IPRO 340 Final Report – Spring 2006

IPRO 340 – Improving Health Care Information Systems for a Community Health Network
Spring 2006
Professor: Daniel Ferguson
Sponsor: Access Community Health Network

Team Members:
Jacquelyn Lange (Team Leader)
Jack Calzaretta
Sean Durkin
Evans Ogbebor
Reshma Marri (Assessment Team Leader)
Jessica Li
Kwandong Kim
Vadim Sinitsyn (EMR Team Leader)
Deborah Hsu
Annie Riaz (Training Team Leader)
Maryum Riaz
Malwina Jaracz
Josh Sammons
Dheera Rajpal

Introduction:

In 1998 Access Community Health Network was founded to address the lack of primary health care services for people in the Chicago-land area. An on-site outreach team made up of a mid-level health provider (a nurse practitioner or physician assistant) and a case manger provides care. Some of the services the team provides are: preventive health care, HIV testing and counseling, STD screening, wound care, referrals to other social services, and health education. They also assist clients in obtaining primary care at the nearby ACCESS clinic site. ACCESS wishes to be a leader in building innovative responses to Chicago's health care problems through medical interventions, education programs, social services, and linkages to substance abuse and mental health treatment ACCESS' Mission is to provide high quality, cost effective, comprehensive primary health care, including preventive care in Chicago-land communities. ACCESS is the largest network of community health centers in the nation, operating 42 health centers serving over 175,000 individuals through 475,000 medical visits annually.

Our objective this semester was to help ACCESS prepare to adopt Electronic Medical Records and shit from the current paper based system they are using. We began the semester by resuming last semester's project of assessing the computer skills of ACCESS employees. We then began develop training programs that would bring ACCESS employees up to par with the computer skills they will need to adopt new technologies, specifically EMR. We also worked to narrow down the selection of EMR vendors for ACCESS to a select few that would be the best fit for ACCESS.

Background:

Last semester IPRO 340 worked to identify technology adoption barriers that ACCESS may face when adopting a new information technology, specifically an electronic based medial records system. One of our findings was that when people are comfortable with a specific technology and have experience using it, they are much more likely to be successful in learning and implementing a similar technology in their daily lives and routines. When researching EMR's we found that many of the systems have interfaces that resemble and operate like Microsoft Excel.

Methodology:

The computer skills determined to be the most necessary in using an EMR system included basic windows skills, basic word processor skills, and basic Microsoft Excel skills. In order to determine where ACCESS employees stood with respect to these skills we needed to go out to the health centers and test the employees and find out. This is what the Assessment Team did this semester. After concluding that a training program would be necessary to bring ACCESS employees to the desired skill levels in Basic Computer Skills, Microsoft Word, and Microsoft Excel, three training pilots were developed and tested at six different health centers (two health centers per pilot design). This was the objective of the Training Team. In addition to these two projects, the EMR Evaluation Team investigating the leading EMR vendors in the market and used various assessment tools to determine which EMRs were the best fit for ACCESS. The objective of this team was to narrow down the scope of possible EMR vendors to 4-6 vendors best suitable for ACCESS needs.

Final Reports:

The final reports for all three subteams: Assessment, Training, and EMR Vendor Evaluation teams follow. The reports outline the research methodology, assignments, obstacles, results, recommendations, and references for each subteam.

Assessment Final Report

Team Members:
Reshma Marri (Team Leader)
Evans Ogbebor
Jack Calzaretta
Sean Durkin

Abstract:

Our team was assigned the duty of assessing Access Community Health Network. The main purpose of this was to see if Access employees had the skills to allow them to adopt new technology in the future. Assessing a non-medical business is a tough task, but assessing a health network as big as Access would be an even bigger task. We ran into some problems that were overcome and made some observations along the way. We knew going into this that it would be a hard job to accomplish because time would be a constraint; since Access employees are dedicated to their patients, which is not a bad thing. After the assessment process and data analysis, we found that Access employees are not as proficient as they should be in the areas of Basic Computer Skills, Microsoft Word, Microsoft Excel, and Microsoft Advanced Excel. Therefore, we concluded that training would be beneficial for Access employees so that they will be ready for implementation of new technology.

