

Case Study, Chapter 53, Assessment of Kidney and Urinary Function

1. George Wright, 63 years of age, is admitted in same-day surgery for a renal angiogram for the diagnosis of renal artery stenosis. (Learning Objective 5)

- a. What patient education should the nurse provide to the patient?
 - The reason for the procedure
 - How the patient will feel and what the patient needs to do after the procedure
 - What will need to happen before the surgery
- b. What preparation should the nurse provide for the patient who is going for a renal angiogram?
 - Fast for 8 hours before the procedure
 - Anxiety calming education

2. Laura is a new graduate nurse who has accepted a position on a medical ward that has a high percentage of patients with hypertension. In preparation for caring for these patients, Laura decides to review aspects of blood regulation, including the kidney's renin-angiotensin system. (Learning Objective 2)

- a. What does Laura learn in reviewing the role of the vasa recta in blood pressure regulation?
 - The **vasa recta** capillaries are long, hairpin-shaped blood vessels that run parallel to the loops of Henle. The hairpin turns slow the rate of blood flow, which helps maintain the osmotic gradient required for water reabsorption. This can affect the amount of fluid in vessels which can fluctuate blood pressure.
- b. What is the physiologic reaction in the kidney to a decrease in blood pressure?
 - Capillaries dilate or constrict depending on the blood pressure and what the body needs.
- c. How does angiotensin II affect blood pressure?
 - A key modulator of blood viscosity is the renin-angiotensin system (RAS) or the renin-angiotensin-aldosterone system (RAAS), a hormone system that regulates blood pressure and water balance.

- d. How does the adrenal cortex function in conjunction with the kidney to increase blood pressure?
- The adrenal cortex releases cortisol which raises blood pressure.