

1. Phlebotomy Practice and the Health Care Setting

A. General Practice of Phlebotomy

1. Due to the wide variety and volume of laboratory tests ordered, blood collection has become an essential skill for health care workers.
 - a. Individuals are specially trained to collect the correct specimen using a variety of collection techniques.
 - b. Allows technicians and technologists in the laboratory to devote their time to the actual performance of specimen analysis.
 - c. Variety of health care workers now trained to draw blood.
 - d. May be involved in Point of Care Testing (POCT) which involves bedside collection and testing of patient's blood.
2. History
 - a. Blood collection training was much simpler, individuals were trained "on the job" (OJT).
 - b. Complexity of equipment used and increase in types of tests ordered has increased the demand for individuals to go through a structured training program.
3. Definition of phlebotomy from Greek words, *phlebo*, relates to veins, *tomy*, relates to cutting.
 - a. The primary duty of the phlebotomist is to collect blood specimens for laboratory analysis.
 - b. The most common method is by venipuncture, opening a vein to obtain a blood sample without destroying the integrity of the vein.
 - c. This is an invasive procedure which must be performed with skill to prevent harming the patient.
4. *Three purposes* for collection and analysis of laboratory samples:
 - a. Diagnostic testing
 - b. Therapeutic assessment
 - c. Monitoring patient's condition

B. Professional Competencies

1. Introduction
 - a. Phlebotomist has high school diploma or GED to enter training program.
 - b. Programs vary in location and length of time of training, depending upon their purpose.
 - c. Several professional and certifying agencies are available for phlebotomists. Certification strongly recommended, refer to your textbook for a comprehensive list.

2. Professional Ethics

- a. ***Principles of right and wrong conduct for the profession.***
- b. Doctors have the Hippocratic Oath (400 BC)
 - 1) Do no harm intentionally
 - 2) Perform according to sound ability and judgement.
 - 3) Do what you're trained to do, no more.
 - 4) Deal with patients assigned, not those you're curious about.
 - 5) Keep all patient information confidential.
- c. Implied code of ethics for *all* health care professions, most common are:
 - 1) Do no harm to anyone intentionally.
 - 2) Perform according to sound technical ability and good judgement.
 - 3) Respect the patient's rights
- d. The National Phlebotomy Association has designated responsibility of the phlebotomist:
 - 1) Represents the laboratory.
 - 2) Gain and apply knowledge.
 - 3) Maintain accuracy, reliability and reproducibility of results.
 - 4) Respect patients bill of rights.
 - 5) Perform specified skills as defined by the hospital or laboratory standards.

3. Professional Behavior

- a. Health care professionals have personal responsibility to provide best care possible.
- b. Character attributes for phlebotomists include:
 - 1) Sincere interest in health care.
 - 2) Accountability for doing things right.
 - 3) Dedication to high standards of performance.
 - 4) Propensity for cleanliness.
 - 5) Pride, satisfaction, and self-fulfillment in the job.
- c. Professional behavior involves doing the right thing when no one is watching.

4. Working with Health Care Team Members

- a. Shifts in job roles and responsibilities have changed practice of phlebotomy in some facilities.
- b. Downsizing, reorganization and point of care testing (POCT) have resulted in other health care professionals being trained in phlebotomy.
- c. Skills for working as a successful team include:
 - 1) Improving technical skills.
 - 2) Effective communication skills
 - 3) Participation in decision making
 - 4) Problem solving

