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EMERGENCY +

In-Building is Just What Doctors Ordered: Lima Memorial

CASE STUDY

CHALLENGE

Built in 1933, Lima Memorial Hospital is an 8-story, 300-bed facility that serves a 10-county area in western Ohio. With 1400 staff and 350 physicians, the hospital provides a full range of services including a Level II Trauma Center, cutting-edge cardiovascular procedures, hyperbaric oxygen chambers, a Women's Health Center, and state-of-the-art cancer care.

With a mission to continually improve its community's quality of life, Lima Memorial was the first facility in its area to provide comprehensive emergency services, and its quality of service depends on fast and reliable communications. Doctors and maintenance staff have relied on wireless pagers and an overhead audio paging system for many years, but by 2004, the medical staff had begun pushing for cellular phones as a more flexible and inclusive communications device. With help from the InterReach Unison® system, Lima Memorial was able to deliver on their request.



OF TOWERS AND TELEMETRY

Hospitals present unusual challenges for cellular coverage. Hospital buildings use steel and concrete construction, which tends to block or reduce the strength of cellular signals coming from outdoor cellular towers and base stations. And the environment in a hospital is generally very "dense," meaning that there are a lot of small rooms with walls that can block a wireless signal, and lots of equipment which can also cause wireless propagation issues. While doctors and staff reported getting reasonably strong coverage in patient rooms on Lima Memorial's upper floors, coverage worsened for users on lower floors or deeper inside buildings. Another problem was the risk of cellular calls interfering with wireless medical telemetry equipment such as wireless EKG monitors on patients. When cellular signals are weaker, users' handsets must boost their own transmit/receive power, making it more likely that a call might interfere with transmissions from nearby wireless telemetry equipment. In fact, this potential for interference is one reason why many hospitals ban the use of cellular phones entirely. To solve both problems, Lima Memorial needed an in-building cellular extension system that would ensure the availability of strong, clear cellular signals anywhere in the building.

LOW-IMPACT INSTALLATION

The job of finding a solution was assigned to Kevin Lowe, biomedical engineering technician at Lima Memorial. Since the challenge was to improve cellular coverage, he turned to the area's four major cellular service providers for help. Based on carrier recommendations, Lowe decided to install the Unison system.

In addition, the active electronics in the Unison system allowed Lima Memorial's IT staff to perform end-to-end system monitoring, much like it has with its data network. This way, the staff could respond quickly in the event of a coverage problem due to a faulty antenna. The deployment was fairly straightforward. Contractors installed 28 remote access units (RAUs), each providing approximately 15,000 square feet of coverage, along with three Expansion Hubs and one Main Hub. The hubs went into existing electronics closets. Since the Unison system uses standard cabling to link its electronic hubs with RAUs, installers could simply pull the required cabling through existing raceways above the hospital ceilings. "The system installation took about two or three weeks," says Lowe, "and there was very minimal disruption." To bring cellular signals into the building, three carriers (Verizon, Alltel, and Sprint Nextel) installed rooftop antennas and repeaters, which then relayed each carrier's signal to the Unison Main Hub.

FAST RELIEF

From the moment the system went live, doctors and maintenance staff noticed the difference and acted on it. Once it became clear to everyone that their cell phones worked everywhere, staff and doctors began abandoning their wireless pagers. "The cellular coverage gives doctors and staff more flexibility, because they can receive pages on their phones as well as regular calls," says Lowe. "Everyone has been very happy with the improvement." By enabling direct calls to physicians rather than forcing them to respond to a page, Lima Memorial is enabling doctors and staff to get more information more quickly, which helps maintain the facility's reputation for quality service. For Lima Memorial Hospital, in-building cellular coverage has become yet another in the long list of "firsts" it has achieved in pursuit of its goal of delivering quality health care in a family-oriented environment.



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From North America, Call Toll Free: 1-800-366-3891 • Outside of North America: +1-952-938-8080

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ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota USA 55440-1101

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