An Optimistic Outlook: Advances in Phlebotomy Promise Improvement

New and improved methods and technologies show promise of resolving patient ID and specimen collection problems with typical populations as well as drug addicts.

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It has been reported that 160,000 adverse patient events occur annually due to patient misidentification or specimen labeling errors committed by the clinical laboratory. 1 “These errors pose a threat to the very lives of those who have entrusted their care to us,” says Dennis J. Ernst, MT(ASCP), director, Center for Phlebotomy Education, Inc., Corydon, IN. “Additionally, patient identification errors rob laboratories of their credibility, reliability, productivity and morale.”

Today’s Biggest Problems

In light of this, three laboratory professionals were asked to identify today’s biggest problems regarding patient identification and blood specimen collection and then to discuss how new and improved methods and technologies have brought improvement to these problematic areas. In addition to Ernst, contributors include Roslyn Yomtovian, MD, clinical professor, pathology (transfusion medicine) Case Western Reserve University, and National Veterans Administration Quality Scholar Fellow, Case Western Reserve University and the Louis Stokes V A Medical Center, Cleveland, OH, and William J. Monteforte, MD, FCAP, laboratory medical director, Providence Regional Medical Center Everett, Everett, WA.

Problem #1: Non-laboratory professionals are drawing samples in decentralized environments.

Solution #1: Facilities that recentralize phlebotomy back to the laboratory have far fewer occurrences of patient misidentification, states Ernst. Decentralized phlebotomy has largely failed as a staffing strategy. Its threats to patient care have been widely reported to include false positive blood cultures, decreased specimen quality and higher rates of misidentified patients and mislabeled tubes. As a result, more patients are treated, diagnosed and medicated according to someone else’s test results.

Problem #2: Patients who cannot identify themselves verbally are not given ID bracelets in the emergency department.

Solution #2: Facilities that immediately put an ID bracelet on all emergency department patients are less likely to have wrong-blood-intube errors, Ernst says. Even if the patient’s name is not known, a temporary identifier is critical to ensure that the right patient sample is collected.

Problem #3: The wrong bracelet or erroneous information is put on the bracelet and the collector fails to confirm the patient’s identity verbally.

Solution #3: Barcoded ID bracelets that can be scanned prior to sample collection go a long way to reduce patient misidentification, but when the wrong bracelet is attached to the patient it is ineffective in reducing errors, Ernst maintains. Thus, it’s critical for the collector to seek verbal confirmation from the patient, a requirement The Joint Commission recently rescinded in its 2010 National Patient Safety Goals. When patients are unable to communicate, a caregiver or family member should be solicited for the confirmatory information on behalf of the patient. Studies have shown that up to 16 percent of arm bracelets can have erroneous information. Skipping this critical step is taking a chance with the patient’s life.

Problem #4: Some facilities don’t adhere to or enforce Clinical and Laboratory Standards Institute’s (CLSI) protocol for proper patient identification.

Solution #4: Because The Joint Commission is eliminating active patient involvement as a requirement prior to obtaining a laboratory sample, Ernst says that facilities have to make sure that they aspire to the higher standards of CLSI and the College of...
American Pathologists (CAP) in order to fully protect their patients from bracelet errors.

**Problem #5:** There is a lack of uniform standards by major accreditation organizations.

**Solution #5:** Electronic verification with barcoding or a radio frequency identification device (RFID) will improve the ill process by providing a confirmation of the patient’s ID, says Dr. Yomtovian. This will be an improvement over having a second human verifier. Aside from this technology, much of the phlebotomy process is still human based and technology is far from solving these problems.

**Problem #6:** Laboratory phlebotomists maintain consistent performance in following The Joint Commission’s requirement to obtain two patient identifiers, i.e., last name and first name as well as date of birth, for outpatient draws. However, some degradation occurs with inpatient draws. Dr. Monteforte believes this occurs because phlebotomists become familiar with inpatients and as a result, don’t routinely apply the commission’s two identifiers requirement.

