



MEDZOU FULL SCALE EMR ADOPTION AND IMPLEMENTATION PROJECT
INTERDISCIPLINARY FUND GRANT APPLICATION

Project Leaders:

- Matt Alexander 3rd Year Medical Student School of Medicine
- Meryl Sundy 3rd Year Medical Student School of Medicine

Brief Description:

MedZou is a student run, free health clinic that provides health care for uninsured residents of Columbia, MO and surrounding areas. It provides an exceptional hands-on patient-care learning opportunity to health care students from various programs within the university system. In order to keep pace with national standards of health care practice, MedZou is engaging in a shift from paper records to full implementation of an electronic medical record system. This system allows for improved simulation of professional practice for the benefit of student learners as well as more accurate, complete and accessible records for quality patient care.

Endorsements:

<i>Signature</i>	<i>Organizational Role</i>	<i>Date</i>
<i>Matt Alexande</i>	<i>MedZou EMR Team Leader</i>	<i>5-6-13</i>
<i>Meryl Sundy</i>	<i>MedZou EMR Team Leader</i>	<i>5-6-13</i>

Introductory Briefing

On behalf of the EMR team, the student and faculty volunteers, and the patients at MedZou Community Health Clinic, we would like to thank you for the generous award granted by the Interdisciplinary Innovations Fund that has allowed us to facilitate the acquisition and implementation of a functioning electronic medical record in our student run, free clinic. Additionally we would like to thank the Interdisciplinary Innovations Fund Committee for providing us with a purchase extension to allow us to properly implement our plans. We are excited to update you on our progress thus far, and although we still have much left to do to achieve 100% capacity, we hope to attain that goal very quickly.

After much discussion and research, the team determined that it would not be feasible to enter into agreement with Cerner for use of Powerchart in the MedZou Clinic. This means that our system will not communicate directly with the hospital electronic medical record. The reason for this change in plans was two-fold; 1. Medzou does not bill for clinic visits and in the Powerchart system, the clinic would not be able to create a visit note without creating a bill. 2. Cerner did not feel it had the human resources available to provide technical support to our clinic. We were, however, able to secure a license from a private vendor at reduced expense and are certain that this alternative will not act as a barrier to student learning or patient care, and will function to accomplish all the goals set forth by the EMR team.

Now that the software acquisition is complete, we have been able to proceed with computer and server purchasing and on site installment, formation of EMR Implementation Team, and extensive data collection for clinic flow, productivity, and quality initiative research studies. We hope this report will bring you fully up to speed.

Amazing Charts Software

The software acquisition has been a time-consuming task for EMR team. In January 2013

we secured a contract with Amazing Charts, an electronic medical record known for its ease-of-use and high user rating. The decision to pursue the Amazing Charts software came after extensive research of various ambulatory products and vendor demonstrations. We sought approval with faculty and students through standardized patient tested interaction with demo software without previous knowledge of the system. Amazing Charts performed extraordinarily high with respect to ease of use with minimal training. Due to the yearly turnover of the MedZou leadership, and large volunteer base with little time for extensive system orientation, ease-of-use to minimize complicated training was essential. With the financial assistance of the Dean's Office of the School of Medicine, we engaged in a five-year contract with amazing charts that includes customer support.

Aside from ease of use and minimal training, other benefits of the Amazing Charts software include:

- A simple format without multiple templates, which maximizes student learning in the process of note-writing and documentation of history and physical exam
- Option to graph lab results over time and identify quality improvement targets
- Searchable clinical database allowing for ease of access for student research
- Electronic access to lab results from Boyce and Bynum
- Automatic generation of patient-centered materials such as Follow Up Appointment Reminders, "What I Talked About with My Doctor" Reminders, and patient education handouts
- Possibility of future customization, allowing collaboration with Tiger Institute to allow for EMR data transfer between institutions.

Equipment & Software Purchasing

In order to launch the EMR system in the comprehensive manner that we had intended, we were required to purchase both software and hardware. A five-year software contract was achieved with Amazing Charts through the financial support of the School of Medicine Dean's Office. The School of Medicine was also fundamental to supporting MedZou in the process to secure an Internet donation from Century Link. This will allow our system to communicate with the IT office at the University of Missouri, and allow the Amazing Charts Software to back up patient information to the secure cloud. Hardware donations from the School of Medicine included one desktop server (without a monitor) to allow the Amazing Charts software to be accessed by thirteen computers simultaneously operating in the MedZou Clinic. Finally, with the assistance of the interdisciplinary innovations fund, we were able to secure the necessary hardware needed to take full advantage of the electronic medical record capabilities and to maximize student volunteer and patient interaction through a secure electronic medical record system. The full list of hardware purchased includes 13 laptop computers, one laptop storage cart, one multi functioning print/fax/copy machine, and extra printing paper and black-and-white toner. An itemized list of the MedZou software and Hardware Acquisitions are listed below.

