Electrical Safety

**Audience**
All personnel in the Pulmonary Laboratories: Pulmonary Function Clinic, Bronchoscopy Service and Center for Pulmonary Rehabilitation.

**Purpose**
To identify the responsibilities and guidelines for maintaining electrical safety in the workplace.

**Policy**
It is the responsibility of every employee to promote a safe work environment, to be cognizant of potential electrical hazards and preventive measures necessary to minimize or eliminate these hazards.

**Testing Program**
In the hospital, the electrical equipment-testing program is designed to ensure a proper ground for all equipment in case the device becomes energized.

**HSS**
Health and Safety Services (HSS) will provide consultant services regarding electrical safety and issue electrical safety hazard warnings when needed.

**CES**
Clinical Equipment Services will perform preventive maintenance of laboratory instrumentation, conduct electrical safety testing of equipment upon acquisition and periodically thereafter, but not less than annually, and inform the Practice Manager upon completion of electrical safety testing and provide documentation of items that failed testing.

**Safety Officer**
Management is responsible for providing adequate facilities, supplies and supervision to control electrical hazards. They are also responsible for ensuring that electrical equipment has been properly tested, labeled and installed in accordance with UTMB policies and manufacturer’s instructions and ensuring that employees know and understand the potential electrical hazards associated with each instrument and the necessary safeguards to prevent a possible shock/electrocution.

**Employee**
Employee responsibility is to become knowledgeable about the electrical hazards associated with the equipment or the type of work performed in their specific job, read and understand the safety information provided by the manufacturer and UTMB and to notify the supervisor of potential electrical hazards.

**Electrical Shock**
Immediately disconnect or shutoff the power source, and/or free the victim from the source by using a non-conductor. Then initiate lifesaving procedures immediately and continue them until a professional medical assistance arrives. If the heart has stopped, begin cardiopulmonary resuscitation (CPR). If respiration has stopped, begin artificial respiration at once. Call for emergency assistance.
quickly. Inside the hospital complex, call extension 24000. Outside the hospital complex call 911.

Preventative Measures
The following are some preventative measures that can be taken:

- Know the location of all power plugs and off switches on equipment in your area.
- Before using equipment that requires connection to an electrical outlet, make sure the equipment has been inspected and that it carries a current electrical safety certification label. This is extremely important for equipment located in patient areas.
- Do not use coffee makers, radios, lamps or other personal electrical appliances unless they have Underwriters Laboratories (UL) approval.
- Do not clip or tape electric cords and telephone wires to desks. If cords must cross the floor, use plastic channels designated for this purpose.
- Never use "cheater" adapters or two-wired AC outlets.
- Use only electrical equipment that has a three-wire plug and is properly grounded. The Physical Plant will check the grounding of electrical outlets.
- Have all electrical devices with motors and transformers inspected frequently.
- Do not use temporary wiring (extension cords), except in special cases and only with the approval of the Department of Health and Safety Services.

Personal Safety
The following are some ways to promote personal safety:

- Remove watches and jewelry when repairing live electrical equipment.
- Do not hold energized electrical appliances with wet hands or when wearing wet shoes.
- Body moisture or perspiration lowers resistance, which permits a greater current flow. Keep body resistance high by keeping hands and feet dry.

Defective Equipment
Never ignore a tingling sensation caused by a piece of equipment. This indicates that the equipment is defective. Turn it off, place an “out of service” tag on it and report it to the appropriate department for repairs.

- Clinical Equipment Services – ext 76143
- Biomedical Engineering and Electronics (BMEE) (for research equipment) - ext 32750
- Facilities Operations and Management (for building equipment and power) - ext 21586

All equipment must be cleaned and disinfected before sending for repair. A decontamination form will be completed and note if the equipment cannot be thoroughly cleaned, attach a biohazard bag.
Any device or instrument under a private maintenance contract (e.g., photocopy machines, typewriters, dictating machines) should be reported directly to the company that services the contract.

**Patients**
All personnel directly involved in the care of patients must be instructed in procedures to prevent electrical hazards to patients.

**Equipment Labeling**
Electrical equipment that utilizes a three-prong plug used in a patient care area shall have a color coded PM/safety inspection label affixed to it. Each label must be fully completed. The following labels indicate the situations in which equipment can be used:

- **Green label (0 to 100 uA)** – Safe for use in all areas. In devices that have leads which connect to a low impedance, direct wire electrical connection to the conductive system of the heart, lead leakage must be 20 uA or less, and chassis leakage must be 100 uA or less.

- **Blue label (101 to 500 uA)** – Not intended for use in patient care areas. Equipment with this label must be used outside a six foot radius from a non-ambulatory patient.

- **Out-of-Service tag. White Tag (red lettering)** – **Remove from service.** If a piece of equipment does not work properly, disconnect it, attach a white tag and contact Clinical Equipment Services ext. 76143 for repair. Also to be used for a device occurrence (incident). Record tag and UTMB asset number on the patient incident report.

**New Equipment Guidelines**
Before obtaining any electrical equipment, the vendor of the equipment must assure the UTMB Purchasing Department that it meets all existing federal, state and university electrical standards.

Consult CES before purchasing, borrowing, leasing or accepting as a donation any piece of equipment. CES can assist you in determining whether it meets the institution’s safety policy.

Immediately following delivery and before installation and use of newly acquired electrical equipment, call CES to inspect new equipment. NO electrical equipment can be put into service without an appropriately colored (green or blue) electrical safety label.

**Electrical Safety Testing**
Equipment will receive electrical safety testing in accordance with the minimum standards listed in UTMB policy. Inspection intervals will vary according to the
use of the equipment. All equipment that has undergone electrical safety testing will have a label attached to it indicating its electrical safety certification.

**Maintenance**  The operators of all electrical devices are expected to perform visual and operation checks to ensure good mechanical condition and proper operation of equipment each time a device is used.

Equipment used in the hospital, clinics and supporting laboratories shall receive preventive maintenance with supporting documentation.

The manufacturer’s recommendations should always be followed.

This form documents the approval and history of the policies and procedures for the Pulmonary Function Laboratory. The Medical Director signs all policies verifying initial approval. Annually thereafter, the Director and/or designee may approve reviews and revisions.

<table>
<thead>
<tr>
<th>Date</th>
<th>Approved by:</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/07</td>
<td>V. Cardenas, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical Director Pulmonary Laboratory</td>
<td></td>
</tr>
<tr>
<td>6/08</td>
<td>V. Cardenas, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changes to the policy</td>
<td></td>
</tr>
<tr>
<td>6/09</td>
<td>V. Cardenas, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No changes to the policy</td>
<td></td>
</tr>
<tr>
<td>7/10</td>
<td>V. Cardenas, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No changes to the policy</td>
<td></td>
</tr>
<tr>
<td>2/12</td>
<td>A. Duarte, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical Director Pulmonary Function Laboratory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No changes to the policy</td>
<td></td>
</tr>
<tr>
<td>5/14</td>
<td>A. Duarte, MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical Director Pulmonary Function Laboratory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No changes to the policy</td>
<td></td>
</tr>
</tbody>
</table>