

# PHARMACY

Drug Information

## Medications to Treat Heart Failure



### What is Heart Failure?

- Heart failure (HF) happens when the heart cannot pump enough blood to the rest of the body. This results in insufficient oxygen and nutrients being delivered for normal body functions, especially when one is active or exercising.
- The most common cause of HF is coronary heart disease, which is the narrowing of blood vessels that supply blood and oxygen to heart muscle.
- Other causes include high blood pressure, abnormal heart rhythms, thyroid disorders, severe anemia and infection.

### What are the Medications for Heart Failure and the Side Effects?

Medications and How Do They Work	Common Side Effects	Management and Advice
<p>Angiotensin-Converting Enzyme Inhibitors (ACE-I)</p> <ul style="list-style-type: none"> <li>• <i>Captopril</i></li> <li>• <i>Enalapril</i></li> <li>• <i>Lisinopril</i></li> <li>• <i>Perindopril</i></li> <li>• <i>Ramipril</i></li> </ul> <p>Angiotensin II Receptor Blockers (ARB)</p> <ul style="list-style-type: none"> <li>• <i>Candesartan</i></li> <li>• <i>Losartan</i></li> <li>• <i>Valsartan</i></li> </ul> <p>Angiotensin Receptor-Nepriylsin Inhibitor (ARNI)</p> <ul style="list-style-type: none"> <li>• <i>Sacubitril-Valsartan</i></li> </ul> <p><u>How does it work</u> Prevent further weakening of the heart resulting from heart failure. Also reduce workload of the heart and blood pressure.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Dry cough (usually ACE-I)</li> <li>• May cause elevated potassium level – symptoms include: dizziness, muscle weakness or fast heart beat</li> <li>• Rare side effects: <ul style="list-style-type: none"> <li>○ Swelling of the hands, face, lips, eyes, tongue, or throat</li> <li>○ Difficulty in breathing or swallowing</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Inform your doctor if you have persistent dry cough, severe dizziness or symptoms of elevated potassium levels</li> <li>• Inform your doctor if you intend to get pregnant or are currently pregnant.</li> <li>• Seek medical attention immediately if you experience any rare side effects</li> </ul>

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Beta Blockers <ul style="list-style-type: none"> <li>• <i>Bisoprolol</i></li> <li>• <i>Carvedilol</i></li> <li>• <i>Metoprolol succinate</i></li> <li>• <i>Nebivolol</i></li> </ul> <p><u>How does it work</u> Reduce heart rate and blood pressure, thereby reducing workload of the heart and improve heart function over time.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Tiredness</li> <li>• Cold hands and feet</li> <li>• Breathlessness</li> <li>• Possible sexual dysfunction</li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from a sitting or lying position to minimize dizziness</li> <li>• Symptoms such as tiredness, cold hands and feet may resolve over time</li> <li>• Inform your doctor if breathlessness or persistent giddiness occur</li> </ul>
Mineralocorticoid Receptor Antagonist <ul style="list-style-type: none"> <li>• <i>Spirolactone</i></li> <li>• <i>Eplerenone</i></li> </ul> <p><u>How does it work</u> Suppress the hormone (aldosterone) that affects the heart, thereby maintaining or improving heart function.</p>	<ul style="list-style-type: none"> <li>• Breast tenderness or enlargement (mainly Spirolactone, in males)</li> <li>• Menstrual changes</li> <li>• May cause elevated potassium level – symptoms include: dizziness, muscle weakness, muscle cramp or fast heart beat</li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Inform your doctor if severe dizziness, breast swelling/pain, menstrual changes, or symptoms of high potassium occur</li> </ul>
Diuretics (“Water pills”) <p><i>Thiazide Diuretics</i></p> <ul style="list-style-type: none"> <li>• <i>Metolazone</i></li> </ul> <p><i>Loop Diuretics</i></p> <ul style="list-style-type: none"> <li>• <i>Bumetanide</i></li> <li>• <i>Frusamide</i></li> </ul> <p><u>How does it work</u> Reduce breathlessness, abdominal bloating and leg swelling by increasing urine output.</p>	<ul style="list-style-type: none"> <li>• Nausea, vomiting</li> <li>• Dizziness</li> <li>• May cause low Potassium levels: dizziness, muscle weakness, muscle cramp or fast heart beat</li> </ul>	<ul style="list-style-type: none"> <li>• Take in the morning or late afternoon to avoid frequent urination at night</li> <li>• Increased urinary frequency is expected</li> <li>• Your doctor may prescribe this with Potassium Chloride. Inform your doctor if you cannot swallow the tablets whole</li> </ul>

