Michigan Department of Community Health

Emergency Medical Services
&
Trauma Systems Section

MEDCOM Requirements

January 2011

MEDCOM Requirements
January 2011

Index

Introduction

Michigan's Public Health Code requires the Michigan Department of Community Health (MDCH) to "…plan, develop, coordinate, and administer a statewide emergency medical services communications system." (MCL 333.20910(d))

This document is created and updated periodically under that mandate.

Compliance with the requirements set forth in this document is a condition of licensure for EMS life support agencies and hospitals.

These requirements have been reviewed by an ad-hoc committee of public safety communications professionals from across the State, as well as by the Emergency Medical Services Coordination Committee. The EMSCC members are appointed by the Director of MDCH to advise the Department on all matters related to EMS operations in Michigan.

Important note on narrowbanding

The FCC deadline for narrowbanding of all radio use in the VHF and UHF bands is rapidly approaching. Narrowbanding will essentially "cut in half" existing channels, to create nearly twice as many available channels. No channels or frequencies will be lost as a result, but many older radios will no longer meet the technical requirements for use imposed by the FCC.

The Department, in the coming months, will provide further information and required steps. It is anticipated that narrowbanding of the Statewide HERN radio system will take place regionally, with each Medical Control Authority making the changeover in concert with the narrowbanding of other public safety communications systems in their region. It is anticipated that narrowbanding will be completed by early 2012, several months ahead of the FCC deadline.

Those MCA systems using UHF MED Channels are free to change to narrowband emissions on those systems at their discretion, with notice to the Department.

EMS agencies are advised to inventory their radio equipment and plan for the budgetary impact of this transition.

Questions may be directed to your local radio service provider or to the Department's EMS Communications Consultant at emsradio@core.com

Michigan MEDCOM Requirements

Medical Control Authority (Hospital) Requirements

Note: *The term "Hospital" as used in this section includes the following:*
-- an acute care hospital licensed under part 215 of the public health code,
-- a freestanding surgical facility licensed under part 208 of the code,
if that facility is approved to receive emergency patients via EMS by the local Medical Control Authority.

R 1.01 Each Medical Control Authority shall include in its Department approved protocols an EMS communications plan. This plan shall describe the day-to-day methods and systems to be used for EMS to hospital medical direction communication, and must also include plans for EMS communications during disaster or other extraordinary situations.

R 1.02 Any changes made to the MCA communication system shall be coordinated between all affected hospitals, life support agencies, and MCA's prior to implementation. The Department, through its communications consultant, shall be consulted before implementation of any system changes.

R 1.03 Prior to the use of MEDCOM communications equipment, each hospital receiving emergency patients shall provide training to their staff sufficient to assure proper operation of the MEDCOM radio components at that facility. Staff shall receive this training prior to any operation by them of MEDCOM equipment.

R 1.04 All voice communications between EMS and hospitals, related to patient care, shall be electronically recorded. These recordings shall be maintained for not less than 60 days. These recorded communications are intended to be used for system Quality Improvement activities, and may be reviewed under the MCA's Professional Standards Review Organization procedures.

R 1.05 Hospitals shall be equipped to communicate by voice with all basic, limited advanced and advanced life support vehicles within the MCA region, as specified in the communication protocol of that MCA. Communication shall be provided to at least 90% of the geographic area of the MCA, 90% of the time, to and from a mobile or portable EMS radio (See Rule 2.12). Communication quality shall be usable and understandable, without significant noise or interference.

The communication system shall utilize frequencies designated by the FCC for public safety communication, and shall be operated by a hospital, MCA, life support agency, or other public safety entity.

R 1.06 Each hospital must provide at least one radio system or channel dedicated to EMS to hospital communication which is configured to provide an audible output of all EMS communications at all times, at one or more continuously monitored locations. This system shall not use equipment that is capable of "scanning" or manually selecting other receiver channels or talkgroups.

R 1.07 If the MCA communication protocol allows for primary or secondary use of public telephone circuits for MEDCOM communication, the hospital receiving such telephone communication shall use only a dedicated telephone number for that purpose. This telephone line shall be electronically recorded, per Rule 1.04. The dedicated telephone number shall be furnished to all EMS agencies within the MCA and published by the Department.

R 1.08 Hospitals shall be equipped for effective local area communication on the HERN frequency, 155.34 MHz. CTCSS (continuous tone coded squelch system) tones will be assigned by the Department as the "receive" tone for each hospital. All hospitals shall transmit using either 97.4 Hz or none as a transmit CTCSS code. This frequency is reserved for use only for communication between EMS and hospitals regarding provision of patient care.

