

MARCER Medical Communications System and Procedures

Overview

The MARCER medical communications system is a two-way radio and telephone patch communications system. The backbone of the system is 800 MHz radios in all Kansas City metropolitan area hospitals. The system allows EMS field crews from over thirty agencies to communicate with Kansas City area hospitals. This communication with hospital emergency physicians is primarily designed to facilitate pre-hospital patient care issues and alert the hospitals to unusual situations, such as mass casualty incidents (MCIs) or hazardous materials incidents requiring decontamination. MARCER operates two radio systems, an 800 MHz trunked radio system and a UHF Medical Channel radio system. Neither system relies primarily on telephone lines, thereby decreasing the possibility of system failure due to telephone system overload or technical problems. Both of these systems are routed through the Johnson County, Kansas Emergency Communications Center (referred to as "Control") primary and backup facilities.

The system operates primarily on 800 MHz trunked radio frequencies used under agreement with three area governmental agencies, Johnson County, Kansas, the Unified Government of Wyandotte County/Kansas City, Kansas and the Board of Public Utilities joint communications system, and the Raytown, Missouri Police Department. This system has virtually 100% mobile coverage throughout the metropolitan area. Portable radio coverage is also virtually 100% in Johnson and Wyandotte counties with coverage decreasing as the distance from those areas increases. Control monitors the MARCER 800 MHz Control talk group and assists with communications as needed. Control can also provide telephone to hospital patches in situations where the EMS unit has equipment problems. This system is able to handle up to twenty-four EMS-unit-to-hospital conversations simultaneously.

For itinerant ambulance services, MARCER also maintains communications on UHF frequencies reserved by the Federal Communications Commission for medical communications. MARCER utilizes Med Channels 1 through 3 for ambulance to hospital patching and Med Channel 10 for ambulance to dispatch communications. Control monitors Med 10 and sets up ambulance to hospital patches as needed. This system utilizes four radio repeaters distributed throughout the metropolitan area to pick up transmissions from the EMS units, which are then patched to 800 MHz channels for hospital communications. This system is limited to three simultaneous EMS-unit-to-hospital conversations.

All communications on both systems are recorded. Each hospital is assigned to a specific talk group to facilitate private communications with field units. The system has the ability, through Control, for call alerting. This facilitates the communications process when circumstances in the hospital prevent personnel from monitoring the system. Also, Control has the ability to dynamically link hospital talk groups, which allows multiple hospitals or all the hospitals to be linked, such as might be required during a MCI.

The System

As outlined, the 800 MHz system relies on trunked radio systems licensed and maintained by three entities, Johnson County, Kansas (“JOCO”), the Unified Government of Wyandotte County/Kansas City, Kansas and the Board of Public Utilities joint communications system (“KCK”), and the Raytown, Missouri Police Department (“Raytown”). The Johnson County system is the primary system, with the KCK and Raytown systems providing coverage for facilities where Johnson County’s system is weak.

Each hospital is equipped with a base station radio and desk set programmed with a common announcement talk group and their hospital-specific talk group on the three radio systems. The hospital radio scans their three talk groups with the Johnson County system as the primary talk group. When a call is received, the hospital picks up the microphone and starts transmitting. Should the unit be calling on a channel other than the primary, the hospital would have to switch over to the applicable talk group if the radio has resumed scanning. Should one radio system experience a failure, the hospitals will be contacted on the announcement talk group and instructed to switch their radios to a functional system until repairs are made.

EMS units are equipped with a mobile radio programmed with the twenty-five hospital talk groups on the three radio systems, for a total of seventy-five talk groups. In addition, each radio is programmed with the MARCER 800 MHz Control talk group and the four tactical channels. Some agencies may also choose to provide portable radios with the same programming, however portable radio coverage considerations should be taken into account before making this purchase.

Some EMS agencies may chose to only program the MARCER 800 MHz Control talk group, the four tactical channels, and the talk groups for their local hospital(s). Primarily this will be an agency that already operates on 800 MHz and does not have the radio capability to program all of the seventy-two talk groups. The number of agencies with this limited capability is small and should diminish as those agencies upgrade their radios and program all of the talk groups.

Viewing the screen on the radio identifies the talk groups themselves. Users should refer to their radio documentation to determine how the hospitals are identified. The hospitals included in the system are: Baptist Lutheran, Children’s Mercy, Independence Regional, Kansas City VA Hospital, Kansas University Hospital, Lawrence Memorial Hospital, Lee’s Summit, Liberty Hospital, Medical Center of Independence, Menorah, North Kansas City, Olathe Medical Center, Overland Park Regional, Providence Medical Center, Research Hospital, Research Belton Hospital, St. Luke’s/Shawnee Mission, St. Joseph’s, St. Luke’s Barry Road, St. Luke’s Plaza, St. Luke’s Smithville (may not be monitored regularly), St. Luke’s South, St. Mary’s Blue Springs, Truman Medical Center Lakewood, and Truman Medical Center Hospital Hill.