C. Communication Skills in the Patient Care Environment

1. Phlebotomist is a critical link in healthcare.
 - a. Quality of sample directly impacts quality of laboratory results.
 - b. Two components: collection technique and patient (client) interaction
2. Bedside Manner
 - a. Knock on the patient's door prior to entering.
 - b. Patient's will in first 30 seconds make a judgement of the phlebotomist.
 - c. Critical to have all supplies available and approach patient with pleasant facial expression, neat appearance, and professional manner.
 - d. Blood collection is procedure dreaded most by patients.
 - e. Introduce yourself and state your mission, informed consent critical.
 - f. Remain calm, compassionate and professional.
 - g. Thank patient for cooperation when leaving.
3. Communication issues in the home and ambulatory settings.
 - a. Terms used for laboratory testing outside the laboratory setting include: on-site testing, alternate-site testing, near-patient testing, patient-focused testing, point of care testing, and bedside testing.
 - b. Communication in these environments may take more time due to:
 - 1) More length introduction and explanation.
 - 2) Location of sample collection area
 - 3) In a home setting must know location of restroom and bed.
 - 4) In a home setting may need a phone to clarify orders.
 - 5) Procedure must be fully explained, especially first time.
 - 6) Meticulous patient identification.
 - 7) Must ensure care of puncture site.
4. Patient Interview
 - a. Guidelines differ depending on site.
 - b. Use patient armband for hospitalized patients, if no armband do not stick, have armband put on or have nurse identify patient and initial all requisitions.
 - c. For outpatient settings require some additional information: driver's license, DOB, social security number, address, etc.
 - d. Never ask a patient, "Are you Mr. Jones?", always ask them to state their name.
 - e. Verbal and non-verbal cues and listening skills are critical in patient communication, will discuss in detail later.
 - f. If patient is a child, give instructions to parent.

5. Teaching Patients

- a. Patient must cooperate for successful procedure.
- b. Phlebotomist must provide basic information in a way patient will understand.
- c. Define “fasting” or “NPO” if necessary and reasons.
- d. Timed testing must be clearly explained to the patient, e.g., glucose tolerance testing, drug testing.
- e. Phlebotomists may need to give instructions for urine collection, 24 hour urine collection, stool or sputum collections.
- f. Best to give oral and written instructions in the patients language.

6. Communication Strategies

- a. Effective communication is critical involving communication loop: sender, receiver and filters, filters are damaging to effective communication.
- b. Verbal communication.
 - 1) *Language barriers.*
 - a) Medical terminology, must translate, bring conversation down to patient’s level of understanding.
 - b) Use simple, honest terms, look for facial expression indicating understanding.
 - c) If patient asks, “when will you start?” it indicates understanding.
 - d) Never state that “ this won’t hurt.”
 - 2) *Hearing disabilities/impairments*
 - a) Section 504 of the Rehabilitation Act of 1973, affirms the right of sensory impaired persons, including hearing impaired persons whose primary or exclusive language is sign language, to receive health care and related services in inpatient, outpatient, and emergency settings which are equal to, or as effective as, those provided to persons without disabilities.
 - b) Lip reading (or speech reading)
 - c) Writing notes and fingerspelling
 - d) Family members and friends
 - e) Qualified sign language interpreters
 - 3) *English as a second language*
 - a) Use non-verbal cues like sign language.
 - b) Find an interpreter
 - c) Telephone language lines.
 - d) Internet translations sites.
 - e) Learn Spanish, it will increase your employment opportunities (English to Spanish list in your textbook)
 - f) Speak respectfully and articulate clearly.

- 4) *Cultural diversity*
 - 1) There is enormous diversity in populations of all cultures.
 - 2) Respect the integrity of cultural beliefs.
 - 3) Individuals' explanations for their ill-health and their expectations of health care can affect their acceptance of treatments and on the eventual outcome of health care.
 - 4) All of us are capable of identifying with our own culture, and forming prejudiced views about other cultures and other belief systems - the skill is in being aware of this possibility and recognizing when it is occurring.
 - 5) Some cultures may respond to treatment if it is emphasized as "important" rather than "helpful."
 - 6) Value diversity. In other words, do not merely tolerate people of differing backgrounds and viewpoints, but consider differences as strengths.
 - 7) Conduct a cultural self-assessment.