**Solution #6:** Providence Regional Medical Center Everett instituted using a PDA-like device, label printers and software from CareFusion (San Diego, CA) almost two years ago. As a result, patient and specimen misidentification have almost completely disappeared for specimens collected by phlebotomy staff, Dr. Monteforte says. Each patient has a barcoded armband that is scanned using a PDA-like handheld device. The device is wirelessly-linked to the laboratory information system (from Cerner Millennium, Kansas City, MO) which downloads orders to the PDA-like device. Barcoded labels are printed from a small printer carried by the phlebotomist to the patient’s bedside. The patient is drawn and the tubes are labeled at the bedside. The tubes can then be sent to the laboratory via the hospital pneumatic tube system.

**Problem #7:** Nurses collecting specimens from inpatients fail to follow The Joint Commission’s two identifiers requirement.

**Solution #7:** Providence Regional Medical Center Everett purchased a laboratory automation system from Beckman Coulter (Sharon Hill, PA) which has eliminated the mislabeled aliquot issue for specimens that go onto the automation line, Dr. Monteforte says. This includes an inlet station, barcode readers, automated centrifugation, decapper, sample volume level detector, daughter tube aliquot and barcode labeling. The sample is put on a Beckman Coulter DXI Immunoassay machine or DXC for chemistry analysis. The tubes are then recapped and sent to either an outflow station for send out to a reference laboratory or to the refrigerated stockyard where they remain for three days. If add-on tests are ordered, the sample is automatically (no human intervention) retrieved from the stockyard, sent back to the automation line and the tests performed. The sample is then returned to the stockyard.

**The Impact of Errors**

Ultimately, challenges and mistakes related to patient ID impacts specimen collection in a number of ways. First, if there is an error caught prior to test completion—a near miss—this delays patient care, Dr. Yomtovian says. Little attention is given to this aspect of failure to properly identify a patient the first time around. “In some cases, a delay may be as bad as providing incorrect results or even incorrect blood. If the delay results in a significant adverse clinical outcome it would mean that treatment delayed is treatment denied,” she says. This aspect of misidentification has been given very little attention.

Secondly, “In our zeal for correct patient identification, we may add steps that add time but result in little if any added benefit,” Dr. Yomtovian says. For example, there is little data to support the fact that a second human verifier adds to the safety of the process—this follows from the paradigm in manufacturing that a checker does not improve quality and may actually reduce quality. Ultimately, there is no ownership because each party thinks the other will be rigorous in their checking and hence neither is rigorous. In addition, the checking process adds time and potentially delays in providing clinical care.

**Moving Forward in a Positive Direction**

Because The Joint Commission no longer requires patients to be actively involved in their own identification, Ernst says facilities that do not adopt the higher standards of CLSI or meet CAP requirements must implement aggressive measures to make sure every identification band is correct in every regard. This can include positive confirmation of ID band accuracy by at least two individuals or by two methods when every patient is admitted, and monitoring ID band accuracy throughout the stay. “Only when ID bands are 100 percent reliable will patients be safe in environments where active patient involvement is not required,” he says.

Specimen collection (i.e., mainly blood sample collection by phlebotomy) remains a very commonplace practice in health care. The results provided by blood collection are often pivotal in providing appropriate clinical care for a patient. “There is very little information on how misinformation resulting from
incorrect patient identification resulting in wrong sample collection from a patient impacts the overall quality of health care,” Dr. Yomtovian says. “Often-times, the impact is well below the tip of the iceberg. One approach would be to further standardize the phlebotomy process so that all laboratory testing—not just that which involves the collection of blood for the blood bank—follow the same careful collection protocol.”

**Challenges with A Specific Population: Drug Addicts**

Drawing blood from drug addicts poses its own set of challenges. This time, phlebotomy experts were asked to list what challenges they have encountered when drawing blood from drug addicts. Then we asked them to give advice on how to resolve these dilemmas or challenges.

**Challenge #1:** Drug addicts’ injections can be very harsh on veins. Not only are addicts’ veins scarred from frequent access, but their drugs also make veins increasingly harder to locate.

