



Renal block
ANATOMY
team 435

Kidney

Location of kidney	<ul style="list-style-type: none"> Lie behind the peritoneum on the posterior abdominal wall on either side of the vertebral column. (from T12 to L3) Retroperitoneal . (retro = behind) 		
Characteristic	<ul style="list-style-type: none"> - Reddish brown. - Right kidney lies slightly lower than the left due to the large size of the right lobe of the liver. - The upper border of the right kidney is at the level of 11th intercostal space - the upper border of the left kidney is at the level of 11th rib. 		
Function	<ul style="list-style-type: none"> • Excretion of the wastes. • Synthesis of hormones (erythropoietin) and enzyme (renin) • Regulation of water and electrolytes balance> • Convert Vitamin D to its active form. 		
Covering (layers) From inner to outer	<ul style="list-style-type: none"> - Fibrous capsule - Perirenal (perinephric) fat - Renal fascia - Pararenal (paranephric) fat 		
Blood supply (arteries)	Aorta (at the level of L2) → renal artery → five segmental artery (4 in front and 1 behind the renal pelvis) → lobar artery (arises from each segmental artery , one for each renal pyramid) → 2 or 3 interlobar artery (run toward the cortex on each side of the renal pyramid) → arcuate arteries (at the junction of the cortex and medulla) → interlobular arteries . → afferent glomerular arterioles .		
veins	<ul style="list-style-type: none"> • vein drains into IVC. • The left renal vein receives the left gonadal and the left suprarenal veins. 		
Nerve supply	Renal sympathetic plexus (no parasympathetic)		
Two capillary beds	<ol style="list-style-type: none"> The glomerulus The peritubular capillary 		
Hilum transmits (anterior to posterior) VAUA	<ul style="list-style-type: none"> - Renal vein - Renal artery - Ureter - Third branch of renal artery. 		
Relations <i>Very important</i>	Anterior	Right	<ul style="list-style-type: none"> • Right suprarenal gland • Liver • Second part of the duodenum • Right colic flexure • Colic of small intestine
		Left	<ul style="list-style-type: none"> • Left suprarenal gland • Stomach • Spleen • Pancreas • Left colic flexure • Descending colon • Colic of jejunum
	Posterior (for both right and left)	Muscles (4)	Nerves (3)
	<ul style="list-style-type: none"> - diaphragm - psoas major - quadratus lumborum - Transvers abdominis 	<ul style="list-style-type: none"> • Subcostal nerve (T12) • Liohypogastric nerve (L1) • Lioinguinal nerve (L1) 	<ul style="list-style-type: none"> • 12th ribs • Costodiaphragmatic pleural recess.

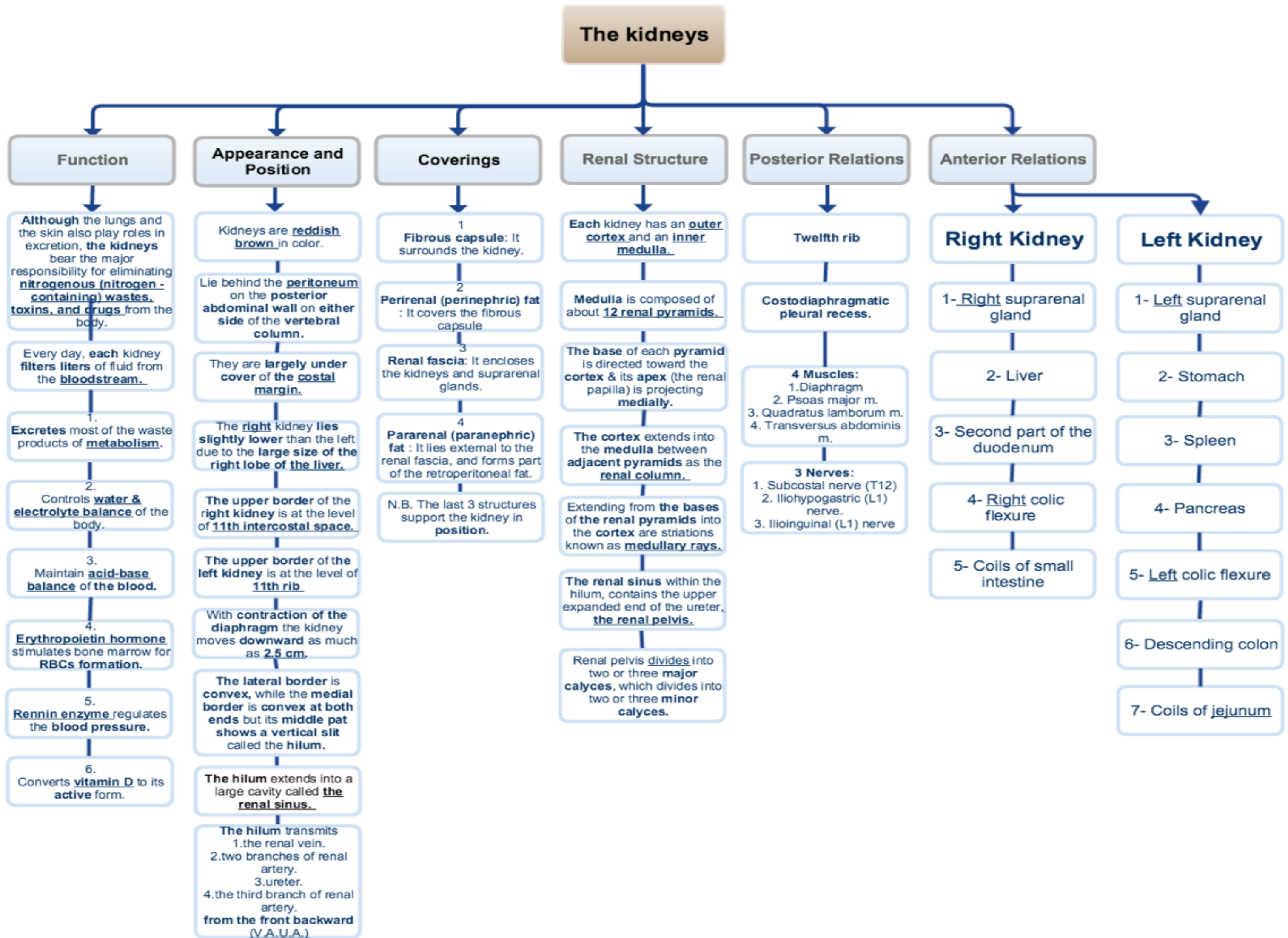
This schedule can be used in anatomy practical as well.

