



# Automated Urinalysis

eClinic

## Lesson 2: Operating an Automated Urinalysis Instrument - Calibration and Quality Control

Every instrument that generates a signal has to first test a solution with a single, known concentration of whatever it is you are trying to measure. This solution is called a *calibrator* if it is serum-based, or a *standard* if it is water-based. Usually, this will be done with multiple such solutions so the instrument (or you) can determine the linear relationship between instrument signal and analyte concentration. Once that is established, you can then run controls and patient samples and use the established relationship to figure out the concentration.

### Doing the Science

1. Open the Automated Urinalysis simulation.
2. Select the “Calibration” button at the bottom of the screen.  
*\*Note that all tubes and bottles must be capped when not in use since evaporation will make the standard become more concentrated than the label on the bottle indicates.*  
*\*Note that the tubes for the calibrators are already labeled. Care must be taken to ensure the correct standard is placed in the correct tube.*
3. Select a test tube from the shelf.
4. Select the “SG Cal 1.005” bottle from the shelf and move the bottle to the test tube in the middle of the table.
5. Select and move the test tube in the middle of the table to the far left open position of the blue rack.
6. Repeat steps 5–7 for all of the bottles on the shelf labeled with “Cal.”
7. Select the arrow at the bottom of the blue rack to view the back side of the test tubes. Select the arrow again to return the rack to its original position.
8. Select a test tube from the shelf.
9. Select the “Low Control” bottle from the shelf and move the bottle to the test tube in the middle of the table.
10. Select and move the test tube from the middle of the table to the red rack.
11. Repeat steps 10–12 for the other two bottles on the shelf labeled “Control.”
12. Select the arrow at the bottle of the red rack to view the back side of the test tubes. Select the arrow again to return the rack to its original position.
13. Select and move the blue rack to the right front of the instrument to load the rack.
14. Select and move the red rack to the right front of the instrument to load the rack.
15. On the “Calibration Evaluation” screen, select whether each test results is “Acceptable” or “Unacceptable.” Record your data and results in Table 1.
16. Select the “Check” button at the top left of the screen to evaluate your responses.
17. Select the arrow to the right of the “Calibration” title to evaluate the control results.
18. On the “Control Evaluation” screen, select whether each test results is “Acceptable” or “Unacceptable.” Record your data and results in Table 2.
19. Select the “Check” button at the top left of the screen to evaluate your responses.
20. Please note: If any of your results are “Unacceptable,” you must repeat steps 5–16. Otherwise, select the “Test Mode 1” button at the bottom of the screen.

*Table 1. Calibration Results*

<b>Test</b>	<b>Value</b>	<b>Acceptable</b>	<b>Unacceptable</b>
Specific Gravity 1.005			
Specific Gravity 1.025			
Specific Gravity 1.050			
Colorless			
Straw			
Yellow			
Amber			
SICI Clarity			
CI Clarity			
Turbidity			

*Table 2. Control Results*

<b>Test</b>	<b>Value</b>	<b>Acceptable</b>	<b>Unacceptable</b>
Specific Gravity			
Protein			
pH			
Blood			
Ketones			
Bilirubin			
Urobilinogen			
Glucose			
Leukocytes			
Nitrite			

