Section A1. Identifying Information: **Individual CHO Application**

1. Community Health Organization name: **White River Rural Health Center, Inc**
2. Name and title of applicant: **Greg L Wolverton, Chief Information Officer**
3. Address: **PO Box 497**
4. City: **Augusta**   State: **Arkansas**   Zip Code: **72006**
5. Telephone: **870-347-3379**   Fax: **870-347-3364**
6. Email: **greg.wolverton@wrrhc-ar.org** Website: **wrrhc-ar.org**
7. Type of CHO: **FQHC**
8. Member of collaborative entity/health network? **No**
9. Number of sites: **22**
10. Annual number of patient encounters: **90,332**
11. Annual number of patient encounters documented in EHR: **90,332**
12. Services Offered: **(Direct)Pharmacy, Pediatrics, Cardiology, Oral Health and Dental Care**, **Family Practice**, **Women's Health**, **Arkansas Breast care Program**, **Susan G. Komen Foundation**, **OB/GYN**, **Diabetes Self-Management, Chronic Disease, Prevention/Wellness Centers**, **Patient Assistance Programs, HIV/AIDS Care Program, Medicaid Enrollment Assistance, Transportation, Emergency Preparedness, Literacy and Education Programs, Community Improvement Initiatives.**
    Referral Programs Include: Behavioral Health, Housing, Elderly Day Care, Nursing Facilities.

13. See Above
14. Staffing (number of FTE's)
    Physicians: **24**   Nurse Practitioners: **8**   Physician Assistants: **1**
    Nurses: **53**   Certified Nurse Midwives: **0**   Lab Personnel: **1**
    X-Ray Personnel: **1**   Medical Assistant: **3**
    Other Medical Personnel: **4**   Dentists: **2**   Dental Hygienists: **1**
    Other Dental Personnel: **5**   Psychiatrists: **0** Care Managers: **8**
    Information systems staff: **2**
    Number of all other FTEs (including administrative, executive, fundraising, etc): **54**
15. Describe hospital affiliation(s): **White River Rural Health Center maintains a number of affiliations to ensure that we fulfill our mission towards "Health for All". Our affiliation with Baptist Health, the largest tertiary care center in Arkansas, provides access to the latest in advanced care. Our affiliation with St. Bernard's Medical Center, located in Jonesboro, provides our northern patients advanced care in a tertiary environment.**
16. Provide detailed information regarding any commercial/employment agreements with the vendor/s of EHR hardware/software. If no such arrangements/agreements exist, please indicate "No commercial/employment relationships with any vendor of our EHR system." **White River Rural Health Center, Inc has no commercial or employment relationships with any vendor of our EHR**
17. Please list the names of the members of the EHR Implementation Team:
    Steven Collier, MD, CEO
    Greg Wolverton – CIO
    Brenda Kennedy – Quality Director
    Norma Morris – Quality Support
    Kelly Martin – Business Office Liaison
    Stacy Barker - LPN
    Sherry Peevy – DON
18. Will all be considered authors of the application: **No**

1.   **Populations: Anticipated Impact for Patient Populations Served**

The diversity of the populations served by White River Rural Health Center assisted in defining the drivers of our "Total Care" system and several "key concepts" guided our identification of the framework. Strategically, we recognized that initiating an integrated model of health information technology was a key driver to enable our organization to achieve the highest possible standards of care and safety. These key components of this strategy included:

- **Improved care access:** The Total Care System provides a seamless system of care to any White River Rural Health Center patient regardless of point of entry and subsequent services at any White River Rural Health Center location. Prior to EMR implementation each patient could have multiple records at multiple sites, resulting in fragmented and in-complete information that negatively impacted continuity of care.
- **Patient and population based outcomes:** Prior to EMR, the organization utilized multiple databases to track patient and population based outcomes. Multiple points of data entry increased the margin of error and resulted in incomplete records. The outcome was disparate data on which to base healthcare decisions and the allocation of patient resources. Without accurate data the organization had difficulty aligning strategic plans with the needs of the populations.
- **Disease management:** The strategy of the organization includes the utilization of an EMR and integrated health information technology to: identify high risk patients, educate patients and their families to empower them to become better engaged in their care management. Improved clinician awareness and adherence to evidenced based care strategies; establish more coordinated care interventions and follow up systems to prevent un-necessary health complications. The program includes educating clinicians and providing decision support, assisting clinicians and monitoring patient outcomes, establishing communications and collaboration among medical staff, improving case management and patient education resources, and utilizing health outcome and service indicators to continually monitor the improvement of care services.
- **Point of Care Quality Improvement:** Medical advancements have established evidence based practices to prevent or minimize complications from chronic diseases. However busy clinicians are unable to keep pace with the volume of research and emerging best practices. Best practice guidelines are embedded into the Total Care System allowing medical staff access to the most current state of evidence based best practice.
- **Continuity of Care:** The organization considers an electronic health record to be a crucial part of services as it contains all the information needed to treat the patient and provides easy access to information for quality measurements. This will ensure that health facilities serving the same population will have access to complete, accurate, and timely patient information, and thereby improving continuity of care and healthcare outcomes.
- **Secure clinician access:** Having access to complete patient health records from any internet source in the world enables the provider to make informed decisions regarding patient care during after hours call, hospital rounds, emergent care activities or any other time when the provider is not within a clinic location but still needs to address patient care.

2.   **Organizational Program Objectives**

The organizations mission is "Health for All". Achieving this mission in today's marketplace with decreasing federal funding and increasing costs requires healthcare organizations to develop a business approach to streamlining process and eliminating waste. Eliminating waste and becoming a lean organization has increased our competitive advantage and the organizations ability to expand services without federal funds to serve those communities in need.

- **Access to Information:** The organization recognized it operated in the traditional "silo" approach to care. This approach resulted in ineffective and oftentimes no communications between departments and services. We seized the opportunity to use our electronic health information system implementation to address these communication issues. Integrating information systems improved the capabilities of continually monitoring, evaluating, communicating and coordinating multiple aspects of care services to maintain a patient centric focus and improved quality of services. This allowed the organization to transform to a systems approach for health center operations. Increased access to information resulted in elimination of expensive and time consuming re-work that enabled us to "work smarter – not harder". The focus of the approach in implementing an EMR was on the information and not the technology. This was important for White River Rural Health Center in wanting to promote the human factor of technology.

