<u>Old Harding Pediatric Associates</u>
<u>Application for Davies Recognition Program</u>

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Physicians in the practice: Number: 14   FTEs:12
Nurses in practice: Number: 44   FTEs: 32
Additional staff: Number: 32   FTEs: 27.5
No commercial/employment relationships with any vendor of our EHR system.
Annual number of patient encounters: 72,500
EHR Implementation Team: Chris Smeltzer, MD; Kirsten Kravitz, MSN, PNP; Sarah Ligon; and Brenda Plunkett

Old Harding Pediatric Associates is a two site pediatric practice located in greater Nashville, Tennessee. Between both offices there are 14 physicians, including 12 full time physicians ranging in ages 32-68 years. The primary clinic is open 7 days a week including nighttime clinic hours Monday through Friday. The satellite clinic is open 5 days a week for daytime hours. Physicians practice at primarily one clinic except for night and weekend clinics when each physician rotates through on call days.

Both offices have moderately complex labs managed by medical technicians who perform around 230 labs between both sites. Forty nurses and forty support staff are divided between both offices. This includes a separate business office located above our primary clinic. Approximately 400 visits for well child check ups, sick visits, and laboratory needs occur every day. Full time triage nurses intake approximately 350 patient calls throughout the day. At present, Old Harding Pediatrics cares for 23,000 patients.

Our business is providing quality patient care to children and their families. So our utmost objective when deciding to implement an EMR was to improve the quality of our patient care and continue to provide excellent care during implementation. If this goal could be accomplished then we realized we could improve physician and office staff efficiency, improve patient satisfaction, and increase office profitability.

Specific expectations for improving quality of patient care were formulated. We wanted to have complete, legible medical records available upon arrival of every patient. We also wanted assistance at our fingertips with clinical decision making. Having automatic alerts for drug allergies or medications that were incompatible was essential. The reduction of drug errors would be made by producing legible prescriptions for pharmacies. Our referral approval system had to become more expedient and less likely to be overlooked. Patient education on diseases and anticipatory guidance, an important part of pediatrics, needed to be incorporated into our EMR.

To improve our physician and staff efficiency, we wanted to reduce the need for shadow charts. Before our EMR implementation, a copy of every visit at the satellite clinic was made and sent over to the primary clinic for filing in the patient's shadow chart. Also, by keeping all documents in the EMR, the need for filing staff could be reduced or possibly eliminated. We also wanted to rid our stock rooms of stacks of educational handouts that were copied and stored there. To further improve office efficiency we felt communication between all departments of our practice was less than excellent and we wanted improvement in this vital area.

Indirectly, everything we wanted to improve upon would increase our patient's satisfaction. Directly, we foresaw a decrease in turnaround time for triage calls, prescriptions, and referrals. Triage would have immediate access to patient charts and vital information. Decreased time for patient's awaiting a return call translates into increased patient satisfaction.

Office profitability would be enhanced by having a more accurate method of documenting appropriate coding levels for visits. Missed charges for procedures would be captured. With an EMR, if you document it, then you're automatically

billing for it. Our medical records staff could be cut back or restructured to perform other tasks. Copying costs of handouts and super bills would no longer exist. This would free up space and eliminate a large monthly bill.

From the start of this process, Old Harding Pediatrics recognized the need for a dedicated team to lead the search for and help coordinate the implementation of an EMR. Our team included a physician, nurse, executive administrator, and an assistant administrator. Our duties were divided as Project Manager, Implementation Lead, Implementation Administrative Lead, Implementation Clinical Lead, and an outside source for Implementation Technical Lead.

Our Project Manager was our executive administrator. Dedication to the project for life was the first expectation for this team member. She served as a first point of contact for our EMR's Senior Project Manager and managed day to day tasks related to the project. She oversaw the selection of all team members to ensure their commitment for this project.

The role of Implementation Lead was held by a nurse within the office. She served as lead contact for the EMR's Project Manager throughout implementation. Prior to any formal training, she introduced other staff and physicians to the EMR and helped gain enthusiasm from the users. She fielded questions and concerns from the future users regarding implementation and other specifics about the project. She also worked as assistant to our Implementation Clinical Lead because of clinical knowledge she could offer.

