If you are diagnosed with locally-advanced kidney cancer, your doctor can recommend to treat the cancer with radical nephrectomy or embolization. Each procedure has its own advantages and disadvantages. The choice of treatment depends on your individual situation.

This section describes the different treatment options, which you should discuss with your doctor.

This is general information which is not specified to your individual needs. Keep in mind that situations can vary in different countries.

**What is locally-advanced kidney cancer?**

Locally-advanced kidney cancer refers to a tumour which has spread to or beyond the blood vessels, tissue, organs, or lymph nodes surrounding the kidney. It may be a stage III or IV tumour, depending on how far outside the kidney the tumour has spread (Fig. 1 and 2).

![Diagram of kidney and surrounding structures]

**Fig. 1:** Stage III tumours have spread into the renal vein, the fatty tissue next to the kidney (perirenal fat), or the vena cava.
Terms your doctors may use

- Open surgery: A surgical procedure in which the surgeon cuts skin and tissue to have direct access to the kidney
- Laparoscopic surgery: A minimally-invasive surgical technique in which the surgeon does not need to cut through skin and tissue. Instead, the surgeon inserts the surgical instruments through small incisions in your abdomen
- Surgical robot system: An instrument to help doctors perform laparoscopic surgery. The surgeon controls the robotic instrument with remote control sensors

**Fig. 2: Stage IV tumours have spread further outside of the kidney, beyond the renal fascia and into the adrenal gland. Sometimes one or more lymph nodes are enlarged in this stage.**

**Treatment options**

The most common treatment to cure locally-advanced kidney cancer is surgical removal of the kidney which contains the tumour.

Locally-advanced kidney cancer can be treated with a procedure called radical nephrectomy. This means that the kidney where the tumour is located and the surrounding tissue are removed. Radical nephrectomy can be performed by open or laparoscopic surgery. If surgery is impossible or risky, the doctor may recommend embolization.

These are some topics you should discuss with your doctor when planning your treatment pathway:

- Your medical history
- If there are any cases of kidney cancer in your family
- Your kidney function
- What to consider if you only have one kidney
- Whether you have one or more tumours in one or both of your kidneys
- The kind of treatment available at your hospital
- The expertise of your doctor. Ask your doctor about his or her experience with the recommended treatment option
- Your personal preferences and values
- Support during and after treatment
Radical nephrectomy

Radical nephrectomy is a surgical treatment option for locally-advanced kidney cancer. The aim is to remove the whole kidney that contains the tumour and the surrounding fatty tissue. In locally-advanced kidney cancers it may not be possible to remove the tumour and leave part of the kidney intact. Most people can live with only one functioning kidney without major complications.

You may need additional surgical procedures to remove the entire tumour. These include the removal of enlarged lymph nodes or the adrenal gland.

For a radical nephrectomy you will receive general anaesthesia. During the surgery, you will lay on your side or on your back, depending on the location and size of the tumour.

How is radical nephrectomy performed?

Radical nephrectomy can be performed by open or laparoscopic surgery.

Open radical nephrectomy is the standard of care for locally-advanced kidney cancer. First, the size of the tumour is determined and the doctor checks which surrounding tissue or organs have been affected by it. The urologist then cuts the abdominal wall to access the kidney directly. To prevent tumour spillage, the urologist keeps your kidney covered with a protective layer of fatty tissue. The urologist separates the renal artery, renal vein and ureter from the kidney (Fig. 3).

For laparoscopic radical nephrectomy, the urologist inserts small plastic tubes into your abdomen. Through these tubes the urologist can insert the instruments needed to remove the kidney (Fig. 4). The laparoscopic procedure generally leads to faster recovery than open surgery. Nevertheless, the technique is demanding and your doctor needs to be experienced in performing this type of surgery. Laparoscopic surgery can also be done assisted by a surgical robot system.

For the removal of a locally-advanced kidney tumour, open and laparoscopic surgery are equally effective.
Lymph-node removal
If you have enlarged lymph nodes, the urologist may decide to remove them in a procedure called lymphadenectomy. In some cases, the CT scan has shown that lymph nodes are enlarged and the doctor will discuss possible treatment with you. In other cases, the urologist detects enlarged lymph nodes during surgery and may decide to remove them.

Removal of the adrenal gland
The adrenal gland is an organ located on top of each kidneys (Fig. 1). It produces stress and steroid hormones. If the tumour has spread to the adrenal gland, the gland needs to be removed together with the kidney. This procedure is known as adrenalectomy. A CT scan before surgery can confirm that the tumour has spread to the adrenal gland. In other cases, the urologist detects tumour cells in the adrenal gland during surgery and will remove it. The remaining healthy adrenal gland continues to produce all the hormones needed.

