



**POLICY AND PROCEDURE MANUAL
DUKE UNIVERSITY HEALTH SYSTEM
Clinical Engineering Policy CE-030**



Electromagnetic Interference

POLICY:

Duke University Health System (DUHS) recognizes that the proliferation of electronic devices in use within the hospital environment poses a potential electromagnetic interference (EMI) risk to medical equipment. Cellular/cordless telephones, wireless computers & handheld computers (Palm Pilot, Pocket PC, etc.) and the two-way radios often employed by health system personnel are all recognized as potential sources of EMI.

DUHS will minimize the risk associated with this phenomenon by limiting the use of EMI generating devices in Patient Dependant Equipment (PDE) locations such as CCU, PICU, NICU, Emergency Department, Operating Room, monitoring locations in outpatient facilities, etc. A PDE location is defined as an area which has equipment attached to patients which, if the equipment malfunctions, could cause or contribute to the serious illness, injury, or death of the patient.

PURPOSE:

This policy shall define:

- Potential EMI generating devices
- Restricted areas for use of EMI generating devices
- Procedures for emergency use of two-way radios in restricted areas

PROCEDURE:

The following devices are considered to be restricted for use in PDE locations:

- Two-way radios - General Mobile Radio Services (GMRS)*
- Ham (CB) radios
- *GMRS radios operate at between 1 and 5 watts and require a FCC license.

The following devices should be used with caution in PDE location:

- Cellular/Cordless Telephones
- Computers with a wireless network or a wireless modem
- Wireless handheld computers (Palm Pilot, Pocket PC, etc.)
- Two-way pagers
- Wireless LAN phones
- Two way radios – Family Radio Service (FRS)**
- Any device known to emit electromagnetic energy

**FRS radios operate at a maximum of 0.5 watts (500 milliwatt) and do not require a FCC license.

Although these devices are not specifically prohibited in PDE locations, they should only be used when essential and preferably in areas away from life support medical equipment. DUHS staff should ensure that EMI generating devices are not within three (3) feet of critical medical devices.



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Restricted Areas

Two-way radios (GMRS) and ham radios are restricted from use in all PDE locations:

Procedures for Emergency Use of Two-Way Radios in Restricted Areas

Although there are certain potential risks associated with using two-way radios in Patient Dependant Equipment locations, there are clearly unacceptable risks in prohibiting the use of these devices by Public Safety, hospital safety/security officers, EMS personnel, and Life Flight personnel. This policy is not intended to prohibit the use of two-way radios in PDE locations, but rather to restrict their use to emergency situations.

Whenever a Public Safety, Hospital safety/security officer, EMS personnel or a Life Flight employee is in a PDE location and an emergency occurs which requires the use of a two-way radio, they should make their best effort to adhere to the following guidelines which are listed in order of preferred compliance:

- Immediately leave the PDE location to use the two-way radio
(Interference created by transmitting from RF devices is minimized as the distance between the RF device and the affected equipment is increased.)
- If circumstances dictate the emergent use of a two-way radio in a PDE location, transmitting near any energized medical device should be avoided at all times.
- If output levels are adjustable, use the lowest setting possible which still facilitates acceptable communications.

If any equipment in the vicinity of the radio user should malfunction while the radio is in use, use of the radio is to be terminated immediately! Any further use should be conducted from a non-PDE location.

Review

The Center for Devices and Radiological Health (CDRH), a division of the FDA, in cooperation with the Association for the Advancement of Medical Instrumentation (AAMI) has also developed guidance standards for medical device manufacturers seeking pre-market approval.

Clinical Engineering will continue to review technical publications and standards for trends and updates relating to this issue and communicate noteworthy advances to the Safety Committee. Clinical staff may contact Clinical Engineering (phone 681-2525) if they suspect that the function of a medical device has been affected by an EMI generating device. Clinical Engineering will follow up on any incident and report to Risk Management.

Exceptions

- Very low power mini-cell systems or Family Radio Service two way radios may be used throughout the Health System in order to facilitate the emergent nature of the healthcare business. The devices have a



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very small operating range, emit less power than handheld cell phones and are much less likely to cause interference with medical devices.

NOTE: Air waves are unprotected and conversations may be intercepted by other telephones. Refrain from the disclosure of protected health information during cellular phone conversations to prevent the breach of a patient's right to confidentiality.

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