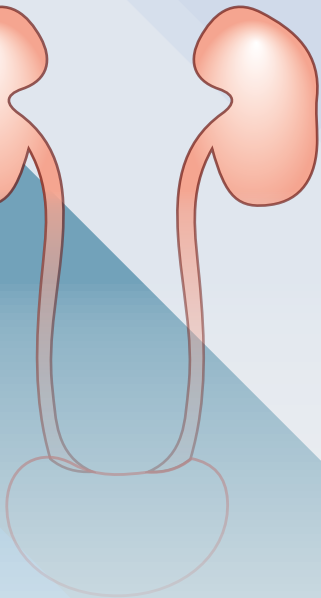


Medications for Chronic Kidney Disease

Classes of Medications	Common side effects	Precautions
Diuretics, electrolyte supplements, alkalinsing agents		
Diuretics (“Water pill”) Frusemide, Hydrochlorothiazide, Indapamide, Metolazone, Spironolactone	Dizziness, stomach upset	※ To avoid frequent urination at night, diuretics should preferably be taken in the morning for daily dose. For twice daily dosing, take the second dose six to eight hours after the first dose. ※ Diuretics may affect potassium level in blood, do not use any potassium-containing medications, supplement or potassium salt substitutes without consulting your doctor. ※ Take with food to reduce stomach upset. ※ Consult your doctor if muscle twitching or weakness occurs during the therapy.
Potassium chloride Sodium chloride	Potassium chloride: Stomach upset, diarrhoea Sodium chloride: Nausea, vomiting, stomach upset	※ Potassium chloride or sodium chloride is used as a supplement to dietary inadequacy and potential loss due to diuretics or renal replacement therapy. It is prescribed by doctor with regular monitoring of blood potassium or sodium level. ※ Do not use any potassium salt substitutes or increase the dosage of potassium chloride without consulting your doctor. It may cause high blood potassium level and possible side effects. ※ Maintain dietary salt restriction to prevent high blood sodium level and possible side effects. ※ Take with meals to reduce stomach upset. ※ Potassium chloride: Swallow the tablet whole with plenty of water; do not crush or chew the tablet.
Sodium bicarbonate	Muscle cramps, urinary urgency, loss of appetite, headache, oedema	※ Sodium bicarbonate is prescribed by doctor for the treatment of disorders related to acid-base imbalance. ※ Avoid taking the drug together with dairy products.
Uric acid lowering agents		
Xanthine oxidase inhibitors Allopurinol, Febuxostat	Stomach upset, dizziness , nausea, diarrhoea, skin rash	※ Take allopurinol with or after meals to reduce stomach upset. ※ Avoid alcohol and excessive intake of vitamin C to reduce the risk of kidney stone formation. ※ Stop taking the medication and consult your doctor immediately if skin rash occurs.
Medications for anemia		
Erythropoiesis-stimulating agents Darbepoetin Alfa, Erythropoietin, Methoxy polyethylene glycol-epoetin beta	High blood pressure, seizure, headache, oedema, abdominal pain, cough	※ Monitor blood pressure and pulse regularly while on long term therapy. Consult your doctor if high blood pressure, severe headache, rapid heartbeat, or chest pain occurs during the therapy. ※ This medication may cause seizures. Do not operate heavy machinery or engage in high risk activities that need full attention. ※ Store in refrigerator; do not freeze. ※ Do not shake.
Iron and vitamins supplements Iron, Folic acid, Vitamin B12 (Cyanocobalamin, Mecobalamin)	Iron: Darkening of stool, stomach upset, constipation Folic acid: Stomach upset Vitamin B12: Stomach upset	Iron: ※ Take with or after meals to reduce stomach discomfort. ※ Iron tablets can either be chewed or swallowed whole depending on the iron formulation prescribed to you. For the best treatment effect, please read the instructions on label before taking. ※ Increase fibre (e.g. vegetables) intake to prevent constipation.
Medications for Chronic Kidney Disease – Mineral and Bone Disorder (CKD-MBD) and secondary hyperparathyroidism (SHPT)		
Phosphate binding agents Aluminium Hydroxide, Calcium Carbonate, Sevelamer	Aluminium Hydroxide / Calcium Carbonate: Constipation, nausea, vomiting, stomach upset Sevelamer: Nausea, vomiting, diarrhoea, indigestion	※ Take with meals to enhance binding of phosphate in food and limit intestinal phosphate absorption. ※ Calcium carbonate and aluminium hydroxide tablets can either be chewed or swallowed whole depending on the formulation prescribed to you. For the best treatment effect, please read the instructions on label before taking. ※ Sevelamer: Swallow whole; do not crush or chew. Take with meals.
Calcium supplement Calcium Carbonate	Constipation, abdominal pain, flatulence, nausea, vomiting	※ Calcium carbonate tablets can either be chewed or swallowed whole depending on the formulation prescribed to you. For the best treatment effect, please read the instructions on label before taking.
Vitamin D preparations Alfacalcidol, Calciferol, Calcitriol, Cholecalciferol, Paricalcitol	Headache, nausea, vomiting, constipation, diarrhoea	※ Do not use any vitamin D without consulting your doctor.
Medications for secondary hyperparathyroidism Cinacalcet	Nausea, vomiting, diarrhoea, headache, abdominal pain, dyspnea, muscle pain, weakness, tingling sensation	※ Take with food or shortly after a meal. ※ Swallow whole; do not crush or chew. ※ Consult your doctor immediately if vomiting, weakness, muscle pain, muscle spasm, seizure or abnormal skin sensation occurs during the therapy.
Others		
Please refer to related patient information leaflets for medication treatments of high blood pressure, high cholesterol level and diabetes mellitus.		
※ If you experience sleepiness, dizziness or blurred vision after taking the medications, avoid driving or activities requiring mental alertness or coordination. Avoid alcohol as it may increase the side effects. ※ If you notice any allergic reactions like skin itchiness, face or hand swelling, breathing difficulty, etc., consult your doctor immediately.		