*Fig. 4: For laparoscopic surgery the surgeon inserts the surgical instruments through small incisions in the abdomen.*
How do I prepare for the procedure?
Your doctor will advise you in detail about how to prepare for the procedure. You must not eat, drink, or smoke for 6 hours before surgery to prepare for the anaesthesia. If you are taking any medication, discuss it with your doctor. You may need to stop taking it several days before surgery.

What are the side effects of the procedure?
Usually you need to stay in the hospital several days. The length of hospital stay can vary in different countries. You may experience minor pain in the side of your body for some weeks after open radical nephrectomy.

Recommendations for 4-6 weeks after the surgery:
- Drink 1-2 litres every day, especially water
- Do not lift anything heavier than 5 kilograms
- Do not do any heavy exercise
- Discuss any prescribed medication with your doctor

You need to go to your doctor or go back to the hospital right away if you:
- Develop a fever
- Have heavy blood loss or pain

Read more about support after surgery in the Support for locally-advanced kidney cancer section.

What is the impact of the treatment?
Radical nephrectomy is a common procedure for locally-advanced kidney cancer. Because you are left with one functioning kidney, there is increased risk of chronic kidney disease. Reduced kidney function is also a risk factor for cardiovascular disease.

What will the follow up be like?
After radical nephrectomy for kidney cancer, your doctor will plan regular follow-up visits with you. How often these visits are needed depends on the classification of the removed tumour (See diagnosis and classification). Follow-up lasts at least 10 years or can be life-long. Common tests during follow-up visits are abdominal and chest CT scans, ultrasound, chest x-ray, and urine and blood analyses. These are done to determine and monitor:
- Complications related to the surgery
- The status of the other kidney
- Any recurrence or metastasis

It is important that recurrences or metastases are detected early, so that it is possible to remove them with surgery.

Surgery after recurrence
If a recurrence is detected during follow-up, you may need additional surgery. Before this surgery your doctor may recommend to shrink the tumour with antiangiogenic therapy. It is also possible that your doctor recommends this therapy or ablation therapy after surgery.

Embolization

Embolization is a treatment option for locally-advanced kidney cancer. Your doctor may recommend embolization if you are unfit for surgery and the tumour causes symptoms like bleeding or pain. This treatment is only recommended if surgery is impossible or risky. During this treatment a small catheter is inserted in the groin to reach the blood vessels around the kidney.
Support for locally-advanced kidney cancer

Getting diagnosed with cancer has a great impact on your life, and the lives of your loved ones. It can cause feelings of anxiety, uncertainty, fear, or even depression. Undergoing treatment for cancer is intense and will affect your work and social life. To find support, approach your doctor or nurse. They will be able to give you contact information about patient organizations or others who can help you with psychological support or practical matters such as financial advice.

Preparing for a consultation

Preparing for a consultation can be very useful. It will help you and your doctor to better address your questions and concerns. Here are some things you can try:

- Write down the questions you would like to ask the doctor. This will help you remember things that you want to ask. Writing down questions can also help you organize your thoughts
- If you can, take someone with you to the visit. It is good to have someone to discuss what the doctor said and you probably remember different things
- Ask for information about your specific type of cancer
- Ask about your treatment options
- If the doctor uses words you do not understand, ask for an explanation
- Tell your doctor what medicine you take and if you take any alternative medicine. Some of these medicines can affect the treatment

After the consultation you can:

- Search the Internet or go to the library for more information about your type of cancer. Be aware that not all the information you see online is of good quality. Your doctor or your health care team can point you to reliable websites
- Contact a patient organization, they can offer support and information
- Discuss the possible financial consequences of your treatment with your health care team. They might be able to direct you to people or places where you can get advice about your economic situation or even financial help
- If you want, you should ask for a second opinion from another specialist

Support after surgery

In the first days or weeks after surgery you may need help with everyday activities. If you can, ask family, friends, or neighbours to help you with things like buying and carrying home food, cooking, cleaning, washing, and gardening. You can also ask your health care team for information about professional home care.

