



## Antiangiogenic therapy

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This leaflet contains general information about antiangiogenic therapy as a treatment option for metastatic kidney cancer. If you have any specific questions about your individual medical situation you should consult your doctor or other professional healthcare provider. No leaflet can replace a personal conversation with your doctor.

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# Antiangiogenic therapy

## What is antiangiogenic therapy?

Antiangiogenic therapy is a treatment option for metastatic kidney cancer.

These are a group of drugs which slow down tumour growth or possibly even shrink the tumour. They prevent the formation of new blood vessels which feed the cancer and allow it to grow. The formation of vessels is called neoangiogenesis, and the medical term for these drugs is antiangiogenic therapy.

Antiangiogenic therapy is often referred to as targeted therapy because it mainly affects the cancer cells. There are various types, each one targeting specific factors which influence tumour growth.

Most types of antiangiogenic therapy are pills which you can take at home. A few are administered through an IV, for which you will need to go to the hospital. For kidney cancer treatment, common antiangiogenic drugs are:

- Sunitinib
- Pazopanib
- Axitinib
- Sorafenib
- Cabozantinib
- Lenvatinib
- Tivozanib
- Bevacizumab (combined with immunotherapy)

Antiangiogenic drugs which target a specific enzyme called mTOR are known as mTOR inhibitors. The mTOR enzyme is important for cell growth and cell survival. The following targeted drugs aim to shrink the tumour by attacking the enzyme mTOR:

- Temsirolimus
- Everolimus

Based on your individual prognosis and the characteristics of the tumour, your doctor will select the best antiangiogenic drug for your specific situation. If this particular drug is ineffective or does not relieve your symptoms, you can discuss with your doctor whether to try a different one.

Because these drugs influence the formation of new blood vessels throughout the body they cause many side effects.

## Fatigue

Fatigue is a common side effect. This means you feel more tired than usual, you are out of energy, and it doesn't get better after you sleep. You may also experience pain in your joints, muscles and chest. Fatigue can be a side effect of the drugs, but it may also be caused by the tumour or the metastases.

## Nausea

It is common that you feel nauseous or sick during treatment. You may also have diarrhoea or constipation. If you have any of these symptoms let your medical team know. Your doctor may give you medicine to control these symptoms.

## High blood pressure

During treatment you may suffer from high blood pressure. Your blood pressure will be checked before the start of treatment and in the initial weeks. If necessary, your doctor will prescribe anti-hypertension drugs to control it. Antiangiogenic therapy may also cause erectile dysfunction.

## Thyroid function

These drugs can affect thyroid function. The thyroid is a gland which produces hormones and controls how your body uses energy. If there is a drop in the level of hormones the thyroid produces, you may feel tired, cold, or gain weight. If the thyroid becomes overactive, you may feel hot and sweaty, restless, have problems concentrating and sleeping, or lose weight.

## Other side effects

Sunitinib, pazopanib, axitinib, sorafenib, tivozanib and bevacizumab slow down wound healing, so you cannot start this treatment until your wounds from surgery have healed completely.

While taking these drugs you may experience shortness of breath, chest pain, and swollen ankles and feet. They may also cause blood clots which increases the risk of stroke or heart attack.

## Side effects

Your skin may be dry, become red, or you may develop a rash. In some cases, your skin may turn yellow, which goes away once treatment finishes. You may experience numbness and tingling in your fingers and toes. Your hair may turn grey during the course of treatment. In the break between treatment courses some colour may come back. You could also develop hand-foot syndrome which causes blisters and redness on the palms of your hands and soles of your feet. If you experience this, your doctor may recommend to adjust or interrupt treatment.

The mTOR inhibitors temsirolimus and everolimus may cause other specific side effects, mainly related to your blood and your lungs.

The therapy can cause a temporary drop in the number of red or white blood cells, or blood platelets. A drop in white blood cells can increase the risk of infection. Lower levels of red blood cells can lead to tiredness and feeling out of breath. You could need a blood transfusion if the levels become too low. A drop in blood platelets can cause nosebleeds, bleeding gums after brushing your teeth, or lots of tiny red spots or bruises on your arms and legs, known as petechia.

You should contact your health care team if you have any of these side effects. Your doctor will check your blood counts regularly.

mTOR inhibitors may also affect your blood sugar levels and your cholesterol levels may rise. Your blood will be checked regularly.

Another possible symptom is soreness in the mouth. A mouthwash can help to relieve the symptoms, but avoid mouthwashes which contain alcohol, peroxide, iodine, or thyme because these can make the soreness worse. Ask your medical team for suggestions of brands you can use.

Your lungs could be affected by these drug therapies. Let your health care team know if you develop a cough during the course of treatment.

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