



## C U S T O M E R   S P O T L I G H T

# Mercy Health Systems: Innovative Mobile Applications to Enhance Patient Care

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### Introduction

Mercy ([www.mercy.net](http://www.mercy.net)) is a nonprofit Catholic healthcare system that includes 43 acute care and specialty hospitals in four states (Arkansas, Kansas, Missouri, and Oklahoma). The organization includes more than 700 physician practices and outpatient facilities, 40,000 coworkers, and 2,000 Mercy Clinic physicians. Mercy's mission is to provide the best care possible through the health system's hospitals, physician clinics, outpatient facilities, outreach ministries, and other health and human services. Mercy was named one of the top 5 large U.S. health systems in 2016.

To facilitate this clinical mission, Mercy centralized IT operations and consolidated IT infrastructure in a new \$60 million datacenter that was opened by Mercy Technology Services (MTS) in 2010. Since the move to the new datacenter, Mercy has deployed Epic's electronic health record (EHR) system enterprisewide and built out the mobility ecosystem surrounding the EHR system. To provide a mobility infrastructure that would improve device management and security, Mercy chose Airwatch mobile device management (MDM) from VMware. This Customer Spotlight describes how the project was sourced, developed, implemented, and measured. It also highlights MyMercy Bedside, an initiative to enable patients to access Epic's MyChart from their hospital beds using Mercy provisioned tablets; this project was made possible by the deployment of AirWatch.

### Project Overview

Similar to many other healthcare organizations in 2013, Mercy was dealing with an increasingly difficult-to-manage combination of corporate and personal devices as "bring your own device" (BYOD) became more popular, especially among clinicians. MTS wanted to create a more consistent experience for both company-owned and employee-owned devices and offer more applications on both sets of devices. Security features, such as PIN protection, encryption, and the ability to wipe a device remotely should it be lost or stolen, were also important considerations. With a more robust mobile infrastructure in place, MTS was able to deploy MyChart Bedside, a patient-facing mobile application.

### Solution Snapshot

**Organization:** Mercy, St. Louis, Missouri

**Operational challenge:** From a technical perspective, Mercy wanted a more robust and secure mobile infrastructure that would provide a common user experience on company-owned and employee-owned devices, including the provision of more applications on both sets of devices. From a patient-focused clinical perspective, Mercy wanted to increase the transparency and flow of information to patients admitted to Mercy hospitals.

**Solution:** VMware AirWatch/MyMercy Bedside, a mobile app extension of MyMercy, Epic's patient portal

**Project duration:** 10 months

**Benefits:** Improved security of company-owned and employee-owned devices; improved ability to securely provision tablets for patient use to access MyMercy Bedside when in the hospital; improved clinician, patient, and family satisfaction

## **Vendor Selection**

The MDM selection team consisted of senior management, including the CIO and the CISO who championed the project to minimize initial concerns staff had about IT having control over their personal devices. Rounding out the team were several physicians on staff in MTS who helped evangelize the capabilities by explaining the benefits of MDM to physician leadership.

MTS developed a comprehensive request for proposal (RFP) with more than 300 requirements to evaluate the vendors in the MDM market. The three major areas of consideration for Mercy when evaluating MDM solutions were:

- **MDM framework.** Mercy has more than 8,000 devices to manage across the enterprise; 35% are company-owned devices and 65% are employee-owned devices. With this many devices and a lean team of MDM engineers, Mercy needed to be able to easily manage devices and add and remove applications.
- **Ability to manage multiple mobile operating systems.** Because Mercy had embraced BYOD, the MDM platform had to support multiple mobile operating systems, specifically Android, iOS, and — to some degree — Windows.
- **User experience.** Balancing strong security and control for IT and usability for employees is always a struggle for healthcare organizations. MTS was concerned that staff might perceive the security as intrusive and thus would not feel comfortable using a mobile device for both professional and personal use. Not surprisingly, user acceptance became the biggest component of the MDM project. However, with extensive communication of the benefits of the new mobile platform, staff response became more positive.