Implementation Administrative Lead for the project was our assistant administrator. Her focus was primarily on non-clinical aspects of implementation. She familiarized the EMR's Project Manager with our administrative functions, workflow, billing, and scheduling. Early on, she began introducing non-clinical staff to the product and discussing how the EMR would affect their workflow.

The physician who served as Implementation Clinical Lead was not our most computer savvy resource, but he had belief in the project and enthusiasm about improving our quality of patient care with an EMR. His excitement led others to believe in the project and anticipate its use. He worked directly with the EMR's Medical Knowledge Author to customize clinical workflow and knowledge. Also, he encouraged other physicians to become a part of refining the medical knowledge before its implementation. He helped to instill a sense of ownership in the EMR for each physician.

We contracted from an outside source to find an Implementation Technical Lead. Our Technical Lead worked side by side with our EMR's Engineering Services Analyst to fully assess and plan for the implementation. He was responsible for hardware needs, creating a server environment, and managing any network components that would be needed to support the new system. He also established and still helps to maintain the test, training, and production environments within both offices. Like every other team member, his dedication to the project for life was and still is vital.

The decision to move forward with an EMR came in three phases. A campaign called Compassionate Care 2000 was launched in the office in March of 2000. "Compassionate" stood for providing quality service focused on kindness,

understanding, and accessibility. "Care" meant we were committed to excellent pediatric medical care, education, prevention, and providing a nurturing workplace. "2000" signified our future was focused on technology, quality assurance, research and dedication to education for future physicians.

The second phase started in August of 2001 when a Strategic Planning Committee was formed by representatives from every aspect of our office, including patients. Goals and a clear vision were identified along with areas of improvement in the following areas: facilities, personnel, communication, technology, and external influences. At this time, an EMR goal was set for 5 years out.

The annual Director's Retreat in October 2001 was the third phase of the decision making process. The physicians reviewed the Strategic Planning Committee report. Among the major concerns were continuity of care between multiple sites and chart storage space had been maximized. Either more space would have to be rented for chart storage or we could vigorously pursue implementing an EMR. At that time, the director's set the EMR goal for 1 year.

Our team at Old Harding Pediatrics began researching software companies. We attended trade shows and invited vendors to come to our office for demonstrations of the products. When we found an EMR that met our search criteria, we planned a site visit to see the product in use. Throughout the search process, good communication and a desire to partner with us was key. If a company had a good product, but couldn't communicate with us, we moved onto the next prospect. Once we found a vendor who knew their product, was confident in its abilities, and presented it well; we were done looking.

Noteworthy Medical System's EMR was selected after viewing many products and demos. Physicians wanted a product that looked as close to a paper chart as possible. With Noteworthy, we were able to keep that familiar look while progressing into the electronic world. Our product had to be easy to learn and navigate. Some products required week long introductory sessions and weren't user friendly. Noteworthy has three main tabs that allow patient encounters to be documented logically and easily. Also, we needed an EMR that would interface with our newly implemented billing and scheduling system, CSC. The two companies partnered quickly and worked to ensure a smooth transition for our new billing interface. It was also important for our EMR to come equipped with a solid clinical knowledge base.

Old Harding Pediatrics wanted to customize the medical knowledge, but also didn't want to start from the ground up. Noteworthy offered an extensive pediatric medical knowledge base that provided a great springboard for physician customizations. Noteworthy has a 24 hour help desk available with immediate response. The calls are taken and distributed to the appropriate support staff and are answered promptly by call backs and emails. Noteworthy allowed for and encouraged a great working relationship between their team and ours. They strived to learn our weaknesses and to counter those with their own strengths.

The core functions of the system are very intuitive with Noteworthy. History and Physical Exam questions are driven by the well child or illness Reason for Visit (RV) that is chosen by the nurse. Each RV is linked with a specific set of questions

for history taking and lists appropriate systems for the physician to examine. The majority of information can be captured by selecting from pick lists, but anything may be entered as free text if needed. All information captured within the visit is then translated into a detailed SOAP note format that can be printed for each individual visit if needed.

