

## What are aldosterone antagonists?

Aldosterone antagonists (or aldosterone blockers) are a class of medications used to treat high blood pressure and heart failure. They work on the same hormone system as [ACE inhibitors](#) and [ARBs](#), but in a slightly different way. Aldosterone antagonists block the receptors in the body for the hormone aldosterone, causing the kidneys to hold onto more potassium and get rid of more fluid by increasing urine output. Less fluid in the body means lower blood pressure and less total blood volume, reducing the heart's workload and easing the strain on the heart. Getting rid of excess fluid helps relieve the [symptoms of heart failure](#) that are caused by fluid buildup, such as shortness of breath and swelling in the legs.

Aldosterone antagonists are not routine therapy for women with heart failure because they are less proven than other medications in the same class, including ACE inhibitors and ARBs. but are beneficial in selected women with [systolic heart failure](#) (blood pumping problems) who have recently had a [heart attack](#) or who have severe symptoms. They are added to standard heart failure therapy and frequently given with another [diuretic](#) medication, usually a loop diuretic.

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Older aldosterone blockers (such as *spironolactone*) block more than one type of hormone receptor. They are usually well tolerated in women but may cause lowering of the voice and excessive hair growth. A newer class of drugs called selective aldosterone-receptor antagonists (SARAs), such as *eplerenone*, block only aldosterone receptors, resulting in fewer side effects.

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## Aldosterone Antagonists

<b>Generic Names:</b>	Spironolactone	Eplerenone
<b>Brand Names:</b>	Aldactone	Inspra

**How it is given:** Oral (pill)

**What it is used for:**

- Treatment of heart failure to manage symptoms and to improve survival
- Treatment of high blood pressure
- After a heart attack to improve survival

**You should not be treated with it if:**

- Are taking other potassium-sparing diuretics
- Have high blood potassium levels
- Are taking certain medicines for fungal infections (ketoconazole, itraconazole)

**You should be closely monitored if:**

- You are already taking potassium supplements, since the combination may cause your potassium

**Pregnancy/nursing:** Spironolactone should not be taken during pregnancy, and the safety of ep

### Who should receive aldosterone antagonists to prevent or treat heart failure?

In women at high risk for heart failure but who do not yet have damage to the heart ( [Stage A heart failure](#)), aldosterone antagonists can be used to treat [high blood pressure](#)

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Controlling high blood pressure with any type of medication can prevent the stress on the heart that eventually leads to heart failure.

Women who have had a heart attack may benefit from treatment with eplerenone to prevent complications and slow structural changes in the heart (such as thickening and stiffening of the heart's walls) that cause heart failure.<sup>1</sup>

In women who have recently had a heart attack and have a [systolic heart failure](#) (blood pumping problems) that is causing symptoms, adding the aldosterone antagonist *eplerenone*

to standard treatment reduces hospitalization and improves survival.

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Women who have severe heart failure symptoms can benefit from *spironolactone*

to relieve symptoms and improve survival, whether or not they have recently had a heart attack.<sup>1,4</sup>

### **Who should NOT receive aldosterone antagonists?**

Aldosterone antagonists are not routine therapy for women with systolic heart failure, but are used in selected patients who have recently had a heart attack or who have severe symptoms.<sup>1</sup>

Aldosterone antagonists should not be taken by women with high blood potassium levels (more than 5mEq/L) or impaired kidney function (creatinine levels less than 2.0 mg/dL in women, 2.5 in men).<sup>1</sup> Women taking these drugs need to have their kidney function and potassium levels carefully monitored; if monitoring is not possible, you may be better off not taking the medication at all. Because potassium-sparing diuretics can also cause high blood potassium levels, you should not take aldosterone antagonists if you are taking them. Also talk to your doctor if you are taking any medications to treat a fungal infection, because some of these drugs can have dangerous interactions with aldosterone antagonists.

### **Do aldosterone antagonists work as well in women as in men?**

Our knowledge about which heart failure patients benefit from treatment with aldosterone antagonists comes from a few large, well-controlled studies. Although in most cases less than 30% of study participants were women, the available evidence indicates that women benefit from treatment with these drugs at least as much men do.