**Solution #1:** Scarred and sclerosed veins can be impossible for the phlebotomist to locate and access. They challenge the collector to search outside the acceptable areas for venipunctures, i.e., the antecubital, the back of the hand, and the feet and ankles, which require physician permission. Drawing from other sites is complicated. “If an injury occurred, one may be forced to justify a site not supported in the standard of care during a legal challenge,” said Ernst. On the other hand, the addict may be in desperate need of life dependent laboratory results. Facilities must establish policies on drawing outside of acceptable sites that can stand up to scrutiny.

**Challenge #2:** Illegal IV drug users often suggest which vein to use. These veins are typically not the preferred choice for the phlebotomist and are unsafe.

**Solution #2:** It’s one thing for an addict to access a vein in an unconventional site, Ernst said, but for specimen collection personnel, it can be a landmine. Here’s the bottom line: if you’re going to draw blood from a site that is not supported by your procedural manual and the standards, you must have a thorough knowledge of the area’s anatomy and be prepared to defend your choice should there be an injury that leads to a legal proceeding.

**Challenge #3:** A drug addict offers to insert the phlebotomist’s needle where he usually injects himself.

**Solution #3:** This can result in liability if any injuries occur, Ernst cautioned. The best course of action is to establish a firm policy on drawing from addicts and other patients for whom access is difficult in concert with your risk manager and legal counsel. Then, be diligent about disseminating this policy throughout the facility to all who draw samples for laboratory testing.

**Challenge #4:** IV drug users can become irritated and hostile in emergency situations.

**Solution #4:** These patients will often need to be sedated to allow an examination to proceed. Use extreme caution when accessing their veins. They might move or jerk their arm suddenly, making it a hazardous procedure. Ask for assistance from staff to control the patient, suggested Gail K. Donegan, BSMT(ASCP) CPI(ACA), coordinator medical assistant program, Bucks County Community College, Newtown, PA. The use of a syringe for a difficult venipuncture is often necessary, and strict adherence to standard precautions is mandatory as these patients are at higher risks for infectious diseases such as Hepatitis and HIV.

**Challenge #5:** Preventing the risk of contracting a disease from an accidental needles tick.

**Solution #5:** BD Diagnostics - Preanalytical Systems manufactures safety-engineered blood collection devices. The company introduced the first generation of safety-engineered devices—the BD Vacutainer® Safety-Lok’P’ Blood Collection Set—a device with a manual forward-shielding safety feature. In 1999, the BD Vacutainer® Eclipse® Blood Collection Needle with a manual pivot shielding device joined the array of safety products, said Ana K. Stankovic, MD, PhD, MSPH, WW vice president, Medical and Scientific Affairs and Clinical Operations, BD Diagnostics - Preanalytical Systems, Franklin Lakes, NJ.

Additional devices that aid in safe blood collection include:

- The second generation of safety-engineered devices—the BD Vacutainer® Push-Button Blood Collection Set (PBBCS)—provides in-vein activation of the device at the push of a button with safe retraction of the needle. When used as intended, the PBBCS virtually eliminates healthcare worker exposure to a contaminated blood collection needle.
- The BD Vacutainer® Passive Shielding Blood Collection Needle (PSBCN) offers a safety shield that automatically activates during blood collection with out additional action required by
the healthcare worker. This design is beneficial for use with high-risk patients to assure maximum safety.

- A safety-engineered blood collection lancet for capillary blood collection, the BD Microtainer® Contact-Activated Lancet is a one-step activation lancet that prevents re-use, while improving safety, yielding blood flow and patient comfort.

- The BD Vacutainer® Luer-Lok Access Device (LLAD) offers a safe method for the collection of blood from vascular access devices (VAD), such as catheters and central venous lines. The LLAD design allows direct access to the VAD port, facilitating blood collection into an evacuated blood collection tube. This diminishes exposure to blood and bloodborne pathogens, as well as the risk of needlestick injuries.

