



Multi-Carrier Cellular at Louisville Baptist Hospital

CASE STUDY

CHALLENGE

Baptist Healthcare System, Inc. is one of the largest not-for-profit health care systems in Kentucky. Founded in 1924, Baptist Healthcare System, Inc. (BHSI) has been bringing advanced medical technology, modern facilities, and many of the region's most prominent physicians and medical professionals to the cities and communities of Kentucky for more than 70 years. The system owns five acute-care hospitals with more than 1,500 licensed beds in Louisville, Lexington, Paducah, Corbin and La Grange, and manages a 300-bed acute-care hospital in Elizabethtown.

To facilitate physician and staff communications within its million square-foot Baptist Hospital East (Baptist East) in Louisville, BHSI investigated all of the major providers of in-building cellular systems and deployed an InterReach Fusion® solution. Based on its experience, BHSI has now standardized on solutions for its facilities statewide.



CONNECTING OUTSIDE OF THE OR

With a staff of 3,400, Baptist East offers emergency medicine as well as specialized services for women's health, cancer, heart, orthopedics, neurosciences, emergency care, rehabilitation, sleep disorders, occupational health, and behavioral health, including psychiatric and chemical dependency care. The 6-story structure was built in 1974, and has been enlarged over the years since.

In 2004, BHSI corporate IT began planning to improve cellular coverage within the facility. "We have a lot of anesthesiologists at our facilities, and they were looking for a communications system that gave them immediate contact with other doctors and staff," says Jim Laval, manager of corporate IT at BHSI.

Although the doctors carried pagers, there was always a delay of a few minutes between sending the page and having the doctor respond by phone. Most doctors and staff had cellular phones from one of Louisville's three major carriers (AT&T, Sprint Nextel, and Verizon), but coverage was poor inside the structure. "A lot of the doctors had Nextel push-to-talk phones," says Laval, "but they only worked in the surgical areas of the hospital. The doctors wanted something that worked everywhere."

Since the doctors had wanted to maintain the push-to-talk (PTT) feature of their Sprint Nextel phones, Laval first asked that carrier to price out a distributed antenna system (DAS) to cover the whole hospital. "The cost was prohibitive," says Laval. After Laval's team called Verizon and found the price to be about the same, they knew it was time to begin looking for a multi-carrier DAS product that BHSI could purchase outright.

MULTI-FUNCTION DAS: DREAMS VS. REALITY

Laval and his team grew enthusiastic about claims from some vendors about "utility-like" DAS solutions capable of integrating all wireless services on a single infrastructure. "We were hoping to do a multi-function system that could handle not only the cellular frequencies, but also the fire and police bands, 802.11b/g, medical telemetry frequencies at 600-618 Kilohertz, and a future RFID system," says Laval.

Unfortunately, vendor claims about do-it-all DAS proved to be unfounded. "The first thing that hit us was the cost," says Laval. "The system was very, very expensive. We tried to justify it with the idea that we would put all of the services on the one coaxial cable system, but the more research we did, the less feasible the idea became."

For example, Laval's team discovered that the wireless frequencies used for medical telemetry equipment were governed by the FDA. The agency requires that wireless medical telemetry traffic be carried separately on an FDA-approved system.

The next barrier was the RFID system. "The vendor who promised to carry RFID with cellular turned out to have a very poor RFID solution unless you used their own proprietary ID tags and some additional proprietary antennas," says Laval. "We wanted to keep the system open so we had a choice of vendors for these various components."

As the BHSI technical team dug deeper, it became obvious that the alleged features of the do-it-all system carried a lot of compromises. At this point, the team began re-thinking its DAS strategy. And when the BHSI technical staff evaluated vendors for a cellular DAS, the InterReach system stood out. "The system was far less expensive," says Laval, "and it would support multiple carriers with a far more integrated system that was easier to install."

FUSION BRINGS MULTI-CARRIER FLEXIBILITY

The InterReach Fusion system supports multiple carrier frequencies with one set of electronics (hubs and remote antennas, or RAUs). In addition, all wireless DAS solutions use an active architecture that guarantees strong, uniform signals from every remote antenna, so the quality of service is consistent everywhere. Since Baptist East was seeking a multi-carrier solution, BHSI staff realized that the Fusion system's higher integration and use of standard CATV cabling would make it easier to deploy.

Under Laval's guidance, the Fusion system has developed in Baptist East. Deployment began in June 2006 and was completed by August. The system covers all of the areas of the main hospital that had poor cellular coverage, including the emergency room, surgical suites, and patient

rooms. It includes two Main Hubs, eight Expansion Hubs, and 64 RAUs. Carriers AT&T, Sprint Nextel, and Verizon connected their networks to the system by providing rooftop antennas with cables that carried the macro network signal down to InterReach Fusion hubs in the hospital's telecommunications closet.

The Fusion system supports both voice and data services, so users can access the web, check email, or perform other activities from anywhere in the hospital. Since the system went live in the Fall of 2006, it has worked flawlessly. Doctors and staff are free to use phones for any of the three major carriers, and Baptist East supplies phones and smart phones to some 40 top managers.

"The doctors are very enthusiastic about it," says Laval. "It gives them much better communications with their offices, patients, and with each other. They're very happy to be able to make calls from inside the core of the hospital."

STANDARD CELLULAR INFRASTRUCTURE

Based on its experience at Baptist East and an earlier deployment at Baptist Hospital Central in Lexington, BHSI is now planning to make wireless DAS products its standard infrastructure for in-building cellular communications:

- Baptist East is building a 250,000 square-foot, eight-story expansion for 2008, and the plans include an extension of the Fusion system to cover the new property.
- BHSI is building another, 250,000 square-foot outpatient surgical center in Louisville in 2008, and this will also receive a Fusion system.
- BHSI is planning to deploy wireless DAS at its six-story Western Baptist Hospital in Paducah, also in 2008.

With the most cost-effective and highest-performing DAS solution in the industry, it has made facility-wide cellular communications a standard part of hospital infrastructure for Baptist Healthcare System, Inc., speeding critical communications and ensuring a happy and productive user community.



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