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I <sub>f</sub> Channel Inhibitor <ul style="list-style-type: none"> <li>• <i>Ivabradine</i></li> </ul> <p><u>How does it work</u> Lowers the heart rate thereby reduces the oxygen demand and workload of the heart.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Tiredness</li> <li>• Sensation of enhanced brightness</li> <li>• Blurred vision</li> </ul>	<ul style="list-style-type: none"> <li>• Inform your doctor if persistent dizziness or changes in vision occur</li> </ul>
Sodium-glucose cotransporter 2 Inhibitors (SGLT2 Inhibitors) <ul style="list-style-type: none"> <li>• <i>Empagliflozin</i></li> <li>• <i>Dapagliflozin</i></li> </ul> <p><u>How does it work</u> Shown to have multiple protective effects on the heart and kidneys, reducing hospitalization due to heart failure.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Nausea, vomiting</li> <li>• Urinary Tract Infection - symptoms include:               <ul style="list-style-type: none"> <li>○ Fever</li> <li>○ Blood in urine</li> <li>○ Pain or burning sensation on urination</li> <li>○ Urinary urgency</li> <li>○ Urinary frequency</li> </ul> </li> <li>• Genital Infection– symptoms include:               <ul style="list-style-type: none"> <li>○ Pain, redness, tenderness, or swelling of genital region</li> <li>○ Itch</li> <li>○ Vaginal or penile discharge</li> </ul> </li> <li>• Rare: Severe nausea and vomiting, abdominal pain, confusion, excessive lethargy, fruity breath</li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Ensure good genital hygiene:               <ul style="list-style-type: none"> <li>○ Wash genitals daily</li> <li>○ Wipe after urinating</li> <li>○ Keep the genitalia area dry</li> <li>○ Wear cotton underwear</li> </ul> </li> <li>• If you are feeling unwell or have loss of appetite, stop this medicine until you feel better</li> <li>• See a doctor if you experience any rare side effects, symptoms of urinary or genital tract infection</li> <li>• Inform your doctor or surgeon you are on this medicine before any surgery</li> </ul>

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<p>Arterial Vasodilators</p> <ul style="list-style-type: none"> <li>• <i>Hydralazine</i></li> </ul> <p><u>How does it work</u> Relax blood vessels to reduce blood pressure (afterload).</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Headache</li> <li>• Rare side effects: <ul style="list-style-type: none"> <li>○ Fast heartbeat</li> <li>○ Leg swelling</li> <li>○ Drug-induced lupus: fever, rashes, muscle and/or joint pain</li> <li>○ Blood disorders: Mouth ulcers, fatigue, fever, sore throat, and/or unexplained bleeding/bruise</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Seek medical attention immediately if any of the rare side effects occurs</li> </ul>
<p>Venous Vasodilators (Nitrates)</p> <ul style="list-style-type: none"> <li>• <i>Isosorbide Dinitrate</i></li> <li>• <i>Isosorbide-5-Mononitrate CR (controlled release)</i></li> </ul> <p><u>How does it work</u> Relax blood vessels and reduces the workload of the heart (preload)</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Headache</li> <li>• Flushing</li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Headache and flushing usually improve with time. If headache is bothersome initially, try taking Paracetamol for relief.</li> <li>• Inform your doctor if severe headache or persistent dizziness occur</li> <li>• Do not take with Phosphodiesterase-5 Enzyme Inhibitors [e.g. Sildenafil (Viagra®), Tadalafil (Cialis®), Vardenafil (Levitra®)] without discussing with your doctor</li> </ul>

