



# Stressed Out?

Are rules, regulations, policies, mandates, procedures, and changes relating to the operation of hospital wireless communications systems giving you a king sized headache?

We're not surprised! With no less than ten regulatory agencies involved with helping you do your job, often with conflicting policies, changing policies, lack of guidance, and unfunded mandates, things can get a little confusing.

You may still be dealing with the FCC directive requiring that all 2-way radios VHF and UHF 2-way radios had to be narrow banded before January 1, 2013. We have now learned that the narrow banding process had some devastating effects on performance with vendors telling you that you've got to make a switch to digital, get your license up to date, and a host of other requirements little understood even by the *experts*.

Then someone throws a bunch of terms at you that were never taught in the medical or even business administration professions. Words like "D" Block, P25, FCC licensing, Interoperability, and Narrow Banding.

So the question is - *Where do you go for help?* The answer is *RIGHT HERE!* We have prepared a special report just for our hospital users which we think you will find to be very interesting. For additional information, just keep reading!

Candice Staggs  
*At your service!*

StressedOut.doc

36 – 20<sup>th</sup> Avenue NW – Birmingham, AL 35215 ~ Phone: 205.854.2611 ~ Fax: 205.853.617  
Email: [ServinU@falcondirect.com](mailto:ServinU@falcondirect.com) – Web: [www.falcondirect.com/candice](http://www.falcondirect.com/candice)

# WIRELESS COMMUNICATIONS 101 FOR HOSPITAL MANAGEMENT

Narrowbanding, interoperability, patient rights disaster planning, redundancy, compliance, safety, licensing, and a host of other issues relating to hospital communications an absolute nightmare for those not trained in the miraculous process of conveying information through the air!

At a minimum, the operation of the typical wireless communications used in most hospitals requires compliance with a variety of agency, bureau, and departmental requirements at the local, state, federal, and international levels. A few of the better-known examples include:

**AARL** (American Radio Relay League), the folks who help train amateur radio licensees to operate hospital HF emergency radio systems.

**ADPH** (Alabama Department of Public Health). No further comment required.

**DHS** (Department of Homeland Security) The super agency operating at both federal levels responsible for protecting the safety of US citizens along with the training, support, and administration of all involved in this effort.

**EMA** (Emergency Management Agency) Acts as the administrator of disaster relief efforts at the Federal, State, and County levels. A part of DHS.

**EPA** (Environmental Protection Agency) These are the folks that monitor compliance with the SAR (Specific Absorption Rate) for RF energy emissions by cell phones, 2-way radios, and transmitters of all types).

**FCC** (Federal Communications Commission) The agency responsible for licensing, administration, and enforcement of all activities related to communications in the United States.

**FDA** (Food and Drug Administration) The sister organization of EPA the FCC, and OSHA in defining acceptable SAR levels, both for communications devices and microwave transmissions.

**HIPAA** (Health Insurance Portability and Accountability Act). No further comment required except to stress the need to communicate only in a secure mode when discussing issues involving privacy.

**NFPA** (National Fire Protection Association) Responsible for defining acceptable standards relating to the installation of wiring required for the installation of remotely operated radio transceivers. Works in association with the state fire marshal.

**OSHA** (Occupational Safety and Health Administration) Responsible for protecting workers hearing, sight, cells, hormones, lungs, muscles, bones and future generations from the harmful effects of work related equipment.

And, the list goes on.....

# Types of Hospital Wireless Communications

With all the aforementioned agencies and standards, the next question might logically be *What is there in my hospital that is subject to regulatory compliance and control, and if so, by what or whom?* The following chart may be useful in answering this question.

System	Primary Application	Regulator	Compliance Issues
HEAR System	Emergency/Disaster Relief	FCC, ADPH, HIPAA	FCC license required by ADPH or hospital as applicable
HF Radio System	Emergency Communications	AARL, ADPH, EPA, FCC	Licensed amateur radio operator required for operation
"D" Block System	Interoperable statewide voice and data 700 MHz system	DHS	Compatibility with State operating standards as defined by DHS
P25 Radio Systems	Municipal and/or county digital radio systems	DHS (Funding), EMA, FCC	Hospitals may optionally choose to participate. Not mandatory.
Administrative Radio System	Internal use for maintenance, maintenance, security, and transportation use	EPA, FCC, HIPAA, NFPA, OSHA	VHF MURS license free use is permitted as is 900 MHz band. UHF requires FCC license
Family Alert Paging	ER, and OR Patient family notification	FCC, HIPAA	No FCC license required for 27, 49, or 313 MHz bands.
Hospital Paging	Code Blue Alerting	FCC, HIPAA	FCC license required
Patient Monitoring	Wireless patient monitoring	FCC	No FCC license required for 27, 49, 72, or 313 MHz bands.
Wireless Call Boxes	Parking deck/lot visitor assistance wireless intercom	FCC	VHF MURS - No license required. UHF - License required
Wireless PA's	Extends public announcement capability to remote areas	FCC, HIPAA	VHF MURS - No license required. UHF - License required

