

TECHNOLOGY SUPPORT SERVICES

ELECTRICAL SAFETY CONSIDERATIONS

I. Physiological Effects of Electricity on the Human Body

- A. Uncontrollable muscle contraction or unconsciousness
- B. Claspng objects with inability to let go
- C. Breathing may stop
- D. Convulsions
- E. Burning and/or destruction of tissue
- F. Fibrillation of the heart - inability to pump
- G. Burns, organ damage, tingling sensation.
- H. An electrically susceptible patient

An electrically susceptible patient is one that has in implanted catheter or some other electrode within or near the heart with the other end of the electrode exposed outside the body. This patient is susceptible to minute currents in the area of 20 micro-amperes (.000020 amps). The effect of an electric current applied directly to the heart in such a patient is called microshock. The effect of an electric current applied directly through the intact skin is called macroshock.

II. Indications of Shock Hazard and Practices to be Avoided

- A. Possibility of electrical shock exists if:
 - 1. A staff member or patient complains of receiving an electrical shock. NOTE: If you touch a piece of electrical equipment and get a tingling sensation, this signifies leakage of current. This equipment should be removed from service, labeled with a "Do Not Use" sign, and sent to Technology Support Services (x4899) for inspection and repair.
 - 2. Two-wire cords or plugs are used on equipment.
 - 3. Three-wire adapters are used.
 - 4. Power cords are frayed or plugs are used on equipment.
 - 5. Noise on an EKG wave-form cannot be eliminated by changing the electrodes.
 - 6. An unconscious patient jumps or twitches when monitoring equipment is attached.
- B. Precautions to guard against shock hazards:
 - 1. Never use three-wire adapters called "cheaters", they interrupt the ground path.
 - 2. Never use equipment unless it is equipped with a three-prong plug and three-wire power cord.
 - 3. Before an electrical device is plugged in, inspect the plug for broken pins or shell, power cords for fraying or cuts, and the receptacles for breaks or cracks. Always make certain a device is turned off before plugging it in.
 - 4. Never remove a plug from a receptacle by pulling on the power cord. Always grip the plug shell to remove the plug.
 - 5. If an electrical device is dropped, unplug the AC power plug, and have it checked before placing it in operation.
 - 6. If multiple monitoring devices are going to be used, it is advisable to plug all equipment into the same group of wall outlets.

7. If any liquid is spilled on an electrical device, it should be immediately unplugged and checked for damage.
 8. If an instrument operates erratically, do not use it.
 9. Do not attempt to make any electrical repairs of any kind yourself. Call the appropriate service department.
 10. Keep electrical power cords correctly coiled and out of the path of traffic.
 11. Extension cords can only be used in accordance with UT EHRS Procedure #S-08-037 (Extension Cords).
 12. If a three-prong wall outlet receives the plug too easily or does not hold it securely, report it.
 13. If a power cord or plug is warm to the touch, remove the equipment from service and have the item checked.
 14. Report all suspicious odors associated with use of electrical equipment.
 15. Do not run carts or casters over power cords. This will cause internal damage to the wires and insulation.
 16. When in doubt about electrical safety, contact someone who can check the equipment and power wiring.
 17. Do not plug power strips into power strips.
- III. If there are any complaints from anyone about getting an electrical shock or possible electrical shock, call Technology Support Services (x4899) immediately so an inspection on the equipment and area can be done.
- IV. If the equipment is plugged in and is accidentally dropped, unplug it. Do not try to move it or push switches off or on. The best thing is to unplug the AC power plug from the receptacle.
- V. Whenever you find any biomedical equipment broken, cracked, bent or wires exposed, call Technology Support Services at x4899. **DO NOT TRY TO USE BROKEN EQUIPMENT.** If you have any questions feel free to contact Technology Support Services.