



INTERGY EHR (ELECTRONIC HEALTH RECORD)

2005 COMPUTERWORLD HONORS CASE STUDY

MEDICINE

INTERGY ELECTRONIC HEALTH RECORDS PROVIDE PHYSICIANS QUICK AND EASY ACCESS TO COMPLETE, CLEAR AND ACCURATE PATIENT HEALTH CARE RECORDS, FACILITATING BETTER QUALITY HEALTHCARE AND REDUCING HEALTHCARE COST. [20055315]

A Search for New Horizons



SUMMARY

An innovative system for electronically capturing and storing patient health care information and providing physicians quick and easy access to the complete and accurate patient health care record. Intergy EHR more efficiently facilitates better quality of healthcare while reducing healthcare cost.

APPLICATION

Despite significant advances in medicine, the capture and storage of clinical information in ambulatory clinics remain largely a paper process. A patient's medical record consists of a paper folder containing exam notes, lab results, and other documents. There is no tracking of medication use, patient diagnoses, or vital signs. The paper chart can only be read by one person at a time and is only accessible at one location (the clinic). These factors and others lead to errors in patient care, unnecessary lab tests and overall decreased efficiency as well as increased healthcare costs to patients. Additionally, it is extremely difficult to gather trend data to form decisions since the only way to retrieve clinical data across a patient population is to physically obtain each paper chart.

For sometime, healthcare professionals and outside observers have recognized that computerization of medical records offers great potential for improved patient care. Previous efforts at creating an electronic health record (EHR) that doctors would use have met with poor success. It is estimated that less than 10% of physician practices use an EHR instead of paper charts.

In 2002 WebMD Practice Services launched a major effort to develop a comprehensive and highly usable EHR. Major obstacles to physician adoption of EHR were analyzed. Clinician input from various specialties was used to guide design. Early tests within clinics validated the architecture and design of the system. The end result was the release of Intergy EHR into the ambulatory marketplace in the fall of 2004. This system offers several new and innovative approaches to EHR that promise improved adoption among physicians. In addition, the system's architecture stores codified data from each patient care event, giving the potential for disease management at the population level.

Goals of Intergy EHR

The primary goal in developing Intergy EHR was physician adoption. Previous systems have been difficult to use in the busy everyday activities of the ambulatory clinic. Patient care is delivered in a setting of interruptions, phone calls, and unscheduled emergencies. An effective EHR must be able to support this workflow by allowing quick access to multiple charts and rapid delegation of tasks. Intergy EHR is designed to handle the multi-tasking and rapid decision-making that characterize a typical physician's day.

Another goal of the system is to smooth the transition of the physician to an EHR by the use of intuitive screens that resemble the paper chart. Previous generations of EHR presented a confusing array of buttons and navigational controls that required many hours of training to master. Intergy EHR possesses comprehensive functionality beneath an intentionally simplified user interface. Most modules such as Clinical Task Management or Medication List can be learned in minutes with minimal instruction. This is of great importance as new physicians and staff can quickly become fully operational in less than a day. Physician users, within several weeks, experience an increase in productivity as the time from patient check-in to submission of a medical claim for billing is dramatically reduced.

The centerpiece of a patient visit within a medical record is the Encounter Note. This document contains all the symptoms, physical findings, diagnoses, and treatment plans generated at the time of the visit. The physician and their clinical staff all contribute to the Encounter Note according to a specific workflow. The

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Encounter Note module in Intergy EHR takes into account how medical assistants, nurses, and physicians enter data into the record, using customizable forms that adapt to various roles and specialties.

Unlike older EHR systems, the Encounter Note in Intergy EHR allows multiple means for the physician to document the patient's findings. The physician uses a toolset consisting of point-and-click forms, dictation, drawing, text macros, and voice recognition to produce the Encounter Note in a way most acceptable to the user. The resulting Encounter Note presents a highly readable document with attached drawings and images as needed.

The main goals in ambulatory patient visits are rapid treatment of sickness, preventive health, and management of chronic disease. In many EHR systems, the chief output is merely the Encounter Note, requiring paper methods to handle treatment. A clear example of this is the prescribing of medications. Older EHR systems print paper prescriptions for the patient to take to the pharmacy. Intergy EHR contains a complete electronic prescription system that includes direct delivery of the medication order to the pharmacist. Not only are problems with legibility of handwritten prescriptions eliminated, but Intergy EHR will also detect drug allergies and adverse interactions. The system also possesses interfaces to regional clinical laboratories that handle ordering and reporting of lab tests. These capabilities speed the delivery of care and reduce medical errors.

