



Figure 8-17 A seated adult restraining a toddler.

to reduce the risk of creating too much vacuum draw on the vein and causing it to collapse. In difficult-draw situations, a small amount of blood can be drawn into a syringe and the blood placed in microcollection tubes (microtubes or "bullets") rather than ETS tubes.



CAUTION Laboratory personnel will assume that blood in microtubes is capillary blood. If venous blood is placed in a microtube, it is important to label the specimen as venous blood because reference ranges for some tests differ depending on the source of the specimen.

PROCEDURES

Regardless of the collection method, every attempt should be made to collect the minimum amount of blood required for testing because of the small blood volume of the patient. In addition to reducing the risk of iatrogenic anemia, minimizing the volume of blood drawn shortens the duration of the draw and the time the patient is under stress. Follow strict identification requirements and venipuncture procedures outlined earlier in the chapter. You may be required to wear a mask, gown, and gloves in the newborn nursery or neonatal ICU.

Geriatric Venipuncture

Geriatric means relating to old age. According to the National Institute on Aging (NIA), life expectancy has doubled over the last century, and there are now over 35 million Americans of age 65 or older. This segment of the population is expected to grow by 137% over the next 50 years and to become the major focus of health care. Already a major portion of laboratory testing is performed on the elderly. (See Table 8-3 for a list of tests commonly ordered on geriatric patients.)



Matching 8-3 in the WORKBOOK tests knowledge of geriatric tests and indications for ordering them.

Although aging is a normal process, it involves physical, psychological, and social changes leading to conditions, behaviors, and habits that may seem unusual to those unaccustomed to working with elderly patients. To feel comfortable working with them one must understand the aging process and be familiar with the physical limitations, diseases, and illnesses associated with it. It is also important to remember that elderly patients are unique individuals with special needs who deserve as with all patients, to be treated with compassion, kindness, patience, and respect.

CHALLENGES

Physical effects of aging, such as skin changes, hearing and vision problems, mobility issues—often related to arthritis and osteoporosis, diseases such as diabetes, and mental and emotional conditions often present challenges not only to the patient but to a phlebotomist's technical expertise and interpersonal skills as well.

Skin Changes

Skin changes include loss of collagen and subcutaneous fat, resulting in wrinkled, sagging, thin skin with a decreased ability to stay adequately hydrated. Lack of hydration along with impaired peripheral circulation caused by age-related narrowing of blood vessels makes it harder to obtain adequate blood flow, especially during skin puncture. In addition, aging skin cells are replaced more slowly, causing the skin to lose elasticity and increasing the likelihood of injury. Blood vessels also lose elasticity, becoming more fragile and more likely to collapse, resulting in an increased chance of bruising and the failure to obtain blood.



Key Point Skin changes make veins in the elderly easier to see; however, sagging skin combined with loss of muscle tone may make it harder to anchor veins and keep them from rolling.

Table 8-3: Tests Commonly Ordered on Geriatric Patients

Test	Typical Indications for Ordering
ANA, RA, or RF	Diagnose lupus and rheumatoid arthritis, which can affect nervous system function
CBC	Determine hemoglobin levels, detect infection, and identify blood disorders
BUN/creatinine	Diagnose kidney function disorders that may be responsible for problems such as confusion, coma, seizures, and tremors
Calcium/magnesium	Identify abnormal levels associated with seizures and muscle problems
Electrolytes	Determine sodium and potassium levels, critical to proper nervous system function
ESR	Detect inflammation; identify collagen vascular (i.e., connective tissue) diseases
Glucose	Detect and monitor diabetes; abnormal levels can cause confusion, seizures, or coma or lead to peripheral neuropathy
PT/PTT	Monitor blood-thinning medications; important in heart conditions, coagulation problems, and stroke management
SPEP, IPEP	Identify protein or immune globulin disorders that lead to nerve damage
VDRL/FTA	Diagnose or rule out syphilis, which can cause nerve damage and dementia