Procedure

The procedure for EMS unit to hospital communication varies slightly depending on the method the EMS unit has available. MARCER has the expectation that local EMS units utilize the first method. This provides the maximum communications capability with minimal technological intervention. The methods for communication are:

- **Method 1:** EMS units on-scene or transporting to an area hospital will contact the hospital directly on the 800 MHz system. The unit will switch to the desired hospital talk group on the Johnson County system, wait ten seconds to ensure there are no other units utilizing that talk group, and initiate a call to the hospital. When the communication is complete, the EMS unit will announce they are “clear”. After the radio call, there is no need to “clear” the talk group with Control. If the EMS unit cannot access the Johnson County system due to poor reception, simply switch to one of the other systems and initiate the call. When making a call from either the Raytown or Unified Government system, the call to the hospital should indicate which system is being used so that the hospital can select the proper system for their reply (“Independence Regional, this is CJC Medic 1 on Raytown” or “KU, this is KCK Fire Pumper 1 on KCK”). No patching or linking is required with this method. Should the unit encounter difficulties contacting the facility, they will switch back to Control’s talk group and ask for assistance. Control has the ability to access the hospital’s talk group and alert the hospital.
- **Method 2:** EMS units with UHF Med Channel radios will contact Control on Med 10. They should provide their service agency name and unit number, their current location, and the facility with which they would like to communicate. Control will assign the closest available Med Channel and link that channel to the hospital’s talk group. The EMS unit will switch to that Med Channel and conduct their communication. When they are finished, the EMS unit will return to Med 10 and clear the channel.
- **Method 3:** Should an EMS unit be unable to contact Control on the calling channel, such as not having a radio available or being located in an area without a radio signal, they may call Control by telephone at 913-362-7440 and request a patch to the hospital. Control will patch the telephone line to the hospital’s talk group. When the communication is complete, the EMS unit will announce they are “clear” and will hang up. The EMS unit then needs to call Control on 913-432-1717 and advise they are clear of the patch. Users should be aware that this method will be unavailable in the event of a telephone system failure or overload, such as would occur during an area disaster. No agency will be permitted to use this method as their only method of EMS unit to hospital communications. Users should also be aware that there are only two lines available for this method.

In the event that an EMS unit requires communication with multiple hospitals, such as that necessary during a MCI, they will advise Control on the calling channel of their situation and the facilities with which they need to communicate. Control will link all of the facility talk groups and advise the EMS unit to switch to a tactical talk group for their communications. Control will also call alert all of the linked facilities, advising them of

the situation and to stand-by for additional information. Tactical talk groups may also be utilized for on-scene interagency communications during a mass casualty incident. Coordination must be done through Control.

General Radio Tips

- Always listen to a talk group before transmitting so as not to cover or interfere with another unit on the same talk group.
- If told to stand by, be patient. Control may be on another talk group with another unit.
- Your agency's radios may be programmed with a "talk permit" tone, a triple beep that means the user has accessed the system. Users should key their radio and wait for this tone before beginning to speak. This holds true for each time the transmit button is pressed.
- Radio transmissions should be kept as brief as possible, as other units may need to talk to the same facility and may have a more critical patient. In this system, it is not possible to dedicate a specific talk group to a single unit's use. Each unit should give their report, get the orders they need, and clear the talk group. They are free to call back later with an update on their patient.
- Occasionally a hospital may be busy working with an EMS unit on a critical patient. Each EMS agency should have a written policy identifying other hospitals that can be contacted for medical control and who are willing to relay information the receiving hospital.
- There is a $\frac{1}{2}$ to $\frac{3}{4}$ of a second delay when transmitting on the UHF med channels. Two suggestions to keep this delay from affecting your communications: key the microphone and take a breath before speaking; and use the "hey you, it's me" format for calling the hospitals. For example, by the time you take a breath and say "KU this is Med-Act 1143", the receiver at the hospital will have opened. This delay will occur every time you key the microphone and is more prevalent on the UHF to 800 MHz patch.
- It is important to notify other users when a communication is complete. When the communication is complete, the EMS unit will announce they are "clear" on the hospital's talk group.
- Both Method 2 (UHF to 800 MHz) and Method 3 (Phone to 800 MHz) require notifying Control when the patch is clear.
- If the hospital will not answer after several attempts to call, contact Control on their talk group and ask them to call-alert the hospital. If, after several tries, the hospital still will not answer, re-contact Control and ask them to call the hospital by phone.
- When using the Unified Government or Raytown systems, be sure to announce this when calling the hospital ("Independence Regional, this is CJC Medic 1 on Raytown" or "KU, this is KCK Fire Pumper 1 on KCK"). The hospital will have to switch to that talk group before communications can be successful. Try calling the hospital two to three times before switching over to Control and asking for assistance.