Introduction:

The assessment sub group of IPRO 340 was created to help assess the computer skills of the employees of Access Community Health Network. This was required to work towards the major goal of the IPRO to help Access Community Health Network in their goal of switching from a paper-based records system to a computer-based records system. By doing so, Access Community Health Network can better serve its patients efficiently.

The assessments would take place at twelve Access health centers around Chicago. The staff was to be tested on Basic Computer Knowledge, Microsoft Word, basic Microsoft Excel, and managers were additionally tested on advanced Microsoft Excel. These programs were selected by the previous IPRO team, and this team also helped determine the E-skill software that was used for all the assessments. This group's major tasks were: to schedule the testing time and dates, to assess to the employees, to collect the data, and to provide recommendations for Access Community Health Network.

Results:

What follows is the raw data from the assessments given. These scores can be broken down by job title which consists of MA's / receptionists, case managers / benefit specialists, managers / team leaders, and PA's / providers / midwives. MA's and receptionists averaged 60% on basic computer skills, 43% on Microsoft word, and 44%

Overall Averages of Everyone
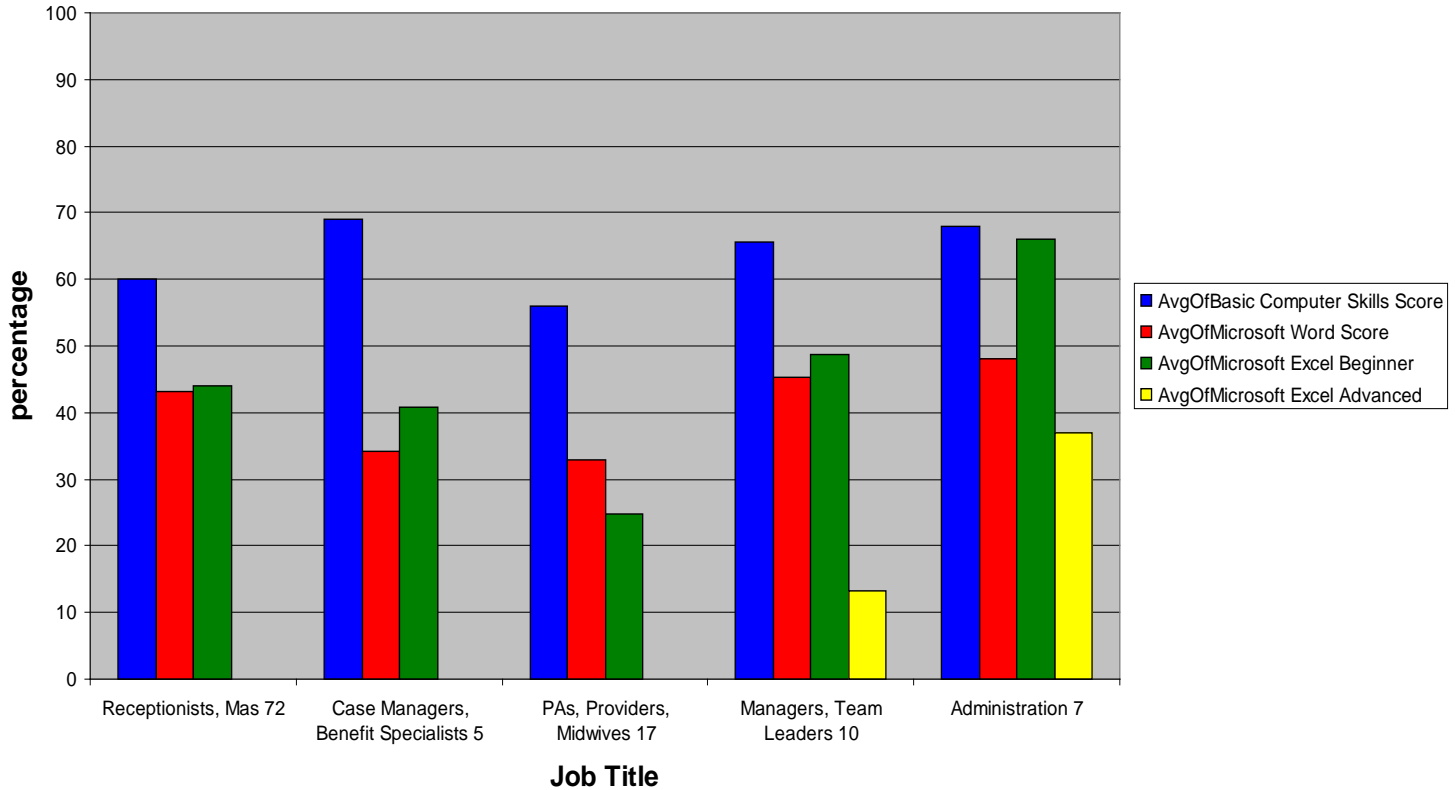
on basic Microsoft Excel. Case managers and benefit specialists averaged 69% on basic computer skills, 34% on Microsoft Word, and 41% on basic Microsoft Excel. Managers and team leaders averaged 66% on basic computer skills, 45% on Microsoft Word, 49% on basic Microsoft Excel, and 13% on Microsoft Advanced Excel. Lastly, PA's, providers, and midwives averaged 56% on basic computer skills, 33% on Microsoft Word, and 25% on basic Microsoft Excel. The following graph, which also includes the scores of the Administration of Access, illustrates these values.