We have prepared a more detailed overview on each of the systems above to assist you in addressing mandatory compliance issues as compared to optional participation. Administrative Radio Systems with two-way communications capability will be briefly discussed as well as some of more common applications of one-way communications as follows:

## A word about the HEAR System

The HEAR system operates on the frequencies of 155.340 MHz for hospital-to-ambulance communications, and 155.280 MHz for hospital-to-hospital communications as a backup for cellular and/or wireless telephone services in disaster situations. The frequency of 155.3475 MHz was made available on January 1, 2013 for ground-to-aircraft communications. Additional information is available at [www.info4u.us/2012AARS.pdf](http://www.info4u.us/2012AARS.pdf) which is a pamphlet recently distributed at the Alabama Association of Rescue Squads (AARS) conference held in Decatur, AL. Radios operated on this system MUST be narrow band compliant no later than January 1, 2013. Consider this to be an ADPH mandatory system.

## A word about HF Radio Systems

Through a grant administered by the Alabama Hospital Association, HF (High Frequency) radio system radios were recently placed in hospitals around the state to provide emergency communications with an operating range of up to 300 miles between participating hospitals in the event of catastrophic disruption of public communications networks. This grant addressed the need for compliance with the National Emergency Communications Plan that evolved from Federal Directive NCS 3.10. A copy is available at: [http://www.dhs.gov/xlibrary/assets/national\\_emergency\\_communications\\_plan.pdf](http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf). Consider this to be a federal standard for emergency communications based on federal assistance funding through the state.

Unfortunately, the grant funding did not make allowance for training of personnel to become certified to operate HF equipment as required by the FCC, nor was funding made available for compensation of volunteer licensed radio operators. The level of proficiency of available operators varies significantly. This can create a problem in the setup and turning procedures required to properly operate an HF radio system.

The antenna systems typically installed at the hospitals are vulnerable to wind damage and there is the additional issue of "tuning" the radio for specific frequencies used for HF communications. Since the installations were made a new ruggedized, automatic tuning antenna has been developed that simplifies setup, enhances performance, and provides greater reliability. Direct substitution of the new antenna, known as the EH antenna is recommended. Additional information is available from the manufacturer at: <http://www.alphacognetics.com/products.htm>. For additional information, call Falcon Wireless Direct at 205.854.2611 or drop us an email to [ServinU@falcondirect.com](mailto:ServinU@falcondirect.com). As a point of information, HF radios are not subject to narrow banding requirements.

### **A word about the "D" Block Radio System**

One of the goals of the interoperability task force was to develop a personal device capable of providing both voice and data capability. In essence, this would be a ruggedized smart phone such as the Android or iPhone capable of operating on high speed LTE carrier networks such as those available from AT&T, Verizon, Sprint, and T-Mobile PLUS operational capability on a "network" specifically set up for the special needs of public safety communications.

The user devices, such as the newly introduced Harris InTouch RPC-200 will be more ruggedized than traditional smart phones, and as previously mentioned, be capable of operating on both carrier networks and Band 14 public safety systems. Most states, including Alabama, are in the initial stages of building out these systems which operate in the 700 MHz frequency band. User devices are expected to be priced in the thousand-dollar range. 700 MHz systems installed thus far in Alabama are based on radios priced in the \$4,000 range. We do not know at this time whether Alabama will continue using the high priced radio units, or make the conversion to LTE. Best guess is that Alabama will stay with radios only.

Compatibility with the provisions of the Alabama First Responder Wireless Commission will be required as per the guidelines defined in the Governors Executive Order Number 14, Amendment Number 1 dated August 16, 2012. See [http://governor.alabama.gov/news/news\\_detail.aspx?ID=6862](http://governor.alabama.gov/news/news_detail.aspx?ID=6862) for a copy of this order. Compliance with this system is not considered to be mandatory at this time since the system infrastructure has not been completed. Unless federal funding is provided, we are of the opinion that participation is at the discretion of hospitals providing emergency medical services.

### **A word about P25 Radio Systems**

There are many types of P25 radio systems which can be on VHF, UHF, 700, or 800 MHz with either proprietary operating standards or open architecture. For example, Cullman and Jefferson counties, among others, restrict purchase to products offered by a single manufacturer. This is known as a proprietary operating standard. Franklin and Shelby counties use an open architecture standard which allows multiple vendors to provide competitive pricing.

In some cases, a local county interoperability network, typically planned by the County EMA will be offered to public safety first responders. In layman's terms, this means those agencies who are either eligible on their own for federal or state funding assistance (Law Enforcement and Fire Departments, both county and municipal, as well as volunteer fire departments, typically qualify for funding). As a general rule, hospitals, ambulance services, and rescue squads are not eligible for funding. However, hospitals are encouraged by the system administrators to join such networks by purchasing a dozen or so compatible radios for use on the network with a typical cost of around \$1,200 each.

Rarely is it mentioned that smaller, more efficient, less expensive radios can be used through the use of an optional device known as a "bridge". Typically, the "bridge" will cost around \$5,000 with good quality portable radios available at prices ranging from \$150 to \$500 each. More information is available on request by calling Falcon Wireless Direct at 205.854.2611. The purchase of P25 equipment of any type is not mandated by federal or state standards except when using federal grant funds for 2-way radios.

## **A word about hospital administrative 2-way communications systems**

As a general rule, we believe it can be assumed that federal or state funds have not, and will not be available for the purchase of 2-way radios used for general administrative, patient transport, maintenance, or security purposes. This means you have the option of purchasing equipment best suited for your individual requirements AS LONG AS IT IS NARROW BAND COMPLIANT!

By January 1, 2013, ALL radios used in hospitals operating in the VHF (150-174 MHz) or UHF (450-470 MHz) frequency bands had to be licensed and operational in the narrow band mode per FCC regulations. There are a few exceptions such as VHF radios operating at 2 watts or less that are compliant with Part 95 of the FCC Rules or portable radios operating in the 900 MHz band. Otherwise, you need a license, and you need to operate in the narrow band mode. For additional information, please visit <http://ourlibrary.us> or see a special report at [http://info4u.us/Narrow\\_Banding\\_101.pdf](http://info4u.us/Narrow_Banding_101.pdf).

You have four basic choices of technology - Analog, DMR Digital, NEXEDGE Digital, or P25 digital. In essence, analog is the least expense, DMR is the most common type of digital, NEXEDGE is the most technically advanced, and P25 is the most expensive (government standard). Additional information on each of these operating systems is listed below:

Information on analog radios including call boxes, voice pagers, wireless intercoms, and wireless PA systems is available at: [www.info4u.us/Analog\\_Planner.pdf](http://www.info4u.us/Analog_Planner.pdf)

Information on DMR digital radio systems, also known as TDMA, MotoTRBO, and Hytera digital is available at: [www.info4u.us/DMR.pdf](http://www.info4u.us/DMR.pdf)

Information on NXDN, also known as FDMA, IDAS and NEXEDGE with products by ICOM is available at: [www.info4u.us/IDAS-Guide.pdf](http://www.info4u.us/IDAS-Guide.pdf)

Information on P25, also known as APCO-25 Phase One is available at: [www.info4u.us/P25Guide.pdf](http://www.info4u.us/P25Guide.pdf). It should be noted that there are two types of P25 radio systems - conventional and trunking. For the layman, conventional generally means operator selectable channel selection and trunking means automatic channel selection. See [www.info4u.us/P25\\_Trunking\\_Radio\\_Catalog.pdf](http://www.info4u.us/P25_Trunking_Radio_Catalog.pdf) for more information on our P25 trunking radio products or see [www.info4u.us/LTR.pdf](http://www.info4u.us/LTR.pdf) for a more detailed explanation on how trunking works. Trunking is also available for analog, DMR, and NXDN systems with the general benefit being better efficiency and allocation of frequency resources through the use of dynamic channel assignment. For additional information, give us a call at 205.854.2611.

It should be noted that all digital radio systems are designed to operate in either analog or digital modes at 12.5 kHz channel spacing (Narrow Band). The NXDN system is capable of operating at 6.25 kHz (Very Narrow Band) which is the next step planned for future implementation. No date for required use has yet been established for use of 6.25 kHz channel spacing. The main point is that current equipment operating in the VHF or UHF frequency bands must be reduced from the current 25 kHz operating bandwidth to 12.5 kHz before January 1, 2013.

In summary, if you are using administrative, maintenance, security, or transportation radios, the systems must be licensed and operational in the narrow band mode per FCC regulations. If you have questions or need assistance, just drop us an email to [ServinU@falcondirect.com](mailto:ServinU@falcondirect.com).