- **Interoperability:** The organization's focus on interoperability included not only technology but also the human approach to delivery of care services and information among internal and external stakeholders. This included laboratory and pharmacy interfaces, internal and external physician referral processes, and hospital and specialty caregiver report processes.
- **Improving Financial Viability:** The organization was analyzed by the Arkansas Foundation for Medical Care, the QIO organization for the state of Arkansas. Their calculations resulted in an estimated first year savings in excess of $1.8 million for the organization. This included transcription costs, medical chart costs, labor, manual charge entry and paper logs for tracking. The main element of viability included a 5% increase in charge capture and coding, even though the national average is 8%. Despite being lower as a percentage on charge capture the financial impact was realized as a result of the efficiencies gained.
- **Customer Satisfaction: (Please see an attachment in Appendix A)** The organization realizes that there are two (2) customer groups: Internal and External, with both being of equal importance within the organization. The main external customer group is our patients. With the EMR, medical staff is now able to provide culturally and linguistically appropriate patient education, trend patient specific data, such as weight, blood pressure and other vital health results and provide alternative methods of communication with the organization. Other external customers such as reference laboratories and specialty services will be provided with much more accurate and complete patient information that will improve their ability to meet the customers care needs. Internal customer satisfaction will be improved through enhanced access to accurate and timely information that will eliminate bottle necks and increase efficiency of work processes. Our main goal for the Total Care System will be to bring all stakeholders together, "on the same page" to fulfill our mission, vision and values and sustain a culture of learning for both groups of customers. Satisfaction entered a new realm towards patient centric care now and is creating a vehicle to move us towards patient driven care, where our customers are loyal and not merely satisfied with our services. WRRHC continues this push towards customer loyalty and patient driven care daily through reporting and outcomes directly from our transparent systems. One external customer was visiting outside the country and needed medications, but could not remember what they were. This "web-enabled" patient was able to log in the WRRHC patient portal and view his medications and was able to obtain the necessary refills. This is another example of mechanisms that create and sustain loyalty and further a truly patient driven aspect of care.
- **Reporting:** This area covers multiple aspects of health center operations, including financial, health outcomes, federal reporting requirements, grant management data reports, strategic planning, and quality monitoring and engagement and accountability of staff. The organization was forced to rely heavily on historical data buried in manual charts because current process are disparate and did not allow for "real-time" data reporting. As a result of our technology upgrade we now have robust reporting at our finger tips enabling our organization to become a data driven decision making organization.
- **Sustainability:** The team realized that sustainability approaches are complex. Financial, operational, and clinical sustainability measures were created to assist in determining multiple dimensions of sustainability. As a result, we were able to develop a balanced set of measures to guide our effort and ensure that we were evolving with a viable and sustainable system.

3. Personnel: Leadership, Governance, and Key Staff
- **Leadership:** The Chief Information Officer was the primary leader in initiating the planning process and provided the main motivation to executive leadership to begin our initiative. The Chief Executive Officer ensured that the team remained motivated during the search activities and RFP generation by providing the necessary support and continued "buy-in" of the process. Early on, the decision was to focus on the search for vendors that would be able to meet our RFP and initial specifications for product rather than focus on individual software. This led all team members to work in their assigned areas and produce a quality RFP and material specification along with the toolkit to utilize. The CIO continued all project leadership roles and provided each team member the necessary resources to be able to accomplish their responsibilities, which included; technology use, travel to other sites and other items the team felt necessary to accomplish their area of responsibility. Trust and credibility had already been established by the HIT team as this team took the leadership role in guiding the organization through several collaborative quality improvement processes. In fact, the early successes led the organization to

serve as a pilot for a HRSA funded collaborative on Finance and Redesign of the practice. Our information technology strategy was integral to that effort.. The HIT team was able to gain credibility and trust through the successes of these past practices.

- **Governance:** Even though WRRHC created a specific team identified for strategic purposes, the CIO chose a non-traditional approach to governance and declaration of management. This approach is indicated in the diagram below and describes a transparent, non-bound structure that allows each member to work in an approach that is clearly transparent in nature across all boundaries of the organization. This approach worked to eliminate barriers that invoke themselves when structuring new processes or teams. Although the total team was involved in all areas, the CIO was able to maintain a "centered" approach towards leadership of the team.

White River Rural Health Center
HIT Governance Structure
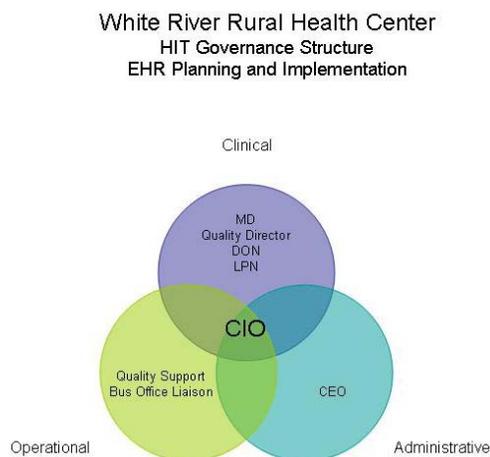EHR Planning and Implementation

Figure 1

- **Skill Sets/Resources:** Some of the most valuable resources the team relied upon were past experiences of the team members. The vision of our project was transformation and not changes; this resulted in team members that were able to pull from past experiences and best practice across the organization as well as the country. Product knowledge was partially obtained through comprehensive site-visits of other organizations utilizing an electronic product as well as team research into EHR best practices. Given the diversity of the team, improvement models, quality indicators and knowledge management were engaged across the team with resource utilization mechanisms such as a customized intranet for project management that kept the team and the organization apprised of the latest changes, improvements and other events. The most resources utilized were the staff time involved with setting the initial parameters, specifications, final application of the Request for Proposal and the resulting "RFP Toolkit" that required each vendor to complete the same information and submit the toolkit back so accurate, equitable and precise scoring and evaluation could be completed. Approximately 150 man hours were expended on creating appropriate specifications and ensuring that each section provided to most comprehensive look at the requirements and needs of the organization.

