

Case study

Baptist Memorial Health Care

Memphis, Tennessee



Wireless system helps transform patient care through mobility and reliability

Baptist Memorial Health Care is an award-winning healthcare system dedicated to providing compassionate, high-quality, patient-focused care. With this dedication and in an ongoing effort to transform care at the bedside, Baptist contacted Johnson Controls, who has assisted Baptist with its technology needs for years, to install an in-building wireless distribution system in seven of its facilities. The system provides complete, reliable wireless coverage throughout facilities, enabling the use of wireless medical devices that enhance the patient experience and patient care.

For Baptist, mobility and reliability were key drivers in the decision to pursue a wireless distribution system and key to the success of its clinical documentation project, which included implementation of an electronic medical record (EMR) keeping system. "We knew that going paperless required transforming care at the bedside, which in turn meant we needed mobility that didn't exist," says Stuart Mitchell, market leader for Baptist Memorial Health Care's metropolitan market. "We also knew that when it comes to electronic documentation, even if we bought the very best system, it would not be successful if we didn't have reliable connectivity at the point of care," adds Beverly Jordan, vice president and chief nursing officer at Baptist Memorial Health Care.



Physicians may access medical records using tablet computers.

“In order to provide the best clinical outcomes that we can, we’re looking for access to medical information from anywhere using a variety of devices, and the Johnson Controls wireless system provides that access.”

KEITH SCARBROUGH
ADMINISTRATIVE DIRECTOR OF IT
BAPTIST MEMORIAL HEALTH CARE



Clinicians use wireless carts to document patient information.

Johnson Controls proposed an engineered wireless infrastructure involving a distributed antenna system designed for each of seven Baptist facilities. Unlike discrete antenna systems, which rely on overlapping fields of coverage often resulting in weak signals and dead spots, this integrated system uses multiple layers of coverage that are equal in size, providing redundancy, complete mobility and guaranteed availability of a signal. “The number one reason we bought the system is because it provides clinicians with reliable access to information, when and where they need it,” says Mitchell.

Technology planning paves way for success

As Baptist embarked on its clinical documentation project it made a significant investment in research, vendor site visits and in getting the appropriate people engaged with the project. Studies were conducted on workflow, patient flow, how clinicians practiced medicine, and how information was recorded and exchanged during the course of caring for patients. The need for mobility to allow documentation at the bedside or wherever the patient was located became even more apparent. “It was obvious we couldn’t continue to be tied to stationary computers or rely on memorization for accurate recording,” says Mitchell. “Similarly, retrieving up-to-date information such as formularies and other critical information at the point of care would help ensure patient safety and quality of care,” notes Jordan.

With the decision made to go wireless, Johnson Controls Innovation Services facilitated a planning session with departmental personnel throughout the Baptist Memorial Health Care system. Personnel rated technologies that

they considered most valuable to the organization and the importance of each one being wireless. “This was an important step in establishing a vision of what the wireless infrastructure would look like and be capable of,” says Keith Scarbrough, administrative director of IT at Baptist Memorial Health Care. “Johnson Controls responded very positively to our design challenges and assisted in executive level presentations necessary to gain confidence in the infrastructure.”

Because it is an engineered wireless infrastructure, consideration could be given to clinical versus non-clinical environments, to the required degree of saturation and capacity, to whether areas such as stairwells and elevators should be included, and what is the right thing to do for patients overall. “The process also allowed for concerns to be addressed as not everyone was completely comfortable with relying on a wireless system. It was critical to walk through potential points of failure with these key stakeholders and vendors to prove that the system could work,” says Jordan.

“Every patient encounter is absolutely vital to the success of that patient, the hospital and our industry. That’s why we strive for transparency and brutal honesty between our own departments and with our vendors. When you can find vendor partners like Johnson Controls that really do understand the need for this type of communication – you can do great things together.”

Having seen the wireless infrastructure in action, Mitchell understood it could not have a single point of failure. “Johnson Controls demonstrated this to key stakeholders as well by providing proof sources and helping them understand how the infrastructure works. This was valuable during the

launch because it made us take the equipment riding on the wireless infrastructure into consideration as potential failure points," says Mitchell. "In addition, Johnson Controls had established a level of trust within our organization through a longstanding relationship."

Improving patient safety, quality of care, operational efficiency

"In order to provide the best clinical outcomes that we can, we're looking for access to medical information from anywhere using a variety of devices, and the Johnson Controls wireless infrastructure provides that access," says Scarbrough. "We did consider traditional discrete deployment, which has overlapping circles of signal distribution versus duplicate layers, but we were concerned about dead spots as well as leakage of signal beyond our facilities. And, because the wireless infrastructure is passive and components are not actively sending out signals they should last longer, resulting in minimal maintenance."