Analysis:

We decided that employees had to score at least 80% on the basic computer knowledge and Microsoft Excel tests, 70% on Microsoft Word, and 50% on advanced Microsoft Excel to demonstrate competency. As we can clearly see, all the averages are well below this line on the graph. Furthermore while on our assessment visits, we observed a few things that served to complement the data. First and foremost, one of the main problems we ran into while attempting to give assessments online was a shortage of computers at most centers. While a few of the larger health centers had eight or more computers, just as many centers only had a handful. This led us to use paper tests, and about 25% of our results were these paper tests.

Secondly, in addition to the lack of computers, we noticed providers do not need to use computers at work, so this may contribute to the lack of on-site computers. Also, this may have contributed to the trend of providers scoring zeros on their tests, as our data indicates. This is because these providers either outright refused to take these tests or

their refusal to take it was due to lack of knowledge.

       Lastly, we noticed that although the managers at the centers we visited were extremely helpful in providing subjects for our assessment, we found that time is a major issue when trying to deal with health center employees. The centers are very busy at all times of the day, thus staff frequently had to walk away from their computer where they were testing to deal with something going on in the center, or just didn't have time to take the assessments at all which was especially true with providers.

Conclusions:

       Due, to the low scores of the Access Community Health Network employees, we believe in order for the Access Community Health Network to successfully transition from paper-based records to computer-based records their employees would definitely need training. But in order for the training to be successful, it would have to deal with the issues we had with time, as training will be difficult to implement during work hours and the training team will need to be considerate of this fact. The training program itself will need to be extremely flexible. This is because Access Community Health Network employees and health centers vary greatly; not only on their assessment scores, and computer availability, but on their willingness to deal with the assessment team. Many of the health center managers were excited when we hinted that we were going to attempt to implement a training program. Be that as it may, there were a few managers that were not so interested in integrating more technology with their jobs, and although they were cooperative with us, they did not seem to appreciate our presence at their centers. Part of this could be due to lack of current computer knowledge, and a general fear of the unknown. For this reason, the training program that is implemented should be able to accommodate this variance.

       Furthermore, Employees need to be able to leave the program if necessary and attend to business at the health center, and be able to come back to their work. Lessons should be short and to the point, allowing employees the flexibility required to finish the training. Also, we noticed the employees showed great enthusiasm for assessment. We must be able to use the employee's general enthusiasm about learning computers to our advantage. Along with this, the cooperation and enthusiasm of the managers will also be very helpful. The managers at Access have great influence over their employees, and this can help us complete the training in a timely manner.

       One thing we noticed while doing the assessments, is that the employees are currently extremely efficient using Meditech, their current records system. Because of this, it should be fairly easy for them to learn a new EMR once they have the necessary computer knowledge. In addition, we would like to recommend that Access invests in more computer equipment for their health centers if they intend to see the training program through to the end. This would both increase the effectiveness of the training, and make the transition from paper-based records to computer-based records a smooth and easy one.

