Tracing Kidney Clues

Follow causes, effects, and care decisions through the urinary system

HAP.14.6 "Research and analyze the causes and effects of various pathological conditions and other kidney abnormalities (e.g., kidney stones, urinary tract infections, gout, dialysis, and incontinence)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline a cause of each condition, circle an effect or symptom, and number two cause-and-effect chains that connect different conditions. Use your marks to explain how a change in one part of the urinary system can lead to another problem.

When Urine Flow Changes

1. After a long practice in the heat, a runner may produce less urine. With less water, minerals in urine become more concentrated and can form a kidney stone. A stone that moves into a ureter, the tube carrying urine from a kidney to the bladder, can cause sharp pain and blood in the urine. If it blocks urine flow, bacteria may be harder to flush out, raising the risk of infection. Not every stone has the same cause: some form from calcium compounds, while others form from uric acid. Drinking enough water lowers the risk of many stones.

2. An infection can begin when bacteria enter the urethra and multiply in the bladder. This urinary tract infection, or UTI, may cause burning during urination and a frequent urge to urinate. Bacteria can sometimes travel upward to a kidney, causing fever and pain in the back or side; kidney infection needs prompt medical care. A frequent urge is not the same as incontinence, which means urine leaks unintentionally. Weak pelvic floor muscles can contribute to stress incontinence: a cough raises pressure on the bladder, and urine leaks. Incontinence can also have other causes and does not automatically mean infection.

3. Kidneys also remove wastes from blood. When kidney function falls severely, wastes and extra fluid can build up, leading to swelling and other serious problems. Dialysis is a treatment, not a disease: it filters wastes and extra fluid when kidneys cannot do enough. It does not cure the underlying kidney damage. Another waste, uric acid, links the kidneys to gout. Gout occurs when uric acid crystals form in a joint and trigger sudden pain and swelling, often in a big toe. High uric acid levels can also contribute to uric acid kidney stones, but having gout does not mean a person will develop stones.

2 ANSWER WITH EVIDENCE

Use the passage

1. How can drinking too little water lead to a kidney stone, and how could a stone increase the risk of infection?

2. A person urinates often, while another leaks urine when coughing. Explain why these symptoms could point to different conditions.

3. What connects gout to some kidney stones, and why does gout not guarantee that a person will develop a stone?

4. What problem can make dialysis necessary, and what can dialysis do and not do about that problem?

3 YOUR TURN

Your own words

Invent a four-sentence patient case that links two conditions in the passage. Include a specific situation, a plausible cause-and-effect chain, one symptom, and one prevention or care step; do not retell the runner example.

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PART 1 · READ AND MARK

Underline a cause of each condition, circle an effect or symptom, and number two cause-and-effect chains that connect different conditions. Use your marks to explain how a change in one part of the urinary system can lead to another problem. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How can drinking too little water lead to a kidney stone, and how could a stone increase the risk of infection?	**Less water makes minerals in urine more concentrated, allowing a stone to form. A stone that blocks urine flow makes bacteria harder to flush out.**
2	A person urinates often, while another leaks urine when coughing. Explain why these symptoms could point to different conditions.	**A frequent urge can occur with a UTI caused by bacteria. Leakage during a cough can be stress incontinence related to weak pelvic floor muscles.**
3	What connects gout to some kidney stones, and why does gout not guarantee that a person will develop a stone?	**Uric acid crystals cause gout in joints, and high uric acid can contribute to some stones. Stones have other causes, and a person with gout will not necessarily develop one.**
4	What problem can make dialysis necessary, and what can dialysis do and not do about that problem?	**Severely reduced kidney function can let wastes and extra fluid build up. Dialysis removes wastes and extra fluid but does not cure the kidney damage.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

At an outdoor music festival, Lena drinks little water and later notices sharp pain in her side. Concentrated urine may have helped a kidney stone form, and the stone may now slow urine flow. When Lena develops burning urination and a fever, she may also have a urinary tract infection that has reached a kidney. She seeks prompt medical care for the fever and plans to bring water to future outdoor events.

Accept other accurate cause-and-effect links supported by the passage. In the patient case, look for a plausible link between two conditions, a fitting symptom, and an appropriate prevention or care step.