Phlebotomy in mastectomy patients; HIV test result confidentiality; RBC indices

I recently was asked to collect a specimen for type and crossmatch from a patient who had an intravenous (IV) line in her left arm and had undergone a mastectomy on her right side. It is our hospital’s policy to not collect blood from the arm adjacent to the mastectomy site, so I asked the nurse to stop the IV drip for a half hour and I would come back to collect the specimen. The nurse said the IV line could not be turned off, so I proceeded to collect the specimen from the patient’s foot.

Why is venipuncture prohibited from the mastectomy side? How much time must lapse after mastectomy before blood can safely be collected from the adjacent arm? Is it OK to collect blood from the hand adjacent to the mastectomy site?

Venipuncture is prohibited in the arm and hand adjacent to a mastectomy site. Surgical mastectomy procedures often include the removal of lymph nodes located proximal to the patient’s breast. The removal of these lymph nodes can cause the cessation of lymph flow out of the arm (and hand) — a condition known as lymphostasis. Lymphostasis can compromise the accuracy of test results. As Strasinger and DiLorenzo report: “Removal of lymph nodes in the mastectomy procedure interferes with the flow of lymph fluid and increases the blood level of lymphocytes and waste products normally contained in the lymph fluid.”

In addition, performing a venipuncture in an arm or hand affected by lymphostasis may bring harm to the patient. Because of diminished or arrested lymph drainage, the patient is very susceptible to infection. Additionally, the pressure associated with tourniquet application may result in injuries to patients who have had this type of surgery.

Selecting the foot as an alternate venipuncture site is certainly acceptable as long as that method is permitted per the facility’s policy and procedure manual. Some facilities do not allow phlebotomists to perform venipuncture in the ankles or feet. In the event that a patient has undergone a double mastectomy, one source recommends that the arm with the oldest surgical procedure be selected for venipuncture. This may be an acceptable alternative in facilities that do not allow venipuncture in ankles or feet.

At this writing, the concerns described above for mastectomy patients have no specified time limit. That is, after a patient has had a mastectomy on one side, that arm or hand should never be considered as a potential venipuncture site. Surgical techniques and treatments are continuously evolving. As standards for surgical techniques change and evolve, side effects (such as lymphostasis) may diminish and/or become completely eliminated in the future. Your facility’s policy and procedure manuals are your best reference for venipuncture site selection guidelines used at your facility.

Reference
How do you provide security for HIV test results?

Are results available on the patient’s chart or in the laboratory information system (LIS) or hospital information system (HIS)? Are patients registered using their names or is anonymous testing performed?

We have attempted to keep HIV antibody test results as confidential as possible in our institution. Our procedure adds some labor beyond what is normally associated with other laboratory tests in that we individually mail out reports and do not include results on cumulative trend reports or on computer screens. For most patients:

1. Ohio law requires that informed consent be obtained prior to performing an HIV antibody test on a patient. Our hospital legal staff has interpreted this to mean a written consent must be obtained from the patient. The consent form we use asks the patient to state who may receive his or her HIV antibody test results, in accordance with the law. Consent forms must be signed by the patient and the individual (usually a physician or nurse, not laboratory personnel) who explains the test to the patient. We do register the patient, which includes a medical record number, and other standard information.
2. The test is viewable in both the LIS and HIS as being ordered for the patient.
3. The viewable result in the HIS says “Test completed. See confidential report sent under separate cover.”
4. We generate an HIV Confidential Report, which contains patient demographics on a label printed out by the LIS, a result, and the immunology director’s signature. This report is mailed to an outpatient physician or placed on inpatient charts by our hospital infection control practitioners. It may seem paradoxical to place the result on the patient’s physical chart but not in the patient’s computer records. The chart is viewed as a confidential document, present in one place. While the computer record is treated as a confidential document, patient records may be viewed from any terminal in the hospital, even following discharge. Our medical and legal staffs have determined that there is a stronger possibility of inappropriate viewing of the computer record than the physical chart.
5. Results are viewable in a secured mode in the LIS. This allows me or someone covering for me to rapidly obtain a result in case of an immediate request from a physician. This also helps for middle-of-the-night requests.
6. Because of the lack of results available in the HIS, we do give out results by phone to the medical staff. We require positive identification of the physician to whom the result is given (often including a call back method) and documentation that the physician is involved in the care of the patient. We will release results with a properly executed patient information release form. According to Ohio law, this form must specifically state that HIV test results may be released.