? For any queries, please seek advice from your doctor, pharmacist or other healthcare professionals.

Medications for Chronic Kidney Disease



藥劑職系及服務統籌委員會
COC-Grade (Pharmaceutical Services)



What is Chronic Kidney Disease



Kidney is a vital organ in the human body, and has the following functions:

- 1. Removes excessive water and toxic substances (e.g. urea, uric acid, etc.) through urine; maintains electrolytes balance (e.g. sodium and potassium, etc.) and acid-base balance.
- 2. Produces different types of hormones to regulate blood pressure and to produce red blood cells.
- 3. Activates Vitamin D to maintain normal calcium level in bones for bone health.

Chronic kidney disease occurs when the kidney tissue is damaged slowly, resulting in progressive loss of kidney function. Common causes of chronic kidney disease include high blood pressure, diabetes mellitus, inflammation of the glomeruli (kidney's filtering units). Appropriate intake of protein, avoiding excessive salt and high cholesterol food intake can help to maintain kidney function and slow down disease progression.

Most people with chronic kidney disease do not have any noticeable symptoms in early stage. The disease may be discovered in health checks or when symptoms arise from declining renal function. Symptoms of chronic kidney disease include:

- 1. Malfunction in water and toxic waste substance excretion, electrolyte and acid-base regulation, which may lead to: frequent urination at night, blood in urine, protein in urine, high urea in blood known as uremia (symptoms include nausea, vomiting, loss of appetite, tiredness, pale face, metallic taste in mouth, urine-like breath odor, shortness of breath, mental status changes, itchiness, muscle cramps, etc.) and oedema. Excessive retention of water in the body may affect the normal function of the heart (e.g. leading to high blood pressure, heart failure, etc.) and lead to accumulation of fluid in the lungs and thereby breathing difficulty.