The Problem List is visible on the Summary Page when a patient chart is opened. It is easily updated and can be date stamped. A diagnosis made within the system can be automatically transferred to the Problem List if the physician chooses to do so. Current Medications and Allergies are also located on the Summary Page. Medications can be ordered, refilled, or changed on this page. Noteworthy has incorporated a drug allergy alert system so that an override must be entered if an attempt is made to order a drug listed in the allergy section. There is a separate side Medications tab where the patient's complete drug history is listed with past and current medications ordered, including immunizations.

Radiology exams are ordered in the system and a synopsis of results is entered manually when the report comes into the office. The complete report is then scanned into an X-ray folder within the Imaging section of the chart. The side Radiology tab, like the Medication tab, logs the patient's full radiology history. Referrals are ordered within Noteworthy by the physician and a report is run by referral staff so they can complete authorizations and prior approvals for these patients. When referral correspondence comes into the office, it is scanned into the Referral Correspondence section of Imaging. There is a side Consults tab where a history of all outside referrals is kept in the chart.

Lab ordering is made easy with Noteworthy. All in house labs are ordered in the system and results are entered in the chart by the Lab Technicians within minutes. Any labs that are sent out are still ordered in the system and then results are entered manually when the lab results come into the office by fax or mail. After the numerical values are entered, the hard copy of the results is then shredded.

Reporting capabilities for pediatrics are vital. Growth curves are now available within the system, eliminating plotting errors by hand and offering a more precise calculation by graph. Illness summaries can be run to review past diagnoses or to send out to referred specialists, such as ear infection summaries to an ENT. Numerous other clinical and administrative reports are available within Noteworthy.

With implementation of the EMR, a chief goal was to limit the doctor and nurse's time spent dealing with technology issues that would take away from patient care. The solution needed to deliver not only the pertinent information about the patient during a visit, but also manage the information related to the patient as far as insurance, documents, billing, scheduling, etc. Noteworthy and Computer Science's MDR portal are the two key components implemented to meet these needs.

The Noteworthy EMR is a self-contained system that includes all the necessary components to replace the paper trail tracking the patient's visits. The software runs on one main server with client software distributed on each exam's station or doctor's station. The client software requests data from the server delivering real-time information. Only data related to the current patient is local to the client, but then updated back to the server. Imaging, a component within

Noteworthy, scans and stores the images to a SQL Server. The Noteworthy client can save or retrieve a scanned image without leaving the patient chart based on an interface that communicates to the imaging software.

The back-office, including scheduling and billing, is done with Computer Science Corporation's (CSC's) MDR portal which is presented to the user within Internet Explorer. The connection to CSC's server is a direct connection to their mainframe backend using java extensively. On a nightly basis, data, such as demographics, is exported out of Noteworthy, manipulated using SQL Server, and then delivered to CSC. Likewise, data is delivered to Noteworthy from CSC.

The entire network infrastructure is based on Microsoft Windows 2000 network operating system. Each client has Windows XP allowing a very graphical interface use with patients. Our practice includes a branch office that communicates back to the main servers over the internet connected via a load-balanced dedicated encrypted VPN tunnel. This allows the branch office to only need a connection to the internet, without the need for additional servers at that location. Laser printers are distributed throughout both offices. All the servers, including those for scanning, the EMR, and email, are located at the main office location with a total of five servers fulfilling these roles.

Noteworthy's EMR employs a simple, comprehensive interface to generate and transmit charge capture information. Noteworthy partnered with our newly implemented billing system, CSC. The EMR generates a summary of activities for each patient encounter and sends it to the charge adaptor to create charges.

When an encounter is signed, all charges are collected and formatted on a charge display in the EMR. The user can review the charges or print a billing slip if needed. The encounter is signed and the charges adaptor receives the data and forwards it to CSC.

The charges adaptor holds the data in a queue so it can be updated or modified before reaching CSC. If an encounter is reopened and billable charges are changed, that triggers an update of the billing data in the queue. If the data cannot be updated because it has already been sent to CSC, a fault is generated and the charges adaptor will notify the user and input the error into an error log.