R 1.09 Hospital HERN radio systems shall be limited to no more than 50 watts transmitter output power, nor more than 150 watts ERP from the antenna, whichever is less, if located south of a line running roughly from Ludington to Tawas City. Antenna height south of this line shall not exceed 125 feet above ground or 200 feet above average terrain, whichever is less.

R 1.10 The following types of communication are not permitted on the HERN channel, 155.34 MHz, in Michigan: paging or dispatch communications of any type, telemetry or data signaling, and automatic Morse ID systems. All station transmitter identification on the HERN channel shall be via voice announcement at the conclusion of EMS communication.

R 1.11 At their option, a medical control authority may utilize for medical direction purposes any other frequency or radio system operated by the MCA, a hospital, a life support agency, or a public safety entity. Such systems include the Michigan Public Safety Communications System (MPSCS, the "*State 800 system*"); systems operated by local units of government, UHF MED channels, or other frequencies or radio systems properly licensed by the FCC for EMS or public safety use.

Any additional frequencies or systems used for medical direction communication will not replace the base requirement of communication capability on the HERN channel as outlined in these rules.

R 1.12 All components of the hospital EMS communication system shall be provided with back-up electric power in the event of loss of commercial power. All equipment shall be equipped with industry accepted lightning and surge protection devices.

EMS Agency/Vehicle
Medical Direction Communication Requirements

Note: The following standards apply to all EMS vehicles, transporting or non-transporting, licensed at the **BLS, LALS, or ALS** level.

R 2.01 The radio communications system installed in an EMS licensed vehicle shall comply with any requirements contained in the communication protocol of the local MCA. The communications system shall provide for voice communication with every hospital (or designated MEDCOM communications location) within the local MCA region, without relay of that communication by dispatch or other entity.

R 2.02 All EMS vehicles, in conjunction with the MCA hospital-based EMS communication system, shall be capable of vehicle to hospital communication to and from 90% of the geographic service area of the EMS agency, 90% of the time.

R 2.03 Any radio used for Medical Direction communication in a licensed EMS vehicle shall provide an “alpha-numeric” display; or, there shall be readily available to the operator a printed reference document showing the relation of radio channel numbers to channel name or function.

R 2.04 All EMS vehicles shall be equipped for operation on the FCC designated VHF public safety band. The radio equipment used to meet this requirement shall be capable of operation on at least 16 channels, using analog wideband and narrowband (12.5 KHz) operation. (Wideband only until January, 2013, per FCC rule)

R 2.05 An EMS licensed vehicle that was licensed and in service prior to April 2004, and which was not equipped for operation on the VHF band prior to that date, is exempt from Rule 2.04.

R 2.06 All EMS vehicles not exempt under Rule 2.05 shall be equipped for operation on 155.34 MHz, the Michigan HERN channel. This channel shall be configured for communication with at least one hospital within the MCA region.

R 2.07 All EMS vehicles not exempt under Rule 2.05 shall be equipped for operation on 155.355 MHz. This frequency shall be designated “VMEDTAC” and is used for on-scene coordination of EMS resources. CTCSS code 210.7 Hz is used on this frequency. Only mobile and portable use is authorized on this frequency.

R 2.08 All EMS vehicles not exempt under Rule 2.05 shall be equipped for operation on the FCC designated VHF national interoperability channels:

-- 155.7525 "VCALL10"
-- 151.1375 "VTAC11"
-- 154.4525 "VTAC12"
-- 158.7375 "VTAC13"
-- 159.4725 "VTAC14"

CTCSS code 156.7 Hz is nationally designated for transmissions on these frequencies. Carrier squelch is recommended for receive.

R 2.09 EMS vehicles equipped for operation on UHF MED Channels, or the 700/800 MHz band, shall be equipped for operation on the FCC designated "UCALL40" and "UTAC41-43", or "8CALL80" and "8TAC91-94", as appropriate.

R 2.10 The medical direction communication system in all EMS vehicles shall provide for voice communication with every hospital (or designated Medical Direction communications location) within the local MCA region; and, to any hospital outside of the local MCA to which the vehicle transports emergency patients. Communications covered under this Rule must occur without relay of that communication by dispatch or other entity.

R 2.11 Prior to use of Medical Direction communications equipment by EMS personnel, each life support agency shall provide training to those persons sufficient to assure proper operation of the radio components used by that EMS agency.

R 2.12 Limited Advanced and Advanced Life Support vehicles, in addition to the above, shall also provide for reliable voice communication from outside of the vehicle ("patient side") to hospital. This communication may be provided with the use of a portable communication device repeated through the vehicle radio system, or with a stand-alone portable radio communicating directly with the hospital radio system.