- 2. Failure to produce different types of hormones by the kidneys may lead to high blood pressure and anemia. Patients with anemia may appear pale, complain of fatigue and loss of appetite.
- 3. Kidney disease reduces the ability in removing excessive phosphate through urination. Accumulation of phosphate and impaired vitamin D activation may reduce calcium absorption, thereby causing inadequate calcium level in bones, and resulting in bone pain and fracture.

Chronic kidney disease cannot be cured completely. Long term dietary control and medication therapies are the keys to alleviate symptoms. Progressive decline of renal function may lead to end-stage kidney failure.

Slowing down the progression of kidney disease

- Undergo regular health check especially in patients with high blood pressure, diabetes mellitus, high cholesterol level and other kidney diseases.
- Maintain a healthy lifestyle. Follow medical advice strictly regarding diet and medicines to optimize control of blood pressure, sugar and cholesterol at goal levels.
- Follow your dietitian's recommendations on dietary control of protein, sodium, potassium and phosphorus and keep the right balance of nutrients and fluid.

Precautions on medication use

- Use the medications as directed. Do not stop using the medications or change the dose or frequency unless directed by your doctor.
- Use the medications preferably at the same time every day.
- If you have history of drug allergy, consult your doctor or pharmacist before using the medications.
- Tell your doctor and pharmacist if you are pregnant, planning to become pregnant or breastfeeding.
- Medications are mainly broken down and excreted by your kidneys and liver. If your kidneys do not work well, medications may accumulate in your body and thus increase the risk of experiencing side effects. Consult your doctor or pharmacist before using any other medications, including health supplements, Traditional Chinese Medicines, Proprietary Chinese Medicines and over-the-counter medications.
- Please consult your doctor or pharmacist if you encounter any difficulties in using the medications.
- Please consult your doctor if symptoms persist or worsen after using the medications.

How to store?

- ♥ Store in a cool, dry place and away from direct heat and light.
- ♥ Keep out of reach of children.
- ♥ Discard all medications that have expired or are no longer required.
- ♥ Do not share the medications with other people.

Pharmacist's advice on appropriate medication use

- ✗ Self-discontinuation or dosage adjustment, because:
 - chronic kidney disease cannot be cured completely; there is no need to use medications.
 - of the belief that chronic kidney disease has been cured after signs and symptoms are relieved.
- ✓ Although chronic kidney disease cannot be cured completely, long-term dietary control and medication therapies can help alleviate the signs and symptoms (e.g. anemia, uremia and bone complications) and control the predisposing factors (e.g. high blood pressure, diabetes mellitus, high cholesterol level), thereby reducing the burden on the kidneys and preventing further deterioration of chronic kidney disease. Patients with chronic kidney disease often need to comply with demanding lifestyle and dietary restriction. If patients maintain good compliance with dietary control and medication therapy, as well as achieve strict control of blood pressure, blood sugar and blood lipid, it may slow down the disease progression.

- ✗ Self-medication, because of:
 - feeling unwell (e.g. cold or flu) before the next follow-up visit.
 - claim from my friends / relatives that they are good for the kidneys.

- ✓ Do not self-medicate with over-the-counter medications because this is risky to patients with kidney diseases. Certain medications and the usual recommended dosages may not be suitable for your condition. Moreover, patients with kidney diseases usually take multiple medications. Self-medicating may potentially lead to drug-drug interactions. Consult your doctor or pharmacist before using any other medications, including health supplements, Traditional Chinese Medicines, Proprietary Chinese Medicines and over-the-counter medications.

- ✗ Refuse to use medications because of potential side effects.

- ✓ Not everyone will experience side effects after using the medications. The severity of side effects also differs among individuals. You should not be too worried about the side effects of the medications. If you stop using the medications or change the dose or frequency due to potential side effects, your condition may get worse. Most common side effects are mild and will subside when your body adapts to them. Consult your doctor or pharmacist if the side effects persist or worsen.

What if I miss a dose?

Use the missed dose as soon as you remember. Skip the missed dose if it is almost time for your next scheduled dose.

Do not double the dose.