For needle-stick situations, hospital employees, or public figures:

1. The physician must draw the blood specimen and label it with a pseudonym.
2. The patient is registered in the system under the pseudonym, usually the physician’s last name, followed by an identification code number.
3. If the specimen is from a physician’s office, we require authorization to bill the office or cash up front.
4. Results are handled as above.
5. We have a coded consent form to use for these special situations, in which the laboratory copy has the patient’s signature blacked out and a visible signature from the physician attesting to the fact that the patient consented to be tested. The physician’s and patient’s copies of the consent form have both the patient’s signature and code number viewable.

We are in the process of installing a new LIS that will make this procedure more complex. I have contacted the medical staff leadership and hospital legal department about changing our policy so that all results are visible in the HIS. The overwhelming response was to keep the results hidden from general view, similar to our current procedure. I would be interested in hearing what other institutions are doing regarding HIV results.

Responding to this month’s question on ensuring patient confidentiality for HIV test results is Thomas S. Alexander, PhD, D(ABMLI), immunologist with Summa Health System, Akron, Ohio. Text modified and excerpted with Dr Alexander’s permission from Medlab-L Listserv posting.
What are the clinical and laboratory significance of RDW, MCH, and MCHC results?

Red cell distribution width (RDW), mean corpuscular hemoglobin (MCH), and mean corpuscular hemoglobin concentration (MCHC) are indices that provide information regarding RBC size and hemoglobin content. Anemias are generally characterized with this information.

RDW is an automated determination of the distribution of RBC size, or anisocytosis. Many electronic cell counting machines can group RBCs according to size and develop a size histogram. Normally, most RBCs are approximately the same size, and a single gaussian-type peak histogram is produced. In anemias and other diseases that affect RBCs, the size of the cells usually changes, often leading to a difference between the abnormal and more normal-sized RBCs, resulting in either broadening of a single peak, or more than one peak, on the histogram. This may also be observed posttransfusion when a dimorphic population of RBCs is present (Figure).

Most cell analyzers then calculate the RDW based on either the coefficient of variation in, or the standard deviation of, the volume of the RBC population, using data from the size histogram. The degree of variability of RBC size determines whether RDW exceeds the index population reference range. This reference range must be established in each laboratory.

In general, RDW is elevated in factor deficiency anemias (iron, folate, or vitamin B12), homozygous hemoglobinopathies (hemoglobin SS, CC, and H [α-thalassemia]), and RBC fragmentation diseases. An increase in RDW is considered by some a more sensitive indicator of changes in RBC size than mean corpuscular volume (MCV), and evidence exists that RDW, in most cases, becomes abnormal earlier than other RBC parameters in iron deficiency anemia.1 A high RDW may also be seen in patients with chronic liver disease or cold agglutinins.2 The RDW is usually normal in thalassemia minor and anemia of chronic disease (Tables 1–3).

Although RDW can be a useful parameter when used in conjunction with other RBC indices, it is not a very sensitive or specific marker for classifying disorders involving RBCs. It does, however, provide an index of RBC anisocytosis, and in instances where it is the sole abnormal RBC index it may suggest early iron deficiency, possibly eliminating the need for further laboratory evaluation.

The MCH and MCHC are closely related parameters that provide an index of the hemoglobinization of the average RBC. The MCH is the...
The MCH is influenced by the size of the RBCs and the amount of hemoglobin relative to their size. In general, MCH is decreased in microcytosis and hypochromia, and increased in macrocytosis. With automated instruments, MCH has been found to closely parallel MCV, and therefore is considered by some to be a redundant parameter that adds little information to the clinical evaluation.

The MCHC is the mean hemoglobin concentration in grams per deciliter per given volume of packed RBCs:

$$\text{MCHC (g/dL)} = \frac{\text{Hb (g/dL)}}{\text{Hct (%)}}$$

The MCHC depends on the relationship of the amount of hemoglobin to the volume of the RBC. The MCHC is often decreased in the anemia of chronic disease and in chronic iron deficiency anemia. An increase in MCHC may be found in severe RBC abnormalities (e.g., hereditary spherocytosis, irreversibly sickled cells). More often MCHC is spuriously elevated secondary to problems with the specimen (e.g., hyperlipidemia, hemolysis, cold agglutinins) or instrument (Table 4). The MCHC may also be spuriously decreased in specimens with high WBC counts (>50,000/µL). Some consider MCHC to be of little diagnostic value, given its lack of sensitivity and specificity for differentiating RBC abnormalities.

Overall, these indices provide useful information for characterizing RBC disorders, particularly anemias, when used as adjuncts to other RBC indices. It is important to remember that these parameters provide only an indication of the average RBC size and hemoglobinization and that all of these parameters may be normal when the RBC morphology is clearly abnormal. Therefore, examination of the blood smear still remains the gold standard in evaluation of RBC morphology.

References