

## Fecal Occult Blood Test – Activity 2: Articles

**Instructions:** In this text the articles (a, an, the) have been removed and replaced with blanks. Read the text and try to put the articles in their proper location. After you have finished, you can (1) listen to a reading of the article to check your answers while practicing your listening skills or you can (2) check the answer page.

**Key Vocabulary:** Non-technical words that you may find useful in medicine have been put in bold blue print.

\_\_\_\_\_ **previous** activity was about \_\_\_\_\_ FOBT, or more specifically G-FOBT, which uses guaiac as \_\_\_\_\_ reagent. This particular test is called \_\_\_\_\_ **qualitative** test because it produces either positive or negative results. It does not measure \_\_\_\_\_ **amount** of blood in \_\_\_\_\_ **stools**. \_\_\_\_\_ test that can measure \_\_\_\_\_ amount is called \_\_\_\_\_ **quantitative** test. \_\_\_\_\_ G-FOBT also has some **limitations** which reduce its usefulness. \_\_\_\_\_ first is that guaiac reacts with \_\_\_\_\_ heme part of hemoglobin. Heme can move through \_\_\_\_\_ entire digestive tract without being seriously **degraded** by enzymes or bacteria. Therefore, any blood from any part of \_\_\_\_\_ digestive tract can reach \_\_\_\_\_ stools and be **detected** by guaiac. Because \_\_\_\_\_ FOBT is particularly interested in blood from \_\_\_\_\_ large intestines, this ability to react with blood from more proximal areas can lead to false positive tests. Second, guaiac is not human specific, that is, it will produce \_\_\_\_\_ positive test if blood from other animals is in \_\_\_\_\_ digestive tract. This may sound strange, but whenever \_\_\_\_\_ person eats red muscle tissue from cows, pigs, cats, dogs, etc., they **ingest** \_\_\_\_\_ small amount of hemoglobin found in \_\_\_\_\_ tissues of \_\_\_\_\_ animal. White muscle tissue contains less blood and is less likely to produce \_\_\_\_\_ false positive. Lastly, as mentioned in \_\_\_\_\_ previous article, guaiac can react with certain chemicals in various vegetables as well as with certain drugs and vitamins. These factors taken together create \_\_\_\_\_ real potential for false positive tests. \_\_\_\_\_ risk of \_\_\_\_\_ false positive test can be reduced by having \_\_\_\_\_ patient **restrict** their diet prior to testing. However, diet restrictions do not affect \_\_\_\_\_ problem of blood from proximal bleeding being detected in \_\_\_\_\_ stools.

To overcome these problems there is \_\_\_\_\_ second type of FOBT that can be used. \_\_\_\_\_ test is based on immuno-chemistry and not \_\_\_\_\_ enzymatic reaction. \_\_\_\_\_ test is called \_\_\_\_\_ I-FOBT with \_\_\_\_\_ "I" standing for immunochemical. \_\_\_\_\_ test is also sometimes called \_\_\_\_\_ FIT (Fecal Immunochemical Test). These tests can be either positive/negative or quantitative and, like \_\_\_\_\_ G-FOBT, are easy for \_\_\_\_\_ patient to use. Of interest here is \_\_\_\_\_ quantitative test, which is called \_\_\_\_\_ qI-FOBT. Since \_\_\_\_\_ test is quantitative it can measure \_\_\_\_\_ amount of blood in \_\_\_\_\_ stools which gives \_\_\_\_\_ test diagnostic power. Different amounts of blood are **indicative** of various conditions which can cause blood in \_\_\_\_\_ stools. Because of its greater **sensitivity** (i.e. its ability to detect very small amounts of blood) and **specificity** (i.e. no reactions with meats or other foods and chemicals) \_\_\_\_\_ test can reduce \_\_\_\_\_ number of false positive tests (specificity) and \_\_\_\_\_ number of false negative tests (sensitivity).

\_\_\_\_\_ test is based on \_\_\_\_\_ reaction between specially prepared antibodies and \_\_\_\_\_ globin (or protein) part of hemoglobin. Antigen-antibody reactions are very specific, therefore few other compounds can react with \_\_\_\_\_ antibodies designed to react with human globin. This **feature** dramatically reduces \_\_\_\_\_ number of false positives associated with meats, vegetables, drugs and vitamins. Unlike heme, which is \_\_\_\_\_ fairly **robust** molecule and can move \_\_\_\_\_ length of \_\_\_\_\_ digestive tract without destruction, \_\_\_\_\_ globin part of hemoglobin is much more **delicate** and much more easily degraded by enzymes and bacterial action. As \_\_\_\_\_ result, if human globin is detected in \_\_\_\_\_ stools, \_\_\_\_\_ source of \_\_\_\_\_ bleeding must be much more distal. \_\_\_\_\_ globin part of

hemoglobin, from bleeding proximal to \_\_\_\_\_ large intestines, would be destroyed before it reached \_\_\_\_\_ rectum and exited in \_\_\_\_\_ stools.

As you can see, \_\_\_\_\_ qI-FOBT solves all \_\_\_\_\_ major issues associated with \_\_\_\_\_ standard G-FOBT. Its quantitative nature, ease of use, and reduction in both false positives and false negatives all make this test \_\_\_\_\_ desirable screening test. \_\_\_\_\_ **drawbacks** of \_\_\_\_\_ test include \_\_\_\_\_ increased cost of \_\_\_\_\_ test and \_\_\_\_\_ need for special equipment to analyze \_\_\_\_\_ results. However, \_\_\_\_\_ benefits of better detection rates, earlier detection and increased reliability provide **compelling** reasons for its use.