

iitCARES

IIT Creating Access to Remote Electronic Support

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Team Information

Roster and contact information

Carolyn Kos carolynkos@gmail.com
Nicole Valio colee0704@sbcglobal.net
Hazel Michael hmichae2@gmail.com
Unubold Chinzorig unumail@gmail.com
Kendra Johnson kujo_2653@yahoo.com



Strengths, weaknesses, and expectations

Carolyn Kos, Biomedical and Chemical Engineering

Strength: Good with people

Needs: Understanding of telemedicine and organization of hospital

Expectations: Research and frequent communication with Mount Sinai Hospital

Nicole Valio, Biology, Journalism minor

Strength: Good editing skills, familiarity with the hospital setting

Needs: Teamwork skills

Expectations: Establish a good understanding of available mobile health technologies

Hazel Michael, Biomedical and Chemical Engineering

Strength: Team building skills, 3-D modeling using auto-cad and SolidWorks, and good computer and communication skills.

Needs: Comprehending hospital working environment and researching into telemedicine.

Expectations: Finish IPRO successfully.

Unubold Chinzorig, Computer Science

Strength: Computer-based search skills

Needs: IPRO experience

Expectations: Get a good grasp at mobilized data monitoring

Kendra Johnson, Aerospace Engineering, Pre-Medical Studies minor

Strength: Good with numbers and technology, very organized, eclectic knowledge base

Needs: Experience working with the Medical field

Expectations: An understanding of hospital organization and practices

Team Identity, logo, purpose and objective

iitCares: IIT Creating Access to Remote Electronic Support

Purpose

The purpose of IPRO 345 is to improve and mobilize the data and remote health care system for Mount Sinai Hospital. Specifically, this project aims to create a data support to aid diabetic patients within 500 meters of the hospital in order to decrease cost of operation and time and increase the quality of care. We will develop the groundwork for future IPRO 345 teams that will eventually implement the new data collection program.

Objective

1. Study the feasibility of the implementation of mobile technologies in the management of patients with diabetes through interviews and observations of the health care system.
2. Research recent technological developments in the monitoring of chronic diseases, specifically diabetes
3. Utilize all team member skills to maximize efficiency and gain valuable team work experience
4. Work as a team to improve Mount Sinai's current approach to treating diabetes and other chronic diseases

Background

Mount Sinai Hospital

Mount Sinai Hospital is a state-of-the art health service provider to the Chicago West Side community. Founded in 1919 with 60-beds to serve Eastern European immigrants and train Jewish physicians, the hospital has grown today to 320-beds and has over two thousand employees. Mount Sinai Hospital is a member of the Sinai Health System, working collaborative with other medical facilities such as Schwab Rehabilitation Hospital, Sinai Community Institute, Sinai Medical Group, and Sinai Children's Hospital. Mount Sinai is also a major teaching hospital for the Rosalind Franklin University of Medicine and Science, training over 300 medical professionals each year.

Mount Sinai Hospital today continues to provide quality health care to every individual, regardless of race, religion, or economic status. Mount Sinai Hospital services a predominantly African-American and Latino community with dedication,

and continues to provide care to patients with economic difficulties.

Diabetes testing

Diabetes is a chronic and debilitating disease that affects 25.8 million people in the United States. The cost of care and treatment of diabetes in the United States in 2007 was \$174 billion dollars according to the Center for Disease Control and Prevention. In 2010 1.9 million people were newly diagnosed with diabetes, and the number is expected to rise as more American show signs of pre-diabetes.

Blood glucose monitoring is the main method for a patient to manage diabetes. Maintaining a record of blood glucose levels allows health care providers to understand the patient's response to the current treatment plan. Currently, patients test their glucose level with a glucose meter and hand writes the results. Later this data is transcribed into a digital record that is shown to the doctor during a consultation.

The need for diabetes patients to repeatedly schedule consultations with doctors to review their blood glucose levels is costly and wastes time. Doctors are frequently given incomplete records of the patients' glucose levels and health providers must take the additional step to digitize the information to display trends of the patients' response to treatment.

Telemedicine

Telemedicine has emerged as an alternative option of health treatment in recent years. Utilizing innovative technology, important medical information can be sent from a patient's home to a centralized data collection that tracks and analyzes the patient's treatment. Telemedicine allows for patients to easily record and send their medical professionals through mobile devices, in this case smart phones equipped with a specific program.

The remote database will automatically signal the patient if they are at risk for health failure, such as when their recorded glucose level is dangerously high. The remote database also can send out reminders for patients to log their data, prompting the patients to consciously track and report their response to treatment. The use of remote technology to record data allows for patients to schedule consultations with doctors only when at need, preventing unnecessary appointments and hospitalization.

Successful applications of remote health care technology

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Potential Ethical Issues

In order to ensure respect to patients and health care providers all members of this project have agreed to maintain patient confidentiality. IIT CARES wishes to continue providing high quality health service to all patients of the Mount Sinai community regardless of any racial, ethnic, religious, or social affiliation.

Benefits of technological upgrade

The United States spends an annual \$2 trillion on healthcare services, with three quarters of that amount treating chronic diseases. Diabetes cost an annual \$174 billion. Patient treatment costs for chronic diseases can be lessened by using current technology in place of traditional doctor consultations and visits. Telemedicine holds the potential to reduce healthcare cost for all patients, especially easing the burden on economically challenged, contributing a better quality of care to patients, and broadening healthcare access. Based on a previous study performed at the Veterans Hospital, telemedicine applied to patients with chronic diseases reduced the cost of patient care to one tenth of the original cost.

