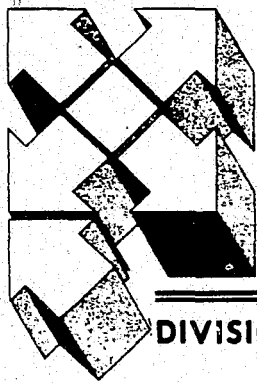


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# MERCI

## MEDICAL EMERGENCY COMMUNICATIONS OF ILLINOIS

DIVISION OF EMERGENCY MEDICAL SERVICES AND HIGHWAY SAFETY  
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

### MEDICAL EMERGENCY COMMUNICATIONS OF ILLINOIS ("MERCI")

By: Daniel W. VonBerg, P.E.  
E.M.S. Communications Coordinator

On July 1, 1971 the Illinois Statewide EMS Program was initiated. One of the first major steps was the designation of geographically situated, locally selected, emergency medical care hospital centers specifically dedicated, operated, and equipped to provide 24-hour advanced emergency medical treatment within seconds of a patient's arrival. With this came specialized training for rescue and transportation personnel, bigger and better equipped ambulances, and a realization that physician-directed care must extend from the emergency hospitals to the side of the critically sick or injured.

Late in 1972, another element was added to the Illinois Emergency Medical Service (EMS) system: a coordinated statewide communications subsystem, called "MERCI" (Medical Emergency Communications of Illinois). Its communication network includes: citizen input and response (911

and CMED); hospital-to-hospital and hospital-to-medical resource; ambulance to CMED and ambulance-to-hospital; fire, police, and disaster relief interfaces; and Medical Control emergency communications control centers. The MERCI system is based on day-to-day emergencies involving one or more persons; it can also handle major disasters with a few procedural changes. MERCI is the unifying medium for emergency medical services in Illinois and vicinity.

### CITIZEN INPUT AND RESPONSE

Most citizen input to the EMS system is through the telephone. Where no central telephone input is available, the citizen is left to his own devices. The telephone directory, if available, lists from several to a few hundred emergency numbers. Before a call can be placed, the caller must answer questions such as: "Where am I?", "What is my problem?", "What type of emergency aid do I need?", "Who in this area handles what type of aid?", "Do I have a dime for the phone?", etc. If the citizen overcomes these hurdles, he usually has lost from 5 to 20 minutes of life-saving time, and even then he may not get proper aid.

The answer to this problem is an easy-to-remember, single telephone number, emergency system such as 911 combined with emergency central dispatch of all police, fire, medical, etc. responses. Many Illinois areas already have 911 and many others are working on it.

The Division of EMS and HS has been working on 911 and CMED (Central Medical Emergency Dispatch) since late 1972. Other state agencies have also been working on 911 as well. September of 1975 was an Illinois bench mark for that was when PA 79-1092 was signed into law. Illinois Public Act 79-1092, better known as the "911 law," mandates that every jurisdiction in Illinois have operational 911 PSAP's (Public Safety Answering Point) and central police, fire, medical, rescue and other emergency service dispatch by 1985. The ICC (Illinois Commerce Commission)<sup>4</sup> is the lead 911 agency in Illinois and it



FIGURE 1

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plans to complete the statewide technical and operational standards by the end of 1977. The law requires all jurisdictions to submit their tentative plans to the ICC for approval by the end of 1979. Final plans are due by the beginning of 1982. Excluding the Chicago metro area, all plans must be submitted by county.

In anticipation of the law the ICC using ILEC (Illinois Law Enforcement Commission) funds contracted with SRI (Standard Research Institute) for a statewide 911 study and plan. The SRI study and plan was accomplished under ICC's direction and the help of a 911 Advisory Panel. The 911 Advisory Panel is composed of representatives from police, fire, telephone, etc., state associations and government bodies such as the Illinois Department of Public Health's Division of EMS and HS. SRI's recommendations are drawn up in three manuals which go into some detail on the how, what and wheres including jurisdictional problem remedies.

What is 911? In its *ideal* state, any telephone in the country could be dialed 9-1-1 and the citizen's call would be automatically routed to the nearest 911 Public Safety Answer Point (PSAP). The person answering the 911 call would be trained to obtain the necessary dispatch information from even a hysterical caller. At the 911 PSAP Center, a computer\* would automatically print out the calling telephone's number and location as soon as the phone was answered. The 911 telephone complaint operator would know where the call was coming from even if the caller did not. After finding out what type of emergency assistance was required, he or she would dispatch the necessary aid either directly or through normal police, fire, or CMED (Central Medical Emergency Dispatch) dispatchers.

