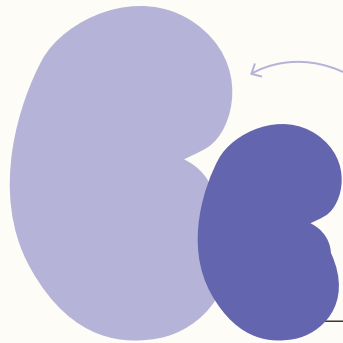


THE SILENT DISEASE

Kidney cancer is being detected earlier thanks to modern diagnostic techniques, meaning more patients receive treatment. By Graham Shaw; illustration by Lucy Reading-Ikkanda

KIDNEY CANCER, BY THE NUMBERS

Kidney cancers are a range of diseases that affect the body's ability to filter waste products in the blood. They often develop without symptoms, which means they are normally picked up in tests for other reasons. The disease is one of the ten most common forms of cancer in developed countries, for reasons that are not well understood.



In 2012, worldwide¹:

338,000
new cases of kidney cancer

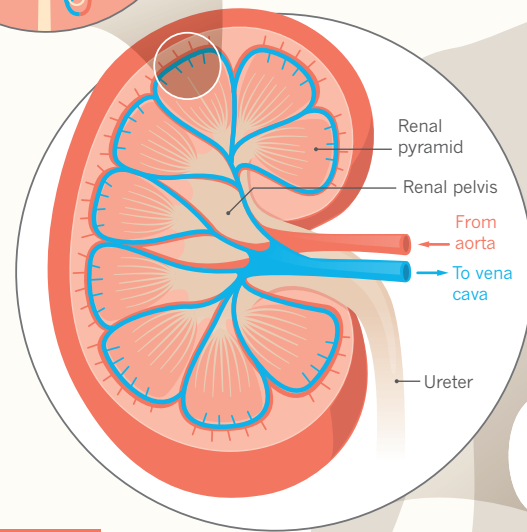
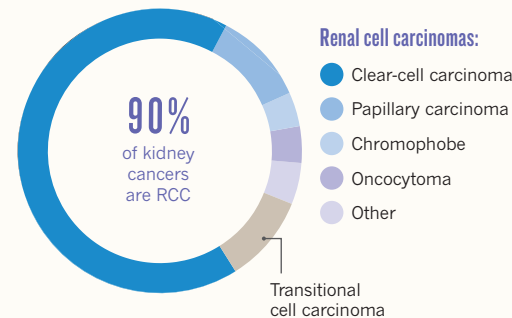
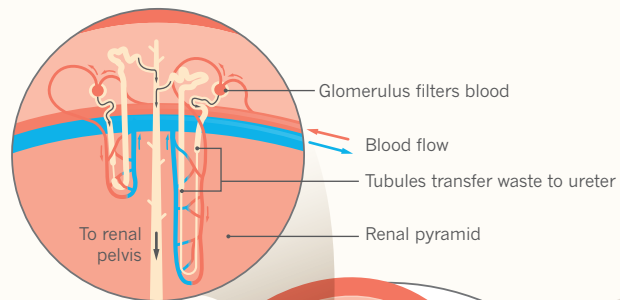
143,000
deaths from kidney cancer

Men are **twice as likely** as women to develop kidney cancer



COMMON FORMS

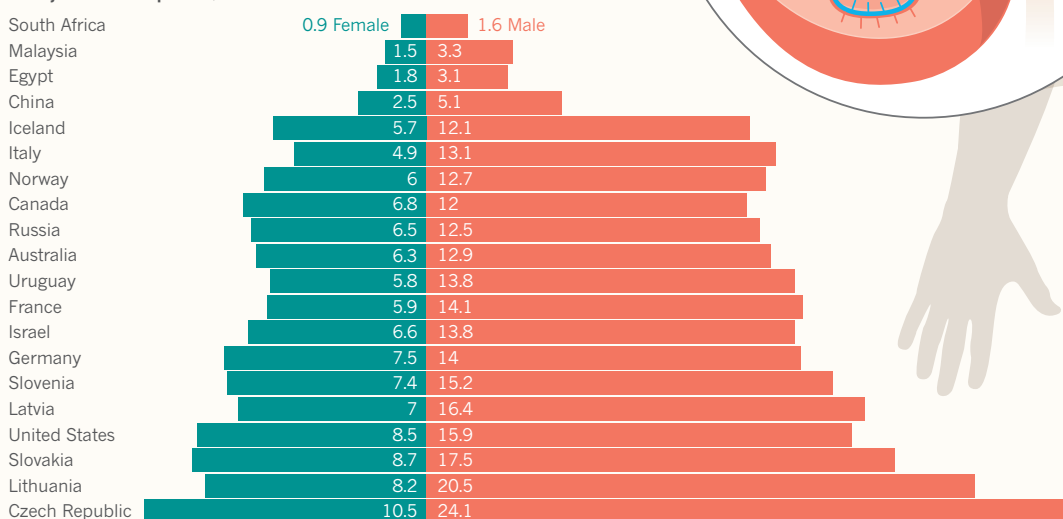
Renal cell carcinoma (RCC) is the most common form of kidney cancer and affects tubules inside the kidney that transfer waste products from the blood to the urine through the glomerulus. RCC has multiple subtypes, of which clear-cell carcinoma is the most common. The remaining 10% of cancers are transitional cell carcinomas, which form in cells lining the renal pelvis and ureter².



GLOBAL KIDNEY CANCER RATES

Kidney cancer is more common in some parts of the world than in others³. People from developed countries are more than four times as likely to develop RCC than people from developing nations. Generally, there is less geographical variation for transitional cell cancers.

Kidney cancer rates per 100,000



TRIGGER WARNING

Smoking and obesity are the biggest risk factors for kidney cancer.

Smoking

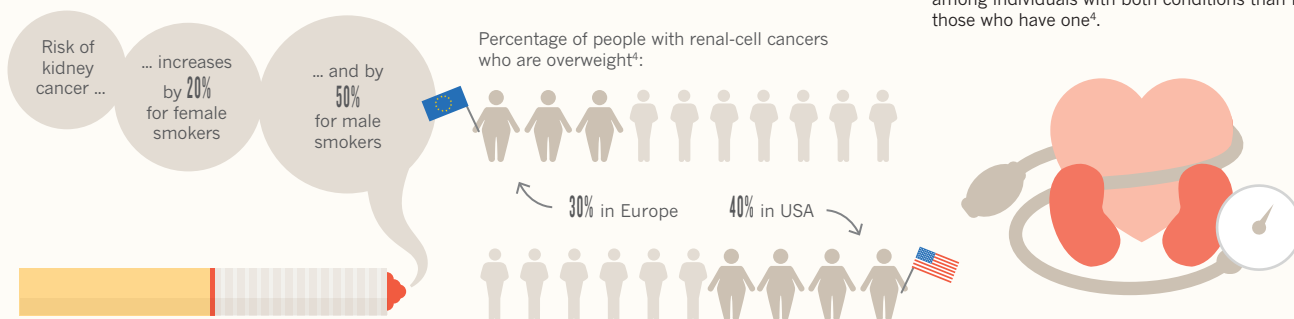
The falling popularity of smoking in developed countries could help to lower kidney-cancer incidence in these regions⁴.

Obesity

Every five-point increase in body mass index (BMI) increases risk by 24% for men and 34% for women. The rising level of obesity worldwide is likely to have contributed to increases in kidney cancer⁴.