Another central goal of Intergy EHR is to capture all patient care events in a codified manner using standardized nomenclatures and terminologies. To the physician, the system is a highly usable electronic medical record that supports order entry and results viewing. For the care manager or medical director, each patient encounter generates rich clinical data for monitoring quality of care and disease states. In the past, a clinic would have to pull hundreds of charts and spend days abstracting data from paper records to detect trends and outliers in a patient population. Intergy EHR, though built to be easily adopted by clinicians, also is designed to aggregate patient data for analysis and disease surveillance. The concept of building a clinical system that cares for the individual as well as the population represents an innovation that will help healthcare organizations manage large numbers of patients with chronic diseases.

Nearly all medical practices today use a computer system for collecting procedures and diagnoses for the purpose of billing charges to the patient and their insurance company. Physicians today record the information needed for billing into the patient's paper chart. Information from the paper chart is then manually entered into the billing system. This is a large manual effort within the practice today. A goal of the Intergy EHR was to eliminate the need to manually enter the information into the billing system since it had already been recorded in the EHR system. This was achieved by having Intergy EHR fully integrated with the Intergy POMIS system. The clinic today can have essentially one system that collects information at one point in time and is able to accurately bill the insurance company and patient from the information gathered at the point of care. Intergy EHR furthered the goal by using the HL7 communication standard to send the information to any practice billing system.

BENEFITS

The benefits of an electronic health record (EHR) are numerous. Most notably are the following:

- A physician is able to instantly see the patient's medical history without the need for obtaining a physical paper chart. The physician can reference with ease the patient's previous ailments, treatments prescribed, as well as results. The capability also allows for multiple people to be referencing the chart simultaneously. This eliminates any time lag in care due to having to route a paper chart to someone that may be at a different location. The electronic chart also enables the user to view the entire history reducing the risk of missing information.

- Physicians provide better quality of care using the Intergy EHR since all procedures and orders that are recorded are able to be checked and verified to be appropriate for the intended purpose thus minimizing mistakes. An example of this is in the prescribing of medications. The Intergy EHR system is able to check a requested prescription automatically against the current medications being taken by the patient and alert the physician to any adverse effects. Without an EHR, the physician would have to rely on his or her memory to determine if any adverse conditions were possible. By eliminating this type of human error, patients are provided better healthcare.

- The cost of healthcare to the patient can be reduced. Physicians making use of the Intergy EHR will be much more efficient at providing care, since duplication will be minimized. This will be most significant in the case of diagnostic procedures such as blood work, x-rays, etc. that are often redone since the previous results are not easily retrieved, reviewed or compared. The Intergy EHR allows a physician to have access to all

diagnostic results, images, etc. at any time, thus eliminating duplication. The Intergy EHR will also electronically send the information recorded to the practice's billing system. This enables accurate data to be recorded in the clinic's billing system thus reducing the number of claim rejections by the insurance company. These advances in data recording and transmission will reduce healthcare cost by eliminating redundant procedures and potentially stop rising insurance premiums to the patient since insurance claims will be accurate on the first submission.

- Encounter notes are automatically generated from the pre-defined exam questionnaires. This has two dramatic benefits. The first is that the physician's notes are consistent and accurate due to the fact that he or she is not required to verbally dictate and then have the dictation transcribed and sent back for review. This further reduces healthcare cost as multiple handling of the notes is eliminated. The second benefit is the physician can care for more patients each day as the time required after each visit to record notes within the paper chart prior to seeing the next patient is eliminated.

- The Intergy EHR stores all encounter findings in a codified manner thus allowing information to be easily mined across a population of patients. This enables physicians to determine if there is a chronic ailment affecting a certain demographic group or whether or not a given treatment of a disease is having widespread positive results. Having the ability to perform analysis of this type provides the medical community and the public with enhanced care. Additionally, codified data stored electronically paves the way for the future capability of aiding the Centers for Disease Control (CDC) by providing them with codified data via electronic means that can then be examined for an entire population. Today the CDC receives its information from the medical community by manual means. Electronic exchange of health information could be the difference between stopping a potential disease outbreak and having an entire population put at risk.