4. Partnerships: Collaborations for Community Health

White River Rural Health Center identified one of the main goals was partnerships and collaborations. We had the opportunity to gain experience in partnering through our participation in the HRSA Health Disparity Collaboratives that we participated in since the first pilot 1999 and participated in each collaborative since. With the focus of our project on the information and not the technology, we were able to "think outside the box" and discover new partnerships that could increase the utility and impact of our system. As a result, we titled our information system the "TotalCare" System. In addition to services provided to local residents, White River also provides services to the Woodruff County Nursing Home residents located in McCrory. A White River physician fulfills the role of Medical Director for this facility. Due to

the number of patients which these two organizations share, it would be an enhancement of patient care and safety to utilize health information technology to increase the accuracy, timeliness and availability of data transmitted between these organizations. With this, we engaged the Woodruff County Nursing Home, now the Woodruff County Health Center to be a partner in the TotalCare System. Other community partners included, local pharmacies to link to ePrescribing, co-located behavioral health systems, patient assistance programs, state Medicaid outstation workers program and a variety of other collaborative efforts and partnerships. Other partnerships include LabCorp, Quest, Lab of Pathology and two (2) tertiary hospital systems with one of them being Baptist Health in Arkansas. The greatest partnerships developed ARE the continuing internal process challenges that have brought the varied, oftentimes not connected, different departments together. Linking all 22 locations together with a "one patient – one record" was unique for a community health center and this philosophy spilled over to all our partnerships. This continues today with transparent operations across our organization, which has resulted in unique internal partnerships and collaborations, such as "Quality at the Source" and our Total Organizational Performance System (TOPS) that brings together all aspects of defined quality.

White River Rural Health Center was able to achieve a new external granting partner with the United States Department of Agriculture, Rural Development Division, Distance Learning and Telemedicine Office. This partnership consisted of a grant award of $341, 297.00 and recognized WRRHC as one of only two grantees in the state with the award. This award provided external recognition that the TotalCare System project was not only obtainable but provided funds to assist in reaching our goals.

5. **Preparation: Readiness and Workflow**
   - **Leadership development and staff education**
     Utilizing much the same model as indicated in section 3: Governance; Leadership development was considered an extremely important aspect of the project. The need for senior leadership to understand and comprehend the outcome of the project was determined to be very instrumental to the success. Rather than creating learning "capsules", the team utilized the Model for Improvement designed by Associates in Process Improvement, Inc (API). This model focused on what we were trying to accomplish and how we can make change an improvement and continue forward towards models of transformation.
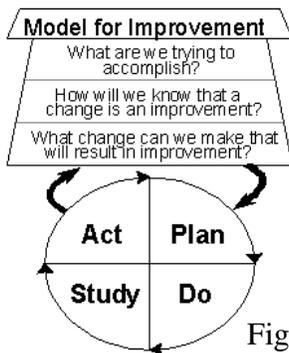

It became important that staff education and leadership development followed through on total transparency. Staff was educated across organizational boundaries, with the focus on connecting staff and linking activities to one another. This became important when implementing the project in that each staff member knew what roles and responsibilities the other had and what tasks impacted or affected the other. This automatically created mechanisms whereby approach automatically led to deployment, learning and integration.

Figure 2

   - **Conference participation, model practice, and vendor research**
     The team attended multiple conferences on electronic health record software and systems related to selection and implementation. These included state conferences and educational summits hosted by the state quality improvement organization. On the national front the CIO attended multiple TEPR conferences; HIMSS conference as well as HRSA sponsored events. Research on multiple vendors was conducted utilizing the RFP toolkit developed internally by the team and stakeholders, vendor site visits, and team visits to potential vendors. Potential best practices were derived from team and stakeholder visits to other ambulatory health care organizations with success in implementing electronic health records.
   - **Readiness assessments done internally or by external consultants**
     Through various research tools the team performed internal organizational readiness assessments, such as detailed process mapping, stream studies and other "production" readiness tools. The Arkansas Foundation for Medical

Care, the state's QIO, conducted their own readiness assessment utilizing a standard tool supplied by CMS. These assessments provided the team as well as senior leadership with the confirmation that the organization was sufficiently developed to implement such a wide organizational change.

- **Staff Communications/meetings**
  The first decision the HIT Team made at the first meeting was ensuring staff communications and transparent flow. The fact that WRRHC is spread out over such a large geographic area created inherent issues to communications. In order to facilitate transparent communications, an intranet project site was established that allowed all team members and other stakeholders to remain informed of new actions or change packages. In addition, email distribution lists were maintained to keep the team and others informed of any changes on the intranet project site. The team utilized face-to-face meetings, conference calls, and whiteboard meetings at least once a week to report out on each members assignments.

- **Workflow/patient flow analyses**
  Workflow analysis was very important to the project and the team, through past experiences, recognized that the success or failure of the project would be in addressing any current disparate processes and not re-creating them in the new model. The HIT Team placed a focus of time on the determination of current state processes. The team included the mantra that "we cannot change that which we do not know needs changing". Therefore, process mapping and value stream studies were completed on each and every current process in the WRRHC system. The team also enlisted the assistance of the state's QIO to corroborate the team's flows and process findings. This was a most important presence in the assessment phase of the project in that it kept the teams focus on the "big picture" goals.

- **Data standardization and encouraging paper-based structured form usage**
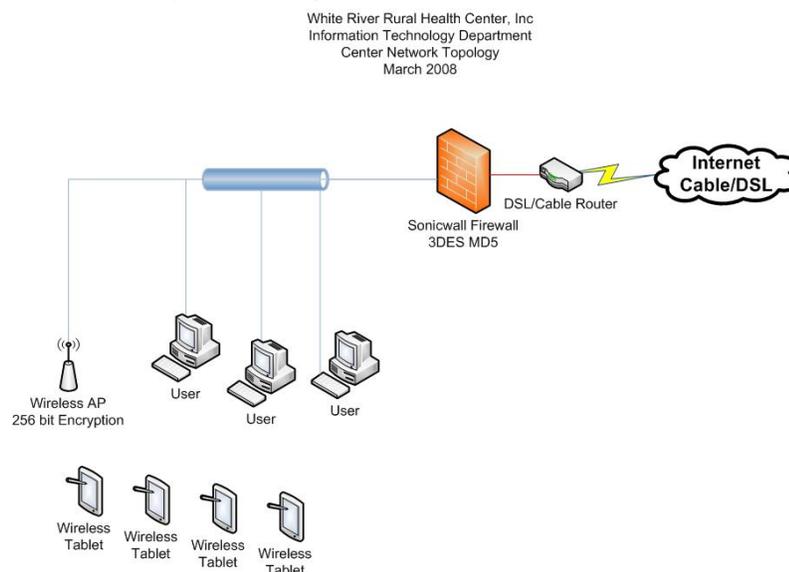 Standardization of data is very important to health centers that are focusing on chronic care that reporting should be population based. After reviewing the current state processes, the team was able to determine that encouraging a paper-based form approach would simply not work at WRRHC. Several key items indicated that if we modeled our electronic record system after our paper based process, we would ultimately end up with a broken electronic version of our current processes. The team, along with senior leadership, felt it was time to re-design the WRRHC system and its processes. Pulling from previous re-design collaborative experience, the team took on the role of "re-designer" rather than "mimicker". This was important, in that the focus now was on "same patient –same record" concepts rather than mimicking current system flaws. Transparency was automatically created and the result was a more streamlined, less process intense and ultimately patient centered WRRHC.