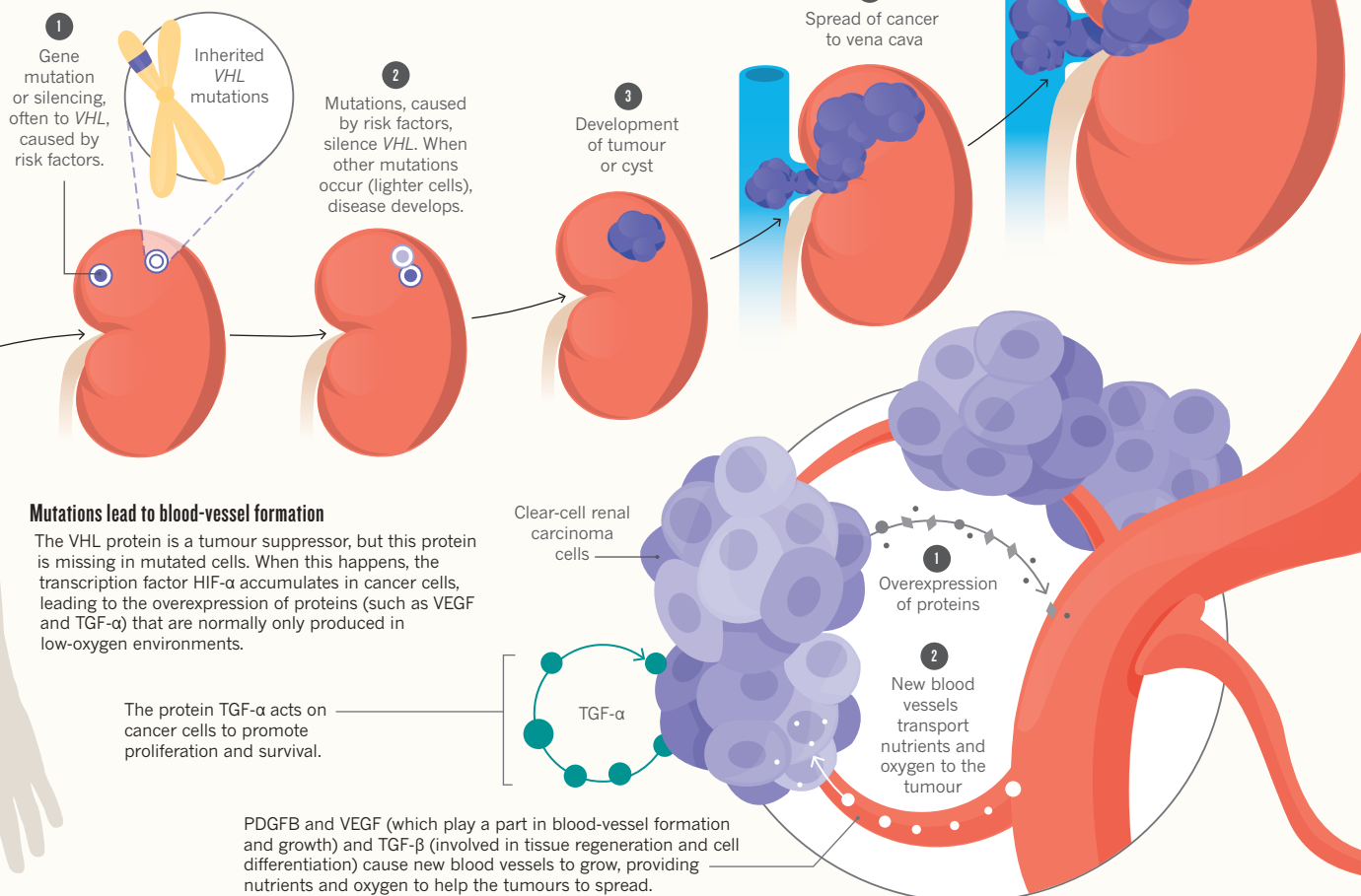
Hypertension

Risk of kidney cancer increases with rising blood pressure. Although obesity can increase blood pressure, the two risk factors are independent and the chance of developing the disease is higher among individuals with both conditions than for those who have one⁴.



DEVELOPING STORY

Loss-of-function mutations in the gene *VHL* are responsible for about 60% of clear-cell carcinomas². Around 2–3% of renal cell carcinomas run in families⁵. People with an inherited form of kidney cancer caused by von Hippel-Lindau syndrome (VHL) are born with a defect to an allele of *VHL*, and go on to acquire mutations that silence the gene. Most people with kidney cancer acquire *VHL* mutations during their lives as a result of environmental factors. A lack of symptoms can mean that some cancers can spread to other parts of the body before they are caught.



Sources: 1. Znaor, A. et al. *Eur. Urol.* **67**, 519–530 (2015). 2. Cohen, H. T. et al. *N. Engl. J. Med.* **353**, 2477–2490 (2005). 3. Ferlay, J. et al. *GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11. (IARC, 2012)*. 4. Chow, W.-H. et al. *Nature Rev. Urol.* **7**, 245–257 (2010). 5. Rini, B. I. et al. *Lancet* **373**, 1119–1132 (2009).