Training Final Report

Team Members:
Annie Riaz (Team Leader)
Maryum Riaz
Kwandong Kim
Deborah Hsu

Project Objective:
The Illinois Institute of Technology IPRO 340 Training team worked with ACCESS Health network to prepare ACCESS employees for the adoption of new information technologies. The purpose of the Training Project was to design a computer training model and start training ACCESS employees on Basic Computer Knowledge, Word, and Excel skills. Three training pilots were developed and tested at 6 health centers. Short assessments were given before the training started and after the training ended. The results from these tests were analyzed to determine which training pilot and factors are most important for maximum efficient learning of computer skills.

Project Strategy:

Before delivering the training program to the health centers, our team accomplished the following tasks:

- Three separate training pilots to be tested at 6 health centers were created.
- The most important training subsets under Basic Computer Knowledge, Word, and Excel were determined by utilizing the assessment tests given in these areas. These subsets were formulated into a curriculum (see Appendix A).
- A mock training was done at IIT, and feedback from fellow students was obtained and utilized in modifying the training program.

Health Center employee training program began on Monday, April 10th and ended on Friday, April 28th. The three training pilots were administered for three weeks. Following training, an assessment test was administered to all the employees who participated in the training on Monday 5/1/06 to obtain direct correlation between the training pilot and the amount of knowledge gained by the employees. All three training pilots were provided with an e-mail and a phone number to be utilized for technical support. The call notes may be viewed in Appendix B. The three training pilots were as follows:

1.) Detailed instructions of the program, logging on instructions, and a curriculum were provided for the three week training (Appendix C).

2.) In this pilot, additional help was provided by our training team. Visits by our training team were made once every week for three weeks to provide technical support and answer any questions that may have come up during the course of the training. Everything else remained the same as pilot one.

3.) This pilot was exactly like pilot 2, but with an additional 30 minute demonstration for accessing Customguide, logging on, and proceeding on from one training program to the next was provided.

The assessment results were provided to the managers for all Access employees. The following six health centers were chosen for the specific training pilots:
Pilot 1: South State and Plaza
Pilot 2: Ashland and Pilsen
Pilot 3: San Rafael and Cabrini

The chosen health centers were similar in size and provided a large sample population for statistical analysis.

Results:

Throughout the three week training program, the progress of the health centers in each training pilot was monitored. The following graph depicts the results for Computer Basics, Word, and Excel:
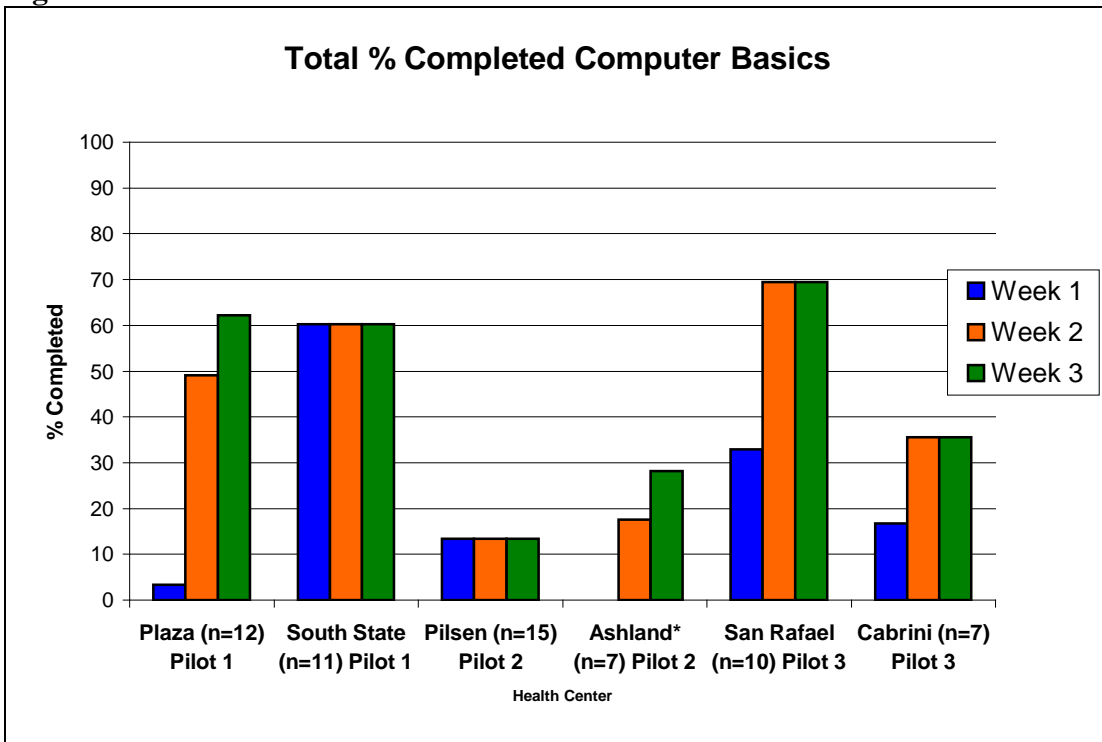
Figure 1A.