Donations: Server, Software, Internet Connection

Amazing Charts Software:

- Amazing Charts Donations: One license for five years with one year of Amazing Charts Support for two licenses.
- School of Medicine Purchases: One additional license, cloud support x 4 yrs, and Amazing Charts Support x 4 yrs

Desktop Machine				
Capital Cost				
	Quantity	University Price	Quarterly Price	
Desktop Machine	1	\$ 1,600.00	\$ 1,600.00	
Specs				
	Quantity	Type (Description)		
Warranty	5	Basic, NBD, 5x10		
Annual Depreciation Cost (5 year lifecycle)			\$ 320.00	
Total Capital Cost			\$ 1,600.00	
Annual Licensing Costs				
	Quantity	Per License Cost	Total Cost	
Windows Enterprise*	1	\$ 116.94	\$ 116.94	
Amazing Charts Support**	1	\$ 950.00	\$ 950.00	
Annual Cost			\$ 1,066.94	
Maintenance Costs				
	Quantity	Monthly Rate	Monthly Total	Annual Total
Data Port	0	\$ 13.75	\$ -	\$ -
Amazing Charts Cloud Backup	12	\$ 20.83	N/A	\$ 250.00
System Administration	0	\$ 170.00	\$ -	\$ -
Data Center Floor Space	0	\$ 21.50	\$ -	\$ -
Maintenance Costs			\$ -	\$ 250.00
Year 1 Service Cost			\$	1,636.94
Years 2-5 Service Cost			\$	2,470.00
Total Cost (5 years)			\$	11,516.94

Purchases: Computers x 13, Secure Computer Storage Cabinet, Print/Fax/Copy Machine, Office Supplies

SFCIC Grant: Award \$10,000.00

-Dell Latitude E6430 Laptop x 7 at \$1,043.01 per unit = Total \$7,301.07

-Canon image CLASS MF4890dw (B&W, Print, copy, fax, wireless) = \$299.99

-Cartridge 128 B&W x 5 at \$87.00 per unit = \$435.00

-Paper x 10 at \$10 per ream = \$100.00

Total = \$8,136.06

IIF Grant Award \$15,207.25

-Dell Latitude E6430 Laptop x 6 at \$1,129.52 per unit = \$6,777.12

-Bretford LAPTG15ESA-GM Fully Assembled Laptop Storage Cart = \$1,308.95

Total = \$6,258.06

Remaining Balance: \$8,949.19

Implementation Plan and Timeline

The implementation plan and timeline has been a carefully orchestrated endeavor. In January of 2013 a division of EMR was created within the MedZou organizational chart. This division consists of two co-chairs and five additional trainers. The seven-member team has been tasked with the major responsibilities of implementation of the electronic medical record within the clinic. This EMR team works in close contact with the previous EMR administration and grant authors dedicated to the EMR project to oversee a specific timeline of implementation.

Implementation will consist of three solid phases based on the number of student physician teams operating with the use of the electronic medical record. There are four student doctor teams working in clinic simultaneously. Phase one will consist of one student doctor team using the electronic medical record while the remaining teams are using the traditional paper charts. Phase 2 will consist of two student doctor teams utilizing the electronic medical record. Phase 3 will consist of all four student doctor teams working with the electronic medical record. Each phase of implementation will last one month to allow a smooth transition for appropriate data collection to occur. Furthermore, each phase will be preceded by a training clinic. Diabetes night is a clinic run once per month that is a separate entity from our regular Thursday night clinics and will serve as our training clinic. This clinic typically schedules fewer patients that will be more accommodating to buffer any bottlenecks caused by major changes occurring at the clinic. The purpose of the training clinic is to provide a low stress environment to allow the EMR implementation team to identify any obstacles caused by electronic charts. This will provide the team with time to troubleshoot such issues before the regular Thursday night clinic where efficiency is more critical.

The EMR team will be charged with developing short training modules to be completed by new volunteers before each clinic. These training modules will be designed to be five minutes and

length or shorter and fully oriented the student to the specific tasks they will be assigned with on that particular night. Again, the high user rating and ease-of-use of the Amazing Charts software is what will facilitate the swift adoption of the new chart by novice users.

In order to create enough data points for meaningful research, each phase of implementation will last approximately one month. Implementation will begin on May 20 and full data collection from each phase of implementation will be achieved by the first week of September.

