

**BY ORDER OF THE COMMANDER  
59TH MEDICAL WING**

**59TH MEDICAL WING INSTRUCTION  
41-218**



**29 NOVEMBER 2016**

**Health Services**

**ELECTRICAL SAFETY PROGRAM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements Air Force Policy Directive 41-2, *Medical Support*. This instruction describes the purpose of the services and responsibilities necessary to provide detailed training, operational maintenance, and inspection procedures pertaining to the safe use of electrical appliances and equipment within and under control of the 59th Medical Wing (59 MDW). This instruction applies to all personnel assigned, attached, or on contract to the 59 MDW. This instruction does not apply to the Air National Guard, Air Force Reserve or 959th Medical Group at San Antonio Military Medical Center. Refer recommended changes and questions about this publication to the Office of Primary Responsibility using the AF Form 847, *Recommendation for Change of Publication*. Requests for waivers must be submitted to the OPR listed above for consideration and approval. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with in accordance with (IAW) Air Force Manual 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System Records Disposition Schedule.

**SUMMARY OF CHANGES**

The publication has been revised. This rewrite of 59 MDWI 41-218 includes commander approval procedures to satisfy special or unique safety requirements and patient care spaces; updated governed facilities tailoring patient care and treatment areas.

**1. Patient Care Space.** Any space in a health care facility where patients are intended to be examined or treated. The National Fire Protection Association recommends that treatment facilities evaluate risk in individual spaces within a room, rather than in the room as a whole.

The designation of these spaces determines the type of essential electrical system to which an area needs to be connected. A detailed list of Patient Care Spaces can be found in the Facility Management Plan located on the Share drive.

1.1. Category 1 Space; spaces where failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors. Formerly known as critical care rooms are intended to be subjected to invasive procedures while connected to line operated patient care equipment. Examples are cardiac catheterization laboratories, delivery rooms, operating rooms, post-anesthesia care units and other similar rooms.

1.2. Category 2 Space; spaces where failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors. Formerly known as general care rooms they include areas such as inpatient bedrooms, dialysis rooms, procedural rooms, and similar rooms.

1.3. Category 3 Space; space in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort. Formerly known as basic care rooms, they are typically where basic medical or dental care, treatment, or examinations are performed. Examples include examination or treatment rooms in clinics, medical and dental offices, and limited care facilities.

1.4. Category 4 Space; space in which failure of equipment or a system is not likely to have a physical impact on patient care. Formerly known as support rooms, they include anesthesia work rooms, sterile supply, laboratories, waiting rooms, utility rooms, and lounges. Business offices, corridors, lounges, day rooms, dining rooms, or similar areas typically are not classified as patient care spaces.”

## **2. Wet Procedure Locations.**

2.1. Spaces where procedures that are normally subject to wet conditions while patients or staff are presented including standing fluids on the floor or drenching of the work area, either of which condition is intimate. Wet procedure locations are limited to areas where there are long-term, significant amounts of fluids. Routine housekeeping procedures, incidental spillage and patient areas that become wet due to washing, incontinence, or hot packs are not considered wet procedure locations.

## **3. Anesthetizing Locations.**

3.1. Spaces where any inhalation agent is used to produce sedation, analgesia, or general anesthesia. These areas include those that pass nitrous oxide.

## **4. Patient Care Vicinity.**

4.1. A space, within a location intended for the examination and treatment of patients, extending 1.8 meters (6 feet) beyond the normal location of device that supports the patient during examination and treatment and extending vertically to 2.3 meters (7 feet 6 inch) above the floor. It does not extend through walls, partitions, or floors. It is a fixed area that does not move with a patient through corridors, hallways, or waiting rooms. The term patient care vicinity more accurately conveys the intended use of a space where patients are actually cared for.

## **5. Responsibilities.**

5.1. The Environment of Care (EOC) Committee sets policies and procedures for all EOC management programs/plans and evaluates each program/plan's effectiveness at least annually and submits reviews to Executive Committee for approval.