- 5) *Age*
 - a) Vocabulary used when communicating with a teen different than for elderly.
 - b) Be sensitive to word usage, and use appropriately
 - c) View presentation Age Specific Care at Internet Resources of Phlebotomy page http://www.austincc.edu/kotrla/phb_links.htm

- 6) *Tone of voice and inflection* can change positive statement into a negative one.
 - a) Be sure pitch or tone matches words you're trying to communicate.
 - b) Sarcasm is easily communicated and picked up on by tone.
 - c) Practice using calm, soothing and confident tone of voice.
 - d) **KEY:** calm, compassionate, friendly and say it with a smile.
 - e) **AVOID:** degrading, whiney, sarcastic, angry, frustrated, patronizing tones.

- 6) *Emergency situations*
 - a) Surgical suite, recovery room or ER are locations which require extra speed and accuracy without losing the "personal touch".
 - b) Consider each patient in terms of their dignity, not the "burn case down the hall", "head injury in 807".

- c. Nonverbal communication.
 - 1) *Positive body language.*
 - a) Smiling
 - b) Good grooming
 - c) Erect posture
 - d) Face to face
 - e) Zone of comfort

- 2) *Negative body language/distracting behaviors.*
 - a) Rolling eyes
 - b) Nervous behaviors
 - c) Deep sighs
 - d) Crossed arms, wrinkled forehead
 - e) Throwing things around
 - f) Chewing gum
 - g) Yawning
 - h) Be aware and recognize non-verbal messages when *patients* use them.

d. Listening skills.

- 2) Key component of effective communication.
 - a) Lets patient know that you are truly interested.
 - b) *Good listening skills* do not depend on intellect or intelligence, can be learned.

- 2) Tips for active listening.
 - a) Concentrate on speaker
 - b) Use the silent pause
 - c) Use phrases such as “I see”, “Oh”, periodically
 - d) Keep personal judgements to yourself.
 - e) Verify with feedback, paraphrase.
 - f) Mentally summarize
 - g) Sense and address non-verbal signs
 - h) Maintain eye contact
 - i) Encourage patient to expand
 - j) Paraphrase to ensure understanding

D. Appearance, Grooming and Physical Fitness

1. Posture
 - a. Phlebotomy is done standing up, good posture essential to protect back and neck.
 - b. Stand erect, avoid slouching.
 - c. Appear relaxed.
2. Grooming
 - a. Physical appearance communicates impression.
 - a. Neat, clean hair.
 - b. Clean, well groomed fingernails/hands
 - c. Uniform or business casual clothing.
 - d. Clean, pressed lab coat.
3. Personal hygiene.
 - a. Bathe regularly
 - b. Deodorant
 - c. Brush teeth, use mouth spray or breath mints through out the day
 - b. No perfume or after shave

4. Good health habits (nutrition, exercise) improves attitude, appearance and helps reduce stress.
5. Dealing with stress
 - a. Prevalent in workplace
 - 1) Non-physician lab personnel ranked third in terms of workplace stress.
 - 2) Rapid changes in technology forced individuals to adjust to faster paced, pressured life.
 - b. Physiological changes
 - 1) Increased blood pressure, heart rate, respiration, body metabolism and blood flow.
 - 2) Constant stress can result in chronic high blood pressure, predisposing one to heart attack or stroke.
 - c. Causes
 - 1) Constant change with little escape from it.
 - 2) The trauma associated with change is overlooked.
 - 3) Phlebotomists change may be: different shift or route, people you work with, supervisor, new techniques or polices, or some or all of these.
 - d. Rules for low stress living.
 - 1) Make time your ally, not your master.
 - 2) Associate as much as possible with gentle people.
 - 3) Learn and practice the skill of deep relaxation
 - 4) Use aerobic exercise
 - 5) Engage in satisfying, meaningful work.
 - 6) Don't let work dominate you entire life.
 - 7) Find some time in every day for complete privacy.
 - 8) Open yourself up to new experiences and self renewing opportunities
 - 9) Read interesting books and articles
 - 10) Don't bite off more than you can chew.
 - 11) Seek rewarding experiences in all dimensions of your life.
 - 12) Surround yourself with cues that affirm positive thoughts and positive approaches to life and that remind you to relax and unwind occasionally.
 - e. Protective Equipment and Clothing - proper use reduces stress due to safety concerns.
 - 1) Employers legally required to provide Personal Protective Equipment (PPE).
 - 2) PPE includes: gowns, gloves, masks, laboratory coats and face shields.
 - 3) Safety equipment for processing and disposing of samples is provided.
 - 4) Due to latex sensitivity, a variety of gloves in appropriate sizes must be provided.

