

8. CHO Applicant Identification Form: Who Is the Applying Organization?

Section A1. Individual CHO Identification Form

1. Community Health Organization Name: Heart of Texas Community Health Center
2. Address: 1600 Providence Drive
3. City: Waco State: Texas ZIP code: 76707
4. Telephone: (254) 750-8200 Fax: (254) 759-3549
5. E-mail: tbarker@wacofpc.org Web site: www.wacofpc.org
6. Name and title of application author: Roland A. Goertz, MD, MBA
7. Type of CHO: (see list in Section 4. "CHO Applicant Qualifications: Who Can Apply for the Davies CHO Award?") Federally Qualified Health Center
8. Member of collaborative entity/health network? Yes/No No
If yes, name: _____
9. Number of sites 10
10. Annual number of patient encounters: 147,379
11. Number (or percentage) of annual patient encounters documented in EHR: 100%
12. Number (or percentage) of providers and staff using the EHR 80-100% of the time:
100%
13. When did the initial EHR implementation go Live? October 30, 1997
14. When did the CHO meet the Organization-Wide Adoption Test (the EHR is being used in all care settings by at least 80% of providers all the time, or, at least 80% of patient visits are being documented in the electronic chart as part of day-to-day care delivery, with a resultant reduction on paper-based processes): April 1998
15. Services offered:

| | Direct (Yes/No) | Referral (Yes/No) | N/A |
|----------------|-----------------|-------------------|-----|
| Adult Medicine | X | | |
| Pediatrics | X | | |
| Women's Health | X | | |
| Dental | X | | |
| Radiology | X | | |
| Laboratory | X | | |
| Mental Health | X | | |
| Emergency Care | | X | |
| Urgent Care | X | | |
| Pharmacy | X | | |
| Other Services | X | | |

13. Staffing (number of FTEs):

| | # | | # | | # | | # |
|----------------------|----|-------------------------------|----|---------------------------|---|---|-----|
| Physicians | 69 | Psychiatrists | 2 | Dentists | 8 | Information systems staff | 5 |
| Physician Assistants | 2 | Nurses (RN/LPN) | 65 | Other licensed clinicians | 5 | Other FTEs (administrative, executive, fundraising, etc.) | 125 |
| Nurse Practitioners | 6 | Medical Assistants | 1 | Care managers | | Dental Assistants | 22 |
| Lab Technicians | 9 | Dental Hygienists/Technicians | 2 | Certified Nurse Midwives | | AmeriCorps members | 15 |
| Imaging Technicians | 4 | Other medical personnel | 9 | Other mental health staff | 1 | | |

15. Describe hospital affiliation(s): The health center has local hospital affiliations with Hillcrest Baptist Medical Center and Providence Health System

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.” The center has a full maintenance agreement (which includes upgrades) with its EHR vender. In recognition of the center being a safety net provider, the vender only charges the center about 50% of the going rate for the maintenance.

17. Names and titles of EHR implementation team:

Roland A. Goertz, MD, MBA Chief Executive Officer

Tim D. Barker, MD Medical Director and Chief Medical Officer

Allen E. Patterson, CPA, FACMPE, MHA Chief Financial and Operating Officer

Toby Matula Director of Information Technology

Karen Osborne Senior Programmer

Julia Sanchez, LVN

Will all be considered as authors of the application? Yes

HEART OF TEXAS COMMUNITY HEALTH CENTER

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1. PURPOSE:

Community Served

Heart of Texas Community Health Center, Inc. (HOTCHC) is a Federally Qualified Health Center which receives federal funding from the following grants: 330(e)- (Community Health Center (CHC)), 330(h)- (Health Care for the Homeless (HCH)) and 330(i)- (Public Housing Primary Care (PHPC)). HOTCHC's target population includes the 90,200 residents of McLennan County, Texas living at or below 200% of Federal Poverty Guidelines (FPG).

Organizational Description

The McLennan County Medical Society was the original parent of the Center and continues oversight of all academic and research programs as the *McLennan County Medical Education and Research Foundation (MCMERF)*. A second board, the *Waco Family Practice Foundation (WFPF)*, composed of both physician and business leaders, oversees all capital assets and conducts development activities. A third foundation, the *Heart of Texas Community Health Center, Inc. (HOTCHC)*, formed in 1998, supervises all clinical activities and operates as a Federally Qualified Health Center.

Program Objectives

In 1997 the Center's goals related to implementation of the EHR were simple. We hoped that the system would make us more efficient, but more importantly we wanted the system to make us "better" at our primary missions of patient care and graduate medical education. We anticipated improved compliance with patient care guidelines, and reduction of medical errors. We felt that resident education would be enhanced first of all by simply teaching residents to use an EHR system, and also by the potential of the EHR to enhance supervision of residents by our faculty and improve analysis of the residents' clinical experience. We hoped to offset the cost of the system through more effective charge capture, improved efficiency and by leveraging grant funding.

In October 1999 clinical operations were transferred to Heart of Texas Community Health Center (HOTCHC) - the newly formed Federally Qualified Health Center. With increased federal funding and a mandate to reach out to our newly defined target population HOTCHC began an era of rapid expansion of clinical services. In addition to expanding services HOTCHC also had a federal mandate to implement a structured quality improvement program and participate in several health disparities collaboratives. We expected that the EHR and reporting systems would prove to be useful tools in those efforts.

HOTCHC's main clinical site for ambulatory primary care services is called the Family Health Center (FHC). The FHC was in 1999, and still is, the location where family medicine residents see their assigned panel of patients. The residents spend two to four half days per week seeing their assigned patients at the FHC, one half day attending lectures at the FHC, and most of the remainder of their time on rotations at one of two local hospitals. Since these hospitals are located several miles away from the FHC, and since the residents sometimes go for several days without physically entering the FHC, we recognized early on that remote access to the EHR would provide tremendous benefits to the residents in managing their assigned patients. With remote access to EpicCare they could address patient calls, refill requests, and lab results without making a special trip to the FHC. Equally important they would have immediate access to office records

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of patients being admitted to the hospital through the emergency department.

Improved Compliance with Guidelines

We hoped that the decision support features of EpicCare would result in more consistent attention to recommended health maintenance and disease management interventions.

2. POPULATIONS: ANTICIPATED IMPACT FOR PATIENT POPULATIONS SERVED

Care Access

At the time that we initially implemented the EHR there was a tremendous need for expanded safety net services in our community, and we felt that an EHR would be a tremendously valuable asset in those expansion plans. Patient access to their personal medical records via MyChart was not a feature of EpicCare until several years after our original implementation. Based on the experience of other Epic customers we believe that MyChart will improve communication with patients as well as patient and provider satisfaction.

Health for Populations:

HOTCHC is the major provider of primary health care services to several special populations. We are the major Medicaid provider in McLennan County, and most of our Medicaid patients are either children or pregnant women. We anticipated from the start that the EHR would help us provide more effective outreach services to children and also improve childhood immunization rates. We expected that the system would significantly improve care to prenatal patients by making their current prenatal office records immediately available from the hospitals. Preventive care was another area that we felt we could make an immediate positive impact upon and in fact one of our first EHR related grants funded an effort to implement the Putting Prevention Into Practice Program (PIPP) in the context of an EHR.

HOTCHC is also a major provider of care to the elderly in McLennan County, including a large population of nursing home residents. We anticipated that the EHR system would improve our nursing home care, particularly if we could develop a method of accessing the system from the nursing homes.

Quality improvement:

To HOTCHC, quality improvement was the Holy Grail of an EHR system. Approximately 12 percent of office visits within our system involve the care of a patient with diabetes. We currently provide care for over 3,000 diabetic patients and that disease has resulted in a tremendous amount of morbidity and mortality in our patient population. From the very beginning of our EpicCare implementation, diabetes care was one of the main targets of our quality improvement and disease management efforts.

Medication safety is another area where we anticipated improvement due to EpicCare's ability to check drug interactions and allergies each time a prescription is written. We also anticipated that the system would help us quickly identify all patients currently taking a particular medication in the event of a drug recall.

