The Changing Face of Healthcare: A Case Study

Executive Summary
Through its very nature, healthcare is in a constant state of evolution; populations, treatments, illnesses and technologies are discovered every day and we are at a seminal moment in healthcare’s next giant leap. The iconic “doctor’s bag” has been replaced with handheld devices sporting the latest in connected care. But what value does that bring to the patient? The flood of options can be overwhelming and confusing. Understanding how each element works, how information is communicated, and how it impacts patient outcomes are crucial to choosing the correct partner. Quality of life and health care expenditure are imperative to managing healthcare in a technology-infused system. This white paper provides an overview of Remote Patient Monitoring (RPM) and its benefits as well as a case study example of a coordinated care approach to RPM.

Remote Patient Monitoring
Remote Patient Monitoring (RPM) is a type of Telehealth and refers to the electronic exchange of information and communication between health care providers in one location and patients in another, for the purposes of assessing and treating health care needs. Telehealth technologies are varied and can range from telephonic communication with a patient, to video conferencing, to the transmission of vital sign data from remote biometric devices such as blood pressure monitors, weight scales and oxygen saturation and glucose meters. RPM can use all of these technologies and in varied capacities to capture patient health data and transfer it to a health care provider for review, interpretation and intervention (What is Telemedicine? 2014).

Cost Savings and Regulatory Requirements
In 2015, the Centers for Medicaid and Medicare Services (CMS) will broaden the scope of 30-day readmission penalties for hospitals, continuing to include Acute Myocardial Infarction (AMI), Heart Failure (HF) and Pneumonia (PN), while also adding Chronic Obstructive Pulmonary Disorder (COPD) and Total Hip and Knee Replacements (THR/TKR) (Center for Medicare and Medicaid Services, 2014). In 2013, Medicare spent over $17 billion on potentially preventable readmissions and in 2014, a record number of hospitals will receive penalties with fines estimated to total over $423 million (Rau, 2014). RPM has been proven to decrease overall facility utilization including hospital admissions and readmissions. It has also proven to reduce overall health care expenditures while improving patient outcomes and quality of life.

Case Study Example
Introducing the Patient
Our patient will use the pseudonym “George Smith” to protect his privacy. Mr. Smith entered the Marines in 1968 at a young age and 5 months later was deployed to Vietnam. Mr. Smith received an honorable discharge after sustaining injuries in the war. He resumed college and graduated with a bachelor’s degree in social work and criminal justice and went on to work with the adolescent population.

Mr. Smith is now 68 years old. He has suffered from PTSD since his time in Vietnam, a condition often associated with anxiety, depression, substance abuse and chronic pain (Baker DG, 2012: 9). In addition to the emotional and psychological challenges he experienced as a result of his military service and professional experience as a social worker, Mr. Smith, at the beginning of the two month period, was also overweight, and had hypertension, hyperlipidemia, arthritis and difficulty sleeping. An estimated 70% of
Veterans are overweight or obese compared to non-veterans, however the risk of chronic conditions associated with obesity can be reduced with a weight loss of as little as 5% (Littman AJ, 2012; 9). Veterans also have a higher incidence of cigarette use (74%) compared to the non-veteran population (48%) with the reason being Veterans reportedly use cigarette smoking as a coping mechanism for dealing with depression, anxiety, anger and challenging interpersonal relationships as well as other symptoms of PTSD (Gierisch, 2012; 9).

Mr. Smith continues to struggle with the memories of his time in the service and the resulting physical effects. In December 2013, a fellow Veteran and close personal friend from Mr. Smith’s platoon in Vietnam, was given an unfavorable medical diagnosis, which had a profound impact on Mr. Smith’s outlook. Mr. Smith made a decision; he wanted to change his behaviors, lifestyle choices, and ultimately take steps towards a happier, healthier life. He knew he wanted to make changes but did not know where to begin.

With encouragement from Mr. Smith’s spouse, he agreed to evaluate his current health status with a trusted friend, a Registered Nurse named Melanie. He discussed his medical history, psychosocial and functional assessments with her, and together, they established a care plan and achievable goals. Information was collected on Mr. Smith’s current routines, activity levels, medications, alcohol consumption, biometrics, stressors, coping mechanisms, sleep patterns and sources of support. RPM was recommended for Mr. Smith as well as follow up with a physician, which included finding a primary care physician (PCP). Mr. Smith felt comfortable with having a physical exam, baseline laboratory testing, and a medication review. Melanie assisted Mr. & Mrs. Smith with finding him a PCP and an appointment was set.

