70853 Electrically Sensitive Areas

(a)

Electrically sensitive patient areas are those areas of the hospital where patients with invasive instrumentation (that can provide electrically conductive pathways directly to the heart) are usually located. These patients are particularly vulnerable to accidental electrocution from contact with equipment or other conducting surfaces bearing electrical potentials that would not normally be considered hazardous. These patient care areas must be provided with additional electrical safeguards. Such areas include but are not limited to: (1) Coronary care units. (2) Intensive care units. (3) Cardiac catheterization laboratories. (4) Operating rooms. (5) Portions of emergency rooms. (6) Postoperative recovery rooms.

(1)

Coronary care units.

(2)

Intensive care units.

(3)

Cardiac catheterization laboratories.

(4)

Operating rooms.

(5)

Portions of emergency rooms.

(6)

Postoperative recovery rooms.

(b)

All circuits serving electrically sensitive patient care areas shall have equipotential bonding.

(c)

Each patient bed shall be served by receptacles from two separate circuits and, as a minimum, one of the circuits shall be from a separate emergency power source. A portion of the receptacles should be located other than at the head of the bed.

(d)

All circuits from the same source shall be in the same phase.

(e)

To protect instrumented patients who are vulnerable to electric shock hazards, all conducting surfaces, that are or could be located within six feet of a patient shall be tested regularly and shown to meet the requirements set forth below. The measurements shall be made using a standard test load to simulate the conducting pathway provided by the patient. The standard test load and test conditions shall meet the requirements in Safe Current Limits: AAMI Safety Standard for Electromedical Apparatus, published April 1974 by the Association for the Advancement of Medical Instrumentation, 1500 Wilson Boulevard, Suite 417, Arlington, VA 22209. (1) Electromedical equipment with patient leads or other connections intended to be attached directly to the heart or to an invasive conductive pathway to the heart or great vessels shall be provided with special electrically isolated leads or connections by optical coupling or some other technical provision. The current limits for such an isolated patient connection shall

not exceed 20 microamperes at the patient end of the lead and shall not exceed 10 microamperes at the junction between the patient lead and the equipment. (2) The current limit for electromedical equipment with an electrical or conductive patient contact, other than defined in (1) above, shall not exceed 50 microamperes. (3) The limit for currents arising from metal parts associated with electromedical equipment, other than the cases defined in (1) and (2) above, shall not exceed 100 microamperes.

(1)

Electromedical equipment with patient leads or other connections intended to be attached directly to the heart or to an invasive conductive pathway to the heart or great vessels shall be provided with special electrically isolated leads or connections by optical coupling or some other technical provision. The current limits for such an isolated patient connection shall not exceed 20 microamperes at the patient end of the lead and shall not exceed 10 microamperes at the junction between the patient lead and the equipment.

(2)

The current limit for electromedical equipment with an electrical or conductive patient contact, other than defined in (1) above, shall not exceed 50 microamperes.

(3)

The limit for currents arising from metal parts associated with electromedical equipment, other than the cases defined in (1) and (2) above, shall not exceed 100 microamperes.

(f)

All electrical service outlets and grounding circuits shall be inspected at least quarterly. (1) Records of this inspection shall include at least the following information:(A) Confirmation that the contact tension of each blade of each wall

receptacle is not less than 225 grams (8 oz.) per blade. (B) Confirmation of the presence and correct polarity of the hot and neutral connections in each wall receptacle. (C) Verification of the continuity of the grounding circuit in each wall receptacle. (D) Physical condition of each receptacle. (E) Physical condition of any male plugs and line cords of equipment in use in the areas at the time of each inspection. (F) Verification that the resistance between all exposed metal surfaces and each patient reference grounding point, or a selected wall receptacle ground, is less than 0.15 ohms.

(1)

Records of this inspection shall include at least the following information:(A) Confirmation that the contact tension of each blade of each wall receptacle is not less than 225 grams (8 oz.) per blade. (B) Confirmation of the presence and correct polarity of the hot and neutral connections in each wall receptacle. (C) Verification of the continuity of the grounding circuit in each wall receptacle. (D) Physical condition of each receptacle. (E) Physical condition of any male plugs and line cords of equipment in use in the areas at the time of each inspection. (F) Verification that the resistance between all exposed metal surfaces and each patient reference grounding point, or a selected wall receptacle ground, is less than 0.15 ohms.

(A)

Confirmation that the contact tension of each blade of each wall receptacle is not less than 225 grams (8 oz.) per blade.

(B)

Confirmation of the presence and correct polarity of the hot and neutral connections in each wall receptacle.

(C)

Verification of the continuity of the grounding circuit in each wall receptacle.

(D)

Physical condition of each receptacle.

(E)

Physical condition of any male plugs and line cords of equipment in use in the areas at the time of each inspection.

(F)

Verification that the resistance between all exposed metal surfaces and each patient reference grounding point, or a selected wall receptacle ground, is less than 0.15 ohms.

(g)

All portable (minor movable) electromedical equipment that is used in electrically sensitive patient areas shall be included in an appropriate preventive maintenance program. (1) Records of the maintenance shall include at least the following information. These measurements and inspections shall be made at least once every three months. (A) Determination of the leakage current levels for all electrically powered diagnostic, monitoring or therapeutic equipment, including electrically powered beds. (B) Verification of the integrity of the power cords, including continuity of the conductors and adequacy of the strain relief device.

(1)

Records of the maintenance shall include at least the following information. These measurements and inspections shall be made at least once every three months. (A) Determination of the leakage current levels for all electrically powered diagnostic, monitoring or therapeutic equipment, including electrically powered beds. (B) Verification of the integrity of the power cords, including continuity of the conductors and adequacy of the strain relief device.

(A)

Determination of the leakage current levels for all electrically powered diagnostic, monitoring

or therapeutic equipment, including electrically powered beds.

(B)

Verification of the integrity of the power cords, including continuity of the conductors and adequacy of the strain relief device.