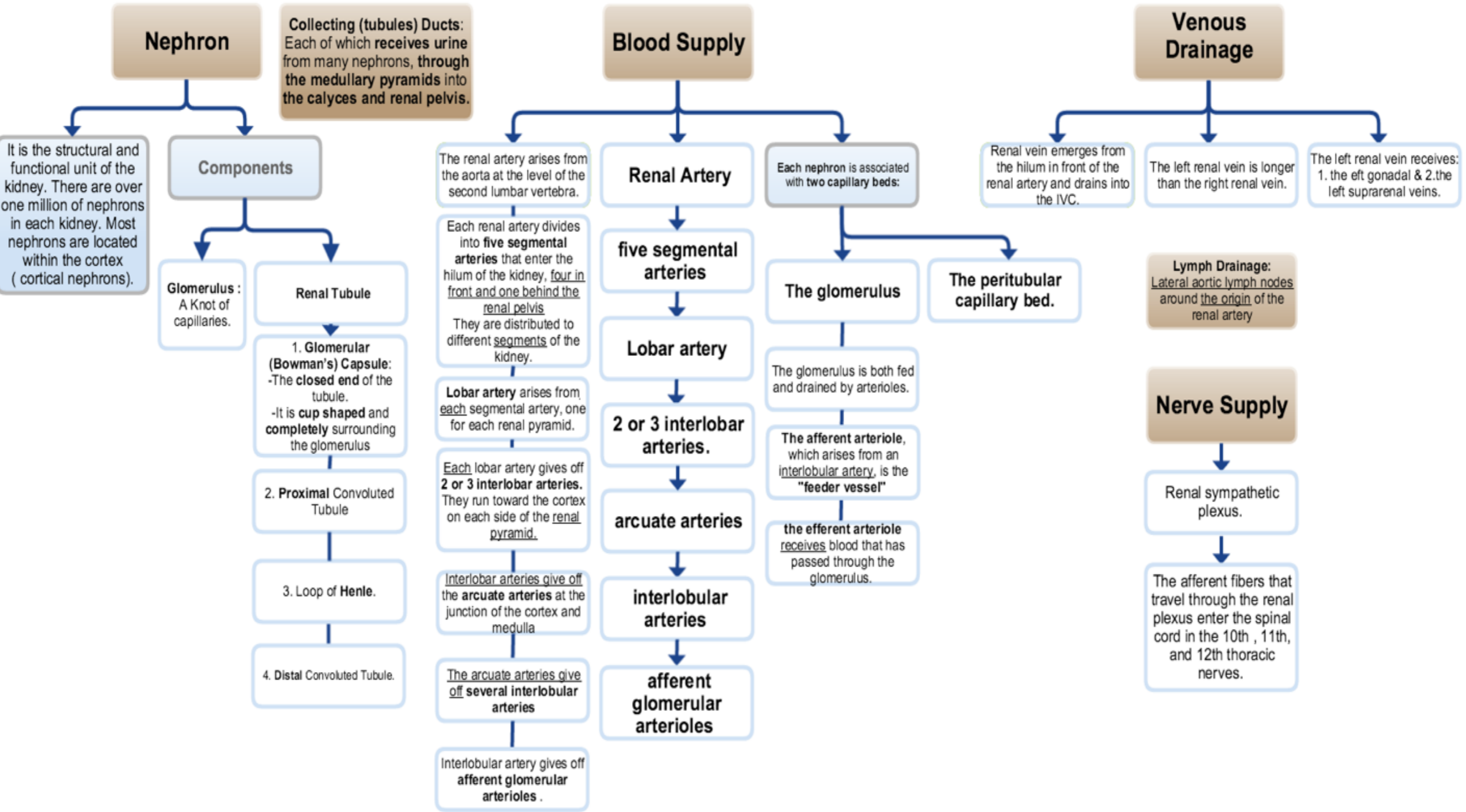
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Anatomy of The Kidneys