The next step was to look at Mr. Smith’s medications. He had prescriptions to treat fluid retention, hyperlipidemia, anxiety, depression, pain, sleep, etc. Most of these medications were taken incorrectly and inconsistently. Having multiple medications with varying doses and frequencies is challenging. Medication reconciliation continues to be key to establishing appropriate medication routines and therapeutic results.

Medication Reconciliation is the process of comparing a list of medications ordered with what the patient is actually taking. Research shows performing medication reconciliation at access points (i.e. the pharmacy or medicine cabinet) reduces the risk of medication errors. Also, educating patients on the medications they are taking can help them become better historians and provide accurate information when requested (JH, 2008). Mr. Smith prepared a list of his medications to take to his physician appointment and after a review, he returned with a consolidated list to treat his then current health status.

Mr. Smith was still not sold on the idea of RPM and having monitoring equipment that automatically transmitted data set up in his home. However his dialogue with Melanie surrounding the health benefits of daily monitoring continued and he agreed to purchase his own scale and blood pressure machine and have contact with Melanie daily to review his biometrics. Melanie also provided health coaching and education.

The results of Mr. Smith’s baseline labs showed he had some work to do. His glucose was normal but his cholesterol was extremely high and he needed to lose weight. His blood pressure was also running 170-180/90-100 putting him at an even greater risk for cardiovascular disease. Mr. Smith was averse to taking medication and was not confident he was dosing properly. He also suffered from anxiety, which kept him up at night, elevated his heart rate and blood pressure and he resorted to alcohol to help him relax. Understanding that compliance with a medication regime was a challenge for Mr. Smith, daily routines were examined to identify opportunities to facilitate compliance as well as triggers for noncompliance.

Mr. Smith reported difficulty sleeping and often stayed awake until 3:00 am watching intense television shows, which precipitated feelings of anxiety. As a result of his sleepless nights, Mr. Smith slept late in
the day and therefore did not take his medications as prescribed. Mr. Smith also spent the majority of his time surrounded by fellow Veterans reliving old war stories while consuming alcohol. Mr. Smith felt a sense of comradery and understanding through socializing with individuals who could relate to his experiences, however it was an unhealthy support system and created a negative cycle of behaviors which further exacerbated his symptoms of PTSD. The correlation between his symptoms and lifestyle choices including socialization were discussed. Mr. Smith was receptive and agreed to feel less negative he must surround himself with positivity. Finally, Mr. Smith’s diet and physical activity were explored. Mr. Smith led a predominantly sedentary lifestyle with little thought into how or what he ate. He also voiced being uncomfortable going to a gym and he felt that diet changes meant giving up everything he enjoyed.

Plan and Outcome

Goals and interventions were set with Mr. Smith and his spouse. Mr. Smith would agree to check his blood pressure, heart rate and weight daily and converse with his nurse for health coaching and review. Patients who have a higher number of interactions for health coaching have been shown to have a greater reduction in blood pressure, improved medication adherence and decreased physician visits (Margolius D, 2012). Home monitoring of blood pressure by patients alone has little to no effect on reducing blood pressure however utilizing telemonitoring (where readings can be analyzed by a health care professional and meaningful interventions are instituted) can result in a downward titration of antihypertensive meds and a decrease in the white coat effect (Agarwal R, 2011). Over a period of two months, Mr. Smith was able to reduce his systolic blood pressure from 170-180 mmHG to 120-140 mmHG (a 30% reduction) and his diastolic from 90-100 mmHG to 70-80 mmHG (a 20% reduction). Mr. Smith also had a downward titration of his antihypertensive medications and increased adherence to medication schedules.

In addition to medication adherence, blood pressure control was achieved through the addition of physical activity and stress reduction techniques. Melanie also provided dietary education and nutrition and Mr. Smith was challenged initially with consuming one low sodium meal daily and with the help of his spouse, keeping a log of his food choices to identify areas to modify. After a food log review, focus was placed on the DASH (Dietary Approaches to Stop Hypertension) method and food choices supporting a reduction in blood pressure and cholesterol such as increased fruits and vegetables, grains and lean proteins (NHLBI, 2014).

