TAKING CONTROL OF HEALTH CARE

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ABSTