



# Automated Urinalysis

eClinic

## Lesson 3: Running a Patient's Sample

One of the greatest advantages of automated urinalysis is the removal of bias due to the different abilities of individuals to perceive color. The principle of the method used to read each pad's color is reflectance colorimetry. A wavelength of light is first directed toward a white calibration area on the strip platform, establishing what is 100% reflectance. The light is then directed toward a pad on the strip, and the intensity of the color developed on each pad will affect the amount of light reflected off of the pad toward a photodetector. A comparison of that amount of reflected light to that reflectance stored in memory will determine the concentration displayed for that sample.

### Doing the Science

1. Open the Automated Urinalysis simulation.
2. You must have completed the calibration portion of this simulation to continue to this part.
3. Select the "Test Mode 1" button.
4. Select a test tube from the shelf.
5. Select the "Patient Sample #1" container from the shelf and move the container to the test tube in the middle of the table.
6. Select and move the test tube in the middle of the table to the far left open position of the blue rack.
7. Repeat steps 4–6 for all of the containers on the shelf labeled with "Patient Sample."
8. Select and move the blue rack to the right front of the instrument to load the rack.
9. On the "Patient Evaluation" screen, select the correct interpretation for each test result for Patient #1. Record your data and results in Table 1.
10. Select the "Check" button at the top left of the screen to evaluate your responses.
11. Select the arrow to the right of the "Patient #" title to evaluate the next patient's results.
12. Repeat steps 9–11 for the rest of the patient samples. Make sure to record your results in Table 1.
13. Please note: You cannot proceed to test mode 2 until you correctly interpret all five patient results.
14. Select the "Test Mode #2" button at the bottom of the screen.
15. Review the on-screen images. Use the on-screen "keyboard" to identify the element on the screen.
16. Select the "Check Answer" button to evaluate your selection.
17. If needed, select the "Image Library" button to see images of the different elements that might be present in a urine sample.

*Table 1. Patient Results*

Test	Patient #				
	1	2	3	4	5
Color					
Appearance					
Specific Gravity					
Protein					
pH					
Blood					
Ketones					
Bilirubin					
Urobilinogen					
Glucose					
Leukocytes					
Nitrite					

**Do You Understand?**

1. What is the main advantage of using an automated device for urinalysis as compared to a person reading a regular urine test strip?
  
2. Name two formed elements that would be difficult to identify using flow cytometry as compared to using a manual microscope.