In addition the 911 operator would handle telephone crisis intervention calls directly or by the transfer-conference method. Plans also call for medical advice to be given by the 911 complaint operators and/or a conference emergency medical person (M.D. or R.N.) from a cooperating Illinois Comprehensive Hospital Emergency Department. All advice will be limited to cases where there is an absence of qualified medical personnel at the scene and immediate first aid is required to limit further injury, sustain life or otherwise decrease the medical dangers of death or permanent disability. Other advance level crisis intervention such as that for suicide prevention or run-away children will be handled by outside agencies\*\* as a local option.

Under the guidance of Capt. R.J. Miller<sup>3</sup>, the ISP (Illinois State Police) is involved in 911 and has set up within the Springfield State Police Academy a 911 Operator Training Center. The combined

curriculum for 911 telephone complaint operators and dispatchers is two weeks long (70 hours) and includes 20 hours of medical and crisis intervention training. This medical training module was developed within the Division of EMS and HS by Karen Kabat, R.N.<sup>2</sup> with a consultation of Daniel W. VonBerg, P.E.<sup>1</sup>.

In addition to the 911 complaint operator and dispatcher training the Illinois State Police will also offer 911 manager training. This manager training will cover some of the elements from the 911 complaint operator and dispatcher course as well as an overview of the law, 911 and central dispatch concepts, communications and facilities requirements, manning and personnel management, multiagency agreements, grant writing, system management, etc. In addition to the above, managers will be trained in the closest car and closest best suited BLS and ALS (Basic Life Support and Advance Life Support) concepts.

To compliment 911 citizen input, Illinois will be using NEAR's (National Emergency Aid Radio) CB (Citizen Band) radio program. Early this year ISP will have over 1200 highway cruisers and 21 base stations CB equipped. By 1978 all 1700 of their patrol cars will have CB. In addition to ISP vehicles many local police will join NEAR to give Illinois a very good rural citizen input to emergency aid.

The actual mechanics of a local plan may vary to suit local needs. In some cases, police and firemen answer 911 calls; in others, the 911 PSAP Center is an independent group with direct communication ties to police, fire, and CMED dispatchers. It is expected that 911 will be in use nationwide in the not too distant future.

## AMBULANCE COMMUNICATIONS

In 1970 less than four percent of all ambulances in Illinois had radio communications with a hospital. **MERCI** has changed that, and, by late 1974 Illinois had over one thousand ambulances and rescue vehicles with 4-channel multi-tone encode, high band, VHF voice radios. Generally their channels are as follows: Channel 1 is 155.340 MHz statewide ambulance-to-hospital; Channel 2 crossbands 155.340 MHz (225.7 Hz tone) transmit and 155.460 MHz receive for communication to 21 state police headquarters; Channel 3, where necessary, is local ambulance-to-hospital (155.160 MHz, 155.400 MHz,

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\*Simple 911 centers do not require computers but some advanced systems do utilize them and thereby have the above "ideal" type features.

\*\*Many local and national agencies provide crisis intervention service by telephone, some even have toll free 800 numbers. See "Hotline" 2nd Edition by Margaret D. Hyde, McGraw-Hill 1976.

etc.); and Channel 4 is typically 155.220 MHz for central ambulance dispatch. Channels 1 and 3 are emergency physician talk channels for giving physician-directed aid at the scene to the critically ill or injured. They are in some cases also used for the voice portion of telemetry. In February, 1977 there were 185 UHF paramedic units, as well, operating on Med 1 through Med 8 and using Med 8 as an inter and intra state itinerant channel with 210.7 Hz tone. These channels further allow the physician to make a preliminary triage so that he can direct the ambulance to the hospital that can best care for the victim. Directing the ambulance to the most suitable hospital is done according to Areawide EMS Plans (see *Trauma Center Newsletter*, Feb., 1973) and the physician's professional judgment.

The **MERCI** system now has 54 coordinated **MERCI** Net Hospital VHF Radio Base Stations. They are geographically located (see Fig. 2) so that BLS (Basic Life Support) and ALS (Advance Life Support) units anywhere in Illinois can call a hospital for physician advice and direction. Radio-telephone patches from the **MERCI** Net Hospitals can be used to keep an ambulance in contact with a non **MERCI** Net Hospital or a directing physician even though the vehicle leaves the radio reception area of the local **MERCI** Net Hospital. These stations are configured for tone encode/decode. Digital dials are no longer allowed to be used by Illinois vehicles. All **MERCI** Net Base Stations have all call tone decode 210.7 Hz. This tone has been installed for itinerant vehicles. 210.7 Hz has been accepted as the All Call for many states even those using digital dial systems.