E. Patient rights

1. A Patient's Bill of Rights form

- a. It is the responsibility of all members of the health care team to recognize that your first responsibility is to the patient's health, safety and personal dignity.
- b. Many hospitals and health care facilities have adopted/incorporated "A Patient's Bill of Rights", developed by the American Hospital Association into their policy manual.

2. Patient's Bill of Rights should include/address the following:
 - a. Respectful and considerate care
 - b. accurate information
 - c. Informed consent.
 - d. Patient refusal of blood test
 - e. Privacy
 - f. Strict confidentiality
 - g. Advance directives
 - h. Information about the identity and role of personnel involved in his or her care.
 - g. Information about research procedures involved in his or her care
 - h. Billing

3. Issues in Specimen Collection
 - a. Deliver quality of care regardless of the demeanor of the patient.
 - b. Laboratory tests and results are strictly confidential.
 - c. All records must be secured and accessed only by those individuals who need them.
 - d. Patient has the right to know your name, position (especially if you are a student), description of procedure, and ultimately has the right to refuse.
 - e. Document any unusual occurrences, especially confrontations.

F. Family, visitors and significant others

1. Family and visitors may be more difficult to deal with than the patient.
 - a. Make requests or demands that are not part of your job duties.
 - b. Refuse requests to get food or water, as patient may be NPO, have them contact the nurse.
 - c. Ask there cooperation in reassuring the patient.

2. You can ask family/visitors to step outside during blood collection if necessary.

3. Physicians, priests, chaplains have right to privacy with patient.
 - a. Leave and come back later.
 - b. If timed or STAT request ask permission to collect specimen.

G. Health Care Organizations

1. Health care organizations are located in a variety of settings which offer different *levels of care*.
 - a. **Primary care** facilities maintain and monitor normal health and prevent diseases through immunization.
 - b. **Secondary care** have doctors who are specialists in a particular group of diseases, organ systems or one organ.
 - c. **Tertiary care** provides highly specialized care, geared to treating unusual or complex problems and utilize sophisticated diagnostic instruments.
 - d. **Acute care** hospital, hospital stay of 30 days or less.
 - e. **Long term care**, stays longer than 30 days
 - d. **Ambulatory care**.
 - e. **Home health services**
 - e. In patient defined as a hospitalized patient

2. Hospitals are classified in many ways.
 - a. Mission
 - b. Bed size
 - c. Ownership: federal, state, teaching or non-governmental
 - d. Length of stay
 - e. Type of care provided.
 - f. Location.
 - g. Relationship to other health facilities.
3. Hospitals may have specialty departments, the phlebotomist may want to be aware of the specialized departments within the hospital setting.
4. Ancillary services provide services to help maintain the functioning of the institution or provision of specialized services.

H. Department of Clinical Laboratory Medicine - Personnel

1. Composed of *two major areas*:
 - a. Clinical pathology analyzes blood, body fluids, and biopsy materials
 - b. Anatomic pathology involved in autopsies, cytology and surgical pathology.
2. Clinical Laboratory Improvement Act of 1988 (CLIA 1988) established regulations concerning qualifications of personnel, periodic inspections, proficiency testing, and investigation of complaints. Laboratory tests classified as:
 - a. Waived
 - b. moderate complexity tests
 - c. high complexity tests
3. Laboratory Director - medical director
 - a. A pathologist with extensive education in pathology.
 - b. Aid the patient's physician in the correlation of laboratory results with disease states.
 - c. Aid the doctor in setting up lab protocols such as when order what type of laboratory test and determining the "menu" of laboratory testing to offer.
 - d. Involved with interpretation of tissues such as those obtained during biopsy, surgery, autopsy and bone marrow.
 - e. All problems or abnormal results obtained by the techs are referred to the pathologist.
4. Laboratory Director - Administrative Technologist
 - a. Title held will be dependent on facility - Lab Manager, Chief Technologist, Technical Director.
 - b. May be OJT or have additional education in management and administration.
 - c. Oversees administrative and technical services such as establishing lab policies and procedures, hiring lab workers, maintaining the budget, providing orientation/training of new employees, providing continuing education (CE) for staff and assigning duties based on qualification of the staff.