5.2. Facilities Management Office.

5.2.1. Ensures the 59 MDW electrical distribution system and related items are in compliance with National Fire Protection Association (NFPA) 70, NFPA 99, and NFPA 101. Ensure all maintenance, testing, and documentation requirements specified in AFI 41-201, *Managing Clinical Engineering Programs* are met.

5.2.2. Post approved EOC plan that designates specific patient care spaces, Category (1) through (3), Anesthetizing Locations and Wet Procedure rooms per NFPA 99 on the 59 MDW.

## **6. Supervisors of Category 1 and 2 Spaces and Wet Locations.**

6.1. Schedule annual electrical safety briefing for personnel and coordinate schedule with Clinical Engineering. Clinical Engineering may present briefings if requested by the supervisor.

6.2. Maintain electrical safety training attendance documentation on the individual's AF Form 55, *Employee Safety and Health Record*, in the Air Force Competency Assessment Folder for each functional work center.

6.3. Make weekly inspections of assigned Category 1 and 2 Spaces and Wet Locations to ensure the equipment operator's responsibilities described in AFI 41-201 are explicitly followed. "Report discrepancies to Clinical Engineering"

6.4. Ensure all patients are briefed on the hazards that exist and the special precautions that must be taken.

## **7. Supervisors and Equipment Operators.**

7.1. Ensure all equipment is free of visually apparent electrical hazards before each use. In addition, ensure that all medical equipment items used in patient care areas, regardless of ownership, are inspected by Clinical Engineering prior to initial use IAW AFI 41-201.

7.2. Ensure only qualified personnel operate medical equipment and that verification of their competence is documented annually in the Air Force Competency Assessment Folder. (**Note:** Users notify their supervisors if they lack the knowledge and/or training needed to ensure the safe operation of medical equipment.)

7.3. Ensure extension cord policies are enforced (see paragraph 13).

7.4. Ensure necessary precautions, listed in paragraph 16 are taken while working with electrically susceptible patients.

7.5. Contact Clinical engineering immediately when medical equipment is suspected of being involved in any incident involving injury or potential injury to patient, staff or visitor (see paragraph 12).

7.6. Take all medical equipment (e.g., rented, loaned, or test evaluation) to Clinical Engineering for electrical safety inspection prior to use.

## **8. Clinical Engineering Flight.**

- 8.1. May on request, schedule and conduct in-services on basic hospital electrical safety (to include training on inspections in general care areas) for all 59 MDW personnel.
- 8.2. Conduct basic and Category 1 and 2 Spaces and Wet Locations electrical safety training at annual mandated nursing in-services at the request of Category 1 and 2 Spaces and Wet Locations functional safety monitors.
- 8.3. Consult periodically with supervisors and Critical Care Area (CCA) safety monitors concerning electrical safety issues.
- 8.4. Investigate incidents involving medical equipment.
- 8.5. Perform required electrical safety inspections IAW AFI 41-201.

## **9. Safety Office.**

- 9.1. Conduct periodic inspections to ensure only approved extension cords and Patient Owned Electrical Appliance (POEA)s are used in the 59 MDW.
- 9.2. Conduct annual inspections of equipment in patient or staff break areas, occupational therapy equipment, and housekeeping equipment. Documents all discrepancies and corrective actions taken.

## **10. Non-Government Owned Equipment (POEA).**

- 10.1. Staff-Owned Medical Equipment: Staff-owned medical equipment is not authorized for use in 59 MDW.
- 10.2. Unit personnel inspect personal appliances prior to use. Any appliance in an unsafe condition (frayed cords, cracked cases, etc.) shall not be permitted within the 59 MDW. It is the responsibility of every staff member to ensure that electrical appliances (i.e., electronic media, coffee pots, fans, water heaters, etc.) are in a safe operating condition. Compliance will be verified through routine surveillance activities and questionable appliances will be brought to the attention of the unit noncommissioned officer in charge or officer in charge for assessment and correction. Appliances may be transported to Clinical Engineering for inspection if a quality determination is required.