The major study of spironolactone in patients with severe heart failure included 1663 patients, 27% of whom were women. Adding the aldosterone blocker to treatment with an ACE inhibitor, a loop diuretic, and other standard medications reduced the risk of dying in the next two years by 30% and the risk of hospitalization by 35% compared with placebo.<sup>4</sup> The treatment also improved heart failure symptoms. When women alone were looked at, women taking spironolactone had better survival than those not on the drug, and there was no evidence that the treatment worked any differently in women.

The major study that examined the effects of eplerenone in patients with heart failure who had recently had a heart attack included 6,632 patients, 29% of whom were women. Overall, the aldosterone antagonist reduced the risk of dying by 15%. When results were broken down by gender, women actually appeared to have slightly better survival than men with treatment, although the difference was small enough that it could have been due to chance.<sup>3</sup>

### **If I cannot take an aldosterone antagonist, what are some alternatives?**

Aldosterone antagonists are not a first-choice therapy but can be added to standard therapy for heart failure. If you cannot take them because of side effects or allergies, or because you will not be monitored regularly, one alternative is to not take any additional medication and just stick to standard heart failure treatment.

To relieve heart failure symptoms, diuretics have many of the same effects as aldosterone antagonists. If side effects prevent someone with heart failure from taking aldosterone antagonists, their symptoms can be controlled by adjusting the doses of the diuretics they are already taking or adding a different type of diuretic medication.

### **My doctor has prescribed an aldosterone antagonist. What should I watch out for?**

One of the main risks of treatment with aldosterone antagonists (affecting up to 6% of patients) is developing high potassium in the blood (*hyperkalemia*), which can have dangerous effects on heart function and disrupt the normal rhythm of the heart.

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You will need to be carefully monitored for potassium level and to make sure your kidneys are working properly as long as you are taking the drug.<sup>1</sup> Other medications that can elevate potassium levels, such as potassium-sparing diuretics or nutritional supplements containing potassium, will need to be reduced or stopped altogether. You may be instructed to avoid or limit potassium-rich foods, which include:

- **Dried fruits** - raisins, prunes, apricots, dates

- **Fresh fruits** - cantaloupe, papayas, bananas, oranges, avocados
- **Fruit juices** - orange, grapefruit, prune
- **Vegetables** – beans, greens, peas
- **Certain meats** - poultry, fish, beef
- **Wheat bran**

Be sure to discuss with your doctor the best way to control the amount of potassium you get from your diet. You should avoid non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin, Advil, and Aleve, and COX-2 inhibitors, which can change how your kidneys work and raise potassium levels.

If a problem is detected, your doctor will decide if lowering the dose or stopping the medication altogether is the best option to avoid potentially dangerous complications. If you experience diarrhea or if you cannot take your loop diuretic medication for any reason, do not take your aldosterone antagonist and contact your doctor for instructions.

Other possible side effects of these medications include dizziness, weakness, coughing, flu-like symptoms, diarrhea, and frequent urination. The drug spironolactone can cause side effects including lowering of the voice, irregular menstrual periods, excessive hair growth, and (in men) enlarged or painful breasts. Talk to your doctor if you experience any of these side effects: lowering your dose or switching to eplerenone can often reduce or eliminate these side effects.<sup>2</sup>

## References

1. Hunt SA, Abraham WT, Chin MH, et al. 2009 Focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines Developed in Collaboration With the International Society for Heart and Lung Transplantation. *J Am Coll Cardiol.* Apr 14 2009;53(15):e1-e90.
2. Pitt B, Williams G, Remme W, et al. The EPHEsus trial: eplerenone in patients with heart failure due to systolic dysfunction complicating acute myocardial infarction. Eplerenone Post-AMI Heart Failure Efficacy and Survival Study. *Cardiovasc Drugs Ther.* Jan 2001;15(1):79-87.
3. Pitt B, Remme W, Zannad F, et al. Eplerenone, a selective aldosterone blocker, in patients with left ventricular dysfunction after myocardial infarction. *N Engl J Med.* Apr 3 2003;348(14):1309-1321.
4. Pitt B, Zannad F, Remme WJ, et al. The effect of spironolactone on morbidity and mortality in patients with severe heart failure. Randomized Aldactone Evaluation Study Investigators. *N Engl J Med.* Sep 2 1999;341(10):709-717.

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