5. Technical supervisors
 - a. Larger hospitals have large laboratory sections requiring a supervisor with extensive experience and education in a lab specialty.
 - b. They aid the lab directory by preparing work schedules for their department, ordering departmental supplies, providing training, maintaining Standard Operating Procedure (SOP) manuals, assist in budget preparation, perform employee evaluations, discipline, hiring and firing of personnel.

6. Clinical Laboratory Scientist (CLS), old name Medical Technologist (MT)
 - a. B.S. in laboratory science or biologic science which must include didactic and clinical training in laboratory medicine.
 - b. B.S. plus one additional year in a hospital based program.
 - c. B.S. which includes clinical laboratory science education, either a 3+1 or 2+2.
 - d. These individuals perform all bench work using basic to advanced techniques.
 - e. Perform preventive maintenance (PM) on equipment, troubleshooting, performs and evaluates quality control (QC), participates in continuing education, and teaches CLS and CLT students.

7. Clinical Laboratory Technician (CLT), old name Medical Laboratory Technician (MLT)
 - a. Has obtained education through a hospital based 2 year certificate program or associate degree at the college level.
 - b. Under the direct supervision of a CLS performs routine tests and procedures.
 - c. CLTs free up the CLS to trouble shoot equipment or perform advanced or complex procedures on patient samples.

8. Phlebotomist
 - a. H.S. graduate or equivalent.
 - b. Training varies - OJT or structured program.
 - c. Collects blood specimens from adults, children and babies using appropriate technique and equipment.
 - d. Identification of the patient is the most critical step.
 - e. Must understand and follow to the letter all precautions related to the collection of blood specimens, whether others follow or not.
 - f. May also be responsible for starting and collecting specimens for glucose tolerance tests (GTT), bleeding times, blood cultures, instructing patients on these procedures as well as the proper collection of urine and semen samples, as well as delivering and processing specimens in the lab.
 - g. Must be able to deliver specimens in a timely fashion, maintain accurate records/logs, and exhibit professional conduct and attitude at all times.

I. Department of Clinical Laboratory Medicine - Laboratory Departments

1. Phlebotomists draw blood for a variety of tests.
 - a. Samples are delivered to laboratory.
 - b. Phlebotomist may be responsible for accessioning, matching blood samples to request and delivering to appropriate department.
 - c. Knowledge of tests performed in each department essential for proper delivery.