This Rule may be waived by an MCA with adoption of an approved protocol eliminating the requirement for patient side communication.

EMS Agency/Vehicle Dispatch Requirements

Note: The following rules apply to all licensed EMS vehicles and life support agencies, transporting and non-transporting, at **all license levels**.

R 3.01 Licensed EMS vehicles shall be equipped with a system of two-way voice communication for dispatch activities.

R 3.02 Dispatch radio systems using other than public-safety owned and operated equipment in a channel-sharing environment (i.e. Nextel, cell-phones, local commercial trunked radio systems) shall maintain evidence of priority system access or be able to demonstrate system access on at least 99% of all transmission attempts.

R 3.03 The dispatch communication system provided in each life support vehicle shall comply with MCA dispatch and disaster communication requirements, if any. It shall also comply with applicable interoperability plans of the local governments where the vehicle is in operation.

R 3.04 The dispatch radio system in each licensed vehicle shall be capable, working with the systems fixed infrastructure, of providing reliable coverage to at least 90% of the geographic service area of the life support agency, 90% of the time.

R 3.05 Each life support agency shall assure the electronic recording of all requests for emergency medical services from the public, and dispatch communication.

Air Ambulance and Aircraft Transport Vehicles

"Air Ambulance" means a rotary-wing aircraft that is licensed and used to provide transportation and BLS, LALS or ALS services to a patient.

"Aircraft Transport Vehicle" means an aircraft that is primarily used to provide patient transportation between health care facilities and typically provides patient care under orders issued by the patient's physician.

R 4.01 An air ambulance shall comply with Rules 2.01 through 2.11, and Rules 3.01 through 3.05.

R 4.02 Pre-hospital medical direction communication from an air ambulance to a receiving hospital may occur on any frequency or system properly available for that purpose. Use of the HERN channel while in the air should be limited to prevent wide-area interference on that frequency.

R 4.03 Per FCC rule, 47 CFR 22.925, the use of a cellular telephone or similar device on board an aircraft in flight is prohibited.

R 4.04 Aircraft transport vehicles are to use only FCC assigned aircraft frequencies, or systems designated by the FCC for public air to ground communication. Aircraft transport vehicles will not normally use FCC designated land mobile frequencies.

Frequency Use Standards

R 5.01 Radio frequencies designated by the FCC for use by emergency medical services (PM) shall be licensed and used in Michigan according to the standards listed in Appendix One of this document.

Waivers

R 6.01 A licensed EMS agency or hospital may apply to the Department for a waiver of any portion of these rules. Waivers will be granted only upon a showing of significant economic or other hardship that outweighs the benefit to the public created by full compliance with these rules.

Appendix One

Michigan Emergency Medical Services Communications System

MEDCOM Frequency and CTCSS Requirements

The Department has the responsibility under FCC rules (47 CFR §90.20) to coordinate use of frequencies specified in the rules as reserved for "Emergency Medical" use and listed in FCC frequency allocation tables with the designation "PM". Emergency Medical frequencies will be approved by the Department for use in the State of Michigan as follows:

VHF Channels

150.775 MHz	Mobile and portable use only; vehicular repeaters
150.790 MHz	Mobile and Portable use only; vehicular repeaters
150.805 MHz	Mobile and portable use only; vehicular repeaters
155.325 MHz	Dispatch of EMS resources, base and mobile use
155.34 MHz	Reserved for communications between hospitals and EMS personnel, for the purpose of coordination and instruction regarding care and transport of patients in the rendition or delivery of emergency medical services. Dispatch and paging operations are not allowed on this frequency. (Commonly known as the HERN channel)
155.355 MHz	Mobile and portable only; On-Scene Coordination of EMS resources; mutual aid; tactical operations. "VMEDTAC"
155.385MHz	Primary use: Rotary Wing Ambulance Dispatch Secondary use: regional coordination between hospitals, health departments, and Emergency Operating Centers during times of disaster and large multi-casualty incidents
155.400 MHz	Within the SE Michigan counties of St. Clair, Macomb, Oakland, Wayne, Monroe, Washtenaw and Livingston, this frequency is reserved for disaster coordination purposes and as a secondary HERN channel. No dispatch or paging operations will be allowed in SE Michigan. Outside SE Michigan, the frequency is available for dispatch of EMS resources, base and mobile

"Emergency Medical" (PM) Channels offset 7.5 KHz from those listed above will be approved for use as indicated for the "PM" channel immediately below it.