Mr. Smith began integrating physical activity into his daily routine 3-4 days a week and discussing his exercise routine with his nurse. Mr. Smith performed a variety of types of exercise including walking, biking and swimming. He began with 20 minutes of physical activity and gradually added time in 10 minute increments until he reached 60 minutes. Mr. Smith noted improvement in sleep, mood and outlook as well as over a 5% reduction in weight over the two-month trial period. As an added bonus, he reported having more quality time with his spouse, who frequently accompanied him during his walks and swims, and he felt a sense of accomplishment. Mr. Smith received education, support and encouragement from his nurse and even registered to complete his first 5K. Studies of weight loss behavioral interventions showed participants having access to a weight loss coach, either in person or telephonically, had a greater clinically significant weight loss (5% or more) and are able to sustain the weight loss (Appel LJ, 2011).

Cognitive Behavioral Therapy (CBT) interventions were used to assist Mr. Smith in establishing a sleep routine and thus more productive time during the day. Stimulus control, relaxation and sleep restriction were also initiated. Mr. Smith was encouraged to wake at a set time each morning and follow his day routine – taking his medications as prescribed, performing scheduled physical activity, grocery shopping (Mr. Smith began preparing meals for him and his spouse) and finally research on hobbies and activities of interest. Mr. Smith’s spouse frequently left lists of errands/tasks for him to help keep him focused and allow them to have more quality time together when she finished work in the evenings. While Mr. Smith
initially reported being very tired and sometimes requiring an afternoon nap, he quickly began sleeping better at night.

To facilitate relaxation and decrease stimulation, education on sleep hygiene was provided such as avoiding alcohol and caffeine several hours before bedtime, keeping light and noise levels low and refraining from visual distractions and stimulus that could be anxiety provoking such as TV shows depicting violence or stressful subject matter (Morin CM, 2012). Mr. Smith began a routine of limiting TV shows to one hour in the evening; and, several hours before bedtime, drinking chamomile tea, reading books and enjoying quiet time in low lighting. CBT requires more time than pharmacological management of insomnia however; the effects are sustained over a longer period of time and are more accepted by patients (Morin CM, 2012).

In conclusion, Mr. Smith experienced huge success and personal rewards and now maintains many of the same routines established during his two-month Telehealth care management trial period. Mr. Smith achieved reductions in weight, cholesterol and blood pressure, increased physical activity and endurance accompanied by decreased pain; improved sleep and interpersonal relationships; decreased anxiety and alcohol use; an understanding of diet and nutrition and the addition of new hobbies which allow him to separate his life now from his life as an active duty Marine. Fluctuations in habits and behaviors are normal, but Mr. Smith continues to utilize telemonitoring as a way to help keep him on track. He continues to educate himself, be proactive in his health care and ultimately, have control over his health and well-being. A properly managed people-driven telehealth system can drastically improve a patient’s prognosis while reducing the costs and likelihood of related complications. Systems like the one described here improve utilization management of healthcare resources and reduce risk for insurers, caregivers, and ultimately, patients themselves.

**Disclaimer:** Mr. Smith’s experience has been outlined here to illustrate the possibilities and potential benefits from a managed Telehealth and telemonitoring program. Every medical situation is unique, and should be treated as such. While rooted in current and prudent medical practices, the aforementioned should not be considered medical advice. myNEXUS™ assumes no responsibility or liability for the outcomes of any action taken independently of personalized and prescribed professional medical advice as a result of the study outlined in this document.
About the Caregiver

Melanie M. Hynes, RN, BN, has more than ten years of healthcare experience spanning the continuum from critical care to home care. Melanie has both a clinical and management background with expertise ranging from telehealth, disease management, clinical education and program development to readmission reduction, acute care partnerships, revenue generation, operations and sales. Prior to joining myNEXUS, Melanie was the Corporate Director of Business Development at SunCrest Healthcare the where she played an integral role in the development, implementation and management of a telehealth program yielding an 80% reduction in 30-day readmission rates. Previously, Melanie worked as a nurse for The Ottawa Hospital, HCA and Baycare where she created an innovative Volunteer Nursing Program; one of only a few in the country. Melanie received her nursing education from Memorial University in Newfoundland, Canada and holds a Bachelor of Nursing degree and continuing education credits in Business Administration.

About myNEXUS

myNEXUS, Inc., based in Brentwood, Tennessee, acts as a link that connects many parts of the healthcare system including individuals, physicians, health providers and insurers. myNEXUS’ care management team focuses on reducing waste by managing care according to proven clinical criteria and business intelligence. For individuals with chronic conditions, the company uses a daily biometric monitoring system which allows them to detect, prevent and intervene at the appropriate times resulting in better outcomes, decreased re-hospitalizations and lower costs. For further information, please visit http://www.myNEXUScare.com.

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References


