



STEP 1 | ORIGINAL SAMPLE

Renal physiology sample

A clean segment map, a reasoning framework, and original review questions.

\$69

FULL PROGRAM PRICE

4

designed pages

3

original questions

17

topic modules

This sample is independently written and designed to demonstrate the StepBridge MD format.
For exam preparation only. It is not a substitute for clinical judgment or patient specific care.



Nephron transport at a glance

Use the segment, apical transporter, water permeability, and hormonal control to solve most transport questions.

01

Proximal tubule

About 60 to 70% of filtered sodium and water

NHE3, SGLT, amino acid cotransport

02

Thin descending limb

High water permeability; tubular fluid concentrates

Water exits toward the hypertonic medulla

03

Thick ascending limb

About 20 to 30% of filtered NaCl; water impermeable

NKCC2 creates a diluting segment

04

Distal convoluted tubule

Fine tuning of sodium and calcium handling

NCC reabsorbs sodium and chloride

05

Collecting system

Final control of sodium, potassium, water, and acid base

ENaC responds to aldosterone; ADH controls water



A four move reasoning method

1

Locate the segment

First ask where the transporter or channel lives. Location usually narrows the answer immediately.

2

Name the movement

State what moves from lumen to cell, what leaves the cell, and whether water can follow.

3

Predict the urine

If reabsorption falls, expect more of that solute downstream. Then predict volume, concentration, and electrolyte effects.

4

Connect the regulator

Aldosterone changes sodium and potassium handling. ADH changes water permeability. PTH changes calcium and phosphate handling.

FAST CHECK

Water impermeable + NKCC2 = thick ascending limb

That single pairing connects transporter location, medullary gradient formation, tubular dilution, and the site of action of loop diuretics.



Quick check: renal transport

These original questions show how the notes connect a fact to a decision. Answers appear inside each card.

QUESTION 1

Which nephron segment reabsorbs sodium through NKCC2 and remains impermeable to water?

Answer: Thick ascending limb

NKCC2 and water impermeability make this a diluting segment and help build the medullary gradient.

QUESTION 2

Aldosterone increases sodium reabsorption and potassium secretion through which collecting duct cell?

Answer: Principal cell

Principal cells use ENaC apically and the sodium potassium pump basolaterally.

QUESTION 3

Why does reduced proximal sodium reabsorption increase delivery to downstream segments?

Answer: More filtered sodium remains in the tubular lumen

The downstream nephron receives the solute that was not reclaimed earlier.

FORMAT PROMISE

Every quiz item is paired with a short explanation so the learner reviews the reasoning, not only the correct option.