- d. Knowledge of clinical significance of commonly performed test enhances knowledge of blood collection protocols, especially special testing requirements such as fasting, additional safety requirements and special handling.
2. **Clinical Chemistry** is the largest laboratory department. Through chemical analysis of serum or plasma many diseases of the major organs systems can be diagnosed such as heart attacks, hepatitis, renal failure, diabetes, etc. (**Drawn in red, gold or green stoppered tube**)
- a. Perform chemical analyses on serum and plasma.
 - b. Blood lipids (fat) such as cholesterol and triglycerides to diagnose risk of heart disease.
 - c. Iron and total iron binding capacity to diagnose anemia.
 - d. Electrolytes - sodium, potassium, CO₂ and chloride become abnormal in dehydrated patients.
 - e. Uric acid - indication of renal function or gout.
 - f. Creatinine and Blood Urea Nitrogen (BUN) used to monitor kidney function.
 - g. Liver function tests include AST, ALT, alkaline phosphatase, LDH, and bilirubin.
 - h. Cardiac enzymes -CK, ALT, LDH along with electrolytes aid in the diagnosis of heart attack.
 - 1. Amylase and lipase levels aid in the diagnosis of acute pancreatitis.
 - j. Glucose to diagnose and monitor diabetes. (**May use gray stoppered tube**)
 - k. Hormones such as thyroxine (T₄), parathyroid hormone, insulin, testosterone, renin activity, luteinizing hormone, prolactin, and cortisol.
 - l. Drug analysis is of two types:
 - 1) Therapeutic drug monitoring (TDM) to ensure patient is maintaining therapeutic blood levels of drugs such as gentamycin, dilantin, tobramycin, digoxin, etc.
 - 2) Drugs of abuse testing to detect blood alcohol, barbiturates, salicylates, etc.
 - m. Special chemistry deals with analysis of rare or uncommon substances.
 - n. Immunoassay which includes the techniques of radioimmunoassay (RIA) and enzyme immunoassay (EIA).
 - o. Chemistry profiles are very popular and include a menu of commonly ordered chemistry tests selected to evaluate each major organ system.
3. **Hematology** is the study of the formed elements of the blood to identify diseases associated with blood and blood forming tissues.
- a. Hematology tests aid the physician in diagnosing infections, leukemia, polycythemia, anemia and other blood dyscrasias (abnormalities).
 - b. The most commonly ordered hematology test is the complete blood count (CBC) which is routinely performed on automated instruments, such as the **Coulter counter**, that electronically count the cells and calculate results.
 - c. **CBC** is actually a multi-part assay which includes the following (**purple stoppered tube**):
 - 1) hematocrit (HCT)
 - 2) hemoglobin (HGB)
 - 3) red blood cell (RBC) count
 - 4) white blood cell (WBC) count
 - 5) platelet count
 - 6) mean corpuscular hemoglobin (MCH)
 - 7) mean corpuscular hemoglobin concentration (MCHC)
 - 8) mean corpuscular volume (MCV)
 - 9) differential (DIFF)-done on a blood smear.

- d. Other tests performed in the hematology department include:
 - 1) reticulocyte count (*purple*)
 - 2) erythrocyte sedimentation rate (ESR or Sed Rate) (*purple or black*)
 - 3) sickle cell preparation (*purple*)
 - 4) Eosinophil count (*purple*)
 - 5) Cell counts and differential on body fluids such as: CSF, pleural, synovial, and pericardial.
4. **Coagulation department** is often housed in the hematology area.
 - a. Coagulation deals with the study of defects in the blood clotting mechanism and monitoring of medication given to patients as "blood thinners" or anticoagulant therapy.
 - b. Blood for the following tests is always collected in *light blue stoppered* tubes.
 - 1) Prothrombin time (PT)
 - 2) Partial thromboplastin time (PTT)
 - 3) Fibrinogen
 - 4) Fibrin split products or fibrin degradation products (FDP)
5. **Urinalysis department** is often housed in the hematology area also.
 - a. Urinalysis is a routine test performed on urine that involves chemical tests to screen for substances which may indicate disease or damage.
 - b. UA dipstick will detect abnormalities or the presence of the following - pH, specific gravity, protein, glucose, bilirubin, urobilinogen, nitrites, leukocytes, occult blood, and ketones.
 - c. The urine is **centrifuged**, decanted and the small portion that is left is examined for the presence and number of the following - yeast, bacteria, WBCs, RBCs, mucous, epithelial cells, crystals and parasites.
 - d. Pregnancy tests are performed in this department also.
 - e. It is important to remember that cultures (UA C&S) are commonly ordered on urine. The urine must be taken to the microbiology department **first** for processing.
6. **Microbiology** is the department that analyzes body fluids and tissues for the presence of pathogenic microorganisms primarily by means of culture and sensitivity (C&S).
 - a. Results of the C&S tell the physician the type of organisms present as well as the particular antibiotic that would be most effective for treatment.
 - b. Collecting and transporting microbiology specimens is very important in the identification of microorganisms and must be handled with great care.
 - c. Subsections of microbiology include **bacteriology** (study of bacteria), **parasitology** (study of parasites), **mycology** (study of fungi), and **virology** (study of viruses).