- **Business planning and determination of health network, vendor, and clinic roles**
  Business planning was the forefront of all processes at WRRHC and a part of our strategic planning process. WRRHC utilizes a philosophy that "Quality without a business case is not sustainable". The HIT Team brought this to the next level by applying the business case to the initial planning of health network, selection of vendors and clinic roles.

- **Technical infrastructure preparation**
  WRRHC utilized it's already existing technical infrastructure for the TotalCare project. This made the project planning much faster from a technical management perspective, in that the technical stakeholders we able to view existing infrastructure and very little changes were recommended.

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Information Technology Department
Center Network Topology
March 2008

- **Financial/budget preparation**

  Financial planning and preparation is mission critical to a community health center with limited funding and the need to leverage as much as possible to eliminate any threat of decrease in funding. WRRHC was able to obtain a new partner in the United States Department of Agriculture, Rural Development, Rural Utilities Service, Distance Learning and Telemedicine Office (USDA) with a grant of $341,297.00 This set the tone for WRRHC to be able to provide a 20% match of funds to begin the preparation of the project. This included a $20,000.00 in-kind participation award from our long-term care partnership. Consistent and clear communication with the vendor, as established in Figure 1, made financial obligations clear and enabled the organization to meet established budgetary goals.

- **Baseline data collection for operational and health outcome performance measurement**

  Using integrated information technology, performance measurement data is now collected on a regular basis. Qualitative and quantitative data is gathered on the degree of implementation of performance measures, the impact of implementation on patients, health care providers, care sites and the organization as a whole. This allows White River to analyze data and provide information to care teams in an effort to share successful implementation practices and cultivate further change strategies. In addition, outcome information is shared with the State planning committees for disease management (currently diabetes and cardiovascular health) and the Arkansas Foundation for Medical Care (State quality improvement organization). The data that can be retrieved through the TotalCare system provides excellent information for this project that will be beneficial to national leaders involved in spreading EMR best practice.

6. Purchasing: Vendor/System Selection

The determination of the software requirements came naturally for the team and other stakeholders after process mapping everyone knew what mistakes and disparate processes we did not want to repeat. With this each member of the team was assigned a part of the specification deliverable according to their area of expertise. These items were shared across the team and ultimately required to be agreed upon unanimously before being added as an official specification in the RFP. The specification of deliverables was the most intense time for the team as each member could reason more and more areas to address. After all internal stakeholders agreed on deliverables the RFP was published in the state newspaper. For each response a toolkit was sent electronically to each potential vendor for their completion. Each vendor was required to complete an initial statement of certification for each of the deliverable sections to ensure complete responses; vendors were eliminated for incomplete or omitted sections. The toolkit included some 1280 individual lines of specified deliverables for various functions throughout our system. Each vendor was required to specify each deliverable in several categories that included labeling each item as custom, available current, available future as well as customized by vendor or client. This allowed the organization to "self" customize most areas of configuration of the software without the need to potentially pay for future customizations on dynamically changing elements, such as sliding fee schedules, federal poverty schedules, care templates, etc. In addition, the organization required any POTENTIAL vendor's software to be CCHIT certified as well as pass functionality through a series of "tests" with the technology division of our external auditing firm, BKD, LLP. In addition to the CCHIT certification the team required the vendor to have ranked in a first place setting at a public venue such as TEPR, HIMSS, and other organizations that offer competitive demonstration. The organization also required each prospective vendor to demonstrate functionality at an on-site demonstration. This demonstration was conducted at the organization and each vendor was supplied cases by the medical director to "work" in their prospective systems. The team along with other stakeholders evaluated each by utilizing a standard tool and

personal view aspects. This was important in the organization was replacing it aging and disparate legacy practice management system and the need for third party validation was placed upon the team by the CEO.

The organization had an already established technical infrastructure across the enterprise that is supported by an Information Technology Department and led by a Network Administrator and support team. This was important to the project in that it eliminated the need to build an infrastructure to support the implementation of the TotalCare System project. Each vendor was required to supply the operational and functional infrastructure required to BEST operate their product. The information technology department weighed the current infrastructure against all vendors that submitted RFP's and created upgrade action plans for those areas needed enhanced services or hardware.

The organization found it difficult to partner with other community health centers, in that being the first in our state and around the country to deploy a unified EMR/PM system; this made it difficult to determine best practice. Best practices were discovered and documented along the total process of the project, including the partnering of the vendor to custom build each item needed for FQHC operation and requirements. The team found that being the "first of the first" was not always the best even though it allowed the team the creativity to be a part of a construction project that eventually became part of the core product the vendor offers today. This placed the organization in a best practice initiator environment and creativity thrived in the project which resulted in the organization becoming an initiator of best practice for implementing electronic records. This resulted in over 100 site visits by other community health centers and other health organizations.