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Community Care Coordination:

We anticipated that remote access to EpicCare in the hospitals would make a significant positive impact on care coordination between the clinic and hospital setting. A goal that we developed later in our implementation was to improve care coordination in the nursing home setting.

3. PERSONNEL: LEADERSHIP, GOVERNANCE AND KEY STAFF

Leadership/Governance 1991- September 30, 1999

MCMERF, unlike most residency programs, has never been governed by an affiliated hospital or medical school. This autonomy fostered an environment of creativity focused on improving residency education and provision of patient care services. The primary organizational leadership from 1991 until October 1999 included the residency program director, residency faculty, CFO, and the MCMERF board.

October 1, 1999 – Present

On October 1, 1999 governance of clinical operations was transferred from MCMERF to the Heart of Texas Community Health Center (HOTCHC) - the newly formed Federally Qualified Health Center. After that transition MCMERF continued to oversee the academic program, while the clinical activities of residents and faculty, as well as the operating budget, came under the purview of HOTCHC. October 1, 1999 marked the beginning of a new era of rapid expansion of clinical services.

Key Staff

Roland Goertz, MD, MBA has led our organization since April 1, 1997. He took the helm in the midst of the design, build and validation (DBV) phase of our EpicCare implementation, and his vision and strong support of the project were critical to its success. He ensured that adequate resources including personnel, time and capital were devoted to the task at a time when the overall organization was in fact in the midst of a very challenging financial period. It was his belief that our future success was predicated upon the successful implementation of EpicCare. He communicated very effectively to our staff that the only option for future success was to transition to EpicCare as planned, and he gave his full support to other key project personnel.

Allen Patterson, CPA, FACMPE, MHA is our CFOO, and joined the organization in January 1, 1984. His vision of the importance of a successful EHR implementation and his commitment to success in that regard has been absolutely unwavering and critical to our success. It was he who encouraged us to apply a second time for Title VII funding to support this project, and in fact wrote much of that grant and all subsequent grants that have been essential to our EHR implementation and future development. He successfully approached Epic's CEO, Judith Faulkner, in 1992 about the concept of donating the EHR software to us based on our strong relationship with Epic as an early customer, our future value to Epic as a site for prospective customers to view the software being used, and because of our dual missions of medical education and providing health care to the underserved.

We are fortunate to have key people in our information systems department who have been with the organization a remarkably long time and who have an intimate knowledge of our Epic software. The two key people in that department, Toby Matula and Karen Osborne, joined the

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organization several years prior to our 1991 implementation of Epic's practice management software. Toby Matula was one of a small group of key people who selected Epic's practice management system. Both Mr. Matula and Ms. Osborne had major roles in the DBV phase of implementation of the Epic practice management system in 1991 and the EpicCare EHR system in 1997. They continue to be primarily responsible for the ongoing management of all of our information systems.

Tim Barker, MD, a family physician and currently the chief medical officer (CMO) of HOTCHC, has been with the organization since 1990. Since 1995 he has been the physician primarily responsible for EpicCare implementation and development and has been involved in writing all of our technology related grants. He was intimately involved in the DBV phase of EpicCare implementation, spending approximately fifty percent of his time on the project for one year, and was able to develop administrator level knowledge of the system. He has a special interest in clinical decision support systems and has developed expertise in the Clarity SQL reporting system. He is primarily responsible for clinical report generation. As chairman of our Compliance and Performance Improvement and Peer Review Committees he is primarily responsible for HOTCHC's quality improvement program.

Julia Sanchez, LVN made a major contribution to the design of our EpicCare system, and the training and support of new users during the first year of implementation.

4. PARTNERSHIPS: COLLABORATIONS FOR COMMUNITY HEALTH

An initial HRSA Title VII Graduate Training in Family Medicine grant application in 1992 was unsuccessful, but a second application submitted in 1995 was approved and funded for \$204,120. The main objective of this grant was to successfully implement an EHR system and train family medicine residents to use this technology. In 1997 a grant was received from the Texas Department of State Health Services (DSHS) for \$114,700 to implement their *Put Prevention Into Practice* (PIIP) program in the context of an EHR. The Title VII grant supported faculty time and the DSHS grant paid for a fulltime nurse for the DBV phase of implementation as well as for the initial EHR training and user support.

When the Title VII grant was approved and funded in 1995 the WFPF board agreed to support the project with \$450,000 for acquisition of computer hardware. In January 1999, MCMERF was awarded a \$1 million dollar grant from the Texas Telecommunications Infrastructure Fund Board enabling us to extend access to the EHR system and other computer resources to remote sites.

Vendor – Epic Systems

As previously mentioned, Epic agreed to donate the initial \$1 million purchase price of EpicCare. Epic's generous donation along with the other grant funding enabled us to move forward with the project at a time in our history when revenues from patient care were completely inadequate to even consider EHR implementation. We became Epic's first customer to successfully implement Epic's billing, scheduling and EHR software and subsequently hosted site visits for a number of potential Epic customers including such organizations as Children's Hospital of Philadelphia, UC Davis, Cambridge Health Alliance, UT Southwestern, and Kelsey Seybold Clinic.

Hospitals

Our two local hospitals, Hillcrest Baptist Medical Center and Providence Health Center, have

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been very supportive of our EHR implementation including providing network access within both facilities. After our EpicCare ambulatory implementation, Providence purchased and implemented Epic's EpicCare inpatient EHR. Dr. Barker served as a consultant to Providence during their EpicCare inpatient implementation and helped design their physician rounding report which displays on a single screen all of the information commonly needed by a physician during daily hospital rounds.

Sister Foundations

Waco Family Practice Foundation (WFPF) supports the missions of HOTCHC and MCMERF in very tangible ways. WFPF owns the majority of the capital assets used by HOTCHC, including the Epic software license and all computer hardware as well as buildings and other equipment. HOTCHC makes lease payments to WFPF for the use of these assets thereby replenishing WFPF's fund balance so that funds are available for future capital acquisitions. WFPF also benefits from the generosity of many local donors.

The relationship between HOTCHC and MCMERF provides very tangible benefits for both organizations. MCMERF administers the academic program which primarily involves the training of thirty-six family medicine residents, twelve at each year level. HOTCHC's main clinic site is the location where the family medicine residents see their continuity patients, thus benefiting our patients and providing a site for the residents' ambulatory clinical experience. The relationship has been a tremendous benefit to HOTCHC's recruiting efforts for clinical family physicians. Ten of our fourteen clinical family physicians are graduates of our affiliated family medicine residency program.

Texas Association of Community Health Centers (TACHC)

Since we first began to consider the transition to an FQHC, TACHC has provided invaluable assistance. In 1998 they provided vital guidance for the submission of our successful section 330 (FQHC) grant application and the formation of the HOTCHC board and bylaws. Without that guidance we may not have become an FQHC and our organization would look very different than it does today.

HOTCHC received subsequent support from TACHC in the form of internet service, network support, and guidance in the development of our quality improvement program. Drs. Goertz and Barker have provided expert guidance to TACHC as they have developed resources to assist other FQHCs select and implement EHR systems. Both Drs. Goertz and Barker have made multiple presentations at TACHC meetings on EHR systems and how an EHR can enhance quality improvement and patient care activities of an FQHC, particularly in the context of the health disparities collaboratives.

Waco-McLennan County Public Health District (WMCPHD)

HOTCHC collaborates with the WMCPHD on many levels. A recent example of this cooperation was the H1N1 (swine) flu outbreak which affected many areas in our state. Using the Clarity reporting system we were able to quickly respond to the WMCPHD's request for influenza-like illness (ILI) surveillance data in order to determine the extent of the outbreak within our state. Using special order transmittal features in EpicCare we were able to ensure that we gathered all the pertinent clinical data for each patient who presented with ILI.

