

The Importance of Electrical Safety Inspection for Medical Equipment

By: John Juresic, Loss Control Consultant, Thomas McGee, L.C.

With the potential of employee or resident injury, having your equipment in proper working order and correctly grounded is essential for your facility. We often hear “Safety First”, and that is very important when it comes to Electrical Safety Inspections in Nursing Homes, Rehabilitation Centers and Care Facilities because these subtle things do not go unnoticed.

Importance of Preventive Maintenance

Well-functioning medical equipment is a critical tool for the healthcare profession. A failure in medical equipment can have dire consequences for the employee and resident and affect their safety. In a bid to maintain quality services in a nursing home, the practice can adopt preventive maintenance for medical equipment. Preventative maintenance is important because:

- It ensures the safety of the residents and staff because the potential causes of breakdown can be identified and resolved. In addition, it improves the standing of a facility with regards to professionalism. Dysfunctional equipment sends a message of unprofessionalism and irresponsibility to the resident’s family who may view care as substandard.
- It allows efficiency in service. This proactive approach is a way through which the nursing home can plan for a device that may go out of service, thus allowing the facility to serve residents better.
- It is a cost-saving approach. Preventive maintenance can save significant costs because repairs are costly compared to maintenance. Preventive maintenance helps a facility get greater returns on equipment investments and is less costly over time.

WHAT MEDICAL EQUIPMENT NEEDS TO BE CHECKED?

Any Electrical Medical Equipment that is used on or within a patient care area needs to be checked and inspected. Having a safety checklist will provide an easy guide to ensure your employees and residents are being given the utmost protection. The following is a simple Checklist, but not limited to equipment that would require an Electrical Safety Inspection at least once a year.

Typical Nursing Home Equipment Inspection Checklist

- Patient Beds & Lifts
- Patient Vital Monitors

Editor’s Note:

The KING Safety Matters newsletter is published quarterly to provide general safety information. It is not a substitute for adequate safety training, or intended to provide complete safety information or training, on any specific subject. The information contained herein is intended to assist safety efforts and increase safety awareness.

In order to ensure the contents of the newsletter are helpful and important to you, please feel free to send comments, suggestions and feedback to:

John Juresic
Loss Control Consultant
Thomas McGee L.C.
jjuresic@thomasmcgee.com

Kevin McFarland
President
KING
kevin@leadingagokansas.org



- Defibrillators
- Oxygen Concentrators & Ventilator Equipment
- Rehabilitation & Mobility Apparatus
- Patient Scales
- Hydrocollators
- Physical Therapy Tables
- Alternating Pressure Mattress
- Sequential Compression Device

Scope of Work

The Preventive Maintenance of the patient lifting devices shall be performed according to the manufacturers recommended procedure as stated in the service manuals.

- Preventive Maintenance: Preventive maintenance inspections must comply with all applicable regulations and manufacturers specifications, and it will include, but is not limited to the following:
 - Reviewing operating system diagnostics to ensure that the equipment is operating within its specifications.
 - Calibrating and cleaning.
 - Replacing any worn or defective parts.
 - Filling out and tagging the equipment with an inspection sticker.
- Repair: Repairs will be done when a piece of equipment is determines to be in an unsafe condition.
- Parts: All parts supplied shall be Original Equipment Manufacturer (OEM) parts.

Three Major Components of Equipment Maintenance

1. Staff conducts regular inspection of equipment for defects.
 - Visually inspect the physical condition of equipment for flaws, cracks, deformities, tears, or any other apparent defects. Inspect for: loose knobs or switches, frayed or cracked power cords, lose or broken plug pins, loose power plug or any medical equipment with a two-pronged plug.
 - Ensure equipment is labeled with a current electrical safety inspection sticker.
 - Ensure no electrical cords are used and that patients are not using personal electrical appliances.
 - When the unit is being used, complete a performance test to check for appropriate lights or tones. If any problems are noted, remove the equipment, ensure it is appropriately tagged, and send the equipment to an authorized technician to be repaired.

2. Certified electrician conducts annual electrical and mechanical safety testing. Diagnostic equipment will have checks performed at least annually or more frequently to adhere to manufacturers' recommendations, and per IEC safety standards for Medical Electrical Equipment 60601-1.

Electrical and mechanical safety checks include the following:



- If a detachable power supply cord is used, a maximum 0.20-ohm total protective earth pathway is required.
- The allowable values of the touch current are 100uA in normal condition and 500 uA in single fault condition.
- The allowable values of the earth leakage current are 5 mA in normal condition and 10 mA in single fault condition.
- For type BF equipment, the allowable values of the patient leakage currents: From patient connection to earth (a.c.) 100uA (NC) / 500uA (SFC)

3. Documentation of Compliance Recommended Obtain a report signed by the certified electrician that includes the following for each piece of equipment:

- Description
- Serial number
- Ground fault
- Current leakage

Keep a policy for monthly visual inspections and electrical reports for your internal records and indicate where they will be filed. Details about documentation required for accreditation are listed on the following page.

Equipment Maintenance Policy

- The plan should address: monthly visual inspection of equipment by staff for apparent defects; adhering to manufacturers' recommendations for monitoring and maintenance of recording equipment; and electrical safety testing by a certified electrician or biomedical engineer to include at least annual testing for ground fault.
- A written plan regarding the monitoring of all patient-related equipment for electrical and mechanical safety is recommended, but not required for accreditation.

Electrical Safety Rules for Staff

Remove from service and report any piece of equipment if:

- Any wire or cord is frayed, worn, cut, or burned
- A plug is broken, bent, or loose
- Switches or knobs are loose
- Cables do not connect securely
- Any concern of overheating by smell or touch
- Equipment has been dropped or physically damaged
- There has been liquid spilled on equipment or equipment is leaking



Additionally:

- Do not use extension cords in patient areas.
- Never disconnect any electrical plug from the wall by grasping the power cord; always firmly grasp and pull the plug.
- Do not allow patients to use personal electrical appliances.

Take time to set up an inspection program for the electrical equipment around your facility. A shocking experience is not one to take lightly.

*Reference: American Association of Neuromuscular & Electrodiagnostic Medicine
IEC safety standards for Medical Electrical Equipment 60601-1
NFPA 99*

