

WESTERN MARYLAND HEALTH SYSTEM, CUMBERLAND, UNITED STATES

Maryland Medical Center streamlines workflow, generates cost savings with 15-lead ECG system

Hospitals and health systems face a common challenge: patients are ill, the victims of heart attacks, strokes and other cardiovascular emergencies, and time to diagnosis is precious. Technicians, nurses and allied health professionals need timely, accurate, convenient ECG data and comparison studies they can quickly transmit to fellow Clinicians and care team members

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The benefits of innovative ECG technologies are especially evident in busy hospital emergency departments (ED). The demand for emergency services in the U.S. has risen steadily in the past 15 years, increasing the total annual number of emergency visits, according to the National Center for Health Statistics. However, the number of emergency departments has declined, generating higher patient volumes, overcrowding, delays and increased wait times across the nation.

A TALE OF TRANSITION

Before opening the newly constructed Western Regional Medical Center in November 2009, which included a redesigned emergency department, Western Maryland Health System operated on two hospital campuses. A patient might have heart surgery on one campus and receive follow-up care on another. With no system to view scans electronically, Clinicians shuffled and shuttled paper-based records and CDs between the two facilities. The process often added a full day to diagnosis and treatment decision making.

Now, however, the Heart Institute at the Western Maryland Health System offers diagnostic cardiology services, open-heart surgery and interventional cardiology procedures at the new medical center complemented by the use of Agfa HealthCare's IMPAX® HeartStation® ECG Management System.

Clinicians no longer need to navigate through the cardiology department or rifle through paper-based records to get the images they need. Instead, they can access and review images from home or from any of the medical center's 500 PC's and seven Agfa HealthCare reference review stations. Clinicians, from PCPs, nurse practitioners, and Physician assistants, to anesthesiologists, surgeons and neurosurgeons, now have complete access to the medical center's ECG system.

MULTIPLE BENEFITS

Western Maryland has generated multiple positive outcomes since it first automated the processing and storage of ECGs in 2009. In reviewing potential ECG system features and functions, it is important to consider how a system will deliver on promised benefits, exemplified by the following issues:

Fulfillment of HITECH goals and Meaningful Use requirements: Among the goals of a national information infrastructure outlined in the health IT sections of the American Recovery and Reinvestment Act (ARRA) are to improve quality, safety, and efficiency, to reduce health disparities, engage patients and families, improve care coordination, ensure adequate privacy and security protections for personal health information, and improve population and public health. Through its newly installed IMPAX HeartStation, Western Medical can already point to advances in

quality and improved care coordination efficiency.

The issue: How effectively will an ECG system address broad HITECH goals and meet specific meaningful use requirements for 2011, 2013 and 2015?

More time for patients: Clinicians - especially Physicians - invest a significant amount of time simply gathering information in the form of ECGs, lab results and x-rays. Western Maryland Regional Medical Center's ECG system has already reduced Clinicians' record searches, increasing the time they can spend at the bedside providing care for patients.

The issue: How likely is it that the ECG system will liberate Clinicians to spend more time with patients, improving the delivery of care and patient and Clinician satisfaction? Will the ECG system improve Clinician workflow by offering a single convenient point of access to current and historical ECGs?

Faster, more timely ED decisions: Previously, an emergency department Physician at Western Maryland might view a patient's x-rays, chart, and labs on three different high-definition video monitors or assign an ED clerk to sort through medical records. By generating rapid results through the medical center's new ECG system, Western Maryland has benefited from decreased ED wait times and increased operational efficiency, and has saved time previously spent printing and disseminating results.

The issue: How will the ECG system enhance ED care, in the form of smoother workflow, increased efficiency, more rapid patient care decision-making and reduced wait times and delays? Will the ECG help enable the ED to care for more patients, provide higher quality of care or help fulfill its mission as a regional trauma center, for example?

Clinician control and rapid information access: The medical center's ECG system generates critical value alerts, which Clinicians can either review and affirm or edit with a quick point-and-click within a familiar, albeit electronic, format. As Clinicians approve an ECG interpretation, the hospital's information system makes the ECG available to all providers. The result: rapid access to the tools needed for diagnosis and treatment, elimination

of traditional transcription, and the potential for greatly improved efficiency and savings in time and money.

The issue: How well does the ECG system allow Clinicians to display, review, edit, confirm, print and archive ECGs through a hospital information system from a single patient-centric point of access?