Proposed Implementation Outline

1. Look at options and assess the feasibility of using mobile technology in Mount Sinai Hospital to help in monitoring diabetic patient treatment
2. Work with the hospital staff at Mount Sinai to outline a diabetes electronic support center (DESC) to monitor and analyze information sent via mobile technologies to the hospital.
3. After agreeing which mobile technology is to be used and setting up a preliminary DESC, a randomized sample of 25-35 patients will be given mobile phones with the appropriate smart technology included. A control group of 25-35 patients will record their daily blood glucose levels in a daily log. Both sample groups of patients will record their blood glucose levels for several months. At the end of the study the feasibility of the mobile technology will be evaluated and the patients' health will be compared between the control group

and experimental group.

Team Values Statement

Desired Behavior

The following code of ethics defines how the IPRO 345 team shall operate:

1. Behave professionally when visiting with the healthcare professionals at Mount Sinai Hospital to positively reflect the students of Illinois Institute of Technology
2. Respect Mount Sinai's patient confidentiality issues as well as hospital professionals during visits and in all aspects of our research and analysis
3. Attend all meetings punctually and complete assigned tasks to the best of our abilities and talents
4. Uphold a high level of professional integrity by admitting mistakes and taking credit only for work that is our own
5. Maintain an open attitude toward others members' opinions, show tact when expressing alternative views, and provide and take constructive criticism
6. Use a "majority rules" model for decision-making when a consensus among all team members cannot be reached

Conflict Resolution

When a conflict does occur that involves the entire group, a solution will be reached by compromise when possible and majority when it is not. A conflict between individuals is expected to be resolved outside of the IPRO setting, because we wish to maintain a professional and academic setting in which personal matters are not of interest. If a private situation does regress to a point in which group intervention is necessary, the non-participating members shall act as mediators to resolve the matter as quickly and painlessly as possible.

Work Breakdown Structure

Problem Solution

Our team plans to pave the way for new technological advancements at Mount Sinai Hospital by extensive data collection, including research into current available remote diagnostic and monitoring tools and interviewing members of the medical system. The process in which we will accomplish the data collection and design proposal is strongly dependent upon the responses received from our data collection, but the following is our initial plan of action.

1. Visit Mount Sinai Hospital to gain a basic understanding of the current technology being utilized as well as health care providers reactions to remote health care services. Tentatively will take place by June 28th, 2011.
2. Gauge reaction of health care professionals, administrators and insurance companies via prepared interviews. Complete by July 4th, 2011
3. From information collected, identify how the cost and effectiveness of the health care provided can be improved. Research available advancements in the fields requiring an upgrade. Complete by July 7th, 2011.
4. Prepare a report detailing the findings of the interviews and research. Complete by July 25th, 2011.

Phase two of the project will include creating, presenting and implementing a systems design. This will take place in the fall 2011 semester. Given the abbreviated summer semester we will probably be unable to create a systems proposal this semester, but if we are ahead of schedule we will begin working on it prior to the fall semester. Barring no drastic disruptions to the project, we should be able to complete each of the five goals listed by the deadlines provided.

Team Structure

Due to the size of the team, we have chosen to create a loose a sub-group system illustrating each member's specialty, but we will all work on *every* aspect of the project. We also chose to elect Nicole Valio as our team leader.

Research: Everyone is expected to equally share the researching duties due to the nature of this project

Visual Presentation

- Create the video and the Facebook page
- Team members: Kendra Johnson and Unubold Chinzorig

Written Communications

- Report and brochure creation
- Team members: Nicole Valio and Carolyn Kos

Data Analysis

- Collaborating interview results and data
- Team member: Hazel Michael

Gantt Chart

Expected Results

Challenges and Risks

- a. Excellent communication within the team members is necessary for the team to deliver a reliable solution to the given problem. This will enable the subgroups to interact and stay intact which will play a vital role in finishing assignments on time.
- b. Developing a preliminary team division and assignment process based on individual skills and weakness.
- c. Developing a maximized solution to our problem within the given time period.
- d. Motivating each subgroup members to complete their individual tasks on team.
- e. Not having sufficient back ground research could lead to false solutions.
- f. The final product should be market acceptable and comprise user needs.
- g. Staying within the given budget.
- h. Staying within the boundaries of patient- doctor privacy regulations.

Proposed Solution

- a. Maintaining excellent communication within the group by using emails, chatting rooms, Facebook, and IIT igroups etc...
- b. Motivating each team member will be facilitated by having group discussion, and considering opinions.
- c. Dividing teams into subgroups such as research team, collaboration team, and visual presentation team. This will enable more tasks being done efficiently.
- d. Using Gantt chart will enable the entire team to be able to stay on task within

the selected due dates.

- e. Evaluate existing vendors for adoption of mobile technologies in management and monitoring chronic diseases in order to determine plausible methods or integrate into the team's developed solution.
- f. Staying within the budget by determining the feasibility of a proposed solution.

Budget

Printing services: brochures, posters, and other IPRO effectively operate this Semester, IPRO 345 will require funds for transportation to as well as parking at Mount Sinai Hospital each week. Additionally, funding to cover the cost of printing services related to IPRO deliverables will be necessary. Below is a itemized table of all expected expenditures:

<u>Activity</u>	<u>Description</u>	<u>Cost</u>
Transportation/ \$140	7 Round trips to Mount Sinai Hospital	
Parking	(approximately 8 miles) 7 trips X 2 cars X 8 miles @ \$0.50/ mile	
	Parking around the hospital	\$45
	Deliverables	
Total		\$185

Designation of Roles

Agenda Keeper: Nicole Valio

Time Keeper: Carolyn Kos

Minutes Keeper: Kendra Johnson

IGroups/Google Moderator: Unubold Chinzorig

