

The Johns Hopkins Hospital Point-of-Care Testing Program  
**Self-Study Packet**

**pH TESTING**  
**Hydrion Paper**

**Operator Competency**

Only operators who have completed a defined training program and can demonstrate competence will be able to perform pH Hydrion testing.

Operator competency will be assessed annually by two methods.

- a. Successful performance and documentation of quality control (2 levels of pH buffer solutions).
- b. One of the following:
  - Testing an unknown specimen
  - Having the supervisor or qualified delegate periodically observe routine work
  - Written test

**Test Order**

A physician's order, standard protocol, or order by other health professionals authorized to request laboratory tests is required for pH Nitrazine testing.

**Reagents and Storage**

The pH Hydrion paper and the control buffers are stable until the manufacturer's expiration date.

1. The pH Hydrion paper is stored at room temperature (15-30°C or 59-86°F), away from excessive heat, light exposure and exposure to acid and alkaline fumes.
2. The pH buffers are stored tightly capped at room temperature (15-30°C or 59-86°F).
3. The pH Hydrion paper and pH buffers are not used after the expiration date.
4. The pH Hydrion paper dispenser roll and pH buffer bottles are to be dated when initially opened.

**"Date Opened" Label**

The yellow "Date Opened" Label should be affixed to the dispenser roll of pH paper/ pH buffer bottle when it is first opened. Record the date opened on the label.

**Quality Control Frequency**

1. Weekly on each opened roll of pH Hydrion paper.
2. Initially when opening a new dispenser roll of pH paper or bottle of pH control buffer.

### **Quality Control Procedure**

1. Record the lot numbers and expiration dates of the pH Hydrion paper and control buffer solutions on the pH Hydrion QC Log Sheets, along with the date, time and operator initials.
2. Wearing gloves, tear off a strip of Hydrion pH paper from the roll
3. Each Hydrion pH paper dispenser contains 2 rolls of pH paper. Use one roll at a time. The following pH control buffers are run for the specified pH paper range:

<u>pH range:</u>	<u>Buffers:</u>
6.0 – 9.5	pH 6.0 and pH 9.0
4. Dispense a drop of the pH 6.0 buffer solution onto the strip of pH paper.
5. Immediately match the color of the pH paper with the closest color on the Color Chart supplied with the Hydrion pH paper dispenser. NOTE: Colors are unstable and results should be read within 60 seconds.
6. Record the actual number value of the pH test result on the appropriate QC log sheet.
7. Repeat steps 4-6 with the pH 9.0 buffer solution.
8. Verify that all of the QC buffer results are within acceptable range by comparing the results obtained to the control ranges posted on the pH Hydrion QC Log Sheets.
9. Discard used pH paper into a JHMI-approved biohazard waste container.

### **Quality Control – Results Documentation Summary**

1. Record date, time, operator initials, lot numbers and expiration dates of pH Hydrion paper and control buffer solutions on the pH Hydrion QC Log Sheets.
2. Record the pH results as actual numbers.
3. Verify that all of the QC buffer results are within acceptable range by comparing the results obtained to the control ranges posted on the pH Hydrion QC Log Sheets.
4. Place a check mark (✓) in the QC Pass/Fail box on the QC Log Sheets to note whether QC passed or failed.
5. Document any QC failures and corrective actions in the Comment Section of the pH Hydrion QC Log Sheet.

### **Quality Control Failures and Corrective Actions**

If the QC results fail, i.e., the expected results are not obtained:

1. Check to make sure that the Hydrion pH paper and pH buffers have not expired.
2. Repeat the test.
3. If repeat test fails, open a new bottle of pH buffer solution(s) and repeat test.
4. If the test fails with the new buffers, open and date a new roll of Hydrion pH paper.
5. Repeat the test.
6. If the repeat test with new buffers and Hydrion paper fails, **DO NOT PERFORM ANY PATIENT TESTING** until the quality control issues are resolved and the expected results are obtained and recorded.
7. Document all steps taken in the Comment Section of the pH Hydrion QC Log Sheets.
8. Contact the POCT Program Office for assistance.

### **Specimen Collection**

1. Use at least 2 unique patient identifiers (neither to be the patient's room number) to verify a patient's identity when collecting samples for testing.
2. The pH Hydrion test is used to determine the pH in ocular chemical exposures within the range of 6.0 to 9.5.
3. Samples must be fresh (not refrigerated) and tested promptly.
4. Gloves must be worn during sample collection and testing (Standard Precautions)
5. Ocular pH is obtained by gently pulling down on the lower lid of the affected eye and placing the Hydrion pH paper in the cul-de-sac. The lavage or eye wash may also be tested.

### **Patient Testing**

1. Check the pH Hydrion QC Log Sheet to make sure that quality control has been performed for the week. If not, perform QC.
2. Check the expiration date of the pH Hydrion paper.
3. Wearing gloves, tear off a strip of Hydrion pH paper from the roll.
4. Bring the strip of Hydrion paper into contact with the specimen, either by dipping the paper into the eye cul-de-sac or eye lavage.
5. Within 60 seconds, match the color of the Hydrion pH paper to the closest color on the Color Chart supplied with the pH paper dispenser.
6. Record the actual pH number value on the dated, timed, and initialed progress note in the patient chart.
7. Place a check mark (√) or "QC okay" next to the patient result to indicate that the pH quality control had been run within one week.
8. Note result as a Point-of-Care result in order to differentiate this result from a central laboratory result.
9. Document any problems encountered with the test in the comment section of the pH Hydrion QC Log Sheet.
10. Discard the used pH paper into a JHMI-approved biohazard waste container.

### **Reference Ranges**

In chemical exposures the eye is irrigated sufficiently to achieve a neutral pH.

Neutral pH of eye:	7.4 – 7.6
Neutral pH of eye wash:	At least 7.2

### **Interferences**

Interferences for the Hydrion pH test include:

- Salt solutions and enzymes may cause deviations in results

### **Limitations**

1. Hydrion paper is not to be used for pH determinations of urine and/or gastric fluid.
2. The accuracy of Hydrion paper is affected by salts, proteins, and other factors. Deviations may, under certain conditions, exceed 0.5 pH units.
3. Do not touch the pH paper with bare fingers.
4. The color of the pH paper and pH colors on the Color Charts may vary from lot to lot. Therefore, only the Color Chart accompanying each specific package or lot of Hydrion pH paper should be used for comparison.
5. Avoid color comparison under fluorescent lights alone.
6. Use only the Color Chart included with each specific package of Hydrion pH paper. If the chart is missing, discard the roll and open/date a new roll of Hydrion pH paper.

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