Our implementation process consisted of seven main focus areas: Project Charter, Workflow Assessment, Medical Knowledge Configuration, Hardware Considerations, EMR and Practice Management System Interface, Paper Chart Transition, and Staff Training and Encouragement. Old Harding Pediatrics and Noteworthy's Implementation teams worked together on all areas of implementation. The project charter served as a guide for implementation. Our highest priority was to maintain and improve delivery of excellent pediatric healthcare. We had weekly conference calls with Noteworthy, daily phone and email contact, and weekly Implementation Team meetings.

Workflow Assessment started with a two week face to face meeting with Noteworthy. We had good paper workflows already in process, but they had to be translated into electronic processes. During this time, a relationship was built between both teams. Every job duty and each piece of paper were analyzed and

adapted for an EMR. We discovered ways to improve efficiency, create new workflows, and design transition plans for staff.

Medical Knowledge Configuration centered on the philosophy that physician investment in our EMR was essential. Physicians were encouraged to offer input into all aspects of customizations and revisions. They began reviewing the illness and well child reason for visits (RVs) and refining medical knowledge. Physicians were matched with their specific areas of interest and expertise throughout this process. Our Implementation Lead was responsible for gathering the customization data from physicians and organizing it into a logical format to deliver to Noteworthy's Project Manager.

We began searching for Hardware options that would make the transition smooth for the physicians and staff. Our budget had to be reworked to reflect hardware costs. All hardware came from a separate vendor than Noteworthy. Our Implementation Technical Lead encouraged us to install a quality network and robust equipment that would be able to grow with the practice and require the least amount of technical maintenance.

Six weeks prior to our EMR Go Live date, we went live with a new Practice Management System. This was the first interface between Noteworthy and CSC. For the front staff, this meant learning two new systems within a six week period. Because of advanced preparations and training, the competing implementation agenda went smoothly and the interface continues to provide a great billing method.

Physician practice style was changed greatly by removing a paper chart from the patient room. Before relinquishing charts to storage, the physicians set guidelines for data entry personnel and scanning from paper charts to our EMR. For pediatrics, it was essential to have past growth data and immunization histories entered into the system. They also decided to have the last two physicals and sick visits scanned into the Imaging folders. This gave them some past history to review, but made it possible to begin immediately documenting patient encounters within Noteworthy. If individual physicians wanted additional documents scanned into patient charts, they simply noted that on the Paper Chart Transition form placed at the front of every chart.

Both Implementation Teams believed enthusiasm had to flow down from the top. Our senior physician, who served as Executive Sponsor for the project, showed excitement and readiness for the changes about to take place. His optimism spread throughout the other physicians and staff. Throughout the planning and implementation phases, staff had opportunities to become familiar with the system by using one of two training environments set up in the offices. We began job specific training with common user groups and then moved onto doctor and nurse team training.

Two "super users" were educated at Noteworthy's headquarters where they prepared to serve as clinical and administrative leads for the project. The super users provided encouragement and reassurance to all physicians and staff throughout implementation and still provide it today. The week of Go Live with Noteworthy, every staff member was given intensive hands on training by members of both Implementation Teams.

Old Harding Pediatrics and Noteworthy achieved 100% use of the EMR by day 4 of use. Physicians began gradually building up the number of patients seen in the EMR instead of paper charts during that week. Many had stopped with paper charts on day 2 and all had stopped by day 4. Every patient check in, triage call, sick visit, well child visit, nurse visit, lab entry, and billing procedure was documented in Noteworthy by the end of that same week. Because of the staff's familiarity with and excitement about the product, they were eager to make the transition. At present, we still have 100% use of the EMR by all front staff, nurses, physicians, and billing office personnel.

All prescriptions are generated electronically and given to patients. SOAP notes are printed often for use with referrals and visits to the ER. Chronic Illness Summary Reports are now routinely sent with all referrals. We have eliminated the need to handwrite such reports. Every patient seen for a physical receives a Physical Exam Report with growth information and percentiles listed. Vaccine information sheets print at signout if a vaccine has been administered.

