

## What are angiotensin II receptor blockers?

Angiotensin II receptor blockers (ARBs for short) are a class of medications used to treat high blood pressure and heart failure. They are very similar to [ACE inhibitors](#) because they work on the same kidney hormone system. Like ACE inhibitors, ARBs dilate (widen) blood vessels and increase the amount of water your kidneys get rid of, lowering blood pressure. This eases the strain on the heart, allowing it to pump more effectively. ARBs also relieve heart failure symptoms such as leg swelling and shortness of breath, and reduce the chances of hospitalization and improve survival in heart failure patients. ARBs can also slow the progression of kidney disease in women with diabetes.

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Because ACE inhibitors are the first-choice treatment and ARBs do not have a proven advantage, ARBs are usually used in patients who cannot take ACE inhibitors because of side effects. Studies have found that women are more likely than men to be switched from an ACE inhibitor to an ARB and more likely to be given ARBs overall (12% of women versus 9% of men with heart failure), probably because women suffer side effects of ACE inhibitors more often than men (for example, women are more than twice as likely to develop a cough related to ACE inhibitor use).<sup>2-4</sup>

## Angiotensin II Receptor Blockers (ARBs)

<b>Generic Names:</b>	Losartan	Valsartan	Irbesartan
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<b>Brand Names:</b>	Cozaar	Diovan	Avapro
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<b>How it is given:</b>	Oral (tablet)
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<b>What it is used for:</b>	<ul style="list-style-type: none"><li>- Treatment of heart failure to manage symptoms and improve survival in patients who cannot tolerate ACE inhibitors</li><li>- Treatment of high blood pressure</li><li>- Prevention and treatment of diabetic nephropathy (kidney disease from diabetes)</li></ul>
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<b>You should not be treated with it if:</b>	you have had an allergic reaction to this group of medications
<b>Pregnancy/nursing:</b>	ARBs should not be used during pregnancy or nursing

### Who might receive ARBs to prevent or treat heart failure?

ARBs can be used to prevent heart failure in women who are at high risk for developing the condition, such as those with coronary artery disease, diabetes, or high blood pressure.<sup>1</sup> They can also slow the progression of heart failure in women whose hearts show structural changes that indicate the early stages of heart failure (such as thickening or stiffening of the heart muscle wall) or who have had a heart attack, but have not yet experienced [heart failure symptoms](#).

ARBs are an alternative to ACE inhibitors when the side effects of ACE inhibitors cannot be tolerated, which is especially common in African Americans.<sup>5,6</sup> ARBs effectively relieve heart failure symptoms, improve survival, and decrease hospitalization rates in women with [systolic heart failure](#) (blood pumping problems) and symptoms of heart failure.

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Most women will only be given ARBs when they have already tried ACE inhibitors because ACE inhibitors have been more extensively studied and are believed to benefit the heart in several different ways.

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However, ARBs may also be able to further increase survival in some women with heart failure when added to a standard medication regimen.

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In women with [diastolic heart failure](#) (blood filling problems), it is not clear yet how helpful ARBs are. One large study (more than 3000 patients, 40% were women) found that ARBs slightly decreased hospitalizations in these patients. Results were not broken down by gender.

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However, another study of more than 4000 patients (60% were women) found that the drug did not improve the heart's function or survival rates in women or in men.

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### Who should NOT receive ARBs?

Pregnant women should not take ARBs because of risks to the fetus and baby. Patients who develop an allergic reaction to ARBs should not continue to take these medications.

ARBs should be used carefully in women with kidney problems, diabetes, low blood sodium levels, or very low systolic blood pressures.<sup>1</sup> In addition, women who develop *angioedema* (a potentially serious swelling in the deep layers of the skin and under the linings of some organs) while taking ACE inhibitors may develop it in response to ARB therapy as well, so they need to start the medication slowly and be carefully monitored.

### **How do ARBs work?**

ARBs decrease the stress on your heart and relieve some symptoms of heart failure by widening the blood vessels and increasing the amount of water that is excreted by the kidneys. This lowers blood pressure and reduces the heart's workload, making it easier for the heart to pump blood and preventing or slowing some of the changes to the structure of the heart that will eventually make the heart failure worse. Decreasing the amount of fluid in the blood also decreases the strain on the heart and helps improve symptoms of heart failure like shortness of breath (from fluid build up in the lungs) and swelling in the legs.

### **What is the difference between ARBs and ACE inhibitors?**

ARBs and ACE inhibitors have similar effects and are used in similar ways. Both medications work on the same hormone system, and the overall effect of both drugs is widened blood vessels and reduced blood volume. Both prevent a chemical called angiotensin II from working on the heart and blood vessels, but accomplish this job in slightly different ways.

ACE inhibitors work against angiotensin II by preventing it from being made in the first place. In doing so, they also affect the production of some other chemicals. ARBs, on the other hand, block angiotensin II when it tries to touch receptors in the heart or kidneys. ARBs affect fewer pathways than ACE inhibitors, which is why they tend to have fewer side effects.<sup>15</sup> However, because they affect more diverse pathways, ACE inhibitors may also have more ways to exert beneficial effects on the heart.

### Are ARBs as effective as ACE inhibitors?

Research suggests that ARBs are about as effective as ACE inhibitors at improving survival and lowering hospitalization rates in patients with heart failure. In a randomized trial of 768 patients with blood pumping problems (only 17% were women), the ARB *candesartan* was as effective as the ACE inhibitor

*enalapril*

at lowering blood pressure and preventing death and hospitalization.

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Other studies have had similar results.

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### Do ARBs work as well in women as in men?

One large Canadian survey of nearly 20,000 elderly heart failure patients (52% were women) found that women taking ARBs actually had 30% better survival than those taking ACE inhibitors over about 2 years. Men had similar survival with both types of medication.<sup>18</sup> However, most randomized studies have found no evidence of gender differences in the benefits of treatment with ARBs.

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### Should I be taking an ARB if I am already taking an ACE inhibitor?

Most women will only receive an ARB after they have tried a drug from the more-studied ACE inhibitor class, but were unable to tolerate it because of the side effects. However, some women who are tolerating ACE inhibitors may need stronger treatment because of continued heart failure symptoms. For these women, combination treatment with both an ACE inhibitor and an ARB may be considered.<sup>1</sup> Because ACE inhibitors and ARBs work in different ways on the same system, taking both drugs at the same time may have more dramatic effects than one drug at a time. In women with heart failure who are already taking ACE inhibitors, the addition of an ARB can decrease hospitalization rates and improve symptoms.

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### What are the side effects of ARBs?

ARBs are generally well-tolerated medications and rarely cause serious side effects. Talk to your doctor if you experience dizziness when sitting up or standing up quickly, because these may be signs of low blood pressure. Your doctor may decide to adjust your medication or dosage to minimize this side effect. Other possible side effects include kidney problems caused by reduced blood flow to the kidneys, and elevated potassium level that is not usually serious.

A rare but potentially life-threatening side effect that happens in only 1 in 1000 patients taking ARBs is *angioedema*, fluid build up underneath the deep layers of the skin or the linings of some organs. <sup>2</sup> If you develop symptoms like swelling in the lips or throat or nausea and vomiting, seek medication attention immediately.

### If I cannot take an ARB, what are some alternatives?

If you cannot tolerate ACE inhibitors or ARBs, another treatment option is a combination of the drugs [hydralazine and nitrates](#) . These medications also work to dilate blood vessels and decrease the strain on the heart.

### References

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