Remote Monitoring for Patient Management

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Remote monitoring

- A patient management approach combining various information technologies for monitoring patients between the health care provider and a patient in their home.
A patient or caregiver provides daily updated medical data from home using a modem, cable or satellite based equipment.

It is too expensive to visit our patients daily, therefore, telemonitoring can assist by indicating when additional visits are needed or by eliminating wasteful visits.

Why is this an issue?

- Chronic ill patients account for 78% of all medical costs nationally.
- Telemonitoring is cost effective
- Telemonitoring saved Texas over $1Billion in health care costs so far (Andrew, 2008).
- In Maine, a largely rural state with one of the largest telehealth system in the country, patients report saving an average of 165 miles of travel per year (Edwards, 2003).
- With the use of telemonitoring, VA (2006) reports decrease in inpatient hospital days by 77% (122 from 630 the previous year).
- Reported better disease management through IT
- Improved quality of care and life
- Early intervention is far superior than re-hospitalization
- Patient empowerment & participation
There is an impressive body of research and practical experiences that support the superior quality and cost benefits possible with home telemonitoring compared to traditional home care.

**Project Objectives**

- Investigate how IT might improve coordination of care
- Address how IT will decrease health care costs as a result of improving patient compliance
- Establish consumer empowerment
- Ease the transition from acute care to self care while fostering independence
- Reduce re-hospitalizations and complications through early identification and treatment of signs/symptoms.
Symptom Management

- CHF—Dyspnea, fatigue, cough, mucous production, edema and weight gain
- COPD—Dyspnea, cough mucous production, low oxygen saturation readings
- Diabetes—Elevated or unstable blood glucose readings
- Cancer—Dyspnea, fatigue, pain, constipation, nausea, anorexia
- General—Unstable vital signs (including hypotension and hypertension), medication changes that evoke symptoms, history of falls

Possible Challenges faced

- Patient’s lack of experience with technology
- Compliance with the plan of care
- Communication
- Functional ability
Telemonitoring changes traditional notions of care delivery

Stage 1 - Develop and implement programs to track patients’ progress using tools, such as; decreased re-admissions, decreased ER visits and early detection of symptoms

Stage 2 - Create a multidisciplinary advisory panel to monitor the planning and oversight of remote telemonitoring project

Stage 3 - Integrate documentation of clinical activities, reflection and clinical judgment

Stage 4 - Design project evaluation

- How will we incorporate project management?
Law and Policy Role in Tele-Monitoring

- A primary concern is the risk of legal liability.
- Health-care delivery based on supervised autonomy will raise issues about the requisite standards of care for health-care providers (HCP).
- Scope of expectations provision to avoid potential legal ramifications for non-HCPs.
Who is using Remote Tele-Monitoring?

- The oldest to the youngest that requires patient assessment in the field
  - The Wearable Motherboard Smart Shirt continuously transmits vital signs data to a remote monitoring location staffed with trained technicians and physicians.

Who is using Remote Tele-Monitoring?

- Electronic intensive care units (eICUs)-monitor patients in virtually any number of ICU rooms at remote hospitals
- Powered by software from Baltimore-based VISICU Inc
- eICU Program powered by the VISICU eCareManager
What areas are using Remote Tele-Monitoring?

- Telemedicine applications span the following areas:
  - Homecare
  - Patient Tele-monitoring
  - Tele-cardiology, Tele-radiology, Tele-pathology, Tele-dermatology, Tele-opthalmology, Tele-psychiatry, Tele-surgery

Where internationally does Remote Tele-Monitoring extend?

- Department of Veteran Affairs- United Kingdom
  - Remote monitoring of sitting behavior of people with spinal cord injury utilizing the Force Sensing Array pressure mapping system.

- University of the Aegean, Greece
  A novel, low-cost, wide-area telemedicine platform emphasizing patient monitoring and homecare.
International Remote Tele-Monitoring

- Institute of Cardiology- University of Bologna, Italy
  - Telemonitoring of ICDs has the potential to improve patient’s safety regarding both spontaneous clinical events and device-related events.

University of Ioannina, Greece
  - Tele- and conventional ophthalmology using a mobile medical unit for glaucoma follow-up in remote Greece.

International Remote Tele-Monitoring

- Ono Academic College- Israel
  - The Jerusalem TeleRehabilitation System patient and therapist systems plus a central server and database connected via the internet.

Polytechnic University of Madrid, Spain
  - The system that was integrated with Telemedicine devices provided support for the independent living of people with special needs.
How Remote Monitoring is used in our practice?

- Sleep Apnea patient compliance is monitored by downloads obtained from Lincare or other vendors of PAP.
- New Medicare Standards in place 11/1/2008 requiring monitoring of compliance for first 90 days of newly diagnosed OSA patients.

Practice Remote Monitoring

- Patient must use sleep apnea device for at least 4 hours per night for 21 days in a 30 day period.
- ResTraxx is the web-based remote compliance monitoring system; wireless device is attached to the PAP device.
  - J. Pugh (personal communication, April 15, 2009)
Summary

- Telemedicine continues to be used for disease management, patient monitoring, and patient care.
- An increase of eICUs most likely will continue due to <6000 intensivists in the United States serving critical care patients.

Summary

- Remote monitoring covers all patients that require field assessments from the pediatric to geriatric population including those with special needs.
- Patients are managed remotely abroad and even locally in rural locales, spanning the continental U.S.
Questions

References

References