



Achieve Healthcare Technologies

EMC Global Services helps integrate E-prescribing functionality into company's web-based clinical and financial software offering

Achieve Healthcare Technologies (www.achievehealthcare.com) focuses on the long-term care industry by providing comprehensive technology solutions to nearly 3,000 customers nationwide. Achieve Matrix is a fully integrated, Web-based software solution that helps manage clinical, financial, and business operations through a single source. Achieve helps remedy long-term care challenges through electronic health records capabilities, integrated mobile charting technology, and corporate reports and dashboards. Achieve recently formed LTC Technology Services—a division of Achieve that aims to complement a facilities' current technology infrastructure.

Achieve Matrix is a fully integrated, Web-based clinical and financial software system offered by the company to support the management of long-term care facilities' resident and business operations. When Achieve decided to enhance Matrix with a revolutionary electronic medication ordering system, known as e-prescribing, the company turned to EMC® Global Services, a trusted development partner.

“Achieve is leading the way with the first e-prescribing system for the long-term care industry and EMC Global Services is our partner in making this happen,” says Mike Bordelon, VP Research and Development.

E-prescribing for improved patient safety and lower costs

It has been determined that more than eight million adverse drug events occur each year, of which three million are preventable. According to the National Association of Boards of Pharmacies, there are as many as 7,000 deaths annually in the United States from incorrect prescriptions.

Residents in long-term care facilities are at greater risk for drug-related injury than any other patient population because they often take several medications. Existing manual processes for writing prescriptions and performing drug utilization reviews are inefficient and prone to errors. The process is also labor-intensive and expensive, which delays care for the resident and can cost the facilities tens of thousands of dollars monthly.

Achieve knew that improving the speed and accuracy of the entire process, from writing the prescription to delivery of a valid order to the pharmacy, could save long-term care

facilities hundreds of thousands of dollars annually and also reduce medical errors—potentially saving lives. The company decided to implement an electronic medication ordering system, known as e-prescribing.

“With new laws such as the Medicare Prescription Drug Improvement and Modernization Act of 2003 establishing a retiree prescription drug benefit under Part D, e-prescribing and other health technology innovations are no longer a futuristic concept,” says Bordelon.

A solution that matches speed and functionality to need

Achieve recognized that one of the biggest potential challenges to be faced was in getting medical personnel to accept the e-prescribing system. Increasing the acceptance rate would mean making the order entry task as quick as possible while efficiently guiding better drug utilization and reducing prescribing decisions that could lead to adverse drug events.

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For assistance with the development of the e-prescribing system, Achieve looked to EMC Global Services. Together, the two companies determined that the best approach for gaining physician acceptance and facilitating easy integration was to design the system using a service-oriented architecture (SOA) and have it provide realtime information to the user via a simple-to-use interface. The provision of realtime data for instant feedback on selected high-risk prescribing decisions would be the best way to replace the pen and paper process without increasing physician time. Using an SOA would minimize problems with data flow between Achieve Matrix, third-party products, and reference data bases for drug utilization and formulary benefits.

The technology and resources used to achieve these goals include: Java/J2SE/J2EE, JBoss 3.2.6/Tomcat 5.5, Apache Axis 1.1 Web Services, OpenSymphony WebWork 2.2, Microsoft SQL Server 2000, Microsoft SQL Reporting Services, Asynchronous JavaScript and XML (AJAX), Orion Symphonia Message Mapper, and an industry-leading reference database called the First DataBank National Drug Data File (NDDF) Plus.

Today, the new e-prescribing system that EMC Global Services has integrated into Achieve Matrix offers an intuitive web-based user interface that speeds drug entry by the user. The search capability enables the physician to type the first few letters of a drug’s name, such as las for Lasix or tyl for Tylenol and the system automatically retrieves all of the variations available for the drug—dosages, strengths, and forms (oral, nasal, capsule, tablet, etc.). Results are displayed as the user is typing and refined as more characters are entered.

Unlike simple systems that merely automate the order-writing process, Achieve’s e-prescribing system integrates with a resident’s electronic health record in real time. As drugs are displayed, the system accesses NDDF Plus to retrieve patient-specific drug interactions and contraindications, alerting the prescriber before the order is written to any potential interactions that may occur as a result of that patient being on additional medications.

The system also uses web services to perform a realtime formulary benefit check for patients, ensuring that they are receiving medications that are covered by their health plan. Drug search results are displayed in the preferred order that they will be paid. These realtime

checks mean that the search results the physician sees are displayed with a drug utilization review automatically completed.

Once the prescription is completed, it is delivered electronically to the patient's pharmacy in a secure format that complies with health privacy regulations. Orders are sent to the pharmacy using a web service via RxHub.net, a proprietary network exchange for physicians and health care providers.

"The SOA architecture designed by EMC Global Services has enabled us to easily integrate with industry drug reference databases and proprietary network exchanges," says Bordelon. "The carefully designed architecture will also enable us to offer this product as a stand-alone medication management system in the future to non-Achieve Matrix customers."

Far-reaching benefits

With the new e-prescribing system, prescribing practices such as the use, dose, and frequency of a recommended drug are improved. The immediacy of physician alerts to drug interactions and contraindications at the time the prescription is written reduces the chance for adverse drug events and greatly improves patient safety. In addition, realtime formulary benefit checks speed the drug utilization review process. Errors are avoided and time to create an order is minimal, saving considerable time for the resident, pharmacist, and facility.

Electronic transmission of a prescription also is faster, more efficient, more secure, and more reliable than paper or fax prescriptions and is less prone to abuse. Sending prescriptions directly from the point of care eliminates pharmacists spending time calling physicians about refills, illegible or incomplete prescriptions, and insurance coverage issues.

The new system also helps long-term care facilities improve resident care while reducing costs. Medication orders are processed faster, minimizing delays for residents to receive needed drugs. Staff can now spend more time on resident care and less time resolving issues with medication orders. Physicians spend less time resolving drug utilization review issues and more time with residents.

"The addition of e-prescribing to Achieve Matrix dramatically increases the value of the product to our long-term care facilities," says Bordelon. "In addition to the costs facilities expend in resolving formulary and drug utilization issues, it can cost a facility up to \$4,000 for each medication error that is made. Eliminating these costs make the return on investment calculations for Achieve Matrix extremely appealing."

Success brings expanded use

According to the eHealth Initiative, studies suggest that the national savings from universal adoption of e-prescribing could be as high as \$27 billion.

In January 2006, Achieve was awarded a grant from the Agency for Healthcare Research and Quality to test, promote, and refine its e-prescribing system by integrating several long-term care facilities, payers, RxHub.net, and pharmacies.

"Medicare Part D is really changing the way medications are paid," says Bordelon. "With so many payers, a healthcare facility can literally deal with hundreds of formularies, making it almost impossible to know if an order will be paid at time of placement. This grant shows that e-health initiatives are a major priority for the federal government—e-prescribing is just the beginning."



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