For a clearer version : <https://www.glify.com/go/publish/image/10392313/L.png>

Done by: nouf alabdulkarim

Mnemonics

Slide 4

How to remember kidney functions?

A WET BED

A: Acid base balance

W: Water removal

E: Erythropoiesis

T: Toxin removal

B: Blood pressure control

E: Electrolyte balance

D: vitamin D activation

OR

REEM

R: Regulates/balance: Fluid Acid Base & Electrolyte

E: Endocrine: Erythropoiesis/Prostaglandins

E: Exocrine: Waste Products/drugs

M: Metabolic: Vitamin D/PTH

Slide 8

How to remember kidney Layers?

Cortex = outer layer

Medulla =middle layer

Pelvis =inner layer

the letters C M P follows the alphabet

Slides 10, 11 &12

How to remember the posterior relations?

(Lama Made (Nora) Pancakes while Queen Rawan Started To eat☺

Lateral arcuate ligament,

Medial arcuate lig,

Nerves

Psoas major,

Quadratus lumborum,

Rocky means diaphragm as diaphragm is like rock,

Subcoastal vessels,

Transverse abdominis.



Slides 13

How to remember the Anterior relations?

1-Right Kidney

(Real Life Students Cry Intensely)

- 1- Right suprarenal gland
- 2- Liver
- 3- Second part of the duodenum
- 4- Right colic flexure
- 5- Coils of small intestine

2-Left Kidney

(3 Soccer Players Cooled Down after Jogging)

- 1- Left suprarenal gland,
- 2- Stomach,
- 3- Spleen,
- 4- Pancreas,
- 5- Left colic flexure,
- 6- Descending colon
- 7- Coils of jejunum

Slides 15, 16 & 17

SIMPLIFY THE NEPHRONS:

<http://www.yournursingtutor.com/nephron-anatomy/>

Slides 18, 19 & 20

How to remember Renal Arterial Blood Flow?

(Riyadh's Students Ignored the Amazing International Agreement on Environmental Protection Voting)

- 1- Riyadh : Renal Artery
- 2- Students: Segmental Artery
- 3- Ignored: Interlobar Artery
- 4- Amazing: Arcuate Artery
- 5- International: Interlobular Artery
- 6- Agreement: Afferent Arteries & Glomerulus
- 7- Environmental: Efferent Arteries
- 8-Protection: Peritubular capillary
- 9-Vasa Recta

Slide 25

How to remember Renal Nerve Supply?

(10th, 11th & 12th to go out we must dig and delve)

10th, 11th, and 12th thoracic nerves



Important notes from the Dr's

Dr. Abuelmakarem: Anterior relations of the kidney you should know if the retroperitoneal is under the organ or not , the ones with the number in red do not have it under them the ones in black have a retroperitoneal under them.

Right colic flexure (hepatic flexure): the junction between the ascending colon and transverse colon

Left colic flexure(splenic flexure) : the junction between the transverse colon and the descending colon.

Blood supply : renal artery arises from second lumbar vertebra “very important”

Dr. Jamila: the nephron is associated with two capillaries that's why the kidney has portal circulation

The renal vein contains glucose and nutritional substances to give back to the circulation

Dr. Jamila & Dr. Abuelmakarem: another name for lateral aortic lymph nodes is paraaortic and lumbar aortic lymph

Dr. Jamila : The nerve supply for the kidney is only sympathetic no parasympathetic



Dr. Jamila & Dr. Abulelmakarem : The kidney retroperitoneal : they are covered in the front by the peritoneum but are fixed on the posterior abdominal wall (no peritoneum from the back).