Hearing Impairment

Effects of aging include loss of auditory hair cells, resulting in a hearing loss in upper frequencies and trouble distinguishing sounds such as ch, s, sh, and z. Hearing-impaired patients may strain to hear and have difficulty answering questions and understanding instructions. If you know or have reason to suspect that a patient has a hearing impairment, move closer and face the patient when you speak. Speak clearly and distinctly, but use your normal tone of voice. Never shout; shouting raises the pitch of your voice and makes it harder to understand. Allow the patient enough time to answer questions, and confirm patient responses to avoid misunderstanding. Repeat information if necessary. Watch for nonverbal verification that the patient understands. Be mindful of nonverbal messages you may be sending inadvertently. Use pencil and paper to communicate if necessary. A relative or attendant often accompanies a patient with a hearing impairment or other communication problem. If this person is included in the conversation, do not speak to him or her directly as if the patient were not present.



Key Point Although hearing loss is common in the elderly, never assume that an elderly person is hard of hearing.

Visual Impairment

Effects of aging on the eyes include a diminished ability of the lens to adjust, causing farsightedness; clouding of the lens or cataract formation resulting in dim vision; and other changes that lead to light intolerance and poor night vision. The phlebotomy area should have adequate

lighting without glare. Be aware that you may need to guide elderly patients to the drawing chair or escort them to the restroom if a urine specimen is requested. Provide written instructions in large print, avoid using gestures when speaking, and use a normal tone of voice.



Key Point A common mistake and one that is irritating to the visually impaired is to raise your voice when you are speaking to them.

Mental Impairment

Slower nerve conduction associated with aging leads to slower learning, slower reaction times, and a diminished perception of pain, which, in turn, can lead to an increase in injuries. Reduced cerebral circulation can lead to loss of balance and frequent falls. The effects of some medications can make problems worse. Speak clearly and slowly and give the patient plenty of time to respond. You may need to repeat your statement or question more than once. Be especially careful in obtaining patient identification information and verifying compliance with diet instructions. If a relative or attendant is with the patient, verify information with him or her.

Alzheimer disease and other forms of dementia can render a patient unable to communicate meaningfully, requiring you to communicate through a relative or other caregiver. Some Alzheimer patients will act absolutely normal and others will exhibit anger and hostility, which should not be taken personally. Always approach patients in a calm, professional manner. Use short, simple statements and explain things slowly. You may require assistance to keep the patient's arm in place during the draw.



Key Point Although mental confusion and dementia are common in elderly patients, always assume that an elderly person is of sound mind unless you have information to the contrary.

Effects of Disease

Although most elderly persons are generally healthy, many are not. Some of the diseases that affect the elderly and the challenges they present to the patient and the phlebotomist include the following:

Arthritis

The two basic types of arthritis are osteoarthritis and rheumatoid arthritis. Osteoarthritis occurs with aging and also results from joint injury. The hips and knees are most commonly affected; this can cause difficulty getting in and out of a blood-drawing chair. Rheumatoid arthritis affects connective tissue throughout the body and can occur at any age. It primarily affects the joints, but connective tissue in the heart, lungs, eyes, kidneys, and skin may also be affected. Inflammation associated with both types of arthritis may leave joints swollen and painful and cause the patient to restrict movement. It may result in the patient being unable or unwilling to straighten an arm or open a hand. Use the other arm if it is unaffected. If that is not an option, let the patient decide what position is comfortable. A butterfly needle with 12-inch tubing helps provide the flexibility needed to access veins from awkward angles.



CAUTION Never use force to extend a patient's arm or open a hand, as this can cause pain and injury.

Coagulation Problems

Patients who have coagulation disorders or who take blood-thinning medications as a result of heart problems or strokes are at risk of hematoma formation or uncontrolled bleeding at the blood-collection site. Make certain that adequate pressure is held over the site until bleeding is stopped. You must hold pressure if the patient is unable to do so. However, do not hold pressure so tightly that the patient is injured or bruised, and do not apply a pressure bandage in lieu of holding pressure. If bleeding persists, notify the patient's physician or follow your facility's policy.

Diabetes

Many elderly patients have diabetes. Diabetes affects circulation and healing, particularly in the lower extremities, and generally makes venipuncture of leg, ankle, and foot veins off limits. Peripheral circulation problems and scarring from numerous skin punctures to check glucose can make skin puncture collections

difficult. Warming the site before blood collection can help encourage blood flow.