IMPORTANCE

The entire goal of the project was to create an electronic health record to replace the current model of paper records. Information technology served that goal by providing the following capabilities:

- Electronic Storage
- Electronic Data Interfaces
- Graphical User Interfaces
- Image Compression and Viewing
- Mobile Technology (PDA's, Tablets, wireless networks)
- Data Mining (Relational Databases)

The Intergy EHR system is available today solely because of the integrated use of these various technologies. The EHR solution provides physicians with the ability to record clinical information about a patient efficiently with fewer errors and omissions at the point of care. Patients are able to have their complete medical history available to physicians and clinicians at anytime without the need to manually locate and retrieve paper medical records.

While no one technology prevailed as the centerpiece of the system, the culmination of various technologies being integrated together provides a solution that will radically change forever the mode of recording and retrieving patient healthcare information.

ORIGINALITY

The concept of an EHR system is not unique as many companies have been endeavoring to produce a widely accepted system. What distinguishes Intergy EHR from others is that the goal of the system was not to merely capture clinical data and be capable of presenting it, but to design a system that integrates into the workflow of the physician in such a way as to become a necessary tool for doing their job. There have been many great ideas built to aid people over the years, but the really successful ones are those that become a necessity to performing a job. Numerous innovations were incorporated into Intergy EHR to make it into a tool that would become necessary for the physician and their clinic staff to their job well. These innovations include the use of mobile technology that allow for tablet or PDA to be carried and used on the go rather than having the physician have to enter data at a fixed location. Intergy EHR allows the physician to enter data in various ways enabling him or her to work the way that it is most comfortable to them. Examples include filling out predefined questionnaires, drawing on body part diagrams, dictating via voice or attaching existing documents. All of these modes may be used to add data to the patient's health record or exam notes. Additionally, Intergy EHR integrates with the practice's existing billing system to allow for data exchange to occur between the two systems. Many companies provide a single aspect of this solution, such as a handheld product, but with Intergy EHR we have merged the technologies to create an experience that provides continuity across the entire patient

visit from the time they make an appointment to the point at which they leave the clinic.

This was accomplished by applying all of our industry knowledge from having been a leader in the Practice Management arena as well as bringing in physicians to educate us on how a physician conducts their job. We added to that our technology expertise as a leader in electronic data interface exchange with laboratories and insurance payers. Technology advancements such as wireless networks, imaging and others were then added to complete the picture of the system to be built.

SUCCESS

Demand for EHR systems is quickly rising and is now in nearly 60% of all client presentations. While statistics are still being gathered to quantify the success, it is clear from the feedback from early adopters that Intergy EHR has achieved its goals. Physicians who have embraced the system are delighted that the system is the cornerstone building block within their own goal of becoming a fully automated paperless clinic. Early results indicate very easy adoption with little training required. In each case, the physician has indicated after a very short period of use that they would be hard pressed to conduct future business without the system. The system increases accuracy, eliminates waste, aids in providing better care and improves clinic productivity.

The future for healthcare due to physician adoption of this system is extremely bright, since having patient health information computerized and stored in a codified method will open the gateway for the development of standards for exchanging patient health records. Once standards for data sharing are developed, any physician at any facility, authorized to see a patient, could gain access to the patient's entire health record which will ultimately result in better healthcare for people. Work is now underway throughout the healthcare community to integrate the Continuity of Care Record (CCR) that will be the vehicle for sharing patient health information. Further work is also ongoing to allow for a patient to have access to their complete medical history at any time anywhere. This will be accomplished by having EHR systems publish the data to patient's data system.

DIFFICULTY

When embarking on the development of a new system, which radically changes the way the users of the system will perform their jobs, obstacles are always present. In the case of an EHR system, the benefits of providing such a system were obvious, but delivering a system that would be adopted was the real challenge. Physicians are trained to conduct an exam a certain way and any system to aid in the collection of data had to do so without interfering with the physician's mode of work. The new paradigm of using an EHR system for aiding the physician in the performance of their job could only be achieved if it enhanced their experience. The new system could neither, slow the user's efficiency or be more difficult to learn. The unique aspect of this endeavor was that physicians serve in various specialties and each with unique workflow needs. To that end, the major difficulty was in designing a user interface that allowed physicians to easily access patient information and record information with a minimum of effort. Today, physicians can voice dictate their notes and move to the next case with a great deal of ease. Therefore the system had to get very close to that speed, yet provide the added benefit of a fully electronic health record. Delivering a system that would be adopted and liked required countless hours of user interface design and the building of working prototypes to gather user feedback. The ultimate test of any good design is will the target user want to use to the system.