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5. PREPARATION: READINESS AND WORKFLOW

Grant funding made a significant amount of Dr. Barker's time available for EHR implementation from late 1995 through 1998. Dr. Barker and Karen Osborne made several trips to Madison Wisconsin for administrator level training for EpicCare. They then worked very closely with an EpicCare implementer over about a 3 month period during the DBV phase. They also attended Epic's "Train the Trainer" session in preparation for training new users.

Before the first "go live" date we made an attempt to redesign our core workflows to take full advantage of the functionality of the EHR. Areas that changed significantly after the EHR included managing telephone calls and refill requests, ordering and reviewing lab tests, and of course, medical provider documentation. Visit templates were developed for common visit types, particularly for well-child visits and prenatal visits.

We planned a staged "go live" approach, and turned on full EpicCare functionality in 1 of 6 patient care areas at a time. Staff training for nurses and medical providers occurred one week before the "go live" in their area. Nurses received approximately 8 hours of training while medical providers received 12 hours of training. The training was performed by Dr. Barker and a nurse with the supervision of our Epic implementer (an employee of Epic Systems) for the first round of training. Training was based on real life clinical scenarios. In 1997 a few of our staff had to be trained to use a mouse and keyboard. Needless to say, that is not an issue with the 12 new residents we now train each year.

6. PURCHASING: VENDOR/SYSTEM SELECTION

In 1995, when we began to make serious progress toward implementing the EHR, we already had over 4 years of experience with Epic's practice management system. Our information systems staff, had developed significant expertise in configuring billing and scheduling functionality as well as generating practice management reports. Being early adopters of the system we had a significant impact on its initial development, and had forged a very good relationship with key personnel at Epic Systems. Due to that relationship, and Epic's generous offer to donate their software, we were certain that our best option for an EHR was EpicCare. We agreed to a standard contract with Epic at the usual rates for implementation, while Ms. Faulker gave us the support and upgrades at 50% of standard market rates.

Initial hardware procurement to support the EHR included the purchase and configuration of over 60 PC workstations, the design and build of a local area network to support those workstations and a major upgrade to our server and disk storage system. An unforeseen additional \$65,000 expense was a lab information system (LIS) and an interface between that system and EpicCare. While we were willing and eager to proceed with implementation without the LIS and interface, Epic would not agree to move forward without these systems in place. This was one of very few instances since 1991 when we had a conflict with Epic. We ultimately relented and installed the LIS and interface with Epic about 2 weeks before the initial EpicCare "go live". In retrospect, we have to admit the wisdom of Epic's insistence on the LIS and its interface with Epic. Without those components in place our EpicCare system would have lost a tremendous amount of functionality particularly related to decision support, reporting, and electronic in-basket.

Throughout the process we had very close support from Epic. At our expense an EpicCare implementer spent 4 weeks on site in Waco helping with system build, testing and initial training. During our initial go live phase we had a nurse and/or a physician super-user immediately

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available to answer any new user questions. Ongoing Epic support for all the software components has been readily available since the initial implementation. Some of our staff maintain Epic certification which is a process that requires regular review of upgrade release notes and proficiency testing on an annual basis. Our key personnel have such a longstanding and deep knowledge of the system that we rarely need significant support from Epic apart from annual upgrades. Amazingly, all of the key personnel involved in the initial implementation of EpicCare still work at HOTCHC, almost 12 years later.

7. PRODUCT: SOFTWARE/INTEROPERABILITY/HARDWARE/NETWORKS

Integration

We have fully implemented Epic's billing (Resolute), registration (Prelude), scheduling (Cadence), EHR (EpicCare), and SQL reporting (Clarity) systems. Integration of the EHR with billing and scheduling allows a provider to see a patient on their schedule as soon as an appointment is made. When a patient arrives and is checked in their arrival is indicated on the provider's schedule. All appointments, including no-shows and cancellations are viewable from the EHR. For all orders that generate an internal charge the provider can immediately view the cost to the patient based on their payer and plan as entered through the registration/billing system.

EpicCare Functionality

EpicCare has multiple different types of note templates, some of which are customizable at the user level. Our providers make extensive use of these templates for common visit types. SmartSets are a very versatile feature of EpicCare that can incorporate progress notes, patient information, diagnoses, orders, medications, level of service and follow up instructions. We make extensive use of Medicaid Well Child SmartSets in order to efficiently complete these visits and ensure compliance with Texas Department of State Health Services screening and documentation requirements. Notewriter is a relatively new EpicCare documentation tool that we plan to implement in the near future. This feature allows structured point and click charting for more effective capture of discrete data than our current charting system.

EpicCare has two primary types of decision support features, and we take full advantage of both. The health maintenance module uses age, sex, and user or system entered health maintenance modifiers to display a list of health maintenance interventions and their due dates. We have found this functionality to be particularly useful for routine adult health maintenance as well as for childhood immunizations and chronic disease management. The other decision support feature in EpicCare is called BestPractice alerts (BPAs). BPAs are extremely versatile clinical decision alerts with multiple options for inclusion and exclusion criteria. BPAs not only alert a nurse or medical provider of a recommended intervention, they also are most often linked to SmartSets that enable the provider to quickly comply place the recommended orders.

Clarity Reporting

The Clarity system, first implemented in 1999, has been a tremendously valuable tool, enabling us to fully leverage the power of the data captured by the EHR and practice management systems. Dr. Barker has attended Epic's Clarity training and has become quite adept at producing very useful clinical and practice management reports. Some of these reports are run on an ad hoc basis while others are scheduled at regular intervals, sometimes as often as daily. Since the Clarity database contains both practice management and EHR data, reports can be generated combining

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information from each of these areas. An example is the [Diabetes Pre-Visit Report](#) (see page 1 of the appendix). This report is generated for each diabetic patient two days before a scheduled office visit and has two primary functions. First of all, it is used to generate appointment reminder calls for these patients. Secondly, it is used by AmeriCorps (HealthCorps) members on the day of the patient's visit as a self-management goal counseling guide. The system allows us to more effectively and routinely provide and document self-management goal counseling and at the same time relieve medical providers of this task.

Chronic disease registries are generated through Clarity with provider specific performance improvement reports distributed on a regular basis. A [Diabetes Registry Report](#) (see page 2 of the appendix) is automatically generated each week and published to our intranet. Each provider can at any time view a complete registry of their diabetic patients. These registry reports use conditional formatting so that a person with no clinical background can quickly view the report and determine which patients are in need of lab work or a follow up visit. We are in the process of implementing a system using AmeriCorps (HealthCorps) members to manage these registries, perform outreach calls, and place future orders for lab tests that are due. We believe that this system holds great promise in improving our effectiveness at population based disease management, since the missing piece of the puzzle has been those patients who do not return for appointments at the recommended intervals.

MyChart

Epic's MyChart is a system that allows patients online access to a defined portion of their personal medical record. Other features that can be included in MyChart are online refill requests, electronic notification of lab results, and online appointment scheduling. We have obtained a license for MyChart and hope to have the initial phase of implementation completed by the end of this calendar year.

E-prescribing

Epic, in collaboration with Surescripts, provides E-prescribing functionality within EpicCare. Texas pharmacy rules, and 340B pharmaceutical pricing for community health center pharmacies, present significant challenges for community health center pharmacies wishing to provide a full Medicaid formulary. As a result, our Medicaid patients may obtain some of their prescriptions from outside pharmacies and others from our in-house pharmacy. In such a setting E-prescribing would be particularly challenging for our medical providers due to the necessity of routing prescriptions for one patient to multiple pharmacies. We are working diligently to solve this issue to the extent that we are considering opening a second "pharmacy within a pharmacy" with a separate inventory to serve our Medicaid patients. Assuming that plan is a viable option we hope to have this feature fully implemented within the next 12 months. In the meantime we are considering a pilot project involving E-prescribing only for patients with Medicare Part-D.

