**Graduate Student Projects Coordinated under Courses such as**
MS IT Management Capstone, IT Enabled Innovation, and Competing in a Connected World
Project Coordinator: Mohan Tanniru

**Connected Health in Hospice Care**

Hospice provides care for patients with a life-limiting illness and their family and loved ones. Many of the core patient services provided to patients such as physician and nursing services, medical, social and personal care along with spiritual, bereavement and dietary counseling. With family and caregivers not often with easy access to patients in hospice care, and with increasing development of tele-health and other wearable technologies, how can connected health technologies enhance hospice care? This study looks at the opportunities and challenges of connected health in hospice care.

Students: Vinny Gheeverughese and Hyndavi Yalamanchili (Fall 2014)
Project Contacts Hospice care facilities in Michigan and Arizona

**Connected Health for Dementia Patients**

Dementia is an acquired syndrome of decline in mental ability severe enough to interfere with daily life and is common in aging population. Twice as many older patients are expected to access the health care system in the coming years and caring for these patients is psychologically demanding. Care givers need to deal with patient’s agitated behavior and can often lead to psychiatric symptoms of care giver burnout, a state of physical, emotional, and mental exhaustion that changes from positive attitude of caring to negative and unconcerned. The goal in this study is to look at multi-sensory environment with connected devices, by utilizing the existing patient room infrastructure in addition to other devices, which can provide opportunities for reducing agitation in dementia patients while providing occasional relief to care givers. This connected environment would act as a monitoring and alerting system that will prevent patient falls and help the hospital avoid costs associated with it.

Student: Anbukumari Ashokkumar (Fall 2014)
Project contacts Cheryl Riley-Doucet, School of Nursing, Oakland University

**Length of Stay Analysis**

As LOS increases, the hospital incurs more patient costs. The goal of this project is to analyze the data provided by Providence to understand the factors that contribute to an increased LOS. The students cleaned the data set provided and have done the analysis by creating charts and graphs in Excel (Pivot charts and other types of analysis)

Students: Kevin Redmond and Leandra Kramer (Fall 2014)
Project contact Providence Medical Director’s Office
Integrated Health Network for Health Information Exchange and Tele-Health Application

Individual medical records are created at multiple facilities in different locations and this information is needed to be shared with those providing care. Yet, the exchange of medical data among healthcare providers has become a challenge for many reasons, not to mention the need for privacy and security of such data. Various communication and network technologies are available today for patient data sharing in a secure manner and this project explores the use of Cisco technology offerings in developing an integrated health care network (IHN) both to address broader data sharing challenges and, more specifically, in exploring the use of tele-health solution at a nursing home for post-discharge care.

Student: Matthew Fruth (Summer 2014)
Project contact: Hospital and Nursing Home in Rochester, MI

Michigan Health Information Network – Patient Opt-Out Form

MiHIN (Michigan Health Information Network) provides a service throughout Michigan that patients and health care providers alike will benefit from. Given the sensitive nature of the information required to collect and transmit part of health information, an informed patient opt-out must be planned and provided for. The research includes a review of the design of the actual form that a patient would need to fill out in order to opt-out of the program and the processes used in informing the public on how a “Reasonable Patient Standard” will be consistently applied, while still providing adequate information to that entrusted with improving their specific health care plans.

Student: Michael Mulholland (Summer 2014)
Project Contact: MiHIN Staff

Developing a Sustainable Funding Model in Support of Public Health

The Global Health Initiative at Henry Ford Health System focuses on improving healthcare for underserved populations around the world. Their multi-organizational and trans-disciplinary teams create evidence-based solutions to global health concerns and the primary means for fund raising is through grants. The goal of this project is to look at ways to create sustainable funding models using services framework and leverage local resources of time, talent and treasure.

Student: Paula Gialdi (Summer 2014)
Project contact: Members of the Global Health Initiative at Henry Ford Health System

CHIP Program – Developing a Web Portal for Pilot Testing

Community Health Innovator Program (CHIP) is intended to facilitate local innovation across the globe (e.g. Haiti, Ghana, Nepal, etc.) to improve health behaviors. Under development by the Global Health Initiative at Henry Ford Health System, in consultation with an International Advisory Board, this program a knowledge exchange portal to teach, assess, and share important health information with public health care innovators and workers. The goal of this project is the initial development of
a phased approach to developing such a web portal and test the technology and related challenges in supporting the community of healthcare workers among different regions of the world.

