HEART FAILURE AND CKD

WHAT YOU NEED TO KNOW

WHAT ARE THEY?

- **Heart Failure** is a serious condition in which the heart cannot pump blood as well as it should. It can be caused by other conditions, including arrhythmias (irregular heartbeat), heart valve disease, uncontrolled blood pressure, or damaged heart muscle such as after a previous heart attack. As a result, the rest of the body cannot receive enough blood that is rich in oxygen and nutrients. It does not mean that the heart has stopped beating, but the heartbeat is weaker.
- Signs and symptoms of heart failure can include effort intolerance (unable to do physical exercise), trouble breathing, fatigue, swelling (ankles, feet, legs, abdomen, neck), cough, loss of appetite, weight gain, irregular pulse, and/or palpitations (sensation of feeling the heartbeat).
- **Chronic kidney disease (CKD)** is a loss of kidney function that happens gradually, and which has been present for 3 or more months. It is not reversible and it can contribute to the development of heart failure.
- In CKD, the kidneys become less able to perform many vital functions, including removing wastes from the body, balancing the body's fluids, regulating blood pressure, producing red blood cells, and maintaining healthy bones.

WHAT ABOUT HEART DISEASE RISK?

- Heart failure is a major type of cardiovascular disease (CVD) or heart disease. It carries a higher risk of hospital admission and death.
- CKD is a condition that increases the risk of heart disease, and also has a higher risk of hospital admission and death. As the blood filtering units of your body, your kidneys are prone to problems with blood flow and blood vessels.
- CKD has been linked with heart failure. People with CKD have a higher risk of heart failure because the kidneys cannot get rid of fluid effectively. In turn, people with heart failure have a higher risk of CKD due to reduced blood flow to the kidneys.
- People often have both heart failure and CKD. These conditions share many of the same risk factors, including diabetes and high blood pressure.

HOW ARE THEY TESTED?

- Heart failure can be suspected based on physical exam findings of fluid overload, abnormal EKG (electrocardiogram) or heart rhythm tracing, and by echocardiogram (an ultrasound of your heart that shows the pumping function). Your medical and family histories are also important.
- For heart failure, other imaging tests can show signs of fluid overload. An X-Ray can show fluid in the lungs as a sign of heart failure. Blood tests such as B-type natriuretic peptide (or BNP) help diagnose and are used for monitoring degree of heart failure and response to treatment. An exercise stress test can also test for heart disease and looks for risk of future damage.
- CKD can be diagnosed by a urine test to detect protein (albuminuria) and blood (hematuria) or a blood test that measures the creatinine that is used to determine the glomerular filtration rate (GFR). The GFR is a measurement of how well the kidneys are filtering wastes. Other blood tests and imaging studies are needed to determine the cause of kidney disease. Sometimes a kidney biopsy is needed to diagnose the cause of CKD.

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HOW ARE THEY TREATED?

- Heart failure can be treated by addressing certain causes or risk factors:
  - *High blood pressure*: Strains the heart and blood vessels and raises the risk of heart disease. Types of blood pressure medicines can include ACEIs (angiotensin converting enzyme inhibitors), ARBs (angiotensin II receptor blockers), beta blockers, diuretics, and aldosterone antagonists. A newer type of medicine called an ARNI (angiotensin receptor-neprilysin inhibitor) can also be used for heart failure.
  - *Coronary artery disease*: Blockages of the arteries to the heart can cause heart failure. Opening those blockages with stents or bypass surgery can improve heart function in some cases.
  - *Heart valve disease*: Happens when valves within the heart do not form properly. Surgery can be used to repair this.
  - *Irregular heartbeat*: Also called an arrhythmia, which can cause poor pumping function. Medicines can be used to help control the heart rate. Cardiac resynchronization therapy (CRT) involve a controlled use of a small electric shock (cardioversion) in combination with medications, which can be used to correct the heart rhythm. Sometimes a pacemaker or defibrillator is used to help with this. Anticoagulants and antiplatelets are medicines that can be used to help prevent harmful blood clots.
  - *High cholesterol*: Can lead to plaques that block blood vessels. Medicines, such as statins, can be used to control cholesterol along with a diet low in saturated fat, in addition to exercise.
  - *Diabetes:* High blood sugar can raise the risk of heart disease. It can be treated with a low sugar diet and medicines (such as insulin, and/or other oral medications).
- Heart failure treatment often involves maintaining fluid balance and controlling sodium (salt) intake through medications (blood pressure medicines called diuretics) and a low-sodium diet. Sometimes, fluid intake is restricted.
- Some people with severe compromise of heart function might need a heart transplant.
- CKD is linked with high blood pressure, high cholesterol, and high blood sugar (diabetes), all of which can increase the risk of heart disease. These conditions are managed with more physical activity, a modified diet, and medications.
- Early detection and treatment of risk factors, such as high blood pressure and diabetes, can help keep CKD from getting worse. When kidney disease progresses, it may eventually lead to kidney failure, which requires dialysis or a kidney transplant to maintain life.

HOW CAN I REDUCE MY RISK?

- Eat healthier foods. Control your intake of sugar, salt, and fat, and get regular exercise (your healthcare provider can help you determine dietary and lifestyle changes that might be best for you).
- Manage blood pressure.
- Lose weight if you are overweight. Obesity contributes to high blood pressure and diabetes, which can hurt the kidneys and heart.
- Avoid use of non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and naproxen, which can harm kidneys and interfere with medications used to treat heart failure.
- Avoid herbal supplements. Many herbal products can harm the kidneys.
- Avoid smoking. Smoking increases the chance of heart disease.
- Take all medicines as instructed by your healthcare provider, and do not miss any appointments.
- Understand the risks and benefits of any treatment. Your healthcare provider may need to change the amount of certain drugs you take in order to keep the right levels in your blood at all times.
- Talk to your healthcare provider about any new drugs, treatments, and research that can help with your disease, and which treatment might be best for you.

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