

HEMAPROMPT Fecal Occult Blood Testing

I. Principle of the Test

Blood in the feces is often the first and only sign of colonic or rectal malignancy. The HemaPrompt test is based on the oxidation of phenolic compounds present in guaiac to quinones, resulting in the production of a blue color. If blood is present in the fecal sample, the heme portion of the hemoglobin molecule can function in a pseudoenzymatic manner, catalyzing the release of oxygen from the hydrogen peroxide, which in turn causes the oxidation of guaiac. HemaPrompt is composed of guaiac-impregnated paper mounted on a cardboard frame that permits sample applications to one side with development and interpretation from the reverse side. The stool specimen containing occult blood contacts the guaiac-impregnated paper and a pseudo-peroxidase reaction occurs when developing solution is brought into contact with the guaiac paper, by pulling the tab. The test paper will turn blue within 30 to 60 seconds in the presence of more than 2 mg hemoglobin per gram feces.

II. Specimen

- A. It is recommended that the patient be placed on a high residue diet for two days before collecting the stool specimen. Eliminate red meat, raw fruit, and vegetables high in peroxidase (turnips, red radishes, and horseradish). Drugs to avoid that could interfere with test results include the following: Vitamin C, alcohol, aspirin, Iron, Ibuprofen, Naproxin and other arthritis medicines. (Refer to X. Interfering Substances for a complete list of those dietary/medication items that interfere with patient results) However, the special diet may be omitted initially with diet restrictions imposed upon re-testing of all positive results.
- B. Stool samples from three consecutive bowel movements or three bowel movements closely spaced in time should be collected.
- C. Collect specimens in a clean specimen collection container with a screw-capped top. Alternately, the stool sample may be applied directly to the HemaPrompt test card after performing a rectal examination.

III. Materials

- A. Supplies
 1. HemaPrompt test cards
 2. Applicator sticks
 3. Gloves (recommended during HemaPrompt testing)

IV. Storage and Stability

Store HemaPrompt test cards at room temperature (10-24°C or 50-75°F) in original packaging. Protect cards from heat, sunlight, fluorescent light, UV radiation, humidity, volatile chemicals and gases. Do not refrigerate or freeze. Test cards are stable until the expiration date stamped on each test card label, after which time the cards should not be used.

V. Quality Control

Quality Control is automatically performed on a test card each time a patient sample is tested. After the developer has been added, a blue cross (internal positive control) will appear at the right side of the test card and the background behind the blue cross should remain white (internal negative control). These controls verify that the test has been performed correctly and the card is functioning properly.

1. Turn the Hemaprompt test card over to the reverse side.
2. Holding the card facing you, gently lift up the silver tab and slowly pull it all the way to the right and completely remove it from the test card.
3. A blue cross (positive control) will appear through the clear plastic window 60 seconds after pulling the tab
4. The background behind the blue cross should remain white, which serves as the negative control.

VI. Quality Control Remedial Action

1. If the positive control area does not produce the blue cross and/or the background behind the blue cross does not remain white, check the expiration date of all supplies involved and repeat the test with a new card.
2. If blue cross is not visible, patient results are not valid and should not be reported.

* *NOTE:* If the cross is pink after the developer tab has been pulled, this indicates that the developer pad was dry (no developer was applied to the sample) – Do not accept patient results. Repeat the test with a new card.

VII. Procedure

1. Open the Hemaprompt test card so both specimen windows are visible.
2. Apply the fecal specimen to the test card windows:
 - A. Collect a small fecal sample on the wooden applicator stick provided in the Hemaprompt kit.
 - B. Apply a very thin smear of stool to the first window.
 - C. Reuse applicator to obtain a second sample from a different part of the fecal specimen.
 - D. Apply a thin smear to the second window.
3. Close the cover of the test card, avoiding finger pressure to card.
4. Turn the card over to the back. Holding the card facing you, gently lift up the silver tab so that the white developer pad is exposed.
5. While gripping the tab with thumb and finger of other hand, slowly and steadily pull the long silver tab all the way to the right and completely remove it from the test card.
6. Wait one minute after pulling tab before interpreting the test result. (Note: Interpret all results before 3 minutes)

VIII. Results

- A. Interpretation:
 1. Positive - Any blue color in either specimen window. Look for any shade of blue, even if only a faint tinge.
 2. Negative - No detectable blue color on either window.

IX. Limitations

- A. Stool samples should not be collected if the patient is experiencing menstrual bleeding, constipation bleeding, bleeding hemorrhoids or when rectal suppositories or medication is being used.
- B. HemaPrompt test cards are designed for preliminary screening as an aid to diagnosis. They are not intended as a replacement for other diagnostic procedures. Further testing and examination by the physician such as sigmoidoscopy, barium enema, and x-ray studies need to be performed to determine the exact cause and source of the occult blood in the stool specimen.
- C. HemaPrompt test results are to be read 1 minute (but before 3 minutes) after pulling the silver tab. After 3 minutes, intensity of blue color may decrease or fade, and possibly appear negative.

X. Interfering Substances

- A. Fecal specimens
 - 1. Red and rare meats, horseradish, raw fruits and vegetables such as broccoli, cauliflower, red radish, cantaloupe, parsnips and turnips, or other high peroxidase-containing vegetables, which can cause false positive results.
 - 2. Certain medications such as aspirin, indomethacin, phenylbutazone, reserpine, corticosteroids and non-steroidal anti-inflammatory drugs can cause gastrointestinal bleeding and give false positive results. Iron containing compounds may cause false positive results.
 - 3. Vitamin C in dosages greater than 250 mg per day has been shown to cause false negative results.
- B. Hemaprompt Retesting

After false positive result is obtained, discontinue food item believed to have caused the false positive test for 2 days, then retest. Medications need to be discontinued at the advice of the physician for 7 days before and during the test period.

XI. Procedural Notes

- A. Gloves should be worn during testing to prevent skin contact with developer solution.
- B. Test cards with fecal specimen applied may be developed for up to 5 days post-application when test cards are stored at room temperature (10-24°C or 50-75°F)

XII. Reference

HemaPrompt Product Information. 1996. Aerscher Diagnostics, Chestertown, MD.

Updated March 2014