LABORATORY SAFETY

GOOD LABORATORY PRACTICE

- **Be familiar with all lab operations, procedures and equipment.**
- **Injuries may arise from careless treatment of simple, common operations.**
- **Work with another person present (if possible).**
- **Be cautious when handling needles and syringes.**
- **All specimens must be placed into leak-proof and non-breakable containers.**
- **Assure that specimen containers are securely closed and clean on the outside (if not, wipe with spirit / alcohol).**
- **Personnel must be trained in the safe handling practices and decontamination of spills**

Hazardous Materials :

•Understand the hazardous properties of all materials used in the workplace. Observe safe handling, storage, disposal and emergency procedures. Treat unknown materials as potentially hazardous.

Emergency measures and Emergency Equipment

Be knowledgeable about:

•Emergency reporting procedures, telephone numbers, location of telephones.

•Floor lay-out, location of exits and designated evacuation routes, exit procedures, sound of fire alarm and fire extinguishers.

•Location of eyewash stations, overhead and hand-held showers, spill clean-up kits.

•Operating procedures for all safety and emergency equipment.

Personal Protective Equipment (PPE)

- Wear appropriate PPE (e.g., laboratory coats or gowns, gloves, safety goggles or face shields, aprons) for the work being conducted.
- Secure hair/beard if its length may interfere with laboratory work.
- Avoid loose clothing. Remove jewelry when working with chemicals, biohazards, radioactive material, flames or moving machinery.
- Leave laboratory coats in the lab.
- Do not eat, drink or smoke in the laboratory; apply lip balm, cosmetics or contact lenses; insert fingers, pencils, etc., in the mouth; lick envelopes or labels.
- Do not store food or beverages in any refrigerator that contains body substances or chemicals.
- Store food and beverages only in designated areas of the lab.

Work Areas:

- **Keep work area neat, organized and free of clutter.**
- **Clean and decontaminate work surfaces at the end of each work shift.**
- **Keep laboratory corridors free of obstructions and tripping hazards.**
- **Do not use decorations that can be contaminated or present a fire hazard**
- **Keep personal property out of the laboratory area**

Chemicals

- **Conduct procedures using volatile, toxic or flammable chemicals in a chemical fume hood.**

Biohazardous Aerosols

- **Conduct procedures potentially generating aerosols in a biological safety cabinet.**

Pipetting

- **Use only mechanical pipetting devices for pipetting. Do not mouth pipette.**

Access

- **Do not allow unauthorized personnel access to the laboratory. Laboratories should be locked when unattended.**

Equipment

- **Check the safe working condition of all equipment before operating it.**

Accidents

- **Report all accidents, incidents and adverse health effects related to working in the laboratory within 24 hours to the staff clinic.**

Immunization

- **Workers should be protected by appropriate immunization.**

BODY SUBSTANCE PRECAUTIONS

All body substances from all patients must be considered potentially infectious. Use appropriate personal protective equipment when contact with body substances is deemed likely.

Body Substance Precautions is a system that decreases the risk of transmission of organisms by the use of barrier techniques.

Key Elements

- **Hand hygiene**
- **Use personal protective equipment**
- **Use good laboratory practices**

PERSONAL PROTECTIVE EQUIPMENT

•Laboratory personnel must use appropriate personal protective equipment (PPE) when contact with body substances/chemicals is deemed likely.

• All human blood or body fluids are capable of harboring infectious pathogens.

•Employ proper personal hygiene.

•Frequent hand washing is the single most important measure to reduce the risks of transmitting organisms. Wash your hands whenever you leave the laboratory

Remove laboratory coats/gowns before entering other non-laboratory facilities or areas which are considered to be clean.

Protective Eyewear/ Goggles/ visors/ faceshields

- **Protect the mucous membranes of the wearer against droplet transmission and exposure in the event of a splash.**
- **Ordinary spectacles do not provide adequate protection and protective eyewear/goggles/visor or a faceshield should be worn in addition to spectacles**
- **Protective eyewear/goggles/visor or a faceshield should be worn at all times when in the isolation room/area.**

MASKS

- **Close fitting and filter type N 95 (N category at 95% efficiency or any other mask with at least 95% efficiency filter)**
- **Standard surgical mask (splash proved) may be used if N95 is not available -- for patients only**
- **<u>Cotton or gauge masks are not recommended</u>, as they do not provide respiratory protection against droplet transmission**

CAP

(To be used only when splashes are anticipated)

OVERSHOES

BIOLOGICAL SAFETY

This is an important factor when working with infectious agents.

•There are 4 Biosafety levels which Correspond to the 4 risk groups of infectious agents.

• Biosafety level 2 is the practice level at which the Microbiology laboratory must operate. Most pathogens that the laboratory isolates are from Risk Group 2. *Mycobacterium tuberculosis* is a Risk Group 3 pathogen.

•Biological safety cabinets are the most accepted primary containment devices.

•The appropriate cabinet for Biosafety level 2 is a Class II cabinet.

Processing specimens in a Biosafety Cabinet

EQUIPMENT SAFETY

- It is essential to have adequate knowledge of the various types of equipment used including operation, maintenance and initial trouble shooting.
- New, modified, or repaired equipment shall be checked for safe operation before being placed into service.

- A program of preventive maintenance including function and safety will ensure proper equipment safety.

Waste Management

Infectious wastes

- Segregation of waste in appropriate containers
- Segregation of sharps
- Appropriate treatment of cultures and other microbiology waste by steam sterilization

Hazardous wastes and chemical wastes

Management of laboratory effluents

Occupational health and safety