Interfaces

We currently have an interface between EpicCare and our LIS. The LIS interfaces with our local pathology lab and Quest, our primary reference lab. These interfaces manage over 95% of all lab tests ordered in our clinics. When a lab test is ordered an electronic request is transmitted to the LIS where the patient's name and requested test appear on the lab draw schedule. Test results flow seamlessly back into the patient's electronic health record and into the ordering provider's electronic in-basket. The few tests not captured by these interfaces return on paper and are

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scanned by our central scanning department as a result to the original order. When this occurs the result flows automatically to the ordering provider's electronic in-basket. In none of these instances does the medical provider receive a paper result.

Tests ordered for a future date (e.g. a fasting lipid panel) are entered into EpicCare as future orders. When patients return for “lab only” visits they are routed directly to the lab where a phlebotomist accesses their EpicCare record and releases the future orders. The results are then routed as described in the previous paragraph. This workflow has greatly streamlined “lab only” visits and relieved early morning congestion in patient care areas.

Tests not resulted within the normally expected timeframe, whether a routine or future order, generate an overdue results message to the ordering provider. The vast majority of these messages occur because a patient failed to show up for a future ordered lab test. The provider can then decide whether to cancel the order or contact the patient and encourage them to come in for the test.

Connectivity/networking:

Our Epic practice management and EHR software share a common database and run on a client-server system. The servers and disk storage system are located in our IS department and have multiple redundancies built in to ensure data protection and minimal or no downtime in the event of hardware failure. Total nonscheduled downtime since EpicCare implementation in 1997 has been less than 20 hours with almost all of that being due to a handful of unanticipated electrical outages.

We maintain offsite backups that can be used to restore the system in case of a catastrophic event at our main site. All but one of our remote sites and one local hospital are connected to our main site with long range radiofrequency wireless technology. Our most remote clinic site is connected to the main system with a T1 connection. Access from one local hospital is via their public WiFi network and our VPN. All other remote connections are made via the VPN. We have installed wireless networks at all of our sites.

Clarity runs on a separate server in order to offload the resource intensive work of reporting from the clinical server. Data is extracted from the clinical server to Clarity on a regular basis with most clinical information being updated on a daily basis. Crystal Reports is used to develop reports from the Clarity database, and Business Objects is used to schedule and distribute those reports to a specific location on our network, to our intranet, or via E-mail.

In preparation for EHR implementation and subsequently to support the system we have had multiple infrastructure upgrades. We replace our main server on approximately every 4 years. We have just transitioned to our second wireless network system. The first wireless network provided almost flawless service for 8 years. Desktop workstations are replaced on an as needed basis, usually every 4 to 5 years, while most notebook workstations are replaced on an every 3 to 4 year cycle.

8. PROOF: DATA COLLECTION, MANAGEMENT, AND MEASUREMENT

Financial Return on Investment

At the time the EHR system was implemented, the health center was well over one-year through a

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three-year financial decline. It was losing roughly 1/3 of its pre-EHR level reserves per year for each of those three years. Three or four factors were primarily responsible for the financial turnaround, only two of which, the EHR and the selection of Roland Goertz, MD as our entity's CEO (Executive Director), were new to our center during the period of decline. The health center has since been able to parlay the related financial benefits of those factors into a budget that is almost four times larger than its pre-EHR budget. As perhaps the greatest testament to the EHR's financial return on investment, the health center has gone from a near bankruptcy-low of reserves at its worst point (five days of reserves remaining at the very end of the 3-year decline) to now, just 10 years later, having a remarkable 180 days (six months) of operating reserves. Indeed the center has not had a single deficit year for the past ten years (since the end of the 3-year decline). Once again, the implementation of the EHR and the addition of Roland Goertz, MD as the center's CEO were the only significant changes that were made during the 3-year decline.

Organizational Efficiency

At the time HOTCHC was considering the EHR it did what would have been considered a Thesis-quality research project on the operational and financial implications of implementing an EHR. It was concluded that the center needed to be an early adopter of the EHR in order to:

- Position itself to provide and teach more and better patient care by virtue of discrete and real-time data,
- Gain a strategic advantage over other family medicine residency programs,
- Position itself for more cost-effective and efficient expansion, and
- Position itself for additional revenue streams

Telephone Encounters

While we have no baseline data for telephone calls prior to EHR implementation we do have baseline data for telephone calls pre and post implementation of remote access to EpicCare. During March 1999 (prior to remote access) we had 2,635 telephone encounters in EpicCare, and those encounters were open an average of 2.01 days. During March 2000 (after remote access) we had 1,984 telephone encounters, and those encounters were open an average of 1.72 days. First of all, there was a significant decrease in the average length of time that telephone encounters remained open. Physicians were obviously answering their messages on a more regular and timely basis since these messages could be accessed from remote sites. Additionally, the number of telephone encounters dramatically decreased after remote access. This effect is believed due to fewer callbacks because of more timely attention to telephone calls by physicians.

9. PROCESS: IMPLEMENTATION AND TRANSITION TO EHR

We had one site with 6 patient care areas in 1997, and decided to go live with the resident team area that was closest in proximity to our information systems department on October 30, 1997. As we implemented the system in one area we were able to shift patient volume to the other 5 areas so that appointment templates were reduced by 50% for the first week of implementation and then gradually increased them back to normal over a one month period. We made a number of setup changes to improve the system after going live in that first team. By the end of April 1998 EpicCare was fully implemented throughout our system and being used by all medical providers and clinical staff.

Our philosophy is that the EHR is a clinical project, and as such, the main responsibility for

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guiding its implementation and development should lie with clinical personnel. During the design, build, and validation phase Dr. Barker was in daily contact with key clinical personnel seeking their input on important setup options, and garnering their support for the system. Dr. Barker's intimate knowledge of the system and his ability to bridge the gap between medical providers and our non-clinical information systems staff was a significant factor in the success of this project.

An example of how Dr. Barker bridged this gap occurred very early on in our EpicCare implementation when we experienced problems with Windows workstations locking up. The solution proposed by the first of our information systems staff to be notified of this issue was to "just reboot the workstation". It is not surprising that this was his proposed solution, since in his job installing software and setting up workstations he spent a good deal of his time waiting for workstations to reboot. Doing so did not seem unreasonable at all from his perspective. He had no concept of how uncomfortable it was for a physician in an exam room with a patient to be confronted with a locked workstation, the rebooting of which would likely lose important data that she had just entered, not to mention the loss of valuable time during a very busy clinic day, and the embarrassment of revealing to a patient that our system was certainly not without flaws. Dr. Barker was able to gently impress upon our IS staff the importance of having reliable EHR workstations, move this problem up the priority ladder, and the issue was solved in short order.

One of our early decisions, primarily because of limited resources, was to not extract a significant amount data from our paper records into EpicCare. Rather, we asked our medical providers to update the medication database and problem list for every patient at their first EpicCare visit. We kept the paper chart for old progress notes and for outside lab studies and other paperwork until we put our scanning system in place several years later. We found that after one year of being live on EpicCare we very rarely had a need to refer to the paper chart. Since approximately 95% of the laboratory tests ordered by our medical providers are performed in our in-house lab the vast majority of discrete laboratory data has been captured by EpicCare from day one. At this point, since implementation of our scanning system, 100% of patient's medical record data is contained in EpicCare.

Clinical Pathways Workgroup

A few years into our EHR journey we recognized that the "implementation phase" of an EHR never really ends. New features are constantly being developed and plans must be made to implement those features that are deemed most valuable. Additionally, as we constantly strive to provide higher quality care in the most efficient, patient-centered, cost effective manner possible we regularly evaluate and redesign our workflows. We have come to realize the critical importance of well-designed standardized workflows, and we believe that the best people to design those workflows are the front line staff who will use them. To that end we have formed a committee called the "Clinical Pathways Workgroup" (CPW). The members of the CPW are well respected people from various departments (e.g. front office, back office, nursing, lab, X-ray, pharmacy, medical providers), but none are supervisors. Collectively they are experts in how things really work at our center. They are charged with evaluating our workflows and designing better ones. Their ideas are often pilot tested on a small scale as a PDSA project. When their ideas have been fully refined they are presented to our quality improvement committee for approval and ratification. The CPW has been responsible for a remarkable improvement and standardization of our approach to well child visits.

