Action Kidney Cancer

Staging and grading of kidney cancer

If you are diagnosed with kidney cancer you will usually be given a stage. If you have had a sample of your tumour taken (a biopsy) or your tumour removed and the tissue has been looked at under a microscope, you might also be given a grade for your cancer.

Staging information will be given to you after you have had your first scan. Grading information will be given to you after you have received confirmation of the stage of your cancer, and you have had your tumour removed or sampled and it has been looked at under a microscope by a pathologist.

The stage of a cancer tells you how big it is and whether it has spread. The grade tells you how much the cancer cells look like normal cells and how quickly or slowly the cancer will grow or spread. Along with the type of kidney cancer that you have (see Essential guide: Kidney cancer – Renal Cell Carcinoma for more information), the stage and grade help your surgeon or oncologist decide which treatment you need.

Staging

Before your surgeon or oncologist can discuss treatment options with you, they will need to know how far your cancer has progressed. Staging is used to describe how big a cancer is and how far it has spread. The TNM system is a common system used for staging tumours[1]:

T (tumour) indicates the size of the primary tumour and how far it has grown locally.

- **TX** Primary tumour cannot be assessed
- **T0** No evidence of primary tumour
- **T1** The tumour is 7 cm or smaller and is inside the kidney
  - **T1a** The tumour is 4 cm or smaller
  - **T1b** The tumour is 7 cm or less but larger than 4 cm
- **T2** The tumour is bigger than 7 cm but is still inside the kidney

- **T2a** The tumour is 10 cm or less but larger than 7 cm
- **T2b** The tumour is larger than 10 cm and is inside the kidney

- **T3** The tumour has spread to the fat that surrounds the kidney but has not spread into the tissue beyond this or spread into the major veins around the kidney
  - **T3a** The tumour has grown into the renal vein or branches of the renal vein, or the tumour has grown into the fat that surrounds the kidney but not beyond the fibrous membrane that surrounds the kidney (also called the Gerota's fascia)
  - **T3b** The tumour has grown into the large vein that takes blood back to the heart (the vena cava) and is below the diaphragm
  - **T3c** The tumour has grown into the vena cava but extends above the diaphragm, or the tumour has grown into the wall of the vena cava
- **T4** The tumour has spread into the fat tissue that surrounds the kidney, the fibrous membrane that surrounds the kidney (also called the Gerota's fascia) and into the tissue beyond this, including the adrenal gland.

N (nodes) indicates the spread to nearby lymph nodes.

- **N0** means no lymph node spread
- **N1** is cancer cells in one or more of the lymph nodes. **N1** is also described as positive lymph nodes
- **NX** is used when the lymph nodes cannot be assessed.

M (metastases) refers to spread to other parts of the body.

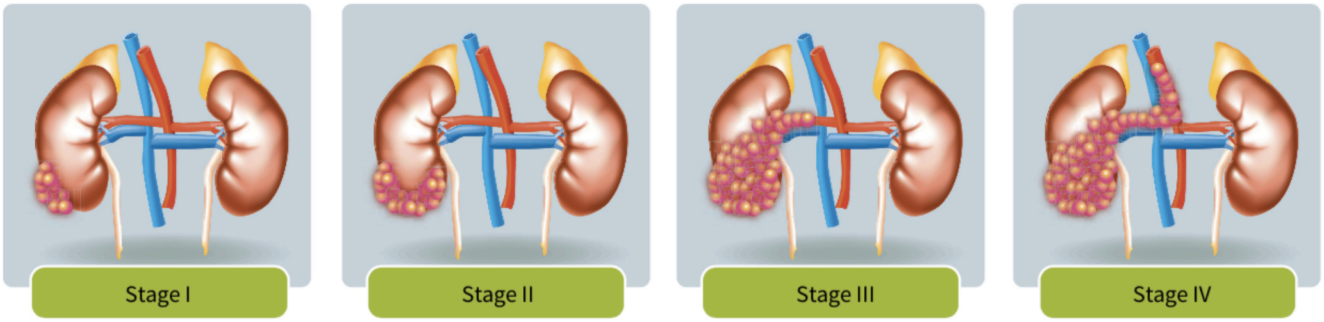
- **M0** would be no spread of the cancer
- **M1** is when the cancer has spread to other parts of the body
- **MX** is used when metastases cannot be assessed.

The overall stage for the cancer is decided by grouping together the TNM system. This is shown below:

- **Stage 1** is when the cancer is 7cm or less and is still inside the kidney with no spread to lymph nodes and no metastatic spread. **T1 N0 M0**
- **Stage 2** is when the tumour is bigger than 7cm but still confined to the kidney with no lymph node or metastatic spread. **T2 N0 M0**
- **Stage 3** is when the cancer has either spread to the lymph nodes or to the main kidney veins or the fat surrounding the kidney. **T3 N0 M0** or **T1-3 N1 M0**
- **Stage 4** is when the tumour has spread to either the lymph nodes or the fat tissue that surrounds the kidney, the fibrous membrane that surrounds the kidney (also called the Gerota's fascia) and into the tissue outside the kidney or other areas around the body. The cancer can be of any size and may or may not have positive lymph nodes. **T4** any **N M0** or any **T** or **N** and **M1**

Finding the stage of a cancer helps your surgeon or oncologist advise on what is the best treatment and gives them a reasonable indication of the outlook (prognosis). It also describes the cancer in a standard language which is useful when surgeons and oncologists discuss patients, and when patients are involved in clinical trials.

When discussing your treatment options, your surgeon or oncologist will also take into account how well you are overall.



Stage I	Stage II	Stage III	Stage IV
Localised	Localised	Locally advanced	Advanced
Size of primary tumour			
Less than 7 cm	Larger than 7 cm	Any size	Any size
Location			
Only in the kidney	Only in the kidney	Spread to nearby (local) lymph nodes, blood vessels, or tissues	Spread beyond the kidney to other organs and tissues in the body (metastasised)

Grading

Pathologists grade cancers to indicate how quickly or slowly a cancer is likely to grow and spread. Cells from a sample of the cancer (a biopsy) are looked at under the microscope or tested in other ways. By looking at certain features of the cells the cancer can be graded as low, intermediate or high grade:

- **Grade 1** or low-grade cells are usually slow growing, look quite similar to normal cells, tend to be less aggressive and are less likely to spread.
- **Grade 2** or intermediate grade cells grow more quickly, look abnormal, are moderately aggressive and could spread.
- **Grade 3** or high-grade cells are likely to grow more quickly, look very abnormal, tend to be more aggressive and are more likely to spread.
- **Grade 4** or high-grade cells look very abnormal, grow very quickly, are extremely aggressive and are very likely to spread.

When your surgeon or oncologist knows how big your cancer is, how far it has spread and how quickly it is growing, you will be able to discuss the various treatment options that are best for you and your kidney cancer *(see Essential guide: Surgery for kidney cancer and Essential guide: Treatment for advanced renal cell carcinoma for more information).*

Further reading

- **Action Kidney Cancer:** https://www.actionkidneycancer.org/
- **Cancer Research UK:** https://www.cancerresearchuk.org/about-cancer/kidney-cancer/stages-types-grades
- **Macmillan:** https://www.cancerresearchuk.org/about-cancer/kidney-cancer/stages-types-grades
- **NHS:** https://www.nhs.uk/conditions/kidney-cancer/diagnosis/

[1]European Association of Urology (EAU) Renal Cell Carcinoma guidelines, 4. Staging and classification systems. https://uroweb.org/guideline/renal-cell-carcinoma/#4

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