Mercy evaluated a number of vendors. During the evaluation period, AirWatch was acquired by VMware. Because Mercy was a VMware shop, the potential for using virtualized platforms that included mobile devices was very attractive and contributed to MTS selecting AirWatch for its MDM platform.

## **MyMercy Bedside: Extending MyMercy Mobile App on an Inpatient Basis**

Healthcare organizations are moving toward a more consumer-oriented approach to delivering services. While progress has been made on this front across the industry, Mercy wanted to focus on improving the transparency and speeding the flow of information provided to patients. Over the past 10 years, Mercy invested extensively in Epic to move its clinical operations to a single, patient-centric EHR system. Mercy also deployed Epic's integrated patient portal, which Mercy calls MyMercy, to offer patients controlled access to the same information their physicians see in Epic via a browser or mobile app (iOS or Android based).

Patients use MyMercy to view test results, physician reports, upcoming and past appointments, and health records of family members (with the appropriate permissions). They can also schedule appointments, request prescription refills and referrals, and update medications and allergies. Patients with chronic conditions can connect their home devices and receive reminders.

Given the success of the patient portal, Mercy wanted to make similar information accessible to patients who had been admitted to a Mercy hospital. Anyone who has ever spent time in the hospital (or had friends or family who have) knows too well the frustration patients experience when they don't know what to expect when it comes to their care. For example, Who is taking care of me? When will my doctor visit me? What tests or procedures will happen today? Are the lab results back, and is the news good or not? When can I go home, and what do I need to know before I'm discharged? How do I communicate all this to my family? How do my family and I reach my care team with questions?

To that end, Mercy's innovation team embarked on MyMercy Bedside, a tablet-based application that addresses many of these patient questions. MTS, along with Mercy caregivers, worked with Epic to establish the proper configuration of the application and provide appropriate integration with other clinical systems. Patients who are deemed a good fit for using MyMercy Bedside are given a Mercy-owned Android tablet and instructions on how to use it by nurses. From the application, patients can view a real-time schedule of planned procedures and inpatient events, profiles of their care team for the day, and lab results and vitals; make requests (ranging from "I'm in pain" to "I'd like another pillow"); jot down notes for themselves to prepare for discharge; review patient education materials, and send messages to the patient care team. To bridge the care continuum, they can activate a MyMercy patient portal account so they can remain engaged as they recuperate at home. To meet patient demand, Mercy optimized a separate network for the MyMercy Bedside application. Access to this network was modeled after hotel guest networks, with the wireless network authentication issuing and revoking wireless privileges when patients are admitted and discharged, respectively.

MTS initially purchased 600 tablets for use in the MyMercy Bedside pilot based on an average daily census of patients who were thought to be good candidates for using the mobile application. The AirWatch MDM suite managed the provisioning of tablets, which are given to patients when they arrive in their rooms and retrieved by nurses when patients are discharged. These patients typically had a minimal length of stay of two to three days (enough time to learn how to use the app) and were not heavily medicated. Initially, MTS thought elderly patients would resist using the MyMercy Bedside application because they might not be technology savvy. The opposite was true; elderly patients were enthusiastic users because the app was intuitive and the tablet provided a connection to younger family members visiting them.

### ***How Does MyMercy Bedside Work on the Hospital Floor?***

"The concept of giving patients a tablet-based app to use during their stay seems 'simple' at first, but it's a pretty complex problem," said Dan Magoc, Mercy Technology Services, vice president of Solution Innovation. There are special considerations for patients using mobile devices in a healthcare environment:

- **Solution must be user-friendly for patients.** Access to MyMercy Bedside was greatly simplified. A wireless account is automatically created when a patient is admitted. Patients initially log in using a combination of their last name and date of birth. The only app available to patients on the tablet is MyMercy Bedside, which also has security features. The application itself was designed to minimize training requirements.
- **Solution can't add to the clinician workload.** While one of the primary goals of the MyMercy Bedside project was to improve the patient experience, another important goal was not to add to the workload of nurses who would be responsible for giving out and taking back the Mercy-owned tablets. Physicians were also concerned that patients' increased access to health records would generate more questions. Both nurses and physicians appreciated the increased level of communication between themselves and their patients and that certain manual tasks, such as acknowledging that patients reviewed educational materials, were automated.

