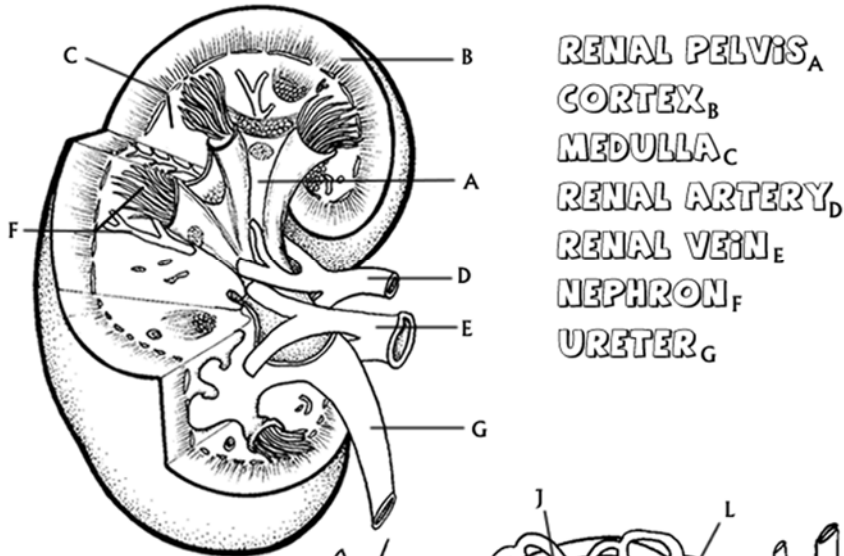


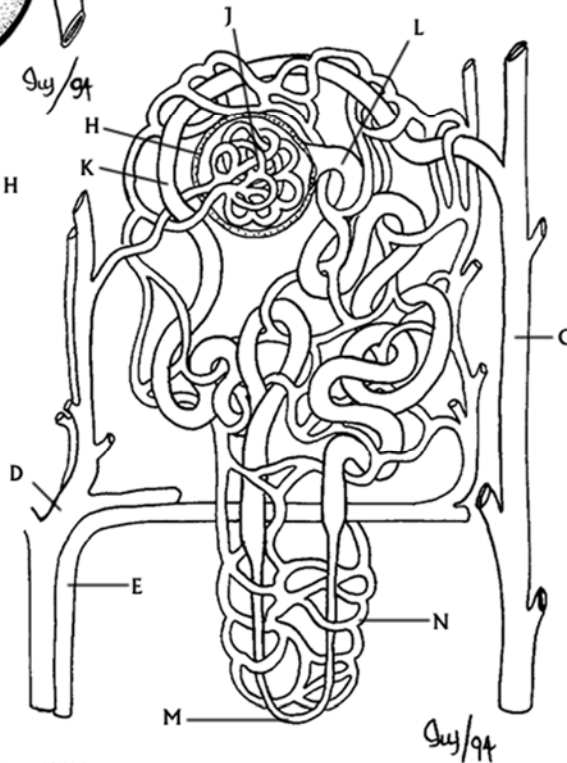
Renal Tests

1. Define glomerular filtration rate (what is glomerular filtration rate?)

STRUCTURE OF THE NEPHRON



BOWMAN'S CAPSULE_H
GLOMERULUS_I
DISTAL TUBULE_K
PROXIMAL TUBULE_L
LOOP OF HENLE_M
CAPILLARIES_N
COLLECTING DUCT_O



2. In order for the clearance of a factor (x) to equate with glomerular filtrate rate, x must have the following properties:
 - a.
 - b.
 - c.

Creatinine clearance may be calculated using the Cockcroft-Gault formula: Cockcroft DW, Gault MH. [Prediction of creatinine clearance from serum creatinine. Nephron. 1976;16\(1\):31-41. PubMed PMID: 1244564.](#)

$$\frac{(140 - \text{age}) \times (\text{ideal weight})}{72 \times \text{creatinine}}$$

Multiply by 0.85 if female

This gives you creatinine clearance in ml/minute

You can also calculate creatinine clearance by collecting urine for 24 hours. Measure the serum creatinine and the urine creatinine values and then use the formula:

$$\frac{\text{Urine volume (ml)} \times \text{urine creatinine concentration}}{\text{Serum creatinine} \times \text{time (minutes)}}$$

<http://www-users.med.cornell.edu/~spon/picu/calc/crclcalc.htm>

3. Why do we use creatinine clearance to estimate glomerular filtration rate?

4. What is a normal glomerular filtration rate for men and women?

5. What are the limitations of using creatinine clearance to estimate glomerular filtration rate?

6. What does MDRD stand for?

Levey AS, Bosch JP, Lewis JB, Greene T, Rogers N, Roth D. A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Modification of Diet in Renal Disease Study Group [Ann Intern Med. 1999 Mar 16;130\(6\):461-70.](#)
<http://mdrd.com/>

7. Why does the lab not report estimated GFR > 60?

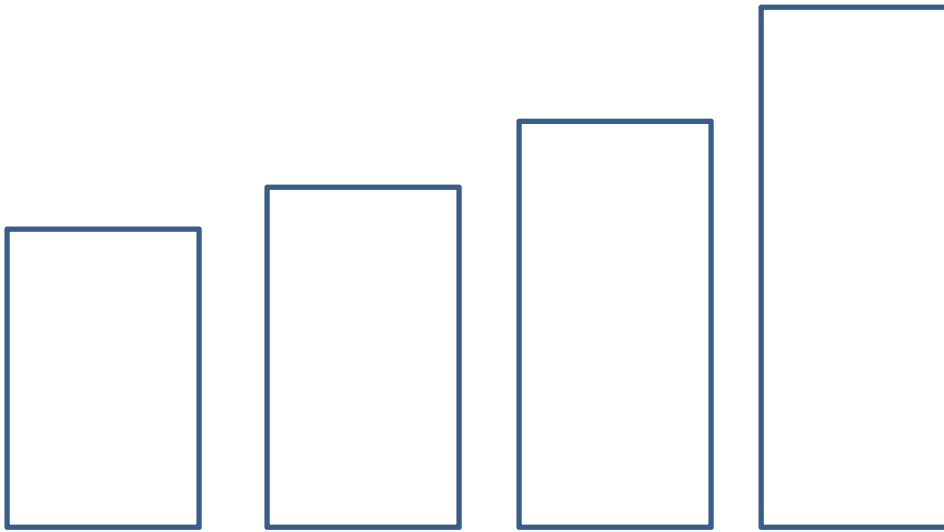
8. What is the relationship of creatinine to creatine?

9. Why is a serum creatinine of 1.0 mg/dl a 80 year old female with a weight of 45 kg not equal to the serum creatinine of 1.0 mg/dl in a 27 year old male with a weight of 70 kg?

Describe individuals are expected to have a low serum creatinine if their kidney function is normal?

Describe individuals who are expected to have a higher serum creatinine if their kidney function is normal.

10. Below-draw how urine protein excretion may change over the course of a 20 year exposure to poorly controlled diabetes



11. Define microalbuminuria

12. Define macroalbuminuria

13. Does the presence of microalbuminuria reflect kidney disease?

14. How much protein is normally in the urine?



No diabetes

10 years diabetes

15 years diabetes

20 years diabetes