The NCCC's throughout the state act as coordinating medical control centers, keeping track of bed and hospital medical equipment, personnel capabilities, blood, drugs, and other supplies for their net area. This information will be maintained and used for coordinating minor and major medical disasters. **MERCI's** medical coordination should even out over-crowded emergency departments by effective triage of critical and non-critical patients. The lack of inter-hospital coordination, which in the past allowed one hospital's emergency room to become overcrowded while other hospitals in the vicinity stood idly by, can no longer be justified. Local disaster agencies such as the Chicago Fire Department will still be in charge of disasters, but they will be assisted by **MERCI** for essential medical communications.

Radio and interagency communications in general are not an expertise that hospital personnel usually have. Very few medical institutions have radio technicians or trained radio operators. For this reason the Division of EMS and HS has developed hospital communication training.

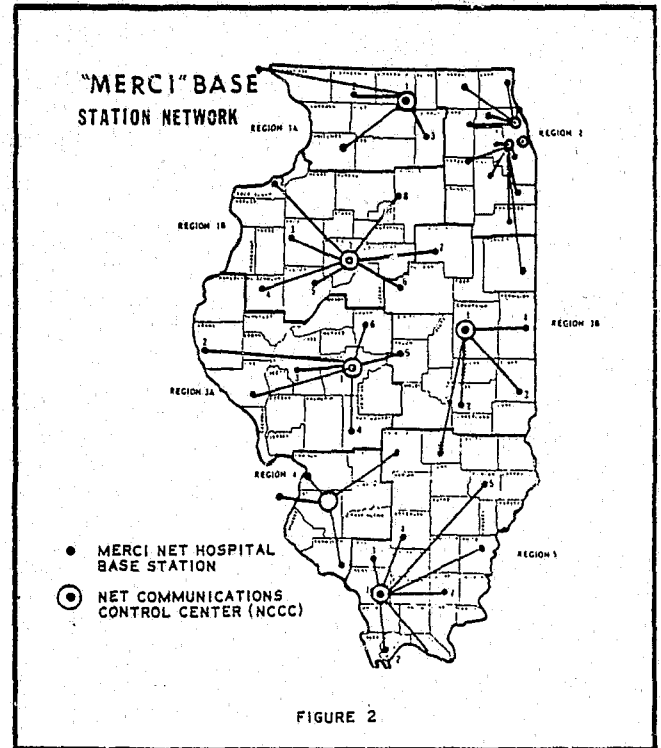


FIGURE 2

The Basic Medical Communicator Course is intended for hospital radio operators who use their radios for ambulance-to-hospital, hospital-to-hospital, and hospital-to-medical resource. The Basic Course consists of three parts, pre-classroom assignments, eight hours of classroom work, and two hours of radio simulator workshop. Pre-classroom assignments, which are mailed out 20 days in advance of the class, include the reading of the *"Communications Manual and Rule Book for MERCI,"* the taking of a self-corrected examination, and a written assignment. Our reason for requiring students to thoroughly read and pre-study our Communications Manual before the course actually starts is that this allows us to put the course on in only eight hours. The final portion of our Basic Course is the two hour simulator training.

In the preparation stage is a two hour all audiovisual course module for the EMT/A training. The tapes and slides of this presentation are meant to train the ambulance attendant on the proper uses of his communications equipment, local and systemwide procedures. Again, examinations are given.

The training materials for the first medical training course is comprised of an 8½ x 11 binder, six tape cassettes, 230 slides, and a dual console radio simulator. We do not have spare copies of the above materials for distribution. For further information concerning these training materials we suggest contacting Mr. Joseph Betzer of Betzer Productions<sup>6</sup>.