Students: Nineetha Turaka and Shilpa Konkani (Summer 2014)
Project Contact: Members of the Global Health Initiative at Henry Ford Health System

**Economic Viability of a Readmission Intervention Model**

Readmission data from a hospital is used to develop cost justification for intervention of a physician with an advanced nurse practitioner among nursing home patients post cardiac surgery. The model compared the impact of intervention on the readmission related costs for both the hospital and nursing home, and compared this with the operating costs of intervention itself. The models are being used to assess the scalability of such intermediary services in select patient population.

Student: Dharmesh Shah (Summer 2014)
Project contact: Dr. Samar Kazziha and Ms. Jackie Jones of Crittenton

**Nurse Call System as a Part of Intelligent Care System**

Nurse call systems enable patients and clinical staff to summon help with visual and audible signals for routine or emergency needs. Integrating the nurse call system with a staff locator can identify the location of staff members within the hospital through a central console or special handsets. The effectiveness of a nurse call system implementation, including how patient calls are answered, can impact patient safety and patient and nurse satisfaction. This project looks at how the Nurse Call System altered the previous work-flows and how effectively technologies such as Voalte iPhone, HillRom Smart Bed, Getwell Network devices as well as Centrak Badges are embedded in the work flows. A later project has interviewed the staff to assess some of the technology assimilation challenges as well as opportunities for process improvement.

Students: Vrenda Pruthi and Sandhya Kaveri Gowda (2014 Summer) and Sandhya Kaveri Gowda and Karen Mitchell (2014 Fall)
Project Contact: Health Care Staff at St Joseph Mercy Oakland, Pontiac, Michigan

**Colorectal Data Base for Assessing Clinical Performance**

Multidisciplinary care has become an increasingly desirable modality for managing complex disease. While some studies suggest a benefit towards clinical decision-making, patient satisfaction and quality of care, little objective data exists to definitively support such an approach. The goal of this project is to develop clinical performance database application of cancer patients and implementing the database application to monitor and track compliance with recommendations and guidelines and to track patient outcomes within the Colorectal Cancer Clinic in relation to care given outside the clinic. The clinical database is developed in conjunction with surgeons and oncologists at William Beaumont Hospital in Royal Oak, Michigan. The application
is structured around Patient information, Patient and Family history, Consults and clinic visits history, Treatments and test results, Surgery and Procedures.

Students: Kavya-Shree Hosakote-Venkatachalaiah (2014) and Initial pilot by Prarthana Balasundaram and Rumy Modak (2013)
Project contact: Dr. Harry Wasvary and Ms. Shelli Bergeron, Colorectal Cancer Clinic, Beaumont Health System

**Patient Sentiment Analysis using Text Mining Tools**

Patient satisfaction, measured in all healthcare provider services, have become important with the governmental oversight and reimbursement penalties from the Center for Medicare/Medicaid Services (CMS). The project explores ways to extract meaningful information from qualitative comments made by patients, as a part of surveys sent post discharge. Text mining tools are used for sentiment analysis of patient survey data for emergency room services.

Student: Padmini Varanasi (Summer 2013)
Project Contact: ER-One

**A Decision Support System for Assessing System Integration**

As health care organizations seek ways to provide complete care solution for patients, many are exploring merger with care providers such as urgent care centers, primary care physicians’ offices and specialists’ offices. As hospitals acquire new facilities, any number of applications have to integrated electronic medical records (EMR) systems. This project looks at when and how such integration is needed and the depth of such integration that is appropriate.

Student: Keelyn VanderWeide (Winter 2013)
Project Contact: Spectrum Health

**Other Research/Practice Projects**

Medical Homes
Student: Darcy Malavolti (Winter 2013)

Personal Health Records
Students: Christine Brownell (Winter 2013)

Health Care Value Chains
Student: Christopher Mitchell (Winter 2013)

Patient-Physician Communication
Student: Shahina Reji (Winter 2013)