each one works by a different mechanism, and all of them have side effects. Some of these side effects can be very disturbing, such as impotence in males, confusion, excessive urination, and depression.

The choice of medications that are used to treat primary hypertension will depend on several factors such as the patient's age, what co-existing medical problems the patient has, and how high the blood pressure is. The Certified Nursing Assistant (CNA) does not need an in depth knowledge of such medication, but should be able to recognize the commonly prescribed medications that are used to treat primary hypertension. The following are the generic names of these drugs.

- *ACE inhibitors:* Captopril, enalapril, lisinopril, ramipril, and quinapril
- *ACE II inhibitors:* Losartan, olmesartan, valsartan
- *Beta-blockers:* Atenolol, carvediliol, labetalol, metoprolol, propranolol
- *Calcium channel blockers:* Amlodipine, diltiazem, felodipine, nifedipine, verapamil
- *Diuretics:* Furosemide, HCTZ, triamterene, spironolactone
- *Vasodilators:* Hydralazine, minoxdil
- *Other anti-hypertensives:* Clonidine, doxazosin, guanfacine, prazosin, terazosin

Hypertensive Emergencies

Primary hypertension can cause serious health complications due to the long-term increase in pressure in the blood vessels of the brain, eyes, heart, and kidneys, and peripheral circulation. For the most part, the damage to these organs takes place slowly and without symptoms but if the blood pressure is very high, it is possible that organ damage can happen quickly and the patient will exhibit symptoms more quickly. This situation is called a *hypertensive emergency*.

A hypertensive emergency is typically defined as a blood pressure greater than 180/120 mmHg *and* the patient has signs and symptoms of sudden, ongoing organ damage.

People who are having a hypertensive emergency may complain of blurred vision, chest pain, dizziness, dyspnea, or headache. The patient is at risk for developing congestive heart failure, pulmonary edema, a stroke, irreversible damage to the eyes, or having a myocardial infarction or a dissection of the aorta. A hypertensive emergency is a true medical emergency, and immediate treatment with intravenous (IV) anti-hypertensives is needed.

Patient Care

Caring for someone with hypertension should start with recognizing the people who are at risk. Remember, people over the age of 60, African-Americans, people who are obese, and people who smoke are very likely to have, or develop hypertension. If a CNA is caring for someone who has any of these risk factors, the CNA should make sure to ask that person when he or she last had the blood pressure measured.

If a patient has primary hypertension, it is important to make sure that the patient's blood pressure is measured accurately. The proper way to measure a blood pressure was reviewed earlier. People might be tempted to take short cuts when checking a blood pressure, but if someone has primary hypertension it is very important to measure blood pressure the right way. To review, the CNA would use the proper size blood pressure cuff, not place the cuff over a shirt, sweater, make sure the arm is at the level of the heart, and make sure the patient is lying or sitting and has been resting for at least five minutes.

Compare the current blood pressure measurement to the previous readings. If it is drastically higher or lower, inform a nursing supervisor immediately. A supervisor should be immediately notified if the systolic pressure is greater than 140, the diastolic pressure is greater than 90 and the patient is complaining of chest pain, headache, dizziness, shortness of breath, or blurred vision. Also, notify a nursing supervisor if the blood pressure is greater than 140/90 mmHg and this is a new finding for this patient.

Remember, normal blood pressure is defined as a measurement equal to or less than 120/80 mm Hg, and hypertension is defined as blood pressure greater than 140/90 mm Hg. There will be instances in which a patient's blood pressure will be over 140/90. For example, a patient's blood pressure is 152/84 mm Hg. Should this be considered an emergency? The answer is no. Despite lifestyle modifications and antihypertensive medication, some people will persistently have a blood pressure that is high. If measuring someone's blood pressure and it is over 140/90 mm Hg, 1) see if the patient has a history of primary hypertension, 2) check previous readings to see if they were

high, 3) see if the patient is taking antihypertensive medication, and 4) make sure that a supervisor is aware of the elevated reading and that the supervisor is aware of the circumstances, *i.e.*, the patient's previous readings, history of primary hypertension, use or non-use of antihypertensive medication.

Aside from accurately measuring the blood pressure and being aware of the signs and symptoms of the complications of primary hypertension, one of the most important things a CNA can do is provide education and encouragement to the patient. Doing what needs to be done to control primary hypertension may not be easy but if a health clinician reminds a patient of the risk of non-compliance versus the benefits of lifestyle changes and medications, making that choice may come easier.

Summary

In the healthcare community, hypertension has been known informally for years as a disease that is resistant to treatment and even people who are compliant may not have complete success in controlling hypertension. Of the people with high blood pressure, many do not seek treatment, ignore the disease, and hope it will go away. Some people who are being treated for hypertension are not able to control their blood pressure well, and some do not comply with treatment.

Hypertension or high blood pressure is a chronic medical condition that is caused by a persistent elevation of the pressure inside the circulatory system. It is a very serious disease that has significant complications and consequences. There is no cure for most cases of hypertension but with lifestyle alterations and the proper medications when needed, hypertension can be controlled. Caring for someone with

hypertension should start with recognizing the people who are at risk. The CNA is able to identify people with risk factors, and to help educate them on hypertension prevention and to encourage them to follow proper treatment.