Greiner Bio-One also manufactures products for blood collection that protect healthcare workers. Both the VACUETTE® Quickshield Complete and Quickshield Complete Plus are tube holder systems that come assembled with a safety shield attached directly to the holder and a pre-attached needle. When the needle is withdrawn from the patient’s vein, the safety shield is activated by pressing it on a solid surface to cover the exposed needle, explained Michelle McLean, MS, MT(ASCP), technical marketing manager, Preanalytics Greiner Bio-One North America, Inc., Monroe, NC. In this manner, the collector’s fingers are always behind the needle and protected from potential needlestick injury.

Additionally, the shield is designed to contain any aerosol and/or blood remaining on the end of the needle which minimizes potential exposure.

Similarly, the VACUETTE® Safety Blood Collection Set is a winged blood collection needle with a safety shield that is designed to be easily activated as the needle is removed from the patient’s vein with an audible click indicating proper engagement of the safety mechanism for maximum safety. The VACUETTE® Blood Transfer Unit is a needleless blood transfer system that allows a safe means of transfer of blood from a syringe to a blood collection tube, again minimizing potential risk of needlestick injury.

Ultimately, following established policies and using safety devices will help healthcare workers to decrease challenges when drawing blood from drug addicts.

**Reference**

Questions for STEP Participants

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In the following, choose the one best answer for each question.

1. Which of the following is false regarding decentralized phlebotomy?
   A. It has largely failed as a staffing strategy.
   B. Its threats to patient care have been widely reported to include false positive blood cultures, decreased specimen quality and higher rates of misidentified patients and mislabeled tubes.
   C. Decentralized phlebotomy has resulted in more patients being treated, diagnosed and medicated according to someone else's test results.
   D. All of the statements are true.

2. Facilities that immediately put an ID bracelet on all emergency department patients are less likely to have wrong-blood-in-tube errors. Even if the patient's name is not known, a temporary identifier is critical to ensure that the right patient sample is collected.
   A. True
   B. False

3. Studies have shown that up to 26 percent of arm bracelets can have erroneous information.
   A. True
   B. False

4. Because The Joint Commission is eliminating active patient involvement as a requirement prior to obtaining a laboratory sample, facilities are advised to make sure that they aspire to the higher standards of Clinical Laboratory Standards Institute and the College of American Pathologists in order to fully protect their patients from bracelet errors.
   A. True
   B. False

5. An example of an aggressive measure to make sure every identification band is correct in every regard is including positive confirmation of ID band accuracy by at least three individuals or by one method when every patient is admitted, and monitoring ID band accuracy throughout the stay.
   A. True
   B. False

6. Perhaps some degradation occurs with inpatient draws because phlebotomists become familiar with inpatients and as a result, don't routinely apply The Joint Commission's two identifiers requirement.
   A. True
   B. False

7. Facilities must establish policies on drawing outside of acceptable sites that can stand up to scrutiny because:
   A. Drug addicts’ scarred and sclerosed veins can be impossible for the phlebotomist to locate and access.
   B. They challenge the collector to search outside the acceptable areas for venipunctures, i.e., the antecubital, the back of the hand, and the feet and ankles, which require physician permission.
   C. If an injury occurred, one may be forced to justify a site not supported in the standard of care during a legal challenge.
   D. All statements are true.

8. Illegal IV drug users often suggest which vein to use. These veins are often the preferred choice for the phlebotomist and are safe.
   A. True
   B. False

9. If you're going to draw blood from a site that is not supported by your procedural manual and the standards, you must have a thorough knowledge of the area’s anatomy and be prepared to defend your choice should there be an injury that leads to a legal proceeding.
   A. True
   B. False

10. When drawing blood from an IV drug user who is irritated in an emergency situation, which of the following is not acceptable:
    A. Sedation may be necessary to allow an examination to proceed.
    B. Ask for assistance from staff to control the patient.
    C. Use a syringe for a difficult venipuncture.
    D. Deviate from standard precautions since these patients are at higher risks for infectious diseases such as Hepatitis and HIV.