Illinois hospitals, in addition to being equipped with radio-telephone patches, also have special dial phones for emergency interconnections. These phones are usually used to notify non-radio equipped receiving hospital's emergency room of radio information such as the patient's arrival time, condition, care, and medication given at the scene. They allow the radio physician to talk to the non **MERCI** Net Hospital receiving physician so that necessary preparations can be made before the patient arrives. The special phone, combined with the **MERCI** phone patch, provides every hospital with radio capability without the need for radio equipment or trained radio operators. The **MERCI** radio/phone patch allows any telephone which is dialed or has dialed in to become a radio control terminal. **MERCI** gives all Illinois hospitals and emergency medical vehicles an economical solution to 24-hour radio service anywhere in Illinois and vicinity. The basic parameters and rules have been set for paramedic activities and UHF radio. These are: (1) Operation under the "Paramedic" Law (P.A. 77-2295) requires advance approval by the Illinois Department of Public Health. (2) All approved programs must be coordinated within areawide plans. (3) Communications control, including channel designation, must be coordinated with the Illinois Department of Public Health via **MERCI** net base stations. They must further operate according to the latest revision of the "Communications Manual and Rule Book for **MERCI**,"\*\*\* (4) All radio transmitters are to be licensed by the Federal Communications Commission (FCC) for medical telemetry. (5) Telephone should be used wherever possible. There are 18 approved and operating UHF paramedic sub-systems in Illinois.

### MEDICAL CONTROL COMMUNICATIONS

Each of **MERCI**'s 54 radio base stations is connected to one of nine medical control centers called **MERCI** Net Communications Control Centers (NCCC's). One such NCCC is located at St. Francis Regional Hospital Center in Peoria. It can remote control, via dedicated lines, the **MERCI** net radios of all **MERCI** net hospitals in Region 1B (refer to Fig. 2). The remote radio control capability is a backup for local hospital personnel during times of ER overload. These same dedicated lines are used for instant intercom between the ER's of the **MERCI** net hospitals, and they form the primary communications

\*\*\***MERCI** rules and procedures are set forth in "Communications Manual and Rule Book for **MERCI**." Copies of this book have been sent to every Illinois hospital administrator and the chairman of EMS Planning Groups. A very limited number of copies are available through Daniel W. VonBerg, P.E., EMS Communications Coordinator, Illinois Department of Public Health, 535 West Jefferson Street, Springfield, Il 62761.

link for both minor and major disaster relief coordination from the NCCC. In addition to these dedicated phone lines, **MERCI** radio hospitals are linked by hospital-to-hospital radio. This point-to-point radio is part of the Illinois Hospital Association's disaster relief system operated on 155.280 MHz.

### CONCLUSION

**MERCI** forms a framework for statewide communications on which the local areawide plan and personnel can build. Together with sound organizational procedures and coordination, the efficient use of telecommunications can greatly ease citizen entry into the medical system, reduce response time of Basic and Advance Life Support (BLS, ALS) units and make possible immediate physician-directed care at the site of an emergency. It can, in effect, bring the emergency room to the side of the patient and ensure that, under physician direction and after resuscitation and stabilization, the patient is transported quickly, but a safe speeds, to the hospital best suited to care for him.

**MERCI** is continuing to be developed by the Division of Emergency Medical Services and Highway Safety. It includes regionally located EMS Communications Agents who are available to local agencies for medical communication consultation and training, and to serve as *ex officio* members of EMS planning groups.

### INFORMATION SOURCES

The below listed personnel may be contacted for further information concerning subjects in this article. To speed answers to your inquiries, please be specific with your questions.

- 1. EMS Communications**  
Daniel W. VonBerg, P.E.  
EMS Comm. Coor.  
Ill. Dept. of Public Health  
Div. of EMS & HS  
535 W. Jefferson  
Springfield, Il 62761  
(217) 782-5278
- 2. 911 Med. Oper. Training**  
Karen M. Kabat, R.N., Coor.  
Rape Victims' Assist. Prog.  
Ill. Dept. of Public Health  
Div. of EMS & HS  
535 W. Jefferson  
Springfield, Il 62761  
(217) 782-5278
- 3. State Police Training & CB**  
Capt. R. Joseph Miller  
Illinois State Police  
101 Armory Bldg.  
Springfield, Il 62706  
(217) 782-6267
- 4. 911 in General**  
Tim D. Fox  
911 Staff  
Ill. Commerce Comm.  
527 E. Capitol Ave.  
Springfield, Il 62706  
(217) 782-4911
- 5. State Systems Coordination**  
LeVern Whitt, Chief  
Dept. of Gen. Serv.  
Div. of Telecommunications  
State Office Bldg., Rm. 702  
Springfield, Il 62706  
(217) 782-3600
- 6. Training Materials**  
Mr. Joseph Betzer  
Betzer Productions  
450 E. Ohio St.  
Chicago, Il 60611  
(312) 664-3257

**END**