- **Devices must be cleaned between patients.** Nurses are responsible for electronically cleaning (i.e., wiping patient information such as credentials or personal health information) and physically cleaning (i.e., disinfecting) the devices.
- **Security is paramount.** Patients cannot access the Android operating system or the internet from the tablet. This mitigates the risk of patients having their credentials to sites such as Facebook or email persist and be visible to the next patient and lowers the risk of introducing malware that could infect the network. In case the device is lost, the tablet can be wiped electronically using AirWatch MDM. When patients are discharged, their account is removed from the system.

## Challenges

The challenges Mercy faced regarding the MyMercy Bedside project were primarily organizational in nature. Both nurses and physicians were concerned about the additional workload the mobile app might create for them. For example, patients and their family caregivers might have more questions, which would take time to address. Another concern expressed by physicians was that their patients would receive adverse lab results before they had a chance to speak to the patients about what these results meant for them. Consequently, Mercy established a 24-hour delay between the time the lab results were provided to physicians and the time the data was made available in MyChart Bedside.

## Benefits

Mercy reported that the initial rollouts of the service at hospitals in Washington, St. Louis, and other Missouri facilities have been a tremendous success. Care teams working with innovation teams have responded with positive reviews. Clinicians have credited the project as having:

- Improved patient communication
- Engaged patients and their families in patient care
- Helped patients and their families get to know the care team, resulting in better interactions
- Provided instructions, communications, and lab results to the patient as quickly as possible
- Reduced anxiety related to lack of information
- Improved understanding of prescribed medications
- Offered patient training on treatments and medications

The overall success of the project was measured through the use of patient surveys embedded in the MyMercy Bedside app. Patients were asked to complete surveys before they were discharged. Overall patient satisfaction was high:

- 80% agreed or strongly agreed that the app helped them understand how to use medications better, and 60% reported that they understand the potential side effects of medications better.
- 84% indicated that they want to use the tablet on any future visits.
- 76% said the tool improved communication with nurses and doctors.

In terms of security and management issues, AirWatch has met expectations, and the IT team is pleased with the choice.

## Other Use Cases and Next Steps

MTS has leveraged AirWatch to support other use cases such as a video remote interpreter application that is used in the emergency room to care for non-English-speaking patients. This solution is particularly helpful if staff who do speak the patient's language are not available to interpret for their colleagues and the patient.

Mercy has deployed Epic Canto and Epic Haiku, which enable caregiver access to EpicCare from a tablet and smartphone, respectively. Mercy has also been very active in providing telemedicine and virtual health services. Engagement at Home is an initiative that sends patients an iPad and a set of Bluetooth-enabled devices (e.g., weigh scale, heart rate monitor, or blood pressure cuff) to patients' homes so that patients and their physicians can monitor their condition and conduct video visits if necessary. When patients are finished with the kit, they send it back in a postage-paid box provided by Mercy, similar to how consumers might return something they bought online. AirWatch technology provisions and deprovisions the tablets used by patients in their homes.

In terms of next steps, MTS is looking into enabling more capabilities on employees' personal laptops using the AirWatch agent. The number of clinical use cases like MyMercy Bedside will only continue to grow, and the ability to support mobile devices used inside and outside the four walls of Mercy will also become more important. AirWatch provides the essential framework to roll out new mobile applications to keep pace with the demands of patients, patients' families, and clinicians while meeting the mobile technology and security requirements of MTS.

## Methodology

The project and company information contained in this document was obtained from multiple sources, including information supplied by members of Mercy Technology Services, questions posed by IDC Health Insights directly to Mercy employees, relevant corporate documents, and publicly available information.

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Global Headquarters: 5 Speen Street Framingham, MA 01701 USA P.508.872.8200 F.508.935.4015 [www.idc-hi.com](http://www.idc-hi.com)