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<p>Cardiac Glycosides</p> <ul style="list-style-type: none"> <li>• <i>Digoxin</i></li> </ul> <p><u>How does it work</u> Improve the pumping action of the heart and improve exercise tolerance. They can also be used to control irregular fast heart rate.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Diarrhea, nausea, vomiting</li> <li>• Abdominal pain</li> <li>• Symptoms of digoxin toxicity (rare) include: <ul style="list-style-type: none"> <li>○ Persistent diarrhea, nausea, vomiting</li> <li>○ Visual changes (such as yellow or blurred vision, seeing bright spots)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Take after meals to reduce nausea and vomiting</li> <li>• Seek medical attention immediately if any of the digoxin toxicity symptoms occur</li> </ul>
<p>Calcium Channel Blockers</p> <ul style="list-style-type: none"> <li>• <i>Amlodipine</i></li> <li>• <i>Nifedipine LA (Long Acting)</i></li> </ul> <p><u>How does it work</u> Relax blood vessels and reduces blood pressure.</p>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Headache</li> <li>• Flushing</li> <li>• Lower leg swelling</li> </ul>	<ul style="list-style-type: none"> <li>• Rise slowly from sitting or lying position to minimize dizziness</li> <li>• Inform your doctor if dizziness is persistent</li> <li>• Elevating your legs may help to reduce leg swelling</li> </ul>

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<p>Anti-platelets (“Blood Thinner”)</p> <ul style="list-style-type: none"> <li>• Aspirin</li> <li>• Ticagrelor</li> <li>• Clopidogrel</li> </ul> <p><u>How does it work</u> Prevent the formation or growth of blood clots and reduce the chance of heart attack or stroke.</p>	<ul style="list-style-type: none"> <li>• Gastric irritation (For Aspirin)</li> <li>• Easy bruising or bleeding</li> </ul>	<ul style="list-style-type: none"> <li>• Take after meals to reduce gastric irritation</li> <li>• Be careful to avoid injury</li> <li>• Avoid rubbing bruises</li> <li>• Apply pressure to small cuts to stop bleeding</li> <li>• See a doctor immediately if unusual bleeding/bruising, or black and tarry stools occurs</li> <li>• Inform your doctor or dentist that you are on a blood thinner before any surgical or dental procedures</li> </ul>
<p>Cholesterol-Lowering Agents (“Statins”)</p> <ul style="list-style-type: none"> <li>• Atorvastatin</li> <li>• Simvastatin</li> <li>• Rosuvastatin</li> <li>• Lovastatin</li> </ul> <p><u>How does it work</u> Decrease bad cholesterol (LDL) and the fatty acids in the blood (triglyceride), hence reducing risks of heart attack.</p>	<ul style="list-style-type: none"> <li>• Muscle ache</li> <li>• Rare side effects <ul style="list-style-type: none"> <li>○ Unexplained severe or generalized muscle pain/weakness</li> <li>○ Tea-coloured (Dark brown) urine</li> <li>○ Yellowing of skin or eye whites</li> <li>○ Severe abdominal pain</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Seek medical attention immediately if you experience any of the rare side effects</li> </ul>

If you develop rashes, facial swelling or shortness of breath after taking the medication, you could be allergic to the medication. Please seek medical attention immediately.

### How are the Medications Taken?

- If you miss a dose, take the missed dose as soon as you remember. If it is almost time for your next dose, take only the usual dose. Do not double the dosage.
- Do not stop taking this medicine without discussing with your doctor as it may worsen your condition.

### Can the Medications be Taken with Other Medications?

- Please also inform your doctor or pharmacist if you are taking other medications, including supplements, traditional or herbal remedies.

### Do I Need Regular Monitoring When Taking These Medicines?

- Regular monitoring through blood tests may be required.
- Monitoring of blood pressure, heart rate and body weight at home can be helpful to help monitor your condition.

### Are There any Special Precautions That I Need to Take?

- It is important to inform your doctor if you intend to conceive or breastfeed while taking these medications.
- If you experience dizziness while taking more than one of the medications, you can try staggering the dosing time of the medications at intervals of 2 hours.

### What Else Can I Do to Help My Condition?

- Limit your water and salt intake as recommended, to prevent excessive retention of water.
- Weigh yourself at the same time every day after emptying your bladder in the morning. Inform your doctor if sudden weight gain of more than 1kg in one day or more than 3kg in a week occurs.
- Stop smoking and avoid alcohol.

### How Do I Store These Medications?

- Store your medication in a cool, dry place away from heat, moisture and direct sunlight.

If you have any problem with your treatment, please contact your doctor, pharmacist or nurse clinician.  
Please keep all medications out of reach of children.