7. Product: Software/Interoperability/Hardware/Networks
Define your high level system requirements and core software/hardware/network features including:
- **Software application(s):** The major requirement of the organization was a totally unified, EMR and Practice Management system. This was important in all aspects of care delivery in the new TotalCare model of operations. The dissolution of current disparate, not connected, non transparent systems was of major concern for the team. We did not want to continue with separate practice management, registry, records, imaging and other examples of instability. The overall choice was eClinicalWorks due to their unique ability to bring our specifications into the core product of the application. The use of a "patient hub" concept was appealing to the team in that a patient's information could be accessed across any care line and delivery. Clinical decision support was built in with tools such as Griffins Five Minute Consult and ADAM clinical reference database along with dynamic care templates and standardized treatment protocols with rules based prompting for important information. All population based registries are totally integrated into the core product and are client configurable as chronic disease state reporting changes.
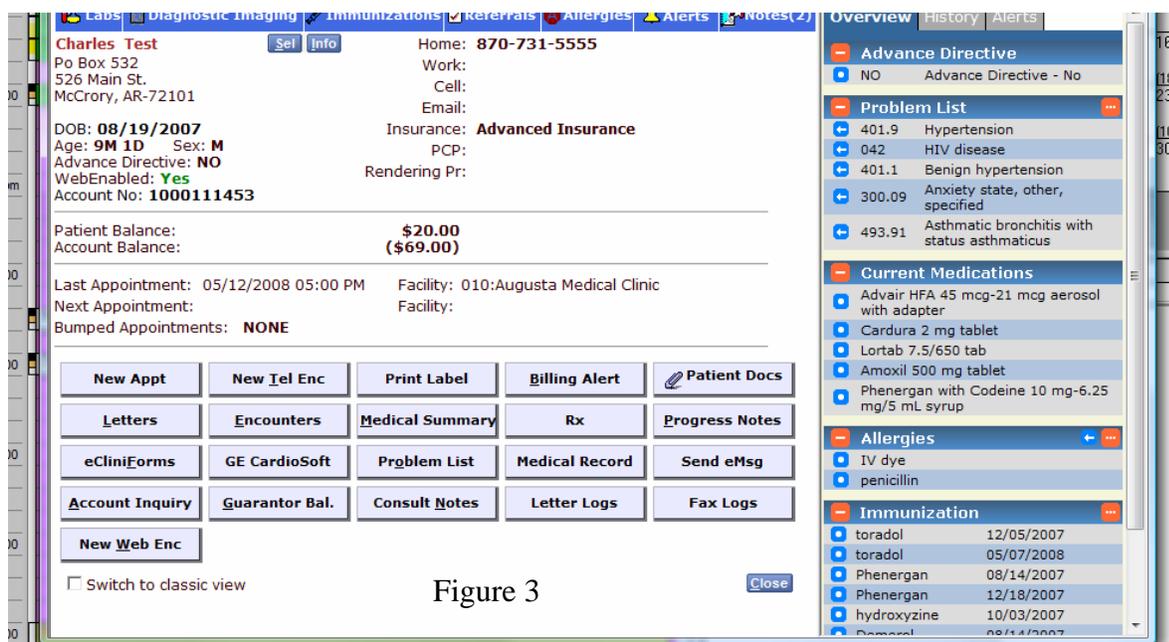

Figure 3

- **Integration/interfaces:** The main reason the team chose to require a unified solution was to eliminate as many interfaces and bridges as possible. All chronic care reporting functions were made a part of the core product eliminating the need for interfaces to un-reliable and oftentimes duplicative work systems. By garnering partnerships with the vendor, we were able to eliminate most interfaces with the exception of reference laboratory items. Our lab partners were excited to become a part of this new Total Care System and immediately began work on transparent interfaces that included order entry and resulting. The result is a totally transparent system of care, reporting and measurement across our organization and three reference laboratories. Care stakeholders are able to view immediately available results and make care decision based on live-time information. As far as the business case, an interface was created to report summary information to the Dynamics G/L application. The auditing team felt there was no need for detail information in the Dynamics system as all this information resided comfortably in eClinicalWorks.
- **Connectivity/networking:** WRRHC utilized its existing technology infrastructure in a client-server environment. The team felt that although more work would be required to maintain and service a client-server based environment the overall benefits far outweighed utilizing an ASP model. Some of the identified benefits were; scanners and other peripheral devices could function better with one another, existing credit/debit card processing technology could be utilized and by utilizing an existing infrastructure we did not have to be reliant upon other technology solutions. The WRRHC Network Operations Center is a secure center housing all of the WRRHC technology solutions, such as Exchange servers, Portal servers and a myriad of other technology applications, including finance.

White River Rural Health Center, Inc
Information Technology Department
Server Topology
March 2008
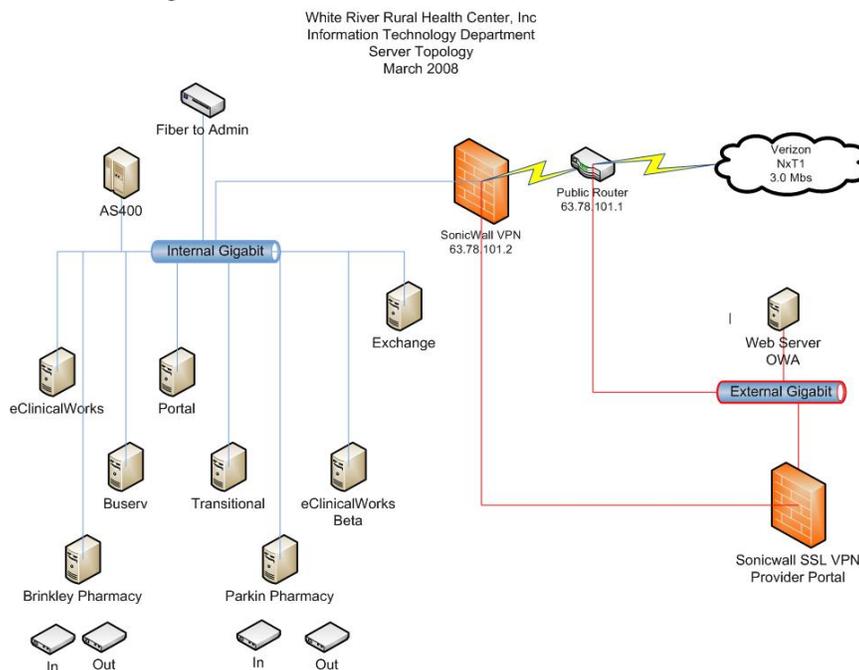
- **Hardware/peripherals:** The decision making process for the hardware was fairly straight forward in terms of the addition of tablet pc's for provider and nurses. After conducting research with other practices utilizing an electronic record, the team chose HP 4200 tablet PC's to provide the information to providers and nursing staff. The existing desktop PC's being utilized by the front and laboratory were upgraded in memory and put to use with the new system. Existing printers were utilized, eliminating the need to purchase new printing assets. Scanners were a new addition to the asset fold and were purchased based on the recommendation of the vendor as to what they established as best product.

8. Process: Implementation and Transition to EHR
Discuss your approach to the following aspects of EHR adoption in community health organizations.

- **Strategy/approach**

  WRRHC HIT Team chose to employ a "train the trainer" model to streamline approach, deployment, learning and integration. A very aggressive schedule was created with the approach of "not too much" but "not too little" as to keep the momentum alive.   The team realized that a multiple approach had to be taken with training strategy. The challenge was to develop and then train of PM and then create the exact model to develop and train with EMR all at the same time. Unique vendor relationships had to be established and maintained in order to accomplish this strategy. With PM rolling out all at one time and being able to "step" EMR implementation; In the end, this strategy worked well for WRRHC to not only keep the positive momentum alive, but increasing the awareness and "I want it next" attitude among the internal stakeholders.

Figure 4

- **Communications/transition**

  As presented in Figure 1, communications took on an approach similar to the leadership model to establish transparency in all communications. The Model for Improvement designed by Associates in Process Improvement, Inc (API) was utilized to communicate specific and replicable information regarding process improvements and their outcomes. The cycle time for learning was decreased as the sharing of information increased across all levels of the organization.