Total % Completed Computer Basics

Figure1B.

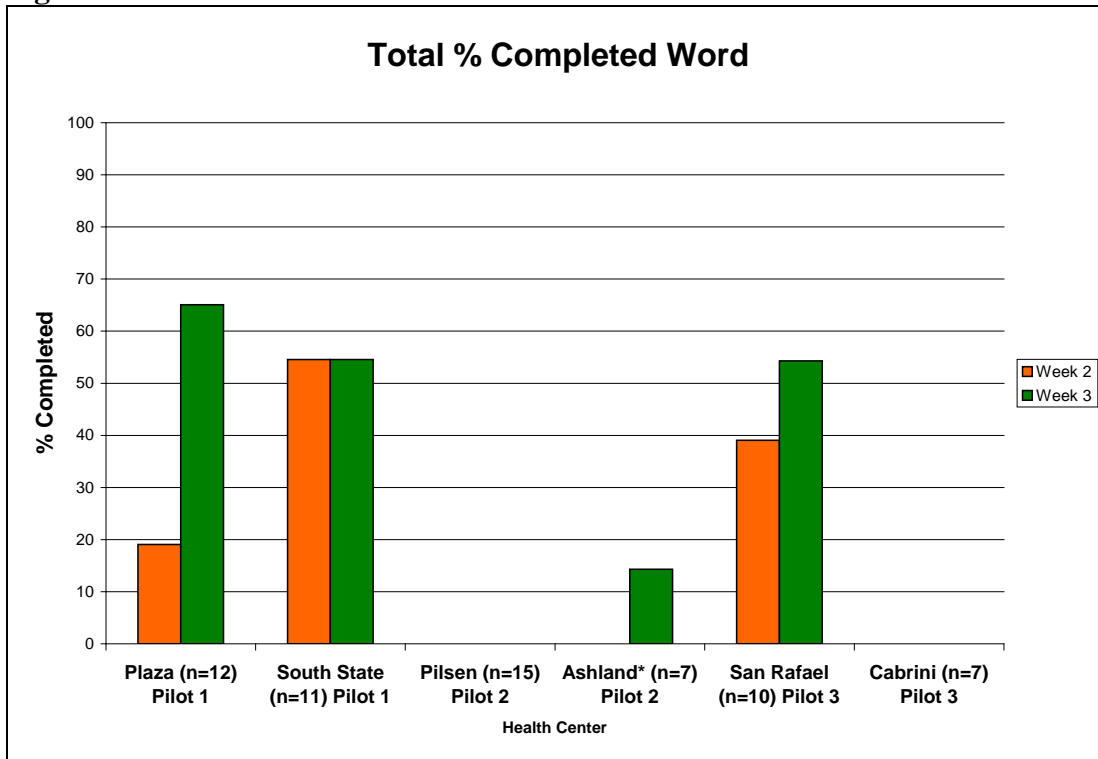**Total % Completed Word**

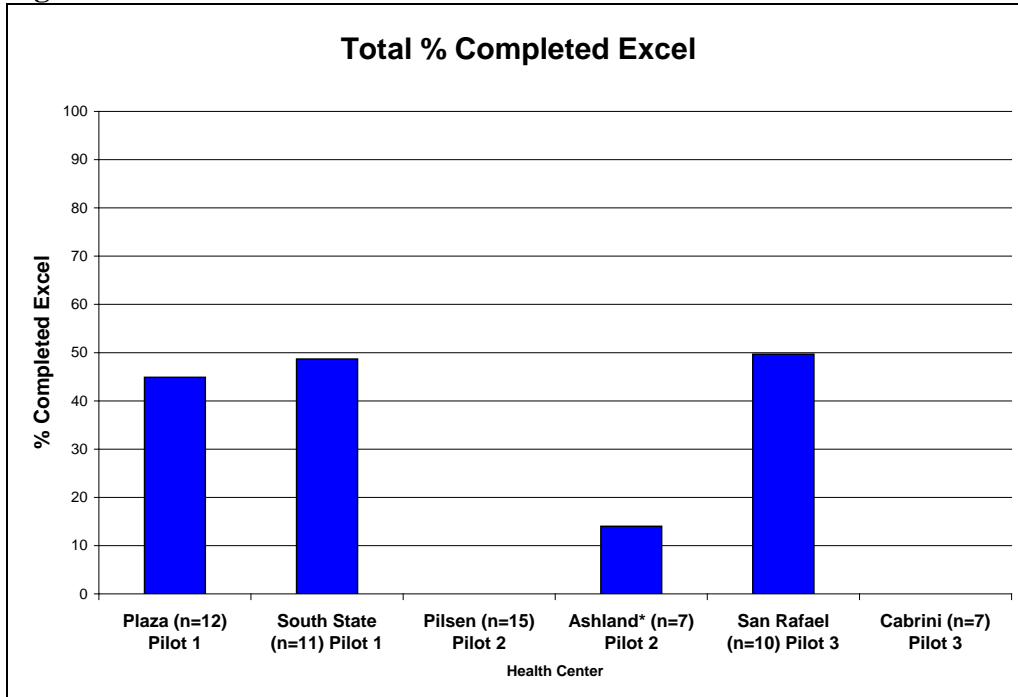**Figure1C.**

Total % Completed Excel

Figure 1 A.) Shows the work done by the 6 health centers on Computer Basics, B.) Shows progress in week 2 and 3 on Word syllabus, and C.) Shows work done in week 3 on Excel.

It should be noted that Ashland health center (Pilot 2) started their training program a week late from the rest of the 5 health centers. This was mainly due to problems with

scheduling. It can be observed that most of the health centers started out slow the first week, but gradually increased their speed in the second and third week. After observing the progress in second week, the training team realized that many individuals were still working on Computer Basics when they should have been working on Word training. In light of this information, the training team decided to only test on Computer Basics and Word. It was reasonable to project that most individuals would have Computer Basics and Word completed by 05/01/06. Moreover, during our post-training assessments, no providers were tested because they had not participated in the training program.

EMR Evaluation Final Report

Team Members:
Vadim Sinitsyn (Team Leader)
Malwina Jaracz
Joshua Sammons
Dheera Rajpal
Jessica Li

Problem:

There are a lot of EMR products available to customers. Access does not know which EMR product is best for their company. The task of this team was to narrow down a list of 20 EMRs to more manageable number of 5 for Access to do further research on.

