Mobility via Wi-Fi®: Transforming healthcare for All

The widespread adoption of Wi-Fi® in hospitals in recent years has transformed healthcare – for the greater good. As a result of Wi-Fi, entirely new waves of medical devices are being created to take advantage of the mobile connectivity that Wi-Fi provides in healthcare facilities – wireless EKGs, infusion pumps, and blood pressure cuffs to name a few. Mobility in hospitals allows clinicians to provide accurate and timely patient monitoring and enables them to focus on providing the best quality of patient care, rather than on administrative tasks. The increasing numbers of wireless medical devices in hospitals has led to the ultimate goal: improved patient care.

Wi-Fi has changed the healthcare environment
Wi-Fi technology has changed how healthcare is conceptualized and delivered. This change has led to the idea of the Connected Hospital, a vision of a fully integrated hospital where wireless technology allows caregivers and patients to roam throughout the hospital while providing accurate, real-time monitoring. In the Connected Hospital, wireless technologies like Wi-Fi will fuel patient safety, data accuracy, and mobility. Within the Connected Hospital, nurses can monitor multiple patients remotely from one main station, receiving alerts and observing data captured on patients' health in real-time. Doctors can make more informed decisions with accurate and up-to-date patient information, leading to better patient outcomes. In addition, patients and their families can feel safe knowing they will always receive the correct dosage of the right medication – resulting in overall better care from medical staff and a more comfortable environment free from wired devices. Mobile medical devices can even travel with patients so they can be monitored from the comfort of their own home.

Figure 1: A fully integrated hospital where wireless technology enables mobility while providing real-time monitoring.

Cutting the cord

Although Wi-Fi is widespread in healthcare facilities, cutting the cord for medical devices has been a slow process. Nevertheless, the opportunities for growth increasingly outweigh the challenges associated with transitioning to wireless medical devices. Naturally, security,

privacy, and patient safety are paramount considerations, but the risks associated with wireless medical devices can be mitigated when the best solution is chosen and the appropriate steps to implement the technology are taken. When dealing with sensitive data, wireless medical devices must have adequate security, such as IEEE 802.11i. IEEE 802.11i provides strong encryption and authentication capabilities in the form of WPA2™-Personal and WPA-2 Enterprise. WPA2-Enterprise is better suited for a hospital setting due to its

Figure 2: Not all wireless medical devices have the same Wi-Fi mobility capabilities, so it is important that wireless medical devices that have embedded Wi-Fi modules that go through the roaming process quickly and seamlessly are chosen.

central management capabilities, which allow for easier authentication management.

In addition, not all wireless medical devices have the same Wi-Fi mobility capabilities, so it is important that hospital IT professionals choose wireless medical devices that have embedded Wi-Fi modules that go through the roaming process quickly and seamlessly.
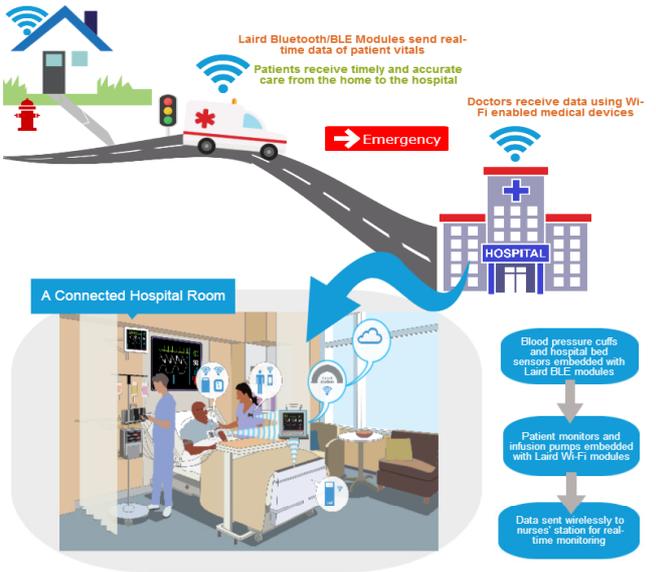
Incentives, documentation, and assistance exists in order for hospital IT staff to make informed decisions, as well as an entire community of medical device manufacturers, wireless module manufacturers, and infrastructure providers for IT professionals to look to for guidance and support. Wi-Fi Alliance has even developed a series of FAQs to assist IT administrators looking to learn more about the design and management of hospital Wi-Fi networks.

The adoption of wireless medical devices in hospitals can be fueled by following best practices and learning from the experiences and success stories of other hospitals. Once everyone is in accordance on how to create a secure and reliable network, hospitals can then take advantage of the secure wireless connectivity that Wi-Fi provides.
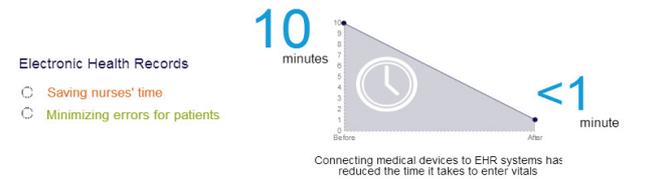
MAKING THE
CONNECTED HOSPITAL
A REALITY

3.7 Million
Medical Devices within U.S.

313.9 Million U.S. Population

Wi-Fi Adoption Rate in Hospitals
97%

Medical Devices Enabled with Wi-Fi
10%

Number of Registered Hospitals
5,723

Improve Patient Care

Facilitation of Data Flow

Always Connected

Laird Bluetooth/BLE Modules send real-time data of patient vitals

Patients receive timely and accurate care from the home to the hospital

Doctors receive data using Wi-Fi enabled medical devices

→ Emergency

HOSPITAL

A Connected Hospital Room

Blood pressure cuffs and hospital bed sensors embedded with Laird BLE modules

Patient monitors and infusion pumps embedded with Laird Wi-Fi modules

Data sent wirelessly to nurses' station for real-time monitoring

Integration with EHR

10 minutes

<1 minute

Electronic Health Records

○ Saving nurses' time
○ Minimizing errors for patients

Connecting medical devices to EHR systems has reduced the time it takes to enter vitals

Workflow Automation

Improving Patient Care

Workflow automation assists hospitals with the following:

⊘ Minimize transcription errors at point of care

↗ Improved patient outcomes due to complete picture of patient's conditions

📱 Remotely configure and monitor patient's dose and other key information

$ Automatic billing to prevent loss of revenue

🔬 Facilitates data analysis by doctors

📋 Provides clinical analysis capabilities for strategic decisions within a hospital

30+ = 🚫

Helps prevent hospital readmissions

Medicare will not reimburse hospitals for readmissions within 30 days for the same cause

Helps increase the accuracy of drug administration

Hospitals that have implemented CPOE (Computerized Physician Order Entry) systems have demonstrated a 20% decrease in hospital wide mortality rates

20%

20% decrease in hospital-wide mortality rates

Further Resources

Association for Advancement of Medical Instrumentation

aami.org/hottopics/wireless

Wi-Fi Alliance

wi-fi.org/discover-wi-fi/healthcare

FOR MORE INFO, VISIT:

lairdtech.com/EWS-Connected-Hospital

Laird
Smart Technology. Delivered.

Sources:
cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html
http://www.transparencymarketresearch.com/medical-device-connectivity-market.html