Parkinson Disease and Stroke

Stroke and Parkinson disease can affect speech. The frustration this can cause to both the patient and the phlebotomist can present a barrier to effective communication. Allow these patients time to speak and do not try to finish their sentences. Keep in mind that difficulty in speaking does not imply problems in comprehension. Tremors and movement of the hands of Parkinson patients can make blood collection difficult; such patients may require help to hold still.

Pulmonary Function Problems

The effects of colds and influenza are more severe in the elderly. Age-related changes in pulmonary function reduce the elasticity of airway tissues and decrease the effectiveness of respiratory defense systems. Weakened chest muscles reduce the ability to clear secretions and increase the chance of developing pneumonia. If you have a cold, refrain from drawing blood from elderly patients if possible or wear a mask.

Other Problems

Disease and loss of immune function in the elderly increase the chance of infection. Lack of appetite due to disease or a decreased sense of smell and taste can result in emaciation. Poor nutrition can intensify the effects of aging on the skin, affect clotting ability, and contribute to anemia.

SAFETY ISSUES

Although all patients require an unencumbered traffic pattern, geriatric patients may need wider open areas to accommodate wheelchairs and walkers. Some patients tend to shuffle when they walk, so floors should have nonslip surfaces and be free of clutter. Dispose of equipment packaging properly and look out for items inadvertently dropped on the floor. Floor mats should stay snug against the floor so that they do not become a tripping hazard for any patient or employee as well.

PATIENTS IN WHEELCHAIRS

Many geriatric patients are wheelchair-bound or are so weak that they are transported to the laboratory in wheelchairs. Be careful in moving wheelchair patients (Fig. 8-18) from the waiting room to the blood-drawing room. Remember to lock wheels when drawing blood from patients in wheelchairs, assisting them to and from the drawing chair, or after returning them to waiting areas. Never attempt to lift patients to transfer them from a wheelchair to a drawing chair. Attempting to do so can result in injury to the patient, the phlebotomist, or both.



Figure 8-18 An elderly patient in a wheelchair.



Key Point It is generally safest and easiest to draw blood with the patient in the wheelchair, supporting the arm on a pillow or on a special padded board placed across the arms of the chair.

BLOOD-COLLECTION PROCEDURES

Although the venipuncture steps are basically the same for all patients, extra care must be taken in the following areas when drawing from elderly patients.

Patient Identification

Be extra careful in identifying patients with mental or hearing impairments. Never rely on nods of agreement or other nonverbal responses. Verify patient information with a relative or attendant if possible.

Equipment Selection

It is often best to use butterfly needles and pediatric or short-draw tubes for venipuncture on the elderly. Although the veins may appear prominent, they are apt to roll or collapse easily, making blood collection difficult. It is best to select equipment after you have selected the venipuncture site so that you can choose the best equipment for the size, condition, and location of the vein. If the veins are extremely fragile, you may have to collect the specimen by syringe or finger puncture.

Tourniquet Application

Apply the tourniquet snugly but loose enough to avoid damaging the patient's skin. A tourniquet that is too tight can cause the vein to collapse when it is released

or the tube is engaged. It can also distend the vein so much that it "blows" or splits open on needle entry, resulting in hematoma formation. It is acceptable to apply the tourniquet over the patient's sleeve or a clean dry washcloth wrapped around the arm.



Key Point Geriatric patients in their 90s and 100s are seen more often lately, and their veins are very sensitive to tourniquet pressure.

Site Selection

Elderly patients, especially inpatients, often have bruising in the AC area from previous blood draws. Venipuncture in a bruised site should be avoided, as it can be painful to the patient and the hemostatic process occurring in the area can lead to erroneous test results. If both AC areas are bruised, select a needle entry point below the bruising. Be aware that some elderly patients may not be able to make a fist because of muscle weakness.