Notes:

- The Department recommends that each mobile VHF radio used in EMS operations in Michigan be configured for operation on all CTCSS tones used on the HERN frequency in Michigan. An up-to-date directory is available from the Department's Communications Consultant (emsradio@core.com)
- Base stations transmitting on 155.34 MHz shall transmit using a "PL" code of 97.4 Hz. Receive "PL" will be as individually assigned by the Department. It is recommended that mobile and portable units use no "PL" (carrier squelch) on receive to prevent unintentional interference on this frequency.
- Stations transmitting on 155.400 MHz within 100 miles of the SE Michigan counties listed above must transmit using a "PL" code of 97.4 Hz or other "PL" as approved by the Department to avoid interference to SE Michigan HERN operations.
- Operations currently FCC licensed and in operation as of the implementation date of these requirements may continue existing uses of these frequencies.
- The State of Michigan maintains FCC licensure on 155.34 and 155.355 MHz for all mobile and portable EMS operations. Michigan licensed EMS agencies are authorized, per FCC rule 47CFR 90.421, to operate mobile and portable transmitters for EMS uses outlined in this document on these frequencies without further FCC licensing. Mobile use of the national interoperability channels does not require additional FCC licensing.

UHF Channels

453.075 MHz Base or Mobile, dispatch of EMS resources

453.125 MHz Base or Mobile, dispatch of EMS resources

453.175 MHz Base or Mobile, dispatch of EMS resources

- 6.25 KHz Narrowband "offset" PM channels adjacent to the above frequencies will be approved for similar EMS dispatch uses, with appropriate emission limits per FCC rules.

- Operations currently FCC licensed and in operation as of the implementation date of these requirements may continue existing uses of these frequencies.

UHF "MED" Channels

Channels and CTCSS codes will be assigned by the Department. The Department's Communications Consultant should be involved in any planning for new or changed UHF MED Channel operations.

In order to minimize the possibilities of co-channel interference between Medical Control communication systems, the Department will designate a channel selection scheme for those areas using multiple UHF channels.

The FCC has designated the following “MED” channels for communications in support of EMS activity. In Michigan, their primary use is for EMS to hospital medical direction communication and for public health coordination activities during times of disaster. The Department will designate the channels and CTCSS tones to be used in each geographic area.

For all MED Channels, use of 6.25 KHz channels is not anticipated until all available 12.5 channels in a given area are used.

MEDCOM Channel Designator	Frequency Base	Mobile
MED 1	**463.000**	**468.00**
MED 11	463.00625	468.00625
MED 12	**463.0125**	**468.0125**
MED 13	463.01875	468.01875
MED 2	**463.025**	**468.025**
MED 21	463.03125	468.03125
MED 22	**463.0375**	**468.0375**
MED 23	463.04375	468.04375
MED 3	**463.05**	**468.05**
MED 31	463.05625	468.05625
MED 32	**463.0625**	**468.0625**
MED 33	463.06875	468.06875
MED 4	**463.075**	**468.075**
MED 41	463.08125	468.08125
MED 42	**463.0875**	**468.0875**
MED 43	463.09375	468.09375
MED 5	**463.100**	**468.100**
MED 51	463.10625	468.10625
MED 52	**463.1125**	**468.1125**
MED 53	463.11875	468.11875
MED 6	**463.125**	**468.125**
MED 61	463.13125	468.13125
MED 62	**463.1375**	**468.1375**
MED 63	463.14375	468.14375
MED 7	**463.150**	**468.150**
MED 71	463.15625	468.15625
MED 72	**463.1625**	**468.1625**
MED 73	463.16875	468.16875

MED 8	**463.175**	**468.175**
MED 81	463.18125	468.18125
MED 82	**463.1875**	**468.1875**
MED 83	463.19375	468.19375

The following frequencies are primarily authorized for use in the dispatch of medical care vehicles and personnel for the rendition or delivery of medical services. These frequencies may also be assigned for intra-system and inter-system mutual assistance purposes. Specific frequencies and CTCSS tones will be as assigned by the Department.

MEDCOM Channel Designator	**Frequency**	
	Base and mobile	**Mobile**
MED 9	**462.950**	**467.950**
MED 91	462.95625	467.95625
MED 92	**462.9625**	**467.9625**
MED 93	462.96875	467.96875
MED 10	**462.975**	**467.975**
MED 101	462.98125	467.98125
MED 102	**462.9875**	**467.9875**
MED 103	462.99375	467.99375

APPENDIX TWO

VEHICLE DESIGNATOR PLAN

It is the Department's desire to have all EMS agencies comply with the state numbering plan. To encourage uniformity for transport vehicles and to lessen confusion for hospital personnel, we encourage all services to adopt the plan. All vehicles would have a two digit by single letter by two or three digit designator. The first two digits identify the vehicle's county of origin listed on Table #1 below. The letter denotes the vehicle's Level of Care listed on Table #2 below, and the last two or three digits are the individual vehicle's identification number. For example, vehicle 41C11 or "Forty-one Charlie Eleven" would be Supervisory Vehicle Eleven from Kent County. All vehicle numbers are to be assigned by the service's local Medical Control Authority.