Methodology:

Our group started with 20 EMR products. We have selected those 16 EMR products from the article that was found last semester ("*Electronic Medical Records: The FPM Vendor Survey*"). Those 20 EMR products were:

- ChartWare
- Logician
- NextGen
- PEARL
- EpicCare
- Physician Practice Solution
- PowerMed EMR
- PracticePartnerPatient Records
- Health Probe Patient Information Manager
- Centricity
- Meditech
- Electronic Healthcare Systems, Inc, (EHS)
- MDServe
- Physician Practice Solution (ASP)
- Welford Chart Notes
- NextGen(ASP)
- TopsChart (ASP)
- Clinical Works Module
- SOAPware
- QD clinical

After the first 2 weeks our group made some progress toward narrowing down this list. First of all, we discovered that **TopsChart (ASP)** and **Clinical Works Module** were not in business anymore, so we stopped researching them. Second, we found out that EpicCare, while it appears to be a good EMR product is too big for ACCESS, therefore it got deleted as well. We also found out that (ASP) means that it is "rentable" EMR software from vendors. Physicians can download the software from the vendor's Web site and run it on their own systems, or they can use a browser to interact with it. Data is

stored at an off-site location rather than on a file server in the physician's office. We did not think that this set-up is compatible with ACCESS's needs. Also both of those EMR products are available in a normal non-asp format.