If no suitable vein can be found, gently massage the arm from wrist to elbow to force blood into the area or wrap a warm, wet towel around the arm or hand for a few minutes to increase blood flow. Avoid heavy manipulation of the arm, as this can cause bruising and affect test results. Have the patient hold the arm down at his or her side for a few minutes to let gravity help back up blood flow. When a suitable vein has been selected, release the tourniquet to allow blood flow to return to normal while you clean the site and ready your equipment.

Cleaning the Site

Clean the site in the same manner as in routine venipuncture, being careful not to rub too vigorously, as that may abrade or otherwise damage the skin. The site may have to be cleaned a second time on some elderly patients who are unable to bathe regularly.

Performing the Venipuncture

Although actually quite fragile, an elderly patient's veins often feel tough and have a tendency to roll. Anchoring them firmly and entering quickly increases the chance of successful venipuncture. If the skin is loose and the vein poorly fixed in the tissue, it sometimes helps to wrap your hand around the arm from behind and pull the skin taut from both sides rather than anchoring with your thumb. Because veins in the elderly tend to be close to the surface of the skin, a shallow angle of needle insertion may be required.

Holding Pressure

As discussed earlier under "Coagulation Problems," it may take longer for bleeding in elderly patients to stop, especially if they are on anticoagulant therapy. Bleeding must have stopped before the bandage is applied. If

bleeding is excessively prolonged, the patient's nurse or physician must be notified and laboratory facility procedures followed.

Dialysis Patients

Dialysis is a procedure in which patients whose kidneys do not function adequately have their blood artificially filtered to remove waste products. The most common reason for dialysis is end-stage renal disease (ESRD), a serious condition in which the kidneys have so deteriorated that they fail to function. The most common cause of ESRD is diabetes. The second most common cause is high blood pressure. Patients with ESRD require ongoing dialysis treatments or a kidney transplant.

In one type of dialysis, called hemodialysis, the patient's blood is filtered through a special machine often referred to as an artificial kidney. Access for hemodialysis is commonly provided by permanently fusing an artery and vein in the forearm, creating an arteriovenous (AV) shunt or fistula (see Chapter 9). During dialysis a special needle and tubing set is inserted into the fistula to provide blood flow to the dialysis machine. A typical AV fistula appears as a large bulging vein in the forearm above the wrist and causes a buzzing sensation called a "thrill" when palpated. The fistula arm must not be used to take blood pressures or perform venipuncture.



Key Point A phlebotomist must be able to recognize a fistula to avoid damaging it, as it is the dialysis patient's lifeline.

Long-Term Care Patients

Long-term care includes a variety of healthcare and social services required by certain patients with functional disabilities who cannot care for themselves but do not require hospitalization. Although long-term care serves the needs of patients of all ages, primary recipients are the elderly. Long-term care is delivered in adult daycare facilities, nursing homes, assisted living facilities, rehabilitation facilities (Fig. 8-19), and even private homes.

Home Care Patients

Care for the sick at home plays an important role in today's healthcare delivery system. Many individuals who in the past would have been confined to a healthcare institution are now able to remain at home, where numerous studies show they are happier and get better sooner or survive longer. Home care services are provided through numerous agencies and include professional nursing; home health aid; physical, occupational, and respiratory therapy; and laboratory services. Laboratory services are often provided by mobile phlebotomists who go to



Figure 8-19 A phlebotomist making a visit to a rehabilitation center.

the patient's home to collect specimens and then deliver them to the laboratory for testing. A home care phlebotomist must have exceptional phlebotomy, interpersonal, and organizational skills; be able to function independently; and be comfortable working in varied situations and under unusual circumstances. Mobile phlebotomists must carry with them all necessary phlebotomy supplies including sharps containers and biohazard bags for disposal of contaminated items and containers for properly protecting specimens during transportation, typically in their own vehicles (Fig. 8-20).

Hospice Patients

Hospice is a type of care for patients who are terminally ill. Hospice care allows them to spend their last days in a peaceful, supportive atmosphere that emphasizes pain management to help keep them comfortable. Some individuals are uncomfortable with the subject of death or being around patients who are dying and react with indifference out of ignorance. Phlebotomists who deal with hospice patients must understand the situation and be able to approach them with care, kindness, and respect.



Figure 8-20 A traveling phlebotomist getting supplies from the back of her vehicle.