The kidneys extend from T12 to L3

Dr. Abulemakarem: in the hilum the anterior structure is the vein ,the most posterior is the ureter and the renal artery is in between. •

Dr. Jamila: the minor calyces are cup shaped and surround the apex of the modullary pyramids they open to the minor then major then renal pelvis. •

Dr. Jamila & Dr. Abulelmakarem:

The posterior relations: (important)

Right kidney: 12th rib only

Left kidney: 11th+12th rib

Dr. Jamila: The posterior muscles :

Diaphragm :separates the kidney from the lungs

Psoas major :most medial

Quadratus lamborum :middle

Transversus Abdominus : most lateral



Q1- What is the major organ that plays role in excretion?

- A- Lungs
- B- Kidney
- C- Skin

ANSWER: B

Q2- One of the following is NOT a kidney function:

- A- Vitamin C activation
- B- Vitamin D activation
- C- Electrolyte balance
- D- Acid base balance
- E- none of the above

ANSWER: A

Q3- Kidneys extend from approximately and the left kidney lies than the right.?

- A- T12 to L3. Upper.
- B- T12 to L3. Lower.
- C- T11 to L4. Lower.
- D- T11 to L4. Upper.

ANSWER: A

Q4- The hilum transmits the:

- A- renal nerve
- B- Ureter
- C- Uterus

ANSWER: B

Q5- What covers the Fibrous capsule?

- A- Perirenal
- B- Pararenal
- C- Renal Fascia

ANSWER: A

Q6- Medulla is composed of

- A- 13 renal pyramids
- B- 12 renal pyramids
- C- 23 renal pyramids
- D- 22 renal pyramids

ANSWER: B

Q7- The renal sinus contains the upper expanded part of the ureter called:

- A- Renal Papilla
- B- Renal Uretur
- C- Renal Pelvis

ANSWER: C

Q8- The Renal Papilla is the:

- A- Apex of the cortex
- B- Base of the cortex
- C- Apex of the medulla
- D- Apex of the pelvis

ANSWER: C

Q9: What is the structural unit of the kidney?

- A- Efferent
- B- Afferent
- C- Naphron
- D- Nephron

ANSWER: D

Q10- For left kidney, the rest of the upper part of anterior surface is covered by:

- A- Retroperitoneal pancreas.
- B- Stomach and spleen.
- C- Left colic flexure

ANSWER: B

Q11- For right kidney, Which one of the following contacts with the kidney close to hilum:

- A- 2nd part of duodenum.
- B- 1st part of duodenum.
- C- Small intestine.

ANSWER: A

Q12- Which one of the following drain into renal vein:

- A- Arcuate veins.
- B- Interlobular veins..
- C- Interlobar veins.
- D- B&C

ANSWER: C

Q13: Kidney supply by:

- A- Vagus nerve.
- B- Renal sympathetic plexus (T10, 11, 12).
- C- Renal sympathetic plexus (T9, 10, 11).

ANSWER: B

Q14- In kidney, Each segmental artery gives rise to number of:

- A- Interlobar arteries
- B- Renal artery
- C- Renal vein
- D- Lobar arteries.

ANSWER: D

1/All of the following structures are present in the hilum of each kidney except :

- A- Renal artery
- B- Renal vein
- C- Urethra
- D- Ureter

2/which one of the following forms anterior relation of the left kidney ?

- A- liver
- B- Duodenum
- C- Ascending colon
- D- stomach

3/ Which one of the following structure is related anteriorly to the right kidney ?

- A- stomach
- B- Spleen
- C- Liver
- D- Splenic artery

4/ Into which vein the right suprarenal vein drains :

- A- Inferior vena cava
- B- Right Renal
- C- Portal
- D- Left renal

5/ The renal artery arises from the Aorta at the level of :

- A- L2
- B- L1
- C- T11
- D- T12

6/at which vertebral level the subcostal nerve is situated ?

- A- L1
- B- L2
- C- T12
- D- T11

7/The interlobular arteries give off :

- A- Afferent arterioles
- B- Efferent arterioles
- C- arcuate arteries
- D- All of the above

8/Which of the following is the most anterior structure placed at the renal hilum

- A- Renal vein
- B- Renal artery
- C- Ureter
- D- subcostal nerve

9/ at which vertebral level the Ilioinguinal nerve is situated ?

- A- L3
- B- T10
- C- L1
- D- L2

1-C	2- D	3-C	4-A	5-A	6-C
7-A	8-A	9-C			

هذا العمل إجتهد من طلاب و طالبات
إن أصبنا فمن الله وإن أخطأنا فمن أنفسنا و من الشيطان

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