Research

Research is a very important component to our EMR implementation plan. Very little research has been conducted on electronic medical records in student run free clinics. Most electronic medical record research that has been accomplished in private practice or academic clinics has been focused on the beliefs and attitudes on physicians that have already been trained in a specific field of medical practice. What makes the research in our clinic unique is the fact that we will be able to conduct meaningful research that targets students of medicine. Not only are students of medicine being trained on the electronic medical record, they are also being trained in the practice of medicine. Our focus is to gather valuable information that speaks to this level of training as well as the interdisciplinary nature of today's clinic model.

The research being conducted over the next 3-4 months will investigate the clinic productivity, quality of care, and attitudes and beliefs of EMR implementation. First, we intend to measure clinical productivity and clinical workflow. Data collection is currently in progress to determine our clinical productivity as determined by the number of tests being ordered and prescriptions written per patient on the paper chart. Clinic workflow data is also being collected consisting of the amount of time required to move patients from station to station with in the clinic using a paper chart. The data collected includes the time the patient checks in to the time the

patient has been seen by our nursing station for vital signs and blood glucose checks. It also measures the amount of time that patients are spending with each student doctor encounter and the amount of time the student doctors spend with the physician discussing the patient. Through this data collection we hope to determine whether the additional training of medical students on electronic medical records during clinic has any impact on the amount of time it takes for a patient to be seen in clinic. We have volunteer data collectors present at every clinic to collect these time measurements. Our data collectors are a unique resource to MedZou because in any other clinical setting, the human resource capacity does not exist to measure these types of interactions with our level of accuracy.

The other aspect of our research will be our ability to measure attitudes and beliefs of EMR use by students, faculty, and patients and quality of care. This will consist of surveys directed at measuring the learning experience of students and interdisciplinary work within the clinic. It will also focus on perceptions of continuity of care and confidence of accurate information within the chart. Patients will also be surveyed to determine their level of trust with the acquisition of an electronic medical record and whether or not they feel that the electronic medical record has interfered with their interaction with the student doctor team or their physician. These attitudes and beliefs surveyed will be specifically analyzed by volunteer role. Thus, survey data will be collected from clinic managers, physicians, clinical students (M3, M4, clinical nursing, and clinical pharmacy students), preclinical students (M1, M2, nursing, pharmacy not on clinical rotations) and nonclinical students (HMI students, social work students, and pre-med undergraduate students).

This research will be submitted by October 1, 2013 to be presented in Nashville, Tennessee at the Society of student run free clinics on February 1st and 2nd of 2014.

Future Purchasing & Remaining Funds

A significant portion of the money awarded in this grant has not been used at this point. Because our research data has not been accumulated or submitted, we have not been able to schedule our conference flights. However, we are excited about the prospect of sharing our research and our experience with other student run free clinics at this upcoming year's conference. We are confident that the type of work that we have done at the University of Missouri MedZou Community Health Clinic is the type of work that will prove to be welcomed at conferences such as this.

We have also been unable to use the grant money allocated to the clinic for the purposes of facility rental fees at Central Missouri Community Action. The building manager is constantly looking to save our organization money and is aware of the impact that this organization has on the community and the low income people that live here in Columbia. They also recognize themselves as a vital asset to the educational experience of students at the University of Missouri. With that in mind, they have worked to lessen the financial burden that rental fees can have on a free organization such as ours. As a result they have not required our rental fee over the past year. However with the recent budget sequesters within our state and federal governments, the revenue coming into Central Missouri Community Action has been decreasing and soon additional fees may be required.

It has always been the intention of the MedZou Community Health Clinic to be resourceful with the finances we have at our disposal. Thus, our financial decisions are always carefully thought out before decisions are made. We want to thank the Interdisciplinary Innovations Fund Committee for their flexibility and allowing us to delay the spending of our award. Had the extension not existed, we fear that we would have made erroneous financial decisions that would not have benefited the clinic to the degree that we would prefer. We want to thank you for your

generosity and the educational value and patient centered care value that you have afforded the MedZou Community Health Clinic over the past two years.

Sincerely,

Matt Alexander & Meryl Sundy



FSPRD90

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Requisition: MedZou equipment - IIF Award

Requester: Neff, Suzanne Business Unit: COLUM Requisition ID: 0000180663 Date: 1/16/2013

Comments:

Line	Description	Qty	Price	Curr	UOM	Total
1	Microsoft Laptops 15 Notebook Storable Unit	1,000	1,178.14	USD	E A	1,178.14
Sched Line		Ship To	Attention	Due Date	Qty	Total
1		Med Science Add- Rm MA215	Neff, Suzanne E		1,000	1,178.14
Line	Description	Qty	Price	Curr	UOM	Total
2	Dell Latitude E6430 Latitude E6430 (Lat)	6,000	1,043.01	USD	E A	6,258.06
Sched Line		Ship To	Attention	Due Date	Qty	Total
1		Med Science Add- Rm MA215	Neff, Suzanne E		6,000	6,258.06

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