Our next step was to apply the criteria given to us by Access, to narrow down the list. The criteria was applied to both, the product and the company of the product. Here is the criteria:

- Does the company have:
    - Large group practice clients (100 and up)
    - Large group practice clients with multiple sites (7 and up)
    - Does the company have community health experience
- Does the product have:
    - Does the product have any multi-specialty modules
    - Do they have Integral Practice Management?

After calling and e-mailing **SOAPware** it was found that the product is not big enough for Access. **SOAPware** only had practices of 10 physicians, which was not big enough for access. Another EMR product that was removed was **Welford Chart Notes**. The company for **Welford Chart Notes** did not have multi sites (7 and up), and therefore was not compatible with access. **Health Probe** EMR also is not compatible with access as their software is downloadable, and they do not have large group clients. PowerMed, while it appears to be a good EMR has only 40 employees, which, in our opinion is too small to work effectively with Access.

Our next step is to use the websites and whatever other information we could obtain from companies (demos) and use that information for the preliminary Self-Assessment tool evaluation. Some companies did not have good websites and did not provide us with any extra information and therefore we could not fill out much of the criteria found in the self-assessment tool. In 3 EMR products in particular we couldn't find much information at all, and they did not perform well when we used Self-Assessment tool to evaluate them. Those 3 products were: **QDClinical**, **Physician Practice Solution** and **ChartWare.** So, we have decided to stop researching those companies as well.

Our final results from the EMR self assessment tool are represented in the following matrix:

	Meditech	NextGen	Pearl	PowerMed	Practice Partner Patient Records	Physician Practice Solution	QD Clinical	MD Serve
Scheduling Functional Requirements	(−)	(+)	(−)	(○)	(+)	(−)	(−)	(○)
Patient/Cliend Registration Functional Requirements	(○)	(+)	(+)	(+)	(+)	(−)	(−)	(○)
Medical/Dental/Mental Health Data Functional Requirements	(○)	(+)	(+)	(+)	(+)	(−)	(+)	(+)
Patient/Client Follow-up Monitoring/Tracking Functional Requirements	(−)	(○)	(−)	(−)	(○)	(−)	(−)	(−)
Billing Functional Requirements	(+)	(○)	(−)	(−)	(○)	(−)	(−)	(−)

The final EMR products that we recommended based on their performance on the Self-assessment tool, the compatibility with access, and other features listed below:

Practice Partner Patient
- Founded in 1983
- Over 1500 clients from small offices to large multi-site clinics
- Used by over 900 medical offices
- Designed to automate both clinical and business sides of medical office
- Very organized with user friendly menus and a design that resembled Microsoft excel
- It was fully integrated and had the most criteria that were needed
- Seemed to be the very flexible, allowing for nearly any part of it to be customized to the user and clinic
- It had clear error messages that alert the user to discrepancies and possible errors in the typing (An example is if you prescribe too much of a drug, an error message will pop up asking if the amount is right and telling why the message popped up in the first place)

Next Gen
- Ideal for any size practice, from the multi-provider enterprise to a solo practitioner, NextGen's proven suite of applications streamline front and back office administration and manage all clinical data relating to patient care outcomes.
- As a wholly-owned subsidiary of Quality Systems, Inc. (NASDAQ: QSII), NextGen is financially solid and continues to be profitable—as proven by numerous recognitions, including Forbes' 200 Best Small Companies in America and Business 2.0's Top 100 Fastest Growing Technology Companies
- Authoritative diagnosis and treatment guidelines for more than 300 diseases are provided through the system's integration with the American College of Physicians' Physician Information and Education Resource (ACP PIER).
- NextGen EMR also incorporates the Isabel diagnosis support software, a diagnosis reminder system that suggests a checklist of likely diagnoses based on the clinical features you enter
- NextGen's diagnosis decision support systems allow physicians to search a large number of resources for patterns of diseases in a split second. Fully integrated with the EMR, these systems are easy to use and able to handle unstructured text (i.e., terminology commonly used by physicians in handwritten case notes)
- Has the following features: advanced security, appointment scheduling, CCR/PHR capabilities (Continuity of Care Records, also referred to as Personal Health Records), clinical decision support, coding optimization, disease management, ePrescribing, electronic chart, eligibility verification,

graphing**,** knowledge base**,** lab order entry**,** outcomes analysis**,** mobile solutions**,** patient registry**,** voice recognition option**,** workflow management

