

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Ms. Randall Anatomy & Physiology**

**Lab activity: Urinalysis**

### **Background:**

Kidneys filter waste products from our blood. Normal urine contains approximately 95% water, nitrogen compounds (including urea, ammonia, and uric acid), salts, small amounts of protein, and glucose.

Abnormal urine composition often indicates disease or infection. Diabetes is often diagnosed after a patient has a positive test for glucose in the urine. Diabetes is the result of an inability to absorb glucose from the blood. The body compensates for these elevated blood glucose levels by filtering the glucose out through the kidneys; the excess glucose exits the body through the urine.

When urine tests positive for protein, kidney damage could be to blame. If the kidneys are damaged by high blood pressure, diabetes, or some types of medication, they begin to break down. The breakdown of the tissue within the kidney results in protein being excreted through the urine.

Urine that is outside the normal pH range can be an indicator of disease or infection. If urine is more acidic than normal, it could be the result of respiratory problems, dehydration, or starvation. Urine that is more alkaline than normal can indicate kidney disease or urinary tract infection.

Ketones can be found in the urine as well. Ketones in a urine sample are the result of the breakdown of fat in the body when glucose is not present. Often, the presence of ketones in the urine are a symptom associated with diabetes and can be an indication of a life-threatening condition called diabetic ketoacidosis.

Urinalysis is a test that analyzes the composition of urine. A urine sample can be collected in a sterile container or a nonsterile container, depending upon the tests being completed. Often, test strips are used to test whether common components are present within a normal range. Glucose, proteins, red or white blood cells, ketones, and pH are a few of the components tested for through urinalysis and the presence of each in varying quantities can help professionals diagnose patients with health concerns.

**Objective:** To perform a modified urinalysis as used in a health care setting. To apply knowledge of normal versus abnormal urine to determine diagnoses on unknown samples

### **Procedure:**

1. As a group, use the test strips to test each of the samples, A to E. Record the results in the table for urine samples.
2. Discuss the results with your group and use the background information provided to determine which of the diseases or disorders each sample indicates.
  - Normal urine
  - Diabetic ketoacidosis
  - Diabetes
  - Urinary tract infection
  - Kidney damage

**Results:**

<b>Sample</b>	<b>Sample A</b>	<b>Sample B</b>	<b>Sample C</b>	<b>Sample D</b>	<b>Sample E</b>
<b>Color</b>					
<b>Ketones present?</b>					
<b>pH</b>					
<b>Glucose present?</b>					
<b>Protein present?</b>					
<b>Disease indicated</b>					