The summary page contains a section for Wellness Rules that lists immunizations needed, suggested referrals, and suggested labs. These rules change depending on the age of the patient. When an RV is chosen, that particular template dictates what questions are asked, which systems to examine are listed, suggested diagnoses, suggested labs, and suggested medications. These suggestions significantly cut back on the amount of typing necessary when caring for a patient. This allows more face time and less time spent in front of the computer. Medications are also suggested based on the diagnosis selected by the physician. All order sets were customized to meet our physician's needs and all are appropriate for pediatrics.

Old Harding Pediatrics has had numerous insurance chart audits since beginning with Noteworthy. Every has audit has produced outstanding reports with no suggestions for improvement. Because of the ease of documentation, physicians now capture more of their physical exams, follow up plans, and anticipatory guidance.

The benefits of the cost of Noteworthy are still evolving for our offices. One of the major assets of Noteworthy is the comprehensive implementation support that was available to us. This support was incorporated into the overall cost of the system and a major component in the decision to buy this particular system. Noteworthy's electronic medical record is so user friendly that training was not a major cost issue. The staff had two hours in the evening of training. Since training was a minimal amount of time, we had several training sessions so physician coverage was not an issue.

Having two sites added cost to our implementation. We had to have T1 lines between offices so data could be sent. Because of the amount of data that now travels the line after 18 months of being on the system, we have added the second T1 line between the offices to try to increase speed.   We also have to have technical staff to maintain the network which is an expense we obviously did not have before the EMR. We invested in the highest quality network and hardware and as a result, we have minimal maintenance.

We have reduced staff in several areas through attrition. We have reduced our business office staff because of the interface between the EMR and the practice management company. Obviously, we have reduced medical records staff and transcription is almost eliminated due to the letter writer option in the EMR. Nurses now can spend time more efficiently, such as follow up on patients, rather than searching for the paper chart.

Regardless of the costs that were incurred, the fact that we have improved the care to patients is worth the cost. Patients are very satisfied with the efficient service that the EMR has brought to them. Employee morale and satisfaction have also increased. Employees feel good to be on the cutting edge of the future of healthcare and the system has made their job easier in many ways.

Our guide for success is our Project Charter. When we drew up our objectives, we outlined success criteria. We defined success as improving quality of patient care, achieving 100% staff acceptance, using Noteworthy for 100% of patient encounters by the end of the first week, and having a virtually paperless office by the end of our first year.

Continuity of care between both offices is excellent because we were able to eliminate lag time between information traveling between the two offices. Our patients are excited about the change and look forward to getting their printed Physical Exam reports and educational handouts. Triage nurses no longer have to search for charts and turnaround time for call back has been markedly reduced.

Prescriptions are always legible and we hve eliminated call backs from pharmacies to verify information. Papers are not lost in the filing system, because once they are read, they are instantly scanned into patient charts. Charges are captured efficiently and reimbursement times have been lessened. Finally, our report tracking has enabled us to analyze both clinical and administrative data that is useful when developing policies and protocols.

As with any change, there are areas of adjustment that occur. Paper chart transition became a much more detailed task than first thought. Before charts are sent to storage, data must be entered and then verified by a nurse and signed off by a physician. Staff roles have evolved from filing and copying to data entry and scanning. Policies and procedures must now all incorporate Noteworthy specific rules. Practice styles have been altered for physicians, because they now have computers in rooms instead of charts. But because of in depth research on hardware, the computers do not come in between the physician and the patient. Our patients enjoy looking at the growth curves or illustrations in Noteworthy.

Ultimately, our overwhelming success with implementation is credited to physician buy-in of the product. Noteworthy was an EMR that looked similar to a chart and was therefore, less daunting to all of our users. All physicians had some level of apprehension about such a monumental change of practice style, but they could also see the benefits that connecting with the electronic world would have on the care we could provide for children. Our Implementation Team's dedication to the project was the other main cause of success. Even when filled with doubt and nervousness, the team members displayed eagerness to all of the staff. This team

served as a constant "safe place" where staff could voice concerns and frustrations and receive encouragement and accurate answers to questions.

It is now over a year and a half since we implemented Noteworthy into our offices. Our physicians and staff have mastered the details of the system and continually find ways to improve quality of patient care. What once seemed like an impossibility for us has now become an extraordinary way to care for and educate our patients while receiving swift and accurate reimbursement.