- **Workflow**

  The goal of workflow processes with the EHR was to develop an integrated model of health information technology for implementing the project to achieve the highest possible standards of care and safety. This ensures that health facilities serving the same population will have access to complete, accurate and timely patient information. This results in improved continuity of care and health outcomes and the patients are provided with safe, timely, effective, efficient, equitable and patient-centered care. In rural areas, access to comprehensive information is imperative to reducing medical errors and enhancing patient care. The area in which White River provides services is predominately rural and access to information is a constant challenge.

  The TotalCare System utilized by all WRRHC clinical sites enables the organization to offer improved health services to area residents. Efforts included redesigning the patient visit to ensure each health care team has the most current and complete information necessary to provide comprehensive management of a patient's chronic illnesses and preventive care needs regardless of the type of visit.

- **Configuration/templates**
  The HIT Team developed care templates based on practice patterns and familiar language used by clinical staff. This increased the staff's ability to navigate successfully through the system and substantially decreased the learning curve normally associated with the assimilation of new language and practice patterns. The vendor (eClincicalWorks) made it a relatively easy task to customize the templates for the various specialties and changing care practices. Although customization requires a significant time resources, the end result is cleaner and less fractionalized processes and usage.

- **Education/training/learning**
  As the sites were designated to deploy the entire center staff was scheduled to attend training at the training center. The HIT Team created a training model that included a streamlined approach for transparent education which resulted in a "see one – do one" training. The following day that site went "live" with the HIT Team located on-site for support and additional training. This team generally stayed on-site for approximately 2 days before staff felt at ease without face-to-face support. A "hotline" was maintained with each site to continue problem solving as issues arose.
- **Information exchange**
  One of the most important specifications of the TotalCare System was a totally unified software system that connected doctors and staff to streamline workflow, increase efficiency, cut the cost of information delivery, encourage compliance and improve the quality of care to our patients. Current paper methods were outdated and resulted in time delays to necessary and often critical health information. Improved efficiency and accuracy in billing and coding increased productivity to the whole system by eliminating errors that currently existed in non-integrated systems.
- **Hardware/networks**
  The organization felt that having a pre-existing technical infrastructure was a major plus for our project. Many health centers face a large technical curve just in the development of infrastructure because they do not have the hardware, software, or technical expertise. WRRHC already had the technical infrastructure in place and the staff to develop it further. This was one area that the team did not have to place a focus on or "worry" about. The WRRHC staff has already "bought in" to information technology due to past experience at WRRHC with other IT related projects/
- **Historical data**
  One of the huge issues that the organization faced was oftentimes inadequate and disparate information that resided in multiple places and multiple formats. Billing was not linked to services and services were not linked to care. This, in itself, made it easy to determine that the organization should not migrate or utilize any existing data. After review by senior leadership it was determined that we would migrate the patient's name, DOB, and SSN. In hind sight this was a mistake due to duplicative information that had to be later eliminated and the records merged.
- **Scanning**
  Scanning technologies are utilized for patient identification and insurance documents as well as patient-signed documents. External documents, reports and results are automatically received into the system through fax-modem technology eliminating the need to generate or deal with paper based results. This also represents a tremendous cost savings with the elimination of paper and personnel to handle it. As a rule, historical records are maintained in the original paper charts within the clinical site. This provides timely access to historical information without the need to scan "everything" to the electronic record that may be of little benefit in future times. All clinical staff is educated prior to providing services enabling the organization to ensure that all applicable information is generated electronically.
- **Continuity of care**
  Physicians can receive electronic analogues of test results, transcriptions and communications from staff and other physicians. The use of "smart-forms" that integrate data from a patient index and expert databases, physicians and their staff can create medical authorizations, lab orders, and prescriptions. Point of care is increased to its

maximum through the use of a "web-portal". This portal will allow physicians to access medical records during non-clinic hours. This access is critical to the safety and continuity of patient care during hospital admissions and on-call emergencies. Patients will also benefit from this web portal with the ability to access their medical records and assist in their care. Self-management is a major part of the care model developed by the Institute for Healthcare Improvement and will drastically improve a patient's healthcare outcomes. Workflow is enhanced and errors are reduced by physicians being able to access necessary health information in "live-time". Previously, paper had to be faxed or mailed before the record could be seen. In emergency situations, proper flow of information could be life or death. The lack of integration with existing electronic data management systems results in unnecessary duplication of data, manual re-entry of data and increases the risk of errors due to duplicative efforts. WRRHC feels that any duplicative measures are a high risk to patient safety and delivery of care as well as increased costs.

- **Support**
  The organization maintains an online Help Center that is linked to the employee information portal. This allows all staff to access the knowledge base, FAQ's, and request additional assistance, as needed. In turn, the issue is sent for an initial review, whereby a determination is made for assignment and resolution. The goal for organizational resolution is 24 hours for non-emergent issues. The vendor also has a portal for "expert" members of the support team to place support items for resolution. The organization has a single point of contact with a vendor-supplied expert. The expert has made site visits and is familiar with the organization and its mission, vision, and values and is able to ensure alignment with resolution of issues.

- **Sustainability**
  Through mapping and value stream analysis the organization was able to identify existing roles that would be aligned and capable of supporting the long-term operations of the TotalCare System. The HIT developed into a Total Organizational Performance System (TOPS) team responsible for overall organizational quality initiatives. The TOPS team continues to provide overall organizational support even though duties may change, responsibilities remain. Our vendor/partner also has a role in sustainability by providing the organization with the necessary updates, continued training, and best practice delivery that is not developed in-house. This unique partnership pushes sustainability to a new level by eliminating total reliance on any single person from the organizational or vendor.

## 9. Progress/Performance: Value, Impact, Outcomes, and Lessons Learned
- **Achievement of objectives/anticipated impact:**
  1. Impact for populations served: Currently, the organization has 100% secure physician access through the internet and an organizational SSL VPN. This is evidenced through the daily interaction of clinicians with the sign-in logs to the VPN. Since February of 2007, the organization has maintained a single electronic medical record for each patient served. Regardless of the location of the WRRHC site within the 6000 square miles of service delivery area, we have "one patient – one record".
  The elimination of multiple systems and databases resulted in 100% of data now existing on a single database. This result has positively impacted the organizations ability to report accurate, consistent, and replicable information. One example of outcome improvement with the implementation of the TotalCare System is improved blood pressure measurement from < 40% to 100 % compliance. With the utilization of the care overview, clinicians have quick access to complete chronic disease diagnoses, recommended treatments, and interventions that are patient specific with respect to diagnoses, age, and gender. Included in the care overview are the patient specific problem list, current medications, allergies, immunizations, and past medical history. This enables clinicians to review key information regarding the patient without extensive review of previous progress notes. Best practice guidelines are also embedded into the problem list through patient specific alerts. The system requires an assessment to be completed prior to treatment thereby allowing the system to review for medical necessity or contraindications.

