

Physiologic Monitoring in the Home

Introduction



Over the past 30 years, there have been tremendous advances in medical knowledge and innovations in technology. Technology has revolutionized many industries because it has proven itself to be efficient and effective. Last year, I was introduced to remote physiologic monitoring technology.



60% of health care costs in Canada is spent on managing chronic kidney disease (namely diabetes, hypertension, chronic kidney disease, congestive heart failure, COPD and mental health). Presently, many patients with these chronic diseases have inadequate monitoring and management of these conditions in their homes resulting in hospital admissions.



My Interprofessional Leadership Project was an opportunity for me to learn how to bring the technology into the home and improve the medical care to my community.

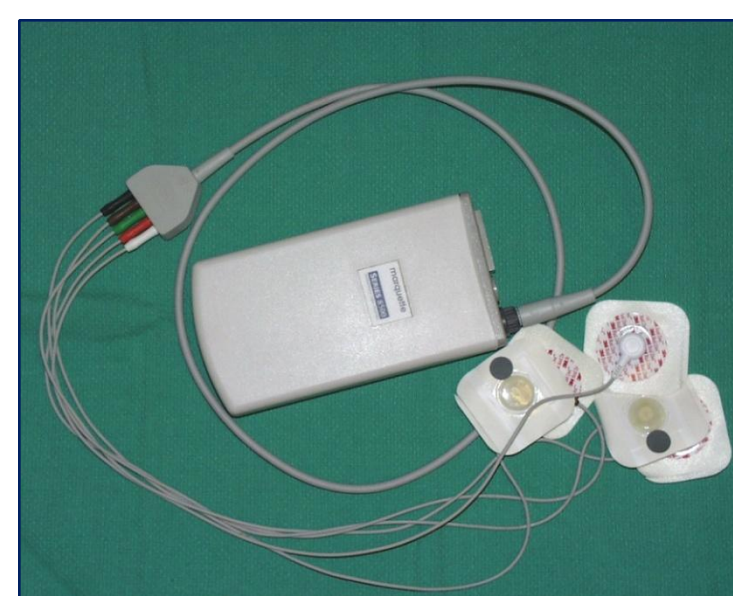


Photo Source: Centre for Global eHealth Innovation UHN UoT Joseph Cafazzo, PhD Presentation Slides

Actions

Most of my time during this project involved identifying what was available and what was possible in the areas of technology, human health resources and funding.

I met and interviewed many friends, patients, doctors, nurses, therapists, hospital administrators, business people, reviewed numerous technology company web sites, visited a manufacturing company, introduced the idea to meetings at the hospital and conducted a survey.



Photo Source: Centre for Global eHealth Innovation UHN UoT Joseph Cafazzo, PhD Presentation Slides



Results



iPhone Health Apps

The survey asked the participant which physiologic parameters they thought were important to monitor such as blood pressure, heart rate, temperature, blood oxygen saturation, blood sugar, body weight, detection of falls, compliance with medications, pain control, or others.

Participants were asked to make any other suggestions regarding medical and physiological management in the home that may help facilitate keeping patients in their own homes.

The survey showed that many thought monitoring a combination of most or all of the physiologic parameters [mentioned above] was a good idea. Health care professionals were more interested in having more services rather than introducing new technologies into their workplace.

There were repeated suggestions for more Meals on Wheels, Lifeline, support for caregivers, transportation assistance, appointment reminders, personal support workers, therapies in the home, wound care, phlebotomy, home assessments, technology to assist with ADL's, friendly visitors, outpatient clinics, and more doctors. Many felt that medication compliance and nutrition monitoring were essential.

Home surveillance cameras and speaker systems were suggested by some. Several people suggested "call in" support following discharge from the hospital. One person pointed out that some people do not have access to a computer and internet.

Challenges

The technology needs to be able to measure multiple relevant physiologic parameters and yet be simple and inexpensive for the patient.

Patients must be educated and take an active role in self monitoring and self management. They need to collaborate with their MD/NP to effect better outcomes.

Other stakeholders including health care professionals, administrators, business people, computer scientists and engineers need to champion the vision for bringing the technology into the home.

Funding for these monitoring devices, computer systems and human health resources needs to be found.



Photo from: <http://www.bodybugg.com>

Lessons Learned

Technology currently exists that can measure blood pressure, pulse, pulse rate variability, blood glucose monitor via an inflatable cuff (Bio Sign Technologies UFIT R TEN-20). Other physiologic data such as body weight, calorie intake and expenditure, pulse oximeter, peak flow meter, body temperature, pain measurement, accelerometer to detect falls, EEG (electroencephalogram) and EKG (electrocardiogram) can be measured and shared between patients, family members and health care professionals. (For more information Google: Health Buddy, BodyBugg, The Doctor Kiosk, Pharmatrust, Holter and Loop Monitors).

Human Health Resources are expensive and in short supply. Most doctors, nurses and therapists are so overwhelmed with their work, only a few embraced the idea of integrating new technology into their working environment. They expressed some frustrations with past experiences with new technologies in their workplace. Others were concerned about who would be responsible to set up the monitoring systems, who would monitor the data and who would be reacting to the abnormal results.

For many, funding appeared to be a major issue. They asked who would be paying for all these technologies and services. The issue of OHIP billing and liability was raised by a doctor. Currently, there is no OHIP billing code for remote monitoring. Doctors get paid for face to face encounters. If they have a serious abnormal result they have a duty to deal with it right away. What happens if this occurs during the night or weekend?



Photo from: <http://www.healthbuddy.com>



New Evidence/Best Practices



May enable health professionals to improve clinical outcomes and patient quality of life while reducing the total cost of care



May improve data collection and disease management by improving the frequency and quality of data collected



Improved workflow when managing multiple patients

Next Steps

There is a need to bring all the stakeholders together. This appears to be a big problem. Everyone is busy and has limited resources to seriously consider bringing remote physiologic monitoring systems into the home.

Ideally, I would like to meet Minister of Health or the CEO of some technology company like RIM or Apple or General Electric who has the authority to assign money and the right people to this project.

Contact Information

Dr. Jim Park
Medical Director & Staff Physiatrist
Lakeridge Health PASS Program
(905) 576-8711 x 4210
jpark@lakeridgehealth.on.ca