COUNTY NUMBER

01 Alcona	02 Alger	03 Allegan	04 Alpena	05 Antrim	06 Arenac
07 Baraga	08 Barry	09 Bay	10 Benzie	11 Berrien	12 Branch
13 Calhoun	14 Cass	15 Charlevoix	16 Cheboygan	17 Chippewa	18 Clare
19 Clinton	20 Crawford	21 Delta	22 Dickinson	23 Eaton	24 Emmet
25 Genessee	26 Gladwin	27 Gogebic	28 Gr Traverse	29 Gratiot	30 Hillsdale
31 Houghton	32 Huron	33 Ingham	34 Ionia	35 Iosco	36 Iron
37 Isabella	38 Jackson	39 Kalamazoo	40 Kalkaska	41 Kent	42 Keweenaw
43 Lake	44 Lapeer	45 Leelanau	46 Lenawee	47 Livingston	48 Luce
49 Mackinaw	50 Macomb	51 Manistee	52 Marquette	53 Mason	54 Mecosta
55 Menominee	56 Midland	57 Missaukee	58 Monroe	59 Montcalm	60 Montmorency
61 Muskegon	62 Newaygo	63 Oakland	64 Oceana	65 Ogemaw	66 Ontonogan
67 Osceola	68 Oscoda	69 Otsego	70 Ottawa	71 Presque Isle	72 Roscommon
73 Saginaw	74 St. Clair	75 St. Joseph	76 Sanilac	77 Schoolcraft	78 Shiawassee
79 Tuscola	80 Van Buren	81 Washtenaw	82 Wayne	83 Wexford	84 Detroit/East

LEVEL OF CARE

A ALPHA	Advanced Life Support Ambulance
B BRAVO	Basic Life Support Ambulance
C CHARLIE	Supervisory Vehicle
D DELTA	Physician Vehicle
E ECHO	Advanced Life Support Non-Transport Vehicle
H HOTEL	Air Ambulance or Helicopter
L LIMA	Limited Advanced Life Support Ambulance
M MIKE	Limited Advanced Life Support Non-Transport Vehicle
N NOVEMBER	Neonatal Unit
R ROMEO	Rescue, Extrication, or Medical First Responder Unit
T TANGO	Basic Life Support Non-Transport Vehicle

Recommended Best Practices

The following are not required under these rules, but are considered to be industry wide best practices.

MFR vehicles ability to communicate with responding ambulance

These rules do not require an MFR licensed vehicle to have communication capability with local hospitals, or directly with responding transport ambulances. However, the ability to communicate directly with a responding ambulance, without relay through dispatch, is highly desirable. Such capability should be considered as part of a local or regional interoperability plan.

Use of "Plain Language"

"While the NIMS Integration Center does not require plain language for internal operations, it strongly encourages it, as it is important to practice everyday terminology and procedures that will need to be used in emergency incidents and disasters. NIMS implementation is a long-term effort and it is probably not possible to persuade everyone to change ingrained habits overnight. But, we do hope that over time, everyone will understand the importance of using common terminology, that is, plain language, every day" (Excerpt from the December , 2006 NIMS Alert)

Use and Availability of COML trained personnel

The Department of Homeland security has created and defined the position of Communications Unit Leader, or COML. These individuals have broad expertise in setting up and using radio communication systems in times of disaster or other major incidents. Training per a standard curriculum is available through the Michigan State Police, Emergency Management and Homeland Security Division. EMS Agencies should be aware of COML trained persons in their area, and include their expertise in planning for major incidents.

Alpha Numeric radio display

Per Rule 2.03, it is permissible to use a radio device that indicates channels with only a channel number. This use is allowed only if there is readily available to the operator a printed cross-reference guide showing actual channel names or uses for each channel number. It is highly recommended that radios with an alpha numeric display of at least 8 characters for each channel be used for EMS purposes.

Common Channel Names

It is highly recommended that channel names used in EMS vehicle and portable radios be consistent with the recommended naming convention published by the National Public Safety Telecommunications Council. Standard, nationally accepted channel names are listed for all common interoperability channels in public safety.
(See www.npstc.org/ChannelNaming.jsp)