Pearl

- provides life- long patient record through online access
- multiple users can easily access a record simultaneously and in real-time (valuable for net of health centers or hospitals)
- every patient receives unique identification number
- contains lots of different modules: registration, transcription, dialysis, obstetrics
- From within the Patient Summary module, PEARL features the Patient Proximity Report. The purpose of this report is to provide clinics with the ability to see a list of all patients that were near a particular patient, during a particular time frame if that patient was later found to have a contagious illness. From the "Room History" tab section, PEARL gives the full room history of the selected patient. A tree will display with all of the rooms in the departments of the selected entries from the prior screen. The selected patient's actual departments/rooms are displayed in red. This report can be saved to Excel and then printed from Excel, if desired.
- PEARL has a unique feature of tracking both incoming and outgoing referrals. This is the basis of the PEARL MSO Claims Adjudication Module. Referrals can be selected by subspecialty and insurance plan acceptance. PEARL captures a record of every referral from your facility, including urgency status and the diagnosis(es) and procedure(s) to be performed
- PEARL allows the facility to track supplies, supply carts, suppliers, and wholesale/resale prices for supplies and drugs dispensed in-house
- Patient Reminder Module. Its primary function is to serve as an electronic "to-do" list. This module can store patient reminders at the facility and department level.
- PEARL's medication module includes a full spectrum of drug monograph sheets that are generated based on medication(s) prescribed by the provider. These monographs are available in either English or Spanish versions.
- PEARL's Interface Router automatically distributes orders, billing information, and requisitions for lab reports or x-rays. The interface router also accepts results from outside systems.
- Documents that have been scanned, transcribed, or emailed for placement in the patient's chart can be placed in a physician's Inbox for review and signature. PEARL's maintenance function specifies which documents are to be submitted for signature
- PEARL offers electronic mail, with which a user can communicate with any other system user or send a message to an Internet recipient. Scanned document(s), image(s), or items from your local pc may be used as attachments to internal mail messages.

- PEARL's Report Tool allows standard reports to be loaded into PEARL.
- * PEARL's functionality allows users to create patient-related documents within the system. This functionality is similar to transcription – it allows the user to select from a list of a facility's predefined templates and define a document specifically for a patient. PEARL will automatically pull predefined items into the document based on the facility's preferences (ex. – medications, problems, allergies, any registration information, etc.).
- Pearl Financials provides complete flexibility and control in managing General Ledger. All entries (including charges, payments, adjustments, write-offs, and refunds) are linked to General Ledger accounts, and all G/L transactions are tied back to individual encounters -- with no additional work.
- In Pearl, if it is ordered it is charged -- and the transaction is automatically driven through to the General Ledger.
- OracleÒ Financials, which can be optionally purchased by the client, offers a complete accounting system that interfaces effortlessly with Pearl Financials.

MD Serve
- They have subject specific instructional programs
- They have subject specific instructional programs
- All of the clients who gave testimonials were community centers providing health care to the un-insured, under-insured, and Medicaid and Medicare
- Services of the clients included medical, dental, mental services etc.
- Presbyterian Medical Services has sites at 30 different locations across NM in which the providers range from single practice to 25 providers. This is just providers per site; not including medical assistants or ancillary staff.
- It works across disciplines
- Some of the staff have worked with computers a lot while others had very little experience with them
- The sites see tens of thousands of visits a year with thousands of patients
- One testimonial said the services were integrated and they have friendly support services

All of those factors make MD Serve very compatible with Access, it looks like they are familiar with the setting that Access has.

The following product was compatible with Access, but not very responsive, so we could not get enough information to put on the matrix. However, our group feels that further research should be done on it to fully evaluate the EMR.

Centricity

- Costs around $25,000 per doctor. A third of that is for hardware, a third is for consulting and training, and a third is for software and license fees
- Integration with all major information systems
- Designed by clinicians for clinicians
- Unparalleled implementation experience and user community
- Familiar, problem-oriented format with a one-screen summary and detailed patient information available with a single click
- Comprehensive medical record – securely accessible when you need it, where you need it, helping to reduce or eliminate costs associated with transcription or chart pulls while correctly coding for the care you provide
- Secure exchange of referrals, messages, and clinical data with any other physician via the Internet