## **A word about Family Alert Paging systems**

Family Alert Paging (FAP) systems are used to summon family member and/or care providers awaiting patient information in the Emergency Room, Operating Room, or Maternity Ward waiting rooms. These devices are similar to "Your Table is Ready" receivers used by many restaurants. For short range (single or partial floor), an FCC license is generally not required. For hospital wide coverage, an FCC license is normally required. For additional information, just give us a call at 205.854.2611 or visit my personal web site at <http://falcondirect.com/candice>.

## **A word about Hospital Paging**

Hospital pagers for administrative use have largely been replaced by 2-way radios and/or smart phones. However, for Code Blue emergency use direct access pagers provide the fastest and most reliable means of summoning critical care personnel. Both voice message and alphanumeric text type receivers are used. As a general rule, these systems must be licensed and operational in the narrow band mode per FCC regulations which includes our own SPARKGAP system.

## **A word about Patient Monitoring**

In general, the systems used to track critical care or mentally unstable patients utilize low powered transmitters that do not require an FCC license which normally exempts such devices from narrow banding requirements. If in doubt, give us a call at 205.854.2611. Transmitting this information to staff members using a system like SPARKGAP (See [http://info4u.us/Picture\\_This\\_Hospital.pdf](http://info4u.us/Picture_This_Hospital.pdf) requires an FCC license for operating in the 900 MHz frequency band.

## **A word about Wireless Call Boxes**

Wireless call boxes come in two varieties. The one-way calling units that simply transmit a prerecorded message by 2-way radio are typically short-range devices that can be operated on VHF license free MURS frequencies. The two-way call boxes frequency used in parking decks and lots are most commonly set up on security radio channels and are subject to FCC licensing and narrow band requirements. (See <http://falcondirect.com/Ritron> for more information on Wireless call boxes and PA's.

## **A word about Wireless PA systems**

Wireless PA systems come in two varieties. One model integrates with an existing wired PA system to allow access by a 2-way radio for broadcasting public address messages. Another model is available that used individual wireless receiver/speakers in outdoor or remote areas. Both can be operated on VHF license free MURS frequencies. If operated on regular hospital VHF or UHF frequencies, both models are subject to FCC licensing and narrow band requirements.

# **SUMMING IT ALL UP**

It all comes down to determining the things you have to do, the things others might want you to do, but not required, and things that require additional consideration. In essence, it more or less comes down to this:

All energy emitting devices operating in the VHF or UHF frequency bands (excluding MURS frequencies and HEAR frequencies licensed by the State) require an FCC license and narrow band compliance.

One of the possible misunderstandings relating to the need to purchase digital radios relates to the alleged requirement to purchase digital radios that are compatible with digital radios used by local area public safety users. The answer is that you are not required to purchase digital radios for ANY reason.

The FCC simply requires that you use equipment capable of operating with 12.5 kilohertz (kHz) channel spacing. The FCC does not care if you choose VHF or UHF, 700 MHz, 800 MHz, or 900 MHz as long as your channel spacing is 12.5 kHz (narrow band) capable for the VHF and UHF frequency bands.

The HEAR system operates in the VHF band in an analog mode only at this time. However, you can purchase a VHF digital radio (DMR, NXDN, or P25) if you wish as long as it can still communicate in the analog mode on the frequencies of 155.340 and 154.3475 MHz.

So, if local area public safety users want to talk to hospitals, they must do so in an analog mode, either on the aforementioned frequencies or any of the Alabama state approved VHF interoperable ANALOG channels as indicated in a Power Point presentation available at [www.info4u.us/Radio\\_101.ppt](http://www.info4u.us/Radio_101.ppt).

You are NOT required to purchase ANY proprietary digital radio system, or for that matter ANY digital system of any type although in some cases it may be to your benefit to consider at least a partial upgrade to either DMR or NXDN digital technology.

You ARE required to have a working HEAR system radio and two amateur band (one HF and one VHF/UHF) radios available for use in the event of a disaster situation that has disabled traditional communications facilities. The HF radio system can be used ONLY by licensed amateur radio operators.

Your compliance for FCC licensing and narrow banding requirements is not limited to just maintenance and security "walkie talkies". The requirement applies to ALL wireless systems including paging, call boxes, and PA systems. If in doubt, it would be advisable that you retain the services of a professional organization, such as Falcon Wireless Direct, to evaluate your facility and make recommendations to assure compliance as well as suggestions for improvements in operational efficiency. We can be reached at 205.854.2611 or by email at [ServingU@falcondirect.com](mailto:ServingU@falcondirect.com).