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Configuration/Templates

System level charting templates and SmartSets are designed primarily by our physician super users and shared with other Epic customers via Epic's user web. Individual nurses and providers have the ability to develop their own SmartPhrase files which can be used for progress notes, telephone encounters, or as patient instructions.

Education/Training/Learning/Support

Several years ago we developed an EpicCare Competencies Checklist which we use as a training guide for new medical providers. It has been particularly helpful in identifying knowledge deficits in new users a couple of weeks after their initial phase of EpicCare training. In April of this year, we very successfully pilot tested Epic's E-learning modules for initial training for a new family nurse practitioner. Based on that experience we believe that E-learning will dramatically decrease the amount of staff time required to train new users while at the same time improving the overall quality of our training program. EHR users are supported by our IS department as well as by physician super users and our full time nurse trainer. This support is immediately available via phone or electronic messaging within the EpicCare system.

Hardware/Networks/Continuity of Care

Our ability to rapidly connect new clinic sites via low-cost, long-range, wireless radio frequency connections has greatly facilitated our rapid expansion. All of our patients have a single electronic health record that is available from all of our sites and in all departments.

Document Management

Scanning occurs both centrally and in the clinical areas. We made a decision to use Epic's integrated scanning capabilities rather than purchase a third party document management system and are quite happy with that decision. Central scanning is used for documents that we receive from outside our system in paper form. Point of care scanning is used for a myriad of documents such as consent forms, Medicaid cards, home blood pressure logs, etc. We have implemented very straightforward scanning protocols in order to capture important documents, but make an attempt to avoid cluttering our system with non-essential documents.

EHR Maintenance and Optimization

Our strategy as a relatively small organization has been to follow EpicCare development closely by attending the advisory councils in the spring and fall and by attending the UGM each fall. At those meetings we create a list of new features that we believe would improve patient care from both a quality and efficiency point of view and also enhance patient and provider satisfaction. At the end of each UGM we have a strategic planning session to set our EHR development priorities for the upcoming year.

Key personnel meet on a weekly basis to discuss our information systems project list. Support from Epic is readily available via phone, E-mail and web meetings. Key personnel review release notes prior to each major upgrade and develop a project list related to the upgrade. Training established users in the use of new functionality or workflows occurs on an as needed basis, either online or in large groups at regularly scheduled administrative meetings.

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10. PROGRESS/IMPACT: VALUE, OUTCOMES, AND LESSONS LEARNED

Achievement of Objectives/Anticipated Impact

Resident Education

Resident education has been enhanced in multiple ways by the EHR. Resident experience in using an EHR is one of the program requirements of family medicine residency programs. Additionally, residents benefit from rapid electronic communication with faculty members and reports that document the details of their training experience. They also participate in our quality improvement program which requires heavily on the EHR and Clarity.

Remote Access

The benefits of remote access to our EHR have vastly exceeded our initial expectations. The Westview Manor nursing home is the only site where we have extended access to our system to non center employees. The nursing supervisors there have the ability to send an electronic message within the EHR to the PCP of a nursing home patient. These electronic messages might include lab results, or notifications of problems such as a fall, fever, or mental status change. This system has markedly reduced the number of phone calls to the physician office, and has dramatically decreased the response time of physicians to that type of communication. We believe that it is no coincidence that this nursing home was recently awarded a five star rating by CMS, the only nursing home in McLennan County to receive that designation.

Compliance with Practice Guidelines – Childhood Immunizations

The idea that simply turning on the decision support features of EpicCare would result in instant compliance with recommended health maintenance and disease management interventions proved to be quite naïve. By experience we learned that decision support reminders are much more effective when coupled with regular provider-specific and nurse-specific quality improvement reports. For instance, implementation of health maintenance reminders for childhood immunizations coupled with a daily nurse-specific missed immunizations QI report resulted in a marked increase in the percentage of children 19-35 months of age who had received all recommended immunizations. In less than a year we were able to raise that rate from 67% to over 80%. As a result of that project our residency program received one of four national AAFP/F Wyeth Immunization "Best Practices" awards on June 8, 2008. The details of that project are described on [pages 3-5 of the appendix](#).

Medication Error Prevention –Metoclopramide

With the EHR an instant improvement was realized in reduction of medication errors due to pharmacists no longer having to decipher physician handwriting. Furthermore, the EHR performed immediate allergy and interaction checking with every prescription written. We were also able, in a very timely manner, to contact patients with active prescriptions for drugs that had been recalled. The first time we used this approach was when we generated letters to every patient with an active prescription for Rezulin on the same day that that drug was recalled by the FDA.

We undertook an innovative QI project examining appropriate, and inappropriate, use of metoclopramide (Reglan) due to its association with tardive dyskinesia. The goals of this project

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were to ensure that this drug was prescribed only for appropriate indications, and that each patient on this medication knew and accepted the associated risks. Clarity was used in Phase I of this project to generate a [“Provider Education and Self Audit Report”](#) (page 6 of the appendix) for each provider which listed their patients with an active prescription for metoclopramide. Providers were informed of the goals of the project and asked to make interventions based on this initial report. Phase II occurred about 2 months later when the Medical Peer Review Committee used the [“Metoclopramide Peer Review Report”](#) (page 6 of the appendix) to review all patients who still had an active prescription for metoclopramide. Active metoclopramide prescriptions dropped by 23% between Phase I and Phase II, and the reviews revealed that informed consent was documented in all patients who remained on this drug. We believe this is an excellent example of using the EHR and reporting systems to improve provider knowledge and enhance the peer review process.

Care Access

Not until our involvement with the Access and Redesign and Optimizing Clinical Care (OC3) health disparities collaboratives did we consider the importance of patient panel size to continuity and access. Once we began to understand those concepts however, we were immediately able to capitalize on the wealth of data captured by our system, which we used to analyze patient panels, access, and waiting times. We were then able to control flow of new patients into provider panels by altering the number of new patient slots in their appointment templates. These changes led to improved access and continuity as well as markedly improved provider satisfaction.

Strategic alignment

Quality Improvement

In our transition to an FQHC in 1999 we accepted the mandate given to all FQHCs to reduce health disparities. Doing so requires the implementation of a very structured quality improvement program as well as becoming involved with health disparities collaboratives. We have participated in the diabetes, cardiovascular disease, access and redesign and optimizing clinical care health disparities collaboratives. The decision support features of EpicCare and the reporting capabilities of Clarity led to our center being recognized as an outstanding participant in these projects. In fact, because of our center’s high level of performance our CMO has been asked by the Texas Association of Community Health Centers to participate as a faculty member in the current Optimizing Clinical Care Collaborative.

Efficiencies

The assumed benefits of the EHR have greatly exceeded what was originally thought possible. In 1997, the health center had one site with roughly 32,000 square feet, at which it provided 58,208 medical visits to 13,696 unduplicated patients. In 2008, with ten sites and roughly 105,000 square feet of medically-related space, the health center provided 147,379 medical visits to 36,230 unduplicated patients. It is also worth noting that the health center is scheduled to complete a major expansion of one of its remote sites in August 2009, and to begin two other remote site major expansions by November 2009. For more details see page *** of the appendix.

From a financial perspective, the numbers are equally compelling. Two important financial markers are most telling. One is that the health center, despite serving the vulnerable, and pushing toward three times as many vulnerable as it served before implementing the EHR, has

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made a surplus every year for the past ten years. Those surpluses have built the center's reserves from the near-bankruptcy level of five days to an incredibly respectful 180 days. A second financial marker is that the center's current ratio, current assets divided by current liabilities, has grown from the near insolvency level to almost a 4:1, which means the center can pay its current liabilities four times over using its current assets. This would be a great current ratio in almost any business, but is simply incredible given that the center provides health care services to the vulnerable.