The infrastructure supports voice and data systems such as personal communications/cellular carriers, local area networks, two-way radios, digital paging, handheld clinical devices, medical telemetry and the EMR system among others. Physicians and other clinicians are also able to bring in their personal equipment. As clinical equipment manufacturers continue to push more devices out on wireless, the infrastructure will accommodate them. From an IT perspective, this enables Scarbrough's team to provide more turnkey solutions to its internal customers.

"Because of the system's built-in redundancy, we know that our various clinical devices and communications equipment will be online so we can record and retrieve information, monitor and administer care where and when it's needed. This ensures the quality of care and the safety of the patient. It's really a matter of form and function. If we didn't have the ability to be mobile, we wouldn't have been able to accomplish our clinical documentation goal," states Mitchell. "There is no defined return on investment for the electronic medical record system other than what's most important, and that is improved patient safety and quality outcomes. By providing reliable connectivity – the wireless infrastructure augments those outcomes," adds Jordan.

Increased freedom and increased efficiency also equate to better care, according to Jordan. "The wireless infrastructure enables clinicians to do real-time documentation and more easily access information. The result is they have more time to do what they do best, and that's providing care." A bedside barcoding project is already in the works, which will further leverage mobility while increasing efficiency.

The design of the wireless infrastructure significantly reduces the need to breach the hard ceiling within facilities when a closet is not available for access points, which is extremely beneficial due to the importance of preventing and controlling infections. Johnson Controls and Baptist worked together to design and procure enclosures for access points that are inserted into the drop ceiling. Once in place, access points can be maintained without breaking the ceiling barrier by simply unlocking the enclosure. "This is an excellent example of the difference between the typical deployment of a wireless system and the engineered deployment Johnson Controls provided," states Scarbrough.



Personal communication devices are supported by the wireless infrastructure.

"Johnson Controls provided proof sources and helped key stakeholders to understand how the wireless system worked. This was especially important to a successful launch because we knew they would be there to support us."

STUART MITCHELL
MARKET LEADER –
METROPOLITAN MARKET
BAPTIST MEMORIAL HEALTH CARE



Nurses stations incorporate wired and wireless devices such as two-way radios, digital pagers, and stationary and laptop computers.



Keith Scarbrough, administrative director of IT, Baptist Memorial Health Care.

Longstanding service and controls relationship brings trust

Baptist began its relationship with Johnson Controls through a contract to service and maintain a variety of brands of building automation and fire/life safety systems at Baptist Memorial Hospital – Memphis. “This relationship with Johnson Controls allowed us to maximize the life of those existing systems while creating a pathway to newer technologies,” says Gary Fowler, director of facility services for Baptist Memorial Hospital – Memphis. Johnson Controls helped Baptist assess which systems to keep, maintain or replace, regardless of manufacturer. One system that was replaced eventually was the building automation system, allowing Baptist to achieve better control of its environment. A Johnson Controls Metasys® building management system was installed to provide monitoring and control of HVAC equipment and controls throughout Baptist’s facilities.

In this process, Johnson Controls reviewed Baptist’s mechanical systems in their entirety, retrofitted specific equipment and designed the Metasys system to improve operational efficiency and minimize energy use through the use of new programming and control strategies. For example, variable air volume controls, variable frequency drives, actuators and CO₂ sensors are integrated with the Metasys system to allow for improved airflow and better use of outside air while driving down energy costs. Nighttime setback programming is also used for select buildings. The existing fire system from another manufacturer, which was identified as being appropriate to keep, is maintained by Johnson Controls and integrated with the Metasys system.

The service contract with Baptist remains in place. Johnson Controls provides daily operational support, maintenance, monitoring and identifies additional opportunities for operational improvement and energy efficiency. The agreement includes Johnson Controls and other manufacturers’ building controls, fire/life safety systems and the Metasys building management system.

“I feel it is important for us to share our wireless story with others in the industry. What we’ve learned from this may help others who may shy away from wireless. We believe it’s something we’ve done well, we know it can work and it is a huge push forward for the industry.”

BEVERLY JORDAN
VICE PRESIDENT AND
CHIEF NURSING OFFICER
BAPTIST MEMORIAL HEALTH CARE



Stuart Mitchell, market leader – Metropolitan Market and Beverly Jordan, vice president and chief nursing officer, Baptist Memorial Health Care.

Humanizing healthcare

The wireless infrastructure can also be used by patients and family members to communicate with others and access information. When an expectant mother needed to remain in the hospital for a lengthy period in order to deliver a healthy baby, the time apart for her and her husband was extremely difficult. “We asked the couple if they would like to be the first to test an Internet launch over the wireless system. They agreed to what became a source of mobility, freedom and communication for them both, and a successful way for Baptist to humanize the healthcare experience for our patients and their families going forward,” says Beverly Jordan, vice president and chief nursing officer.