  Organizational Program Objective: Streamlining of processes through the TotalCare System enabled the organization to strategically design new processes that incorporate "lean" healthcare philosophy into business practice. Another example of the TotalCare System streamline our billing staff went from 14

FTE down to 5; A/R decreased from 60 – 90 days to daily process; paper was decreased from 22 cases of paper per month to less then 1 case per month. Billing staff had 2 large file cabinets each and they were no longer needed. In fact there were so many file cabinets we could not put them on the street for people to obtain for free and put a $5 sign on them and they were stolen. Either way we rid ourselves of the dreaded housing for paper.

2. These "fat" savings alone are paying for annual software support. In addition other savings are derived through the utilization of shared best practice. With access to information being on the forefront of care delivery, WRRHC has seen this go to a new level. Performance is viewed through the same window with the same measurement. What used to be a cumbersome process of manually monitoring, evaluating, and coordinating multiple aspects of care have been reduced to a seamless, transparent, patient-centric focus. The increase in transparent data is instrumental in making better, timelier, and data driven decisions for leadership. With quality at the source and live time validations, such as on the spot insurance verification, allows for more "work smarter" mechanisms and significantly less re-work. In insurance denials alone the TotalCare System reduced first time denials from 85% to less than 5%! This results in faster payments and ultimately better cash flow. One example of financial achievement is demonstrated in the chart below. Please note that even though revenue was up for 2006, 2007, and 2008 encounters showed a decrease.
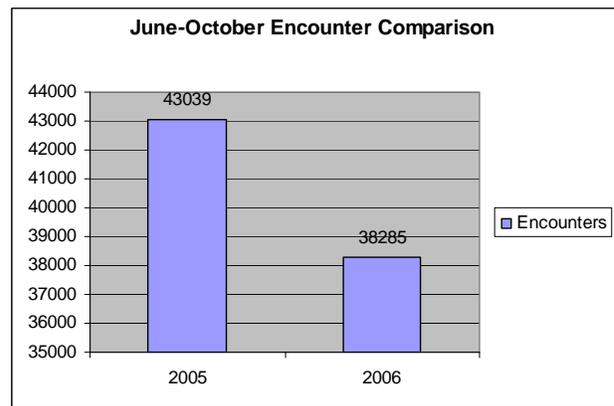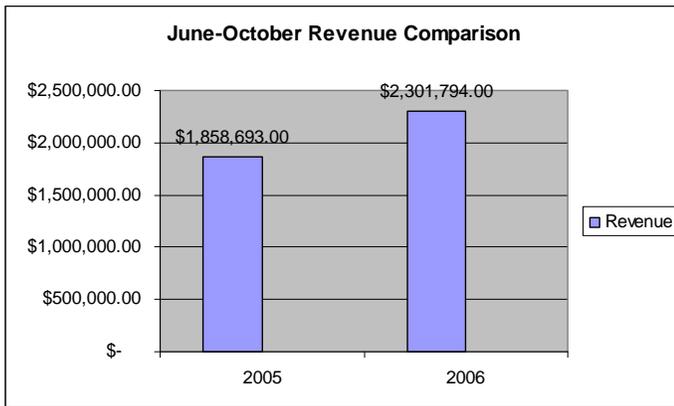
During this time WRRHC eliminated redundant and wasteful departments without layoffs by shifting employees to other critical or needed areas, which minimized support staff and created an institute of lean within our organization. With the advent of the TotalCare System, all internal and external stakeholders are now on the same page with our Mission, Vision, and Values thus creating a culture of learning for all. With the implementation of the TotalCare System and eClinicalworks, WRRHC is able to provide total patient-centric focused care with linguistically appropriate patient education as well as other patient specific trend information to create an informed customer. The EHR was launched, in the beginning, based on the in-adequacy of our practice management system which was bulky and required vast amounts of human and paper resources.

Strategic Alignment

MISSION
The mission of White River Rural Health Center, Inc. is "*Health for All*" with a focus on:
Customer health
Community health
Employee health
Organizational health

VISION
White River Rural Health Center, Inc. will be the provider of first choice in our communities, the largest primary care provider in Arkansas, and a national leader of community health centers.

VALUES
The values of White River Rural Health Center, Inc. guide employees in providing superior service to fulfill our mission and achieve our vision.
Stewardship – valuing our resources daily to insure our mission tomorrow
Positive Attitude – empowering employees to create an energetic work environment
Integrity – honest, ethical, and dedicated to all we do
Respect – appreciating all people, work, and ideas
Improvement – always striving for performance excellence
Teamwork – achieving our goals together

The introduction and implementation of the TotalCare System was a natural fit within the strategic plan of the organization. With the mission of "Health for All" the TotalCare System is assisting clinicians with the delivery of safe, timely,

effective, efficient, equitable and patient-centered care with a standards based, measurable approach. The organization is satisfied that serving as a national model has been achieved as evidenced by more than 30 site visits by other organizations from 12 states seeking EHR best practice. The organization also has demonstrated with the advent of the TotalCare System a commitment to the core values of the organization by utilizing additional resources to increase the value and improvement of our systems and care models. Teams are automatically created with the transparency of data available and all stakeholders are now valued team members, including the customer. The vendor utilized the best practice as a new training model for their organization as well.

- **Critical success factors**
  Our largest attribute to success was the ability to create and maintain a truly functional, diverse, informed, established, and enlightened team. This was very important from the initial decision to future sustainability, in that the team has migrated from the HIT Team to an Innovation/Quality Team. The team is still responsible for new development as well as providing a conduit for change management for the TotalCare System. The most important mechanical process for the organization is managing process and its change. Throughout the planning and implementation phase the team faced constant challenges with frequency of change and the deployment of education to all staff. The organization has determined that without experienced and effective project management that is able to take a holistic versus silo approach to deployment. Having a realistic time frame and the ability to modify the plan as needed to meet changes is important in removing unrealistic expectations and minimizing stress. Another area of success is the ability to better identify opportunities for improvement, such as involvement in the HRSA Patient Safety and Pharmacy Collaborative. We now have the ability to now conduct medication reconciliation between clinical and pharmacy operations, thus being better able to provide full scale services for our customers. Current success factors also include the ability to achieve metrics from such programs as our Diabetes Self Management Program report to the BOD having served a total of 100 patients in the clinics from May 1, 2007 until April 30, 2008, for diabetes assessments / education.   There were 81 first time assessments / attending classes and 19 one on one follow ups. The average HgbA1c for 2007 was 8.5 prior to education. The average after education was 7.6. This would convert to an average blood sugar drop from 210 mg/dl to 180 mg/dl. To encourage continued support of our patients we implemented self-management goal surveys; follow-up letters after labs; and reminder letters for those who had not returned to the MD for a follow-up. Of our patients in the program 84% had routine follow-ups with their family physician.