After surgery, it is common that you experience fatigue. This means you feel more tired than usual, you are out of energy, have trouble concentrating, and it doesn’t get better after you sleep. Most people experience fatigue for six months up to a year after the surgery. To deal with fatigue, you can:

- Write down things that give you energy, and give them priority during the day or week
- Get help with household tasks like washing, cleaning, or gardening
- Take short naps several times during the day
- Try to be as active as you can. A short walk every day is better than a long walk once a week
- When planning social activities like a trip or a visit, keep in mind you may need time to rest during the day. Discuss this with your family, friends, or caregiver so that you can plan ahead. It is important to tell them when you are feeling tired

Follow-up

After surgery, you will meet with your doctor. In this visit, both the results of the surgery and the follow-up schedule will be discussed. Ask for a care plan so you can see how often you will need to see your doctor.
Write down questions you may have before the visit. Examples of questions you can ask are:

- Is the cancer gone?
- Do I need additional treatment? If so, what options are relevant for me?
- What are the risks of the cancer coming back?
- How will the treatment and the kidney cancer affect my quality of life?
- What kind of tests do I need before the follow-up visits?

Lifestyle advice
It is important to maintain a healthy lifestyle during and after treatment. Try to get physical exercise regularly. Find an activity that you enjoy doing. If you have doubts about what you can do, ask your doctor to refer you to a physiotherapist.

Try to eat a balanced diet with a mix of vegetables, fruit and dairy. Also include starchy food like bread and potatoes, rice or pasta, and protein-rich food like meat, fish, eggs or legumes. Try to eat less sugar, salt and fatty food. If you have any questions, ask your doctor to refer you to a dietician.

Try to stop smoking. It may help you recover faster after treatment.

Psychological support
After the treatment you may worry about your prognosis, the impact of cancer on your financial situation, or other issues.

It is common to worry about the cancer coming back. Most people who have been diagnosed with cancer, or their loved ones, will probably have these worries and thoughts. If you feel worried, contact your doctor and find out the risk of cancer recurrence. You can also ask the doctor about psychological support if you feel you need to have someone to talk to. A patient organization can also offer support.

Surgery and cancer treatment can affect your sexuality. It is important that you talk to your partner about your feelings. There are many ways in which you can be intimate. If you do not want to be sexually active, be near each other, touch each other, give and take hugs, and just sit or lay down close to each other.

During treatment you will be away from your work. Talk to your boss about the best way for you to get back to work. Perhaps you could work part time, or in a different function.

Discuss with your health care team the possible financial consequences of your treatment. They might be able to direct you to people or places where you can get advice about your economic situation, or even financial help. If you have difficulties getting back to normal life or getting back to work, talk to your doctor or nurse. They can help you find the support and treatment you need.

A cancer diagnosis can make you look at life in a different way and you may realise you now have different priorities. This can affect your work or relationships and can make you feel disoriented and uncertain. Talk to family and friends and take all the time you need for this process. If you don’t feel comfortable addressing these issues with those close to you, you can ask your health care team for a referral to a psychologist. The psychologist can give you the tools to deal with these feelings and help you to realise the changes you want or need.

Support for family and friends
A cancer diagnosis not only affects the patient, but also the people around them. As a loved one you can offer support in many different ways. Sometimes you can help with practical things like laundry, gardening, or grocery shopping.

It may also be helpful to go to the doctor together. You could offer to drive to the visit or help formulate
questions to ask during consultation. Being there for the consult can also be good. You may remember different things or focus on other details, which you can later discuss together. You could also ask the doctor how the treatment may impact your lives in terms of caregiving and psychological effects.

The diagnosis and treatment can be very emotional for everybody involved. Cancer treatment is intense and your life may change suddenly. Questions about prognosis, the effects of the treatment, and even the possibility of dying may come up. As a friend or loved one you can be there and listen. You don’t need to have the answers.

If you feel you need somebody to talk to, approach your family doctor or the medical team to get support. Patient organizations also offer support for family members or friends of people who have been diagnosed with cancer. These organizations can also help with more practical matters such as financial support.

This information was updated in May 2014.

This leaflet is part of EAU Patient Information on Kidney Cancer. It contains general information about this disease. 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.

This information was produced by the European Association of Urology (EAU) in collaboration with the EAU Section of Uro-Oncology (ESOU), the Renal Cell Carcinoma Working Group of the Young Academic Urologists (YAU), and the European Association of Urology Nurses (EAUN).

The content of this leaflet is in line with the EAU Guidelines.

You can find this and other information on urological diseases at our website: http://patients.uroweb.org

Series contributors:

Dr. Bülent Akdoğan
Dr. Sabine D. Brookman-May
Prof. Dr. Martin Marszalek
Dr. Andrea Minervini
Prof. Haluk Özden
Dr. Alessandro Volpe
Ms. Bodil Westman

Ankara, Turkey
Munich, Germany
Vienna, Austria
Florence, Italy
Ankara, Turkey
Novara, Italy
Stockholm, Sweden