d. Test frequently ordered include the following:

- 1) Acid-fast bacilli (AFB) smear
- 2) AFB culture
- 3) fungus direct smear
- 4) Culture and sensitivity
- 5) Gram stain
- 6) GC (gonococcal) culture
- 7) Pinworm prep
- 8) Ova and parasite (O&P)
- 9) Occult blood
- 10) Strep screen
- 11) fungus culture
- 12) throat culture
- 13) urine culture
- 14) blood culture
- 15) fecal culture

7. **Serology or immunology** - serology literally means the study of serum.

a. Tests done in this department are designed to detect the body's response to the presence of bacterial, viral, fungal, parasitic and other conditions which stimulate detectable antigen-antibody reactions in a test system to aid in the diagnosis of the patient.

b. The following tests may be performed in the Serology department (**red stoppered tube**):

- 1) Cold agglutinins (CAG) - **specimen must be kept warm.**
- 2) Anti-streptolysin O titer (ASO) or screen such as Streptozyme
- 3) Infectious Mononucleosis (IM) tests such as Monospot
- 4) Rheumatoid arthritis (RA)
- 5) VDRL, RPR or FTABS to diagnose syphilis
- 6) Haptoglobin (HP)
- 7) Rubella
- 8) Pregnancy Testing
- 9) C-Reactive Protein (CRP)

8. **Immunohematology (Blood Bank)** performs tests to provide blood and blood products to patients for transfusion purposes.

a. The blood bank technologist relies on the phlebotomist to perform identification of the patient **without error**, since patients will die if given the wrong blood type.

b. Stopper color

- 1) **Plain red** NO GEL for labs using tube testing.
- 2) **Pink stopper** for labs using the gel testing system.
- 3) The only exception is the Direct Antiglobulin test which is drawn into a **purple top**.

- c. Tests include the following:
 - 1) ABO/D (Rh) typing
 - 2) Antibody screen AKA indirect antiglobulin test (IAT).
 - 3) Type and Screen (T&S)
 - 4) Crossmatch
 - 5) Direct Antiglobulin Test (DAT or DC)
 - 6) Rh Immune Globulin (RHIG) or Rhogam workup
 - 7) Antibody titer
 - 8) Antigen typing
 - 9) Antibody Identification
 - 10) Requests for components such as RBCs, platelets, cryoprecipitate (CRYO) and fresh frozen plasma (FFP) will be delivered to the blood bank.

- 9. Anatomic and surgical pathology include the following departments:
 - a. Cytology processes body fluids and other tissue specimens for detection and diagnostic interpretation of cell changes that might indicate cancer, ie, PAP smears.
 - b. Histology prepares and process tissue samples removed during surgery, autopsy or other medical procedures for microscopic examination and evaluation by a pathologist.
 - c. Cytogenetics provides detailed study of individual chromosomes that can detect genetic or acquired diseases or disorders.
 - d. DNA probe analysis tests for genetic disorders, malignant disorders, infections, pathogens and DNA fingerprinting in forensic medicine.

- 10. Education and research develops new procedures as well as basic research contributing to clinical laboratory sciences.
 - a. Performed by pathologists, Phds and Medical technologists.
 - b. Generally done in large teaching hospitals with affiliations with a large university.

J. Interdepartmental Relationships

- 1. The process of the correct test results getting to the patient's chart involves a number of individuals.
 - a. Only physicians can order lab tests, they write it on the chart.
 - b. Nurse or ward clerk sends request to the lab.
 - c. Phlebotomist draws the correct specimens and returns to the lab.
 - d. Specimens are delivered, processed and tested in the appropriate lab departments.
 - e. The results generated are delivered to the floor to be placed on the patient's chart.
 - f. The doctor reviews the results to diagnose and treat the patient.

- 2. The sequence of these results must be performed in a timely manner in order to provide quality care to the patient.