- **Technical infrastructure measurement**
  Success is achieved only to the degree that one is willing to address and resolve any issue or problem that arises. In this case the CIO wanted to have clear methods of obtaining support and documentation of resolution. We established a help center on our intranet and currently maintain a knowledgebase and FAQ's relative to each issue resolution. With this system the CIO and the team are able to measure response time to submitted issues but also have comparative data regarding same issue resolution thus determining if a systems issue existed or merely an educational opportunity.

- **Financial impact**
  As some of the other sections allude, the financial impact to WRRHC was far beyond our original expectation of $1.8M. Streamline processes, elimination of whole departments, streamlining other department and creating more discoverable "value-added" time has created a value based opportunity mechanism for the organization. Simply put, prior to implementation the organization had less than 30 days of operations money. Along with recognizing lean and the TotalCare System, the organization has > 120 days of reserve and is able to increase care delivery by the opening of another wellness center and pharmacy in 2008, without federal funding.   Insurance and billing alone saw a decrease from 287 days to 45 days for average claim payment. This coupled with the more than 10 fold decrease in denial rates, sets the organization apart from most. The organization has also been able to become a viable part of the communities we serve by creating community initiatives to increase the vitality of the communities. This has been achieved by sponsoring local youth programs, community events, and local school revitalization programs. In addition, better, more transparent information availability identified a revenue opportunity for an enhanced 340b pharmacy to assist our customers as well as serve as a major funding source for WRRHC community operations.

- **Lessons learned**

  The organization views diversity of the implementation team to be a major factor in successful planning and implementation of projects. This is easily demonstrated by the WRRHC success of our TotalCare System. The "train the trainer" model assisted the organization in establishing internal experts that can further sustain the project. In addition this model created by the HIT Team is now being utilized on a national level with eClinicalworks as their best practice of training. The organization also found it important to share our lessons learned with other organizations so they do not have to "recreate the wheel". The HIT Team also found it very useful to capitalize on the knowledge of staff by engaging them to share their best practice. This has developed into a mentorship program that moves beyond initial training for new employees.

- **Next steps**

  One of the most crucial next steps that the organization is planning is the incorporation of a health exchange to interface with area hospital partners so that information can be streamlined between in-patient and out-patient care activities. Other next steps include, Physician-to-Physician Communication with patient consent whereby records can be shared between treating physicians to ensure greater accuracy and more complete patient information. Utilizing eReferrals, referrals can be sent via the EMR, thereby eliminating extra paperwork. By expanding our coverage of our PHR, patients can modify personal information, view lab results, request refills and other patient/provider correspondence, allowing patients to have a more active role in their care while reducing the number of phone calls to the office. Using the CCR to integrate Patient Portal and the EMR will demonstrate the organizations continuing commitment to published standards.

10. Practice: Other Aspects That Describe Your Story and Model Practice Initiatives

By utilizing electronic provider portals the organization has taken care to the next level by providing a secure access mechanism to on-call clinicians. This enhances quality care without boundaries or distance by clinician and connects other clinicians to the record in case of stand-in situations. The web-based Patient Portal lets patients and doctors communicate easily, safely and securely over the Internet. Patients are given secure passwords that allow them to log into their physician's system to see their own private set of documents including labs, diagnostics, statements and messages. Doctors can automatically remind patients for their health maintenance reminders, procedure due dates and also send them patient statements and lab results electronically—minimizing the need for patients to call the office. The Patient Portal uses leading edge technology to promote healthcare and make it easier to perform preventive care. It is an exceptional tool to communicate with patients. The Patient Portal gives patients 24 x 7 access to their medical information from the comfort and privacy of their own home or office. The Patient Portal allows patients to view prescription information, lab results, diagnostic results and appointment information in a timely manner. Patients can also request prescription refills, send and receive messages to and from the doctor or nurse, complete health assessments, examine their statements to see their balance and much more. Providers have faster and timelier interaction with the patient, and no wasted time playing "phone tag" with patients. Instant Medical History provides an additional level of secure communication between patient and provider, allowing providers to be informed and pro-active at the time of the encounter.
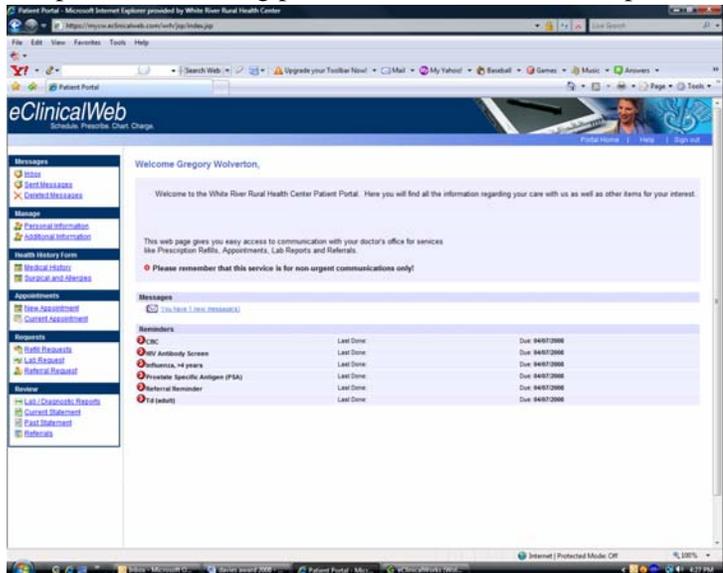
Demonstrations of the organization's best practice have taken on a new meaning and role for the CIO and members of the team. Currently members of the team and CIO have travelled to 9 states and delivered best practice information on EHR selection, implementation and deployment. Those presented to include state primary care associations, quality improvement associations, HRSA, BPHC and others. The organization includes in its presentations replicable models for success and has standing offers for any organization that would like to conduct a site visit to WRRHC.

Wait Time

Ease of Getting an Appointment

Satisfaction with Staff

Billing Processes

Facility

Confidentiality

Would Refer Others to WRRHC