**11. Vendor Owned Equipment; Rental, Leased, Loaned, User Test.** Equipment owners must sign a "Statement of Understanding" (Attachment 2). The using activity custodian will pick up essential documents from MEMO, coordinate with required activities, ensure mandatory signatures are affixed to the documents and makes certain that Clinical Engineering inspects the item before it is used in the Medical Treatment Facility.

## **12. Incidents Involving Electro-medical Equipment.**

- 12.1. Immediately report, by phone, any incident involving medical equipment to Clinical Engineering. After normal duty hours contact and report the incident to the Hospital Automated Resource Protection System.
- 12.2. Complete the Computerized Patient Safety Event Reporting Form. This form is located on the desktop of most computers in the 59 MDW. This form can also be found by going to: <https://patientsafety.csd.disa.mil/>. Record the names of all individuals involved and the Equipment Control Numbers of all equipment involved. Immediately notify the

Patient Safety Office, the Risk Management Office, and the Safety Office of equipment incidents involving potential or actual patient injury.

12.3. Avoid moving and/or adjusting the equipment/device; throwing away disposables involved (if safety permits) until maintenance personnel have a chance to investigate. Secure all equipment involved in an incident that might lead to a claim against the Air Force until cleared by Clinical Engineering and Risk Management.

12.4. Results of the investigation and any recommended action will be reported to the area supervisor for inclusion in the final incident investigation report.

### **13. Extension Cords, Power Strips, Surge Protectors and Adapters.**

#### 13.1. Extension Cords.

13.1.1. An extension cord is an Underwriters Laboratories (UL) approved heavy-duty, three-conductor cord with an industrial grade or hospital grade plug at one end and a single or multiplex industrial grade or hospital grade receptacle at the other end. It does not have built-in fuse or circuit breaker protection. Clinical Engineering must evaluate and approve extension cords used with medical equipment.

13.1.2. Extension cords can be used on a temporary basis, (less than 60 days) and will not be used permanently in place of fixed wiring or installed outlets.

13.1.3. Extension cords used with medical equipment cords must have hospital or industrial grade connectors. Metallic bodied two or three blade end connectors are prohibited.

13.1.4. Use of electrical extension cords will be minimized in patient care areas. In all circumstances, two-wire extension cords are prohibited in those areas.

13.1.5. An extension cord will not be plugged into another extension cord or power strip.

13.1.6. Extension cords will not be run under rugs, hung over walls, run through doorways or windows or other areas that may subject the wire to physical damage.

13.1.7. Use of extension cords on heating appliances (e.g., microwaves, toaster ovens, industrial grade coffee pots, etc.) or high amperage major appliances (e.g., refrigerators, ice machines, freezers, window air-conditioning units, etc.) is prohibited.

13.1.8. Extension cords of any type are prohibited in areas where flammables are used or stored.

13.1.9. The maximum amperage rating of the extension cord must never be less than the appliance cord rating or exceed the electrical rating of the outlets.

#### 13.2. Power Strips.

13.2.1. A power strip is a UL approved conductor cord with built-in fuse or circuit breaker, multiple outlets, and with an amperage rating of 15 or less amps. Power strips will not exceed 15 feet in total length. Clinical Engineering must evaluate and approve power strips used with medical equipment.

13.2.2. The maximum amperage rating of the power strip must never be less than that of the appliance cord rating or exceed the electrical rating of the outlets.

13.2.3. Power strips can be used to extend power from the wall outlet to power low amperage computers and office equipment.

13.2.4. Power strips will not be plugged into another power strip or extension cord.

13.3. A surge protector: a device with built in components to protect equipment connected to it from excessive energy by shorting this energy to ground. Normally, they are configured as a power strip, but may be configured as a single or multiple outlet adapter that plugs directly into a wall outlet. (Most have an indicator light identifying them as surge protectors). Surge protectors will not be connected to patient care equipment unless required by the manufacturer.

#### **14. Inspection of Extension cords, power strips, and surge protectors.**

14.1. The section safety monitor must frequently inspect or evaluate these items. They may also be evaluated by Clinical Engineering periodically.

14.2. Damaged or defective extension cords, power strips, surge protectors, or equipment power cords should be removed from service immediately.

14.3. Use of adapters, either three to two prongs or multiple outlets, is prohibited. (Exception: Qualified electronics or electrical technicians assigned to Clinical Engineering or Civil Engineering may use adapters in the performance of essential tests and maintenance procedures).

#### **15. Safety Outlets.**

15.1. Easily accessible electrical wall outlets in pediatric clinics, pediatric waiting rooms, and other areas where children are routinely unsupervised should be "child safe, childproof" variety.

15.2. Wet locations within six feet of power sources, i.e. electrical outlets or electrically powered equipment must be protected by ground fault circuit interrupter outlets.

#### **16. Precautions.**

16.1. Special precautions for patients with an externalized electrical connection which terminates in the immediate vicinity of the heart. All personnel will be familiar with the safety precautions discussed in AFI 41-201.

16.2. In areas outside CCAs or when transporting, specific precautions will be taken to protect patients with externalized connections, such as externalized cardiac pacing wires, to the heart. Some specific precautions are:

16.3. Use only insulated pacing leads and insulated external cardiac pacemakers.

16.4. Handle pacing wire with gloves.

16.5. Keep the tips of pacing wires insulated.

- 16.6. Keep the area surrounding pacemakers dry.
- 16.7. Advise the patient not to handle the wires.

SCOTT C. SUCKOW, Colonel, USAF, MSC  
Administrator, 59th Medical Wing

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 41-201, *Managing Clinical Engineering Programs*, 15 October 2014

AFPD 41-2, *Medical Support*, 28 June 2013

NFPA 70, *National Electrical Code*, 2011

NFPA 99, *Standard for Health Care Facilities*, 2012

NFPA 101, *Life Safety Code*, 2012

***Adopted Forms***

AF Form 55, *Employee Safety and Health Record*

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**CCA**—Critical Care Area

**EOC**—Environment of Care

**IAW**—In Accordance With

**MDW**—Medical Wing

**NFPA**—National Fire Protection Association

**POEA**—Patient Owned Electrical Appliance

**UL**—Underwriters Laboratories

Attachment 2

59 MDW EQUIPMENT/PRODUCT EVALUATION STATEMENT OF UNDERSTANDING

The, hereinafter called Vendor, shall provide to (Name & address of Manufacturer) 59 MDW, hereinafter called the Government, for use with direct/indirect patient care or approved protocol study # the following property:

Item description \_\_\_\_\_ Model #

The vendor shall provide the property at no cost to the Government. Vendor shall bear all expenses for transportation, installation, removal, operational supplies, and repair parts.

The Vendor shall be responsible for scheduled/unscheduled maintenance of the property. If repair service is unavailable or inconvenient, Vendor may authorize Air Force Clinical Engineering technicians to perform the maintenance.

Vendor understands that the use of this equipment is without monetary consideration for the use of the property. It is loaned equipment without any obligation by the Government to purchase in the future.

The approved period of use is from \_\_\_\_\_ to \_\_\_\_\_.

The Government intends to use the property in an environment and under circumstances consistent with the property's design and intended use. The Government further agrees to provide reasonable care and safeguard of the property while it is in the Governments' possession. Vendor will indemnify, save harmless, and forever defend the Government from and against any and all claims, actions, debts, liabilities and attorney's fees arising out of, claimed on account of, or in any manner predicated upon loss of, or damage to the property of, or injuries to, or death on any and all persons whatsoever, in any manner caused by or attributed to the Vendor, his agents, servants, or employees while in, on, or about 59 MDW, or attributed to the failure or malfunction of the property provided by Vendor during the period of the Government's use of the property.

\_\_\_\_\_  
(Vendor's Authorized Representative)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Property Custodian - account # - phone #)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Legal Office Representative)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Contracting Representative)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Medical Logistics Representative)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Medical Maintenance Representative)

\_\_\_\_\_  
(Date)