

Premature ventricular contractions (PVCs)

Definition

Premature ventricular contractions (PVCs) are extra, abnormal heartbeats that begin in one of your heart's two lower pumping chambers (ventricles). These extra beats disrupt your regular heart rhythm, which normally starts in the upper right chamber (atrium). As a result, you may feel a flip-flop or skipped beat in your chest. Premature ventricular contractions are very common — they occur in most people at some point. Premature ventricular contractions are also called:

- Premature ventricular complexes
- PVCs
- Ventricular premature beats
- Ectopic heartbeats
- Extrasystoles

Most people who have premature ventricular contractions don't need treatment. If you have occasional extra beats but you are an otherwise healthy person, there's generally no reason for concern and no treatment needed.

If you have frequent symptoms or you have underlying heart disease, you may need treatment to help you feel better and treat underlying heart problems.

Symptoms

Premature ventricular contractions often cause no symptoms. But you may feel an odd sensation in your chest, such as:

- Flip-flops
- Fluttering
- Pounding or jumping
- Skipped beats or missed beats
- Increased awareness of your heartbeat

Causes

Your heart is made up of four chambers — two upper chambers (atria) and two lower chambers (ventricles). The rhythm of your heart is normally controlled by the sinoatrial node (SA node)

— or sinus node — an area of specialized cells located in the right atrium. This natural pacemaker produces the electrical impulses that trigger the normal heartbeat. From the sinus node, electrical impulses travel across the atria to the ventricles, causing them to contract and pump blood out to your lungs and body.

Premature ventricular contractions are abnormal contractions that begin in the ventricles. These extra contractions usually beat sooner than the next regular heartbeat. And they often interrupt the normal order of pumping, which is atria first then ventricles. As a result, the extra, out-of-sync beats are usually less effective in pumping blood throughout the body.

Why do extra beats occur?

The reasons aren't always clear. Certain triggers, heart diseases or changes in the body can make cells in the ventricles electrically unstable. Underlying heart disease or scarring may also cause electrical impulses to be mis-routed. Premature ventricular contractions may be associated with:

- Chemical changes or imbalances in the body
- Certain medications, including common asthma medications
- Alcohol or illegal drugs
- Increased levels of adrenaline in the body, caused by caffeine, exercise or anxiety
- Injury to the heart muscle from coronary artery disease, congenital heart disease, high blood pressure or infections (myocarditis)

Risk factors

The following stimulants, conditions and triggers may increase your risk of premature ventricular contractions:

- Caffeine
- Alcohol
- Tobacco
- High blood pressure (hypertension)
- Anxiety
- Underlying heart disease, including congenital heart disease, coronary artery disease, heart attack, myocarditis and cardiomyopathy

When to seek medical advice

If you feel flip-flops, a sensation of skipped heartbeats or odd feelings in your chest, contact your doctor. You'll want to identify the source of these symptoms. Premature ventricular contractions may be the problem, but other conditions also may be to blame, including other rhythm problems, serious heart problems, anxiety, anemia or infections.

Tests and diagnosis

If your doctor suspects that you have premature ventricular contractions, you may have a form of electrocardiogram. This test can detect the extra beats, identify their pattern and their source, and look for any underlying heart disease.

Electrocardiogram

(ECGs)

If you experience infrequent premature ventricular contractions, they may not be detected during the brief time a standard ECG is being done. You may need a Holter monitor ECG or event recorder ECG for at least 24 hours or more to capture any abnormal rhythms:

- **Standard ECG.** During a standard ECG test, sensors (electrodes) are attached to your chest and limbs to create a graphical record of the electrical signals traveling through your heart. It is usually done in a clinic or hospital setting and lasts only a few minutes.
- **Exercise stress EKG.** This diagnostic test uses electrocardiography to record your heart's electrical activity while you walk on a treadmill or pedal an exercise bike. It can help determine the significance of your premature ventricular contractions. When premature beats disappear or dwindle during an exercise test, they're usually considered harmless. On the other hand, if exercise provokes extra beats, it may indicate higher risk of serious heart rhythm problems.
- **Holter monitor.** This portable device is carried in your pocket or in a pouch on a belt or shoulder strap. It automatically records your heart's activity for an entire 24-hour period, which provides your doctor with an extended look at your heart rhythms.
- **Event recorder ECG.** This portable electrocardiogram device can also be carried in your pocket or worn on a belt or shoulder strap for home monitoring of your heart's activity. But, unlike a Holter monitor, it doesn't record continuously. When you feel symptoms, you push a button, and an ECG recording of the preceding few minutes and following few minutes is saved. This allows your doctor to see your heart rhythm at the time of your symptoms.

A Holter monitor or event recorder ECG can help identify the pattern of your premature ventricular contractions. Two premature beats in a row are called a couplet. Some patterns, such as ventricular trigeminy — two normal beats followed by a premature beat — tend to be harmless. Others, such as ventricular bigeminy — a pattern of alternating normal beats and premature beats — may be associated with symptoms. More than three premature beats in a row is called ventricular tachycardia — which can cause symptoms and be a sign of serious heart disease.

Complications

If you have frequent premature ventricular contractions or certain patterns of premature ventricular contractions, you may be at increased risk of developing serious

heart rhythm problems. Rarely, when accompanied by underlying heart disease, frequent premature contractions can lead to chaotic, dangerous heart rhythms and possibly sudden cardiac death.

Treatments and drugs

Most people with premature ventricular contractions and an otherwise normal heart won't need treatment. Rarely, if you have frequent, bothersome symptoms, you may be offered treatment to help you feel better, but PVCs are typically not harmful.

In some cases, if you have underlying heart disease that could lead to more serious rhythm problems, you may need to make efforts to avoid triggers or perhaps take medications.

- **Lifestyle changes.** Eliminating common contraction triggers — such as caffeine or tobacco — can decrease the frequency and severity of your symptoms.
- **Medications.** Beta blockers — which are often used to treat high blood pressure and heart disease — can suppress premature contractions. Other medications such as calcium channel blockers or anti-arrhythmic drugs, such as amiodarone, also may be used, if you have ventricular tachycardia or very frequent premature ventricular contractions that impair your heart's function causing severe symptoms.

If you have very frequent PVCs associated with underlying heart disease and periods of ventricular tachycardia, your doctor might recommend other treatment.

Lifestyle and home remedies

The following self-care strategies can help control premature ventricular contractions and improve your heart health:

- **Track your triggers.** If you have frequent symptoms, you might want to take note of your symptoms and your activities. This can help identify substances or actions that may trigger premature ventricular contractions.
- **Eliminate common triggers.** Caffeine, alcohol, tobacco and other drugs are known triggers of premature ventricular contractions. Reducing or avoiding these substances can reduce your symptoms. Anxiety can also trigger abnormal heartbeats. If you think anxiety may be contributing to your condition, try stress-reduction techniques, such as biofeedback, meditation or exercise, or talk to your doctor about anti-anxiety medications.

Reference: Mayo Clinic-PVC's