

Blood in the urine (also known as haematuria) means the abnormal presence of red blood cells in the urine. It can turn urine pink, red, brownish-red or tea-coloured, which can be seen by the naked eye (macroscopic). Sometimes, it may only be found through a urine dipstick test or under a microscope (microscopic). Even when your urine is bright red, it is very unusual for enough blood to be lost to cause a problem. Half a teaspoon of blood is enough to turn a litre of urine red. Some medication or food can also make urine a dark colour.

Blood in the urine can occur with symptoms such as pain in the kidney area and/or a burning feeling when urinating. Sometimes there are no other symptoms, and then the condition is known as 'asymptomatic' haematuria. It is always wise to check with your doctor if changes in urine colour persist. If there is visible blood in the urine, even once, you should see your doctor without delay.

WHAT ARE THE CAUSES OF BLOOD IN THE URINE?

Blood in the urine can come from anywhere in the kidneys, bladder or urinary tract. If the blood is coming from inside the kidneys, it is usually called 'glomerular bleeding' as it comes from the glomeruli.

The glomeruli are the tiny sets of looping blood vessels inside the nephrons. Each kidney contains up to one million nephrons, the working units of the kidneys. The glomeruli filter your blood allowing excess fluid and waste to pass into the tubule and become urine. In a healthy nephron, this filter helps to keep blood cells and protein in the bloodstream.

If blood does not come from the glomeruli, it is called 'non-glomerular bleeding', e.g. from the urinary tract or bladder. If blood in the urine is present without any other sign of kidney involvement, it is called 'isolated microscopic haematuria'.

Some causes of isolated microscopic haematuria are included in this table:

Origin	Cause	Condition or Disease
Glomerular	Glomerulonephritis	IgA nephropathy Forms of glomerulonephritis
	Family history	Thin basement membrane disease Hereditary nephritis (Alport's syndrome)
Non-Glomerular	Stones	Kidney stones
	Tumours	Bladder cancer Kidney cancer Prostate cancer Urinary tract cancer Benign bladder polyps/ tumours
	Infection	Bladder, prostate, urethra Kidney tuberculosis
	Cysts	Medullary sponge kidney Polycystic kidney disease
	Medication	Analgesic papillary necrosis (cell death)
	Vascular	Kidney infarction (loss of blood flow) Kidney trauma/injury

Short-term microscopic haematuria can be caused by exercise, sexual intercourse, and injury. In women, small amounts of blood can be found in urine during their menstrual period.

HOW DO YOU FIND THE CAUSE?

When it is confirmed that persistent microscopic haematuria is present, your doctor may ask for a detailed medical history, particularly in relation to previous urine tests and risk factors for bladder, kidney and urinary tract cancer. The risk factors for cancer include being over 50 years of age, being male, smoking, heavy analgesic use, past cyclophosphamide use (a drug used to treat cancers), and exposure to toxic dyes. A physical examination may also be carried out.

Your doctor may order further tests to find where the blood is coming from, which can be a basis for diagnosis, such as:

- a blood pressure check
- blood tests
- a urinalysis, which is an examination of a sample of urine
- a urinary tract ultrasound

If a glomerular source of bleeding cannot be identified, further tests may be needed, such as:

- spiral computed tomography (CT), which is a special type of x-ray
- urine cytology, which is a test to look for abnormal cells in your urine

HOW IS A URINALYSIS DONE?

You will be given special instructions regarding the collection of urine. This will include the type of container to use (you may be provided with a special container), the time of day to collect the sample (usually first urine of the morning), and what part of the urine stream to collect.

For example:

- 'Initial' collection is at the beginning of the stream – initial blood in the urine usually indicates bleeding from the urethra, which is the tube taking urine from the bladder.
- 'Terminal' collection is at the end of the stream – terminal blood in the urine usually indicates bleeding from where the urethra meets the bladder, bladder neck or base of the bladder.
- 'Total' collection is the entire stream of urine – total blood in the urine usually indicates bleeding from the bladder or somewhere higher in the urinary tract.

HOW IS BLOOD IN THE URINE TREATED?

Some causes of blood in the urine do not need any treatment while other causes may be serious. If blood in the urine is linked to a serious health problem, any treatment will work better if it is detected and diagnosed as soon as possible. The management of glomerular and non-glomerular haematuria is quite different. Treatment will depend on the cause of blood in the urine. Your doctor can often monitor and provide long-term care for the cause of blood in the urine. Test results help determine the most appropriate management options and whether a referral to a specialist is needed.

For more information about Kidney or Urinary health, please contact our free call Kidney Health Information Service (KHIS) on 1800 454 363. Alternatively, you may wish to email KHIS@kidney.org.au or visit our website www.kidney.org.au to access free health literature.

This is intended as a general introduction to this topic and is not meant to substitute for your doctor's or Health Professional's advice. All care is taken to ensure that the information is relevant to the reader and applicable to each state in Australia. It should be noted that Kidney Health Australia recognises that each person's experience is individual and that variations do occur in treatment and management due to personal circumstances, the health professional and the state one lives in. Should you require further information always consult your doctor or health professional.

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