Improved coordination of team-based care: If a technician performs an ECG in the intensive care unit, it is loaded directly into the medical center's information system. A nurse who spots a critical value alert, such as myocardial infarction, for example, can call a PCP who would recommend a course of treatment. The result: The nurse no longer has to wait for a cardiologist or interventionist to read an ECG before taking action.

The issue: How well does the ECG system promote faster medical decision making, coordination of care and effective use of nurses and allied health professionals?

Billing accuracy and follow-through: The medical center's ECG system offers crisp, clear, easy-to-read results. Instead of asking Clinicians to decipher a Physician's free hand interpretation of an ECG, the ECG provides typed, time-stamped information that improves the clarity of the health record and facilitates charge capture, billing and reimbursement.

The issue: Does the ECG system offer legible, readable information that facilitates billing? Does the ECG system provide patient-centric information that can be captured as part of the electronic medical record?

Innovation: Because Western Maryland had spent 12 months working with the 1.1 version of its ECG system, Agfa HealthCare invited it to become a beta site for version 1.3, which includes support for 15-lead ECGs. The additional leads provide views of the electrical activity of the posterior wall of the heart, which provide additional data to diagnose a heart attack. HeartStation 1.3 gives the Physicians the option of ordering a 12 or 15 lead ECG on patients with chest pain.

The issue: Is the ECG system vendor committed to introducing ongoing innovations and enhancements and allowing facilities to serve as beta sites for new versions of a technology? How

could such innovations contribute to improvements in patient care?

Flexibility and adaptability: Before installing its ECG system, the medical center shopped for a vendor-neutral solution that would mesh with its existing information system from Meditech, as well as equipment from multiple vendors of ECG carts, stress test equipment and Holter monitors. At Western Maryland, the medical center's ECG system is fully integrated with the Cardiovascular Information System (CVIS). If an interventional cardiologist is reading a coronary angiogram or echocardiogram, she or he can easily click on a tab, bring up the patient's current and previous ECGs and compare them to the angiogram or echocardiogram results.

The issue: How fully does the ECG system vendor demonstrate a commitment to multimodality interoperability and open standards? How does the ECG system facilitate clinical correlation? Will the system allow the facility to leverage existing equipment investments and purchase the ECG equipment of its choice?

IDEAS FOR IMPLEMENTATION

No two ECG systems are alike. But hospitals and health systems such as Western Maryland can save time and resources by following some simple implementation steps.

Test, test and test again. Western Maryland worked with Agfa HealthCare engineers for three months to test and verify that its ECG system could easily communicate with other medical center systems. Consequently, ECG results were readily available to Physicians and Clinicians during the "go live" phase, which eased the staff's anxiety related to the conversion to electronic storage and access of ECGs.

Rely on super-users as advisors. Western Maryland identified four staff members who received training on how to trouble-shoot system problems such as reconciliation. Having these staff members available enhanced the implementation process. The staff members made regular rounds on the units, and rotated "oncall" responsibilities during off-duty times as well as for several weekends after the system went "live". This process provided the clinical staff with immediate access

to someone who was familiar with the system and could resolve issues that might have come up.

Invest in training. Two months prior to launch, the medical center's cardiology department joined Agfa HealthCare in conducting training sessions. Prior to system launch, the Information Technology department loaded training programs onto more than 500 medical center PCs.

Insist on the presence of engineers. When the medical center launched its ECG system, two Agfa HealthCare engineers came on site to offer Physicians and nurse practitioners five-to ten-minute tutorials.

Focus on a consistent standard of care. The ECG system allows the medical center to maintain and verify a patient's ECG record through a single system - from the time the patient is admitted through the ED to arrival at a cardiovascular nursing unit or the ICU.

Promote collaboration across departments. Before selecting an ECG system, make sure that IT leadership joins forces with PACS administrators and representatives of specialties such as cardiology and radiology.

Ensure file integration. Be sure to connect a patient's cardiology files into a single record with an electronic patient identifier (EPI). If the patient has an ECG at an outpatient facility in the morning and then presents in the ED the same evening, Clinicians can easily compare the results.

Since Western Maryland implemented its ECG system, nurses who once insisted on printing every ECG have abandoned paper for the efficiency, convenience and control of an automated ECG solution. Physician candidates interested in working at the medical center are impressed with the broad availability of ECG systems, PACS, and electronic patient records. And the hundreds of Clinicians at Western Maryland Medical Center who regularly tap into the power of the ECG system can now look forward to even more significant support toward streamlined workflow, interoperability and accelerated clinical decision making. •