Physiology week 17 – Renal (renin/eryth) VIVAs

TOPIC: Renin-angiotensin system **NUMBER:**

OPENING QUESTION	How does the renin-angiotensin system respond to hypotension?	**PROMPTS**	**COMMENTS**
POINTS REQUIRED	1. With a drop in BP, renin is released from the JG cells and act on a renin substrate to form angiotensin I, which is converted to angiotensin II in the lung. Angiotensin II causes vasoconstriction and decrease the excretion of both salt and water (long term effect).	1	
	2.	2	
SECOND QUESTION (if needed)	What are the other effects of the renin-angiotensin system?		2/5
POINTS REQUIRED	1. Salt and water retention	1	
	2. Stimulate aldosterone secretion	2	
	3. Faciliate the release of noradrenaline	3	
	4. Downgrade the baro-receptors	4	
	5. Increase the secretion of vasopressin	5	

TOPIC: Renin Secretion _____ **NUMBER:** _____ 3b

OPENING QUESTION	**What physiological factors affect renin secretion**	**How do they affect secretion?**	Steer away from the clinical conditions – may need prompt to do this
POINTS REQUIRED	1 **Afferent arteriolar pressure** – increased pressure at the level of JG cells in kidney causes decrease in renin secretion & vice versa	1	**Must have to pass**
	2 **Na & K transport across macula densa** – increased reabsorption leads to decreased renin secretion & vice versa	2	**Must have to pass**
	3 **Angiotensin II** – inhibitory feedback to JG cells	3	**Must have to pass**
	4 **Circulating catecholamines** – increased SNS activity increases renin	4 How does SNS activity affect renin secretion	
	5 **Other – Prostaglandins** – increases renin; **vasopressin** – decreases renin	5	
	6	6	
SECOND QUESTION (optional)	Please give 2 clinical conditions which increase renin secretion and by what mechanism they work		

TOPIC: Renin-angiotensin system _____ **NUMBER:**

OPENING QUESTION	Describe how the renin-angiotensin system regulates blood pressure and flow	**PROMPTS**
POINTS REQUIRED	1 Describes pathway	1
	2 Fall in renal blood flow leads to renin	2
	3 Renin, angiotensin I > II	3
	4 Vasoconstrictor	4
	5	5
	6	6
SECOND QUESTION (if needed)	What factors regulate renin secretion?	
POINTS REQUIRED	1 Stim: sympathetic nervous system, catechols, prostaglandins	1
	2 Inhib: Na and Cl reabsorp, inc BP, angio II, vasopressin	2

What are the actions of vitamin D?
• Increased absorption of calcium from the intestine by induction of calbindin-D proteins.
• Increased resorption of calcium in the kidneys.
• Increased osteoblast activity.
• Aids calcification of bone matrix.
How is the synthesis of vitamin D regulated?
• Not closely regulated.
• Low calcium leads to increased PTH secretion and increased vitamin D is produced.
• High calcium inhibits PTH and the kidneys produce inactive metabolites.
• Low phosphate increases vitamin D production (and high phosphate inhibits it).
• Vitamin D inhibits the enzyme involved in its synthesis.