

HEART DISEASE CONDITIONS AND RISKS

The types of heart disease that affect women can be quite different from those that affect men, and may require a different approach to diagnose and treat.

When it comes to heart disease conditions and risks, there are those that:

- 1) Are unique to a single sex;
- 2) Occur in both sexes but affect men and women at different rates;

Cardiovascular conditions and risk factors that only affect women

Adverse Pregnancy Outcomes:

- **Preterm Delivery:** birth at <37 weeks' gestation. Preterm delivery is associated with a 48 to 73% increase in a woman's future risk of cardiovascular disease, including heart attack, stroke, heart failure and death.
- **Hypertensive Pregnancy Disorders** include gestational hypertension, preeclampsia and eclampsia. These conditions increase a woman's risk for future cardiovascular disease, including chronic hypertension, heart attack, stroke, heart failure and death, by 2- to 5-fold.
 - Gestational Hypertension:* new onset hypertension (>140/90 mm Hg) after 20 weeks' gestation in a woman who originally had blood pressure in the normal range.
 - Preeclampsia:* new onset hypertension (>140/90 mm Hg) after 20 weeks' gestation and proteinuria (the presence of abnormal quantities of protein in the urine) or end-organ dysfunction.
 - Eclampsia:* Rarely, preeclampsia can progress to eclampsia. Eclampsia involves the onset of seizures in a woman with preeclampsia.
- **Intra-uterine growth restriction (IUGR):** The baby's ability to grow in the mother's womb is limited, which can occur due to various reasons related to baby, the mother or the placenta. As a result, the weight of IUGR babies is lower than 90% of all babies. Women with a history of IUGR during their pregnancy have a higher risk of future cardiovascular disease.
- **Gestational Diabetes:** newly diagnosed diabetes beyond the first trimester of pregnancy. Gestational diabetes increases a woman's risk for future cardiovascular disease by about 2-fold, which is mostly mediated by development of diabetes later in life.
- **Peripartum Cardiomyopathy (PPCM):** an uncommon form of heart failure that can occur during the last month of pregnancy or up to five months after giving birth.

Polycystic Ovary Syndrome (PCOS): a condition that affects a woman's hormone levels. Women with PCOS produce higher-than-normal amounts of male hormones. This hormone imbalance can cause irregular menstrual cycles and make it more difficult for women with PCOS to get pregnant. PCOS is a risk factor for cardiovascular disease.

Menopause and early menopause: Menopause is a normal condition that all women experience as they age. It happens when the ovaries no longer release an egg every month and menstruation stops. A woman's risk of cardiovascular disease increases after menopause, due at least in part to the loss of the protective effects of estrogen and other hormones. Some women have early menopause (onset at age 40 years or younger). Early menopause also increases a woman's risk for future cardiovascular disease.

Heart Disease Conditions That Predominantly Affect Women

Coronary Microvascular Disease (MVD) (sometimes called small artery disease, small vessel disease, or cardiac syndrome X): heart disease that affects the walls and inner lining of tiny coronary artery blood vessels that branch off from the larger coronary arteries. The heart's tiny coronary artery blood vessels do not have plaque, but damage to the inner walls of the blood vessels that can lead to deregulation of the vessels' tone and decrease blood flow to the heart muscle. This can cause chest pain, or even a heart attack. Coronary MVD affects more women than men.

Spontaneous Coronary Artery Dissection (SCAD): occurs when a tear forms in one of the blood vessels in the heart slowing or blocking blood flow to the heart, causing a heart attack, abnormalities in heart rhythm or sudden death. Over 90% of patients with SCAD are women.

Apical Ballooning Syndrome (sometimes called Takotsubo or stress cardiomyopathy, broken heart syndrome): weakening of the left ventricle, the heart's main pumping chamber, usually as the result of severe emotional or physical stress. In the classic presentation of this condition, there is predominant weakness of the tip (apex) of the heart as compared to other regions.

Autoimmune diseases occur when the immune system attacks the body because it confuses it for something foreign. There are many autoimmune diseases.) Two of the most common are:

- **Rheumatoid Arthritis:** occurs when your immune system mistakenly attacks your own body's tissues such as the joints. This creates inflammation that causes the tissue that lines the inside of joints to thicken, resulting in swelling and pain in and around the joints. Women are 2.5 times more likely than men to have rheumatoid arthritis.
- **Systemic Lupus Erythematosus (simply known as lupus):** systemic autoimmune disease that occurs when the body's immune system attacks its own tissues and organs. Inflammation caused by lupus can affect many different body systems — including your joints, skin, kidneys, blood cells, brain, heart and lungs. Women are 9 times more likely than men to develop lupus.

Autoimmune diseases such as rheumatoid arthritis and lungs are risk factors for cardiovascular disease and can accelerate the build-up of cholesterol plaque in blood vessels.

Heart Failure with Preserved Ejection Fraction (HFpEF) (also referred to as diastolic heart failure): The left ventricle, the heart's main pumping chamber, loses its ability to relax normally (because the muscle has become stiff). The heart can't properly fill with blood during the resting period between each beat. In addition, HFpEF patients have high blood pressure and other arterial abnormalities that make the work of

the heart more difficult. The constellation of heart and vascular abnormalities lead to heart failure symptoms such as shortness of breath with varying degrees of activity, swelling of the lungs, and inability to lay down flat due to breathing difficulties. HFpEF affects twice as many women as men.

Postural Orthostatic Tachycardia Syndrome (POTS): a condition characterized by too little blood returning to the heart when moving from a lying down to a standing up position. The reduced blood flow to the heart causes the heart rate to increase, which can be uncomfortable. POTS affects more women than men.