Critical Success Factors:

We attribute our success to the right people (our leadership team), the right product/vendor (Epic Integrated Software), and the good fortune to obtain a significant amount of grant funding at a critical time in this project. Dr. Goertz in particular had the vision to recognize the vital importance of steadfastly pursuing the implementation of EpicCare despite major financial challenges for our center. In fact, the successful implementation of EpicCare made a major contribution to our recovery from those financial difficulties.

11. PRACTICE: OTHER ASPECTS THAT DESCRIBE YOUR STORY AND MODEL PRACTICE INITIATIVES

The key personnel associated with our EpicCare implementation have become recognized as experts in the successful implementation, and effective and creative use of EHR systems. They have had the opportunity to share our experiences at many forums including Texas Medical Association Meetings, TACHC Meetings, Epic's Annual Users Group Meeting, Epic's Physician Advisory Council, the AAFP Annual Program Directors Meeting, Health Disparities Learning Sessions, and the American Diabetes Association's Annual Diabetes Summit. Dr. Barker has served as a consultant for Providence Health Center's EpicCare Inpatient implementation and for the Oregon Community Health Information Network (OCHIN) which serves as an application service provider for Epic software for safety net providers in the northeastern United States.

We feel very fortunate to have had the opportunity to become early adopters of an excellent integrated EHR/practice management system and to have had so much success with our system over the last 12 years. We really were at the right place, at the right time, with the right people and the right vendor. We believe that for such a small organization, not really quite large enough even now to be considered a potential Epic customer if we were approaching them for the first time, we have made the most of the opportunities that we were given. Thanks for the opportunity to tell our story.

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Diabetes Pre-visit Report, and the effects of this intervention

This report is used for reminder calls and self management goal counseling. It is generated in either English or Spanish based on the preferred language entered in our registration system (Prelude). Patient names and phone numbers have been removed from these examples

APPOINTMENT DATE: 11/01/2007 SCHEDULED WITH: HAYS, ROBERT
 LOCATION: ATEAM

Goals:
 The goal for most people with diabetes is to have an A1C below 7.
 Your last A1C was on 7/17/2007, and the result was 6.9
Congratulations!! You are at your goal for A1C! Keep up the great work!

The goal for most people with diabetes is to have an LDL cholesterol level below 100.
 Your last LDL cholesterol was on 7/17/2007, and the result was 94
Congratulations!! You are at your goal for LDL! Keep up the great work!

The goal for most people with diabetes is to have their blood pressure below 130/80.
 Your last blood pressure was performed on 10/25/2007, and the result was 127/80

APPOINTMENT DATE: 11/01/2007 SCHEDULED WITH: KURRUS, HEIDI
 LOCATION: OPC

Niveles deseados:
 El ideal para la mayoría de los diabéticos es tener su A1C a un nivel menor de 7.
 Su última A1C fue medida en 9/17/2007, y el resultado fue 5.7
¡¡¡ FELICITACIONES !!! ¡Su A1C! se encuentra en el nivel ideal! ¡Siga así, para mantener este excelente resultado!

El ideal para la mayoría de los diabéticos es tener un nivel de colesterol LDL menor a 100.
 Su último colesterol LDL fue medido en 9/14/2007, y el resultado fue 111

El ideal para la mayoría de los diabéticos es tener una presión arterial menor a 130/80.
 Su última presión arterial fue medida en 9/14/2007, y el resultado fue 151/80

MY COMMITMENT:

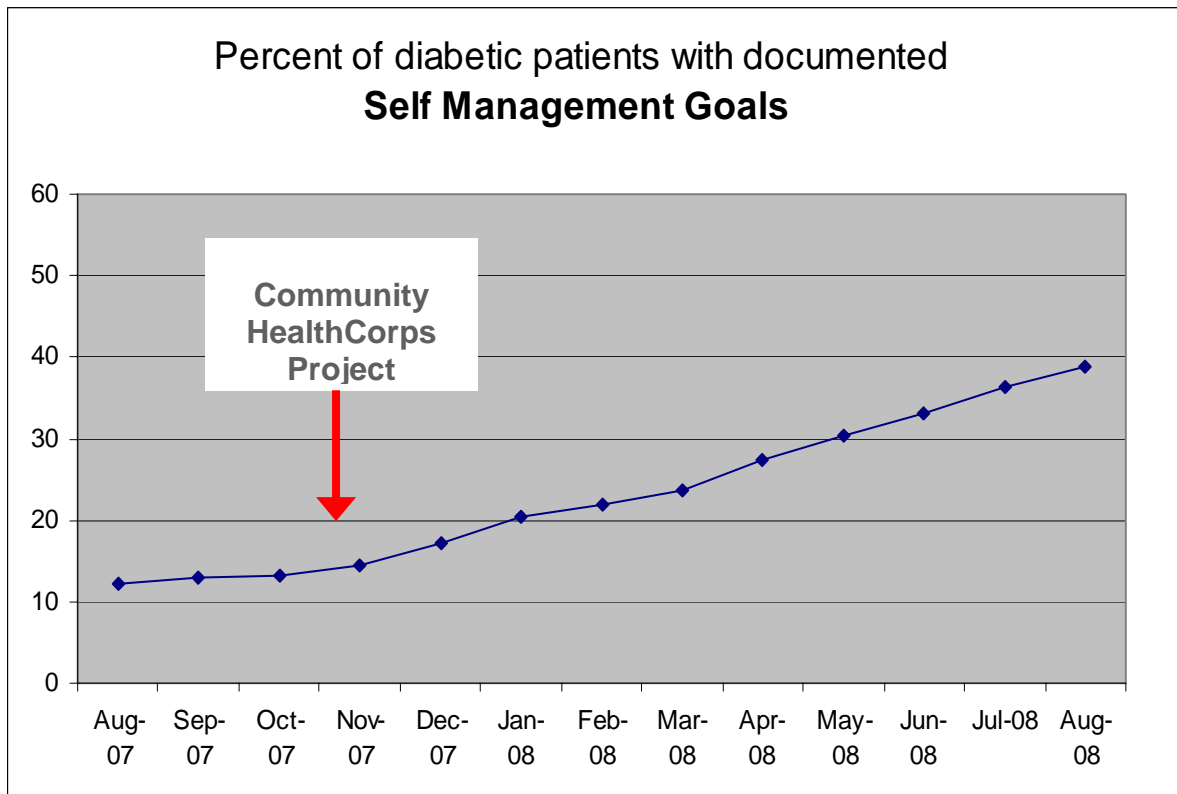
| | |
|---|---|
| I will try to lose ____ lbs by ____/____/____ | I will exercise ____ minutes daily |
| I will quit smoking | I will check my blood sugars at home ____ times per day |
| I will check my feet and shoes daily | I will take all my medications each day |
| I will get an eye exam. | I will attend a diabetes class. |

ME COMPROMETO A:

| | |
|--|--|
| Tratar de perder ____ lbs antes de la próxima visita | Ejercitarme ____ minutos diarios |
| Dejar de fumar | Medir el azúcar en mi sangre ____ veces al día |
| Examinar mis pies y mis zapatos todos los días. | Tomar mis medicinas diariamente. |
| Hacerme un examen de ojos. | Asistir a las clases para diabéticos. |

Signature

Firma



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Diabetes Registry Report

The cover page shows average data for all HOTCHC diabetic patients:

| HOTCHC DIABETES PATIENT REGISTRY | |
|--|--|
| Total Patient Count: 3,341 | |
| Average A1C: 7.99 | |
| 2 A1Cs in last year: 1,805 (54%) | |
| Blood Pressure Controlled (<130/80): 1,098 (33%) | |
| LDL Controlled: 1,320 (40%) | |
| Cardiac risk reduction with ASA or other antiplatelet therapy: 1,910 (57%) | |
| Annual UPCR: 1,909 (57%) | |
| Documentation of self-management goal setting: 1,368 (41%) | |

This is an example of individual provider data in the Diabetes Registry Report. Red medical record numbers (MRNs) indicate a patient who has not had an A1C test in the last 160 days or an LDL in the last 345 days.

| DIABETES PATIENT REGISTRY: BARKER, TIM | | | | | | | | | | | | | |
|---|------|------------|--------|---------|------------|---|------------|-----|------|-------------|------------|-------------|------------|
| Total patients in registry: 53 | | | | | | | | | | | | | |
| Average A1C: 7.70 | | | | | | Annual LDL: 45 (84.91%) | | | | | | | |
| 2 A1Cs in last year: 36 (68%) | | | | | | Annual urine protein/creatinine ratio: 35 (66%) | | | | | | | |
| Annual A1C: 50 (94%) | | | | | | Documentation of self-management goal setting: 29 (55%) | | | | | | | |
| BP controlled (<130/80): 22 (42%) | | | | | | Dilated retinal exam in last year: 23 (43%) | | | | | | | |
| LDL controlled (<100): 29 (55%) | | | | | | Comprehensive foot exam (LEAP) in last 6 months: 26 (49%) | | | | | | | |
| Cardiac risk reduction with ASA or other antiplatelet therapy: 29 (55%) | | | | | | | | | | | | | |
| MRN | A1C | A1C - Date | A1C/YR | BP | BP - Date | LDL | LDL - Date | ASA | UPCR | UPCR - Date | SMG - DUE | RETINAL DUE | LEAP DUE |
| 18401 | 10.4 | 03/28/2008 | 0 | 166/74 | 08/20/2008 | 83 | 03/27/2008 | Y | 0.11 | 07/12/2007 | 05/01/2009 | 06/09/1958 | 09/27/2008 |
| 3702 | 12.1 | 01/07/2009 | 1 | 110/83 | 02/04/2009 | 106 | 01/07/2009 | N | 0.19 | 01/07/2009 | 04/12/2008 | 04/04/2008 | 08/27/2008 |
| 4401 | 7.4 | 02/19/2009 | 3 | 112/63 | 04/13/2009 | 47 | 04/16/2009 | Y | 0.11 | 04/13/2009 | 09/25/2009 | 06/23/2009 | 10/13/2009 |
| 4402 | 7.8 | 02/09/2009 | 3 | 135/68 | 04/27/2009 | 87 | 09/25/2008 | Y | 0.14 | 06/23/2008 | 09/25/2009 | 06/11/2004 | 10/13/2009 |
| 1904 | 13.2 | 12/12/2008 | 1 | 126/72 | 02/11/2009 | 136 | 01/09/2009 | N | 0.13 | 01/09/2009 | 02/25/2009 | 02/11/2010 | 08/11/2009 |
| 1601 | 4.8 | 03/27/2009 | 2 | 146/80 | 03/27/2009 | 101 | 03/27/2009 | Y | 0.12 | 03/27/2009 | 07/28/2009 | 12/16/2006 | 09/27/2009 |
| 4801 | 6.2 | 02/05/2009 | 2 | 136/77 | 03/09/2009 | 84 | 02/05/2009 | Y | 0.07 | 12/28/2005 | 02/07/2008 | 07/11/2006 | 07/03/2006 |
| 406 | 10.1 | 01/15/2009 | 2 | 122/72 | 03/31/2009 | 44 | 10/06/2008 | Y | 0.12 | 02/09/2009 | 02/04/2009 | 02/09/2010 | 03/30/2009 |
| 1201 | 5.9 | 10/08/2008 | 1 | 137/89 | 01/21/2009 | 120 | 10/08/2008 | Y | 0.09 | 10/08/2008 | 02/26/2009 | 02/26/2009 | 04/08/2009 |
| 6201 | 6.8 | 01/15/2009 | 3 | 125/81 | 02/16/2009 | 77 | 10/20/2008 | N | 0.07 | 01/15/2009 | 02/16/2010 | 12/01/2009 | 03/30/2009 |
| 12702 | 9.7 | 10/31/2008 | 1 | 179/104 | 01/15/2009 | 80 | 10/31/2008 | Y | 0.47 | 01/15/2009 | 01/15/2010 | 09/26/2006 | 07/15/2009 |
| 3001 | 6.2 | 09/17/2008 | 2 | 164/92 | 03/02/2009 | 122 | 05/12/2008 | Y | 0.12 | 09/17/2008 | 05/12/2009 | 05/12/2009 | 11/12/2008 |
| 5401 | 10.6 | 01/14/2009 | 2 | 112/77 | 01/28/2009 | 122 | 02/25/2008 | N | 1.55 | 05/05/2008 | 03/24/2009 | 01/14/2010 | 07/14/2009 |
| 1201 | 6.2 | 04/21/2009 | 2 | 103/53 | 04/29/2009 | 36 | 04/22/2009 | Y | 0.22 | 12/15/2008 | 11/24/2009 | 04/27/2009 | 05/24/2009 |

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Childhood Immunizations

Health Maintenance for Childhood Immunizations

| Health Maintenance | | | | | | |
|--------------------|-------------------------------|----------------|----------------|----------------|----------------|--|
| Due Date | Procedure | Date Satisfied | Date Satisfied | Date Satisfied | Date Satisfied | |
| 07/04/2007 | HEPATITIS A IMMUNIZATION (#2) | 01/04/2007 | | | | |
| 12/19/2009 | DTAP IMMUNIZATION (#5) | 01/04/2007 | 06/21/2006 | 05/16/2006 | 02/27/2006 | |
| | HEP B IMMUNIZATION | 06/21/2006 | 05/16/2006 | 02/27/2006 | 12/20/2005 | |
| | HIB IMMUNIZATION | 01/04/2007 | 06/21/2006 | 05/16/2006 | 02/27/2006 | |
| 10/01/2007 | INFLUENZA VACC CHILD | 10/25/2006 | | | | |
| 12/19/2009 | IPV IMMUNIZATION (#4) | 06/21/2006 | 05/16/2006 | 02/27/2006 | | |
| 12/19/2009 | MMR IMMUNIZATION (#2) | 01/04/2007 | | | | |
| | PREVNAR | 01/04/2007 | 06/21/2006 | 05/16/2006 | 02/27/2006 | |
| 12/19/2009 | VARICELLA IMM (#2) | 01/04/2007 | | | | |

This figure shows Health Maintenance for 21 month old child with appointment 9/19/07 last seen 1/4/07

Missed Immunization Opportunities

| Age: 11.64 MOS | | |
|----------------|------------|-----------|
| Up to Date | Due Date | Next Due |
| Hepatitis B | | Completed |
| DTaP | 09/27/2007 | 4 |
| IPV | 09/25/2010 | 4 |
| HIB | 09/25/2007 | 4 |
| PREVNAR | 09/25/2007 | 4 |
| Influenza | 10/01/2007 | |

Detail section of 9/13/07 report

This child is up to date on immunizations

| Age: 2.30 MOS | | |
|---------------|------------|----------|
| Overdue | Due Date | Next Due |
| Hepatitis B | 07/06/2007 | 1 |
| DTaP | 09/06/2007 | 1 |
| IPV | 09/06/2007 | 1 |
| HIB | 09/06/2007 | 1 |
| PREVNAR | 09/06/2007 | 1 |
| Rotavirus | 09/06/2007 | 1 |

This child is overdue for multiple immunizations

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Recall Letters for Well Child Visits (generated each month from Clarity)



Family Health Center

To the parents of [REDACTED]
[REDACTED]
MCGREGOR, TX 76657

August 06, 2007

Greetings from the Family Health Center,

Our records show that your child will soon be due for a 2 month well child (THSteps) visit which includes immunizations for Hepatitis, Diphtheria, Tetanus, Whooping Cough, Haemophilus Influenza, Polio, Streptococcal Pneumonia and Rotavirus. I would like to encourage you to call our patient advocate nurse Maria Aguilar, LVN at 750-8386 and schedule an appointment at your earliest convenience.

Sincerely,

Tim D. Barker, MD
Medical Director



Family Health Center

Padres y/o tutores de [REDACTED]
[REDACTED]
WACO, TX 76705

August 06, 2007

A quien corresponda:

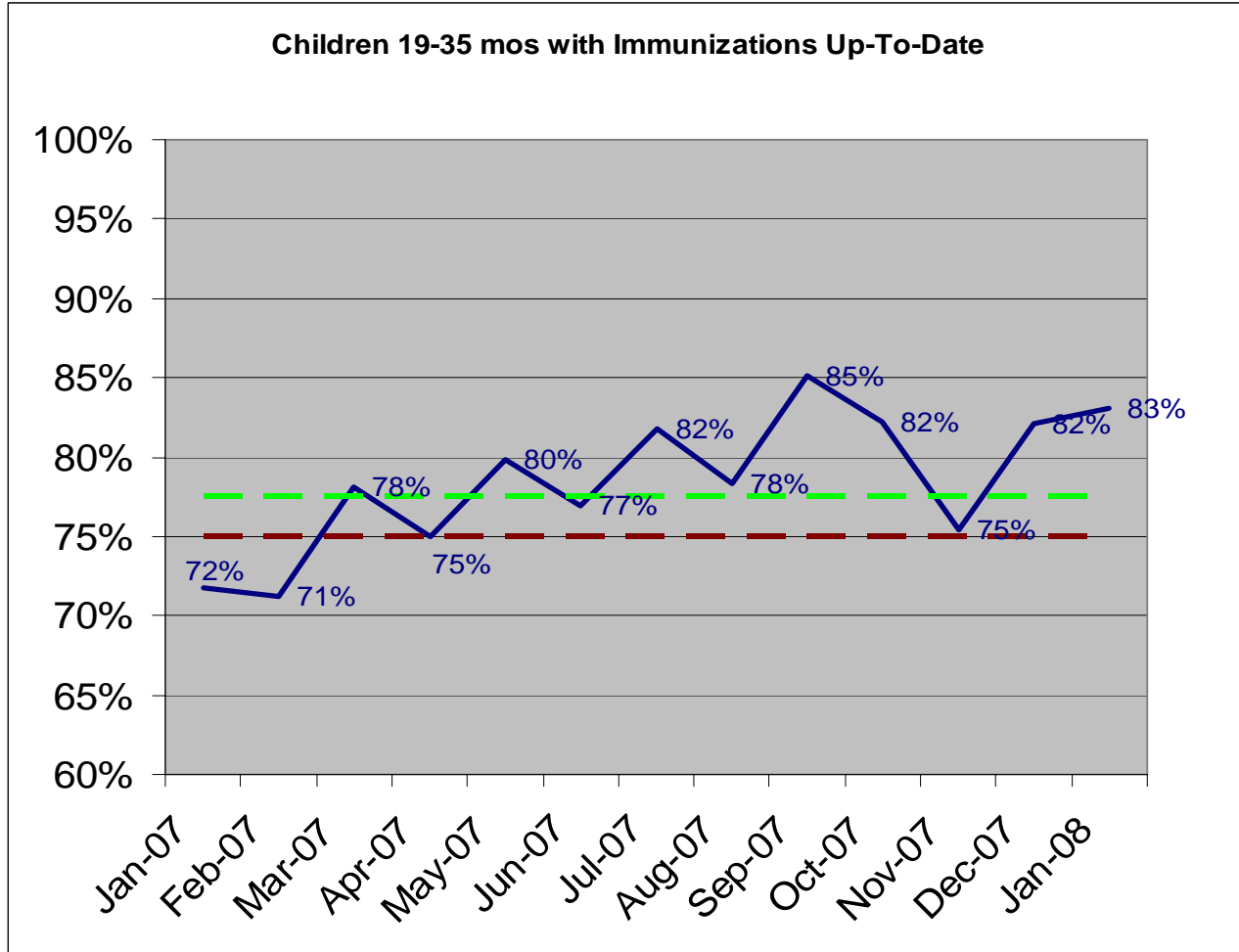
Por medio de esta carta queremos recordarle que ya es tiempo de que su hijo(a) reciba el chequeo medico de los 2 meses de edad requerido por el programa Pasos Sanos de Tejas de Medicaid. El chequeo también incluye la suministración de las siguientes vacunas: Hepatitis, Difteria, Tétanos, Tos Ferina, la gripe de Haemophilus, Polio, Estreptococo de Neumonía y Rotavirus. Por favor comuníquese con nuestra enfermera Maria Aguilar LVN, encargada de hacer este tipo de citas, al teléfono 750-8386. Para su comodidad se le atenderá en español.

Sinceramente,

Tim D. Barker, MD
Medical Director

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Red line = TX average; Green line = National average

Systems changes that led to this success included:

- A standing order instructing nurses to check the immunization status of every child at every visit, and order any immunizations that are due
- An update to the health maintenance module in EpicCare so that nurses can immediately determine which immunizations are due for a particular child
- A regular feedback system to nurses making them aware of missed immunization opportunities. Feedback to nurses lapsed in November.
- A patient recall system using letters (approximately 950 per month) and phone calls to remind parents when their children are due for well child visits.

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Metoclopramide Self-Audit Report

Confidential Peer Review Document

Metoclopramide (Reglan) Drug Usage Review

Dr. No

| MRN | MED | Start Date | Authorizing Provider (if not PCP) |
|---------|-------------------------------|------------|-----------------------------------|
| 2881001 | METOCLOPRAMIDE HCL 10 MG OR T | 11/29/2006 | |
| 6645201 | METOCLOPRAMIDE HCL 10 MG OR T | 08/23/2006 | |

The Medical Peer Review Committee will be performing several drug usage reviews during 2007. This report is Step 1 of the review of Metoclopramide (Reglan) usage, and is intended for your personal review and intervention where necessary. Metoclopramide is known to cause severe irreversible side effects (Tardive dyskinesia) in some patients and should only be given for specific indications such as documented gastroparesis when other treatments have been ineffective. Documentation for patients taking this medication must include a statement that the patient has been made aware of and accepts the risks associated with taking Metoclopramide .

The patients listed above have a currently active prescription for Metoclopramide (Reglan)

Please do the following with this information:

1. Review the records
2. Reglan (Metoclopramide) should be discontinued in patients without an appropriate indication
3. Provide patient education for patients who continue to take metoclopramide, and document that the patient has been made aware of and accepts the risks associated with this medication.

In step 2 of this review this data will be updated and presented to the Medical Peer Review Committee for review at their review.

Metoclopramide Peer Review Report

Confidential Peer Review Document

Metoclopramide (Reglan) Drug Usage Review

Dr. No

| MRN | MED | Start Date | Sex | Authorizing Provider (if not PCP) |
|--------|----------------------------------|------------|-----|-----------------------------------|
| 263505 | METOCLOPRAMIDE HCL 10 MG OR TABS | 08/29/2007 | M | |

Medical Peer Review Committee Comments:

Documentation in the record supports Metoclopramide use in this patient: ___Yes ___No

Documentation shows that the patient knows and accepts the risks of metoclopramide: ___Yes ___No

Comments:

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EHR Supported Growth

| | 1997 | 2008 |
|----------------------------------|-------------|--------------|
| Family Medicine Residents | 36 | 36 |
| Family Medicine Faculty | 11 | 14 |
| Pediatricians | 1 | 1 |
| OB/GYNs | 1 | 4 |
| Psychiatrists | 0 | 2 |
| Clinical Family Physicians | 0 | 14 |
| Licensed Professional Counselors | 0 | 5 |
| Midlevel Providers | 0 | 8 |
| Pharmacists | 1 | 3 |
| Primary Care Sites | 1 | 10 |
| Medical Encounters | 58,208 | 147,379 |
| Unduplicated Patients | 13,696 | 36,230 |
| Annual Budget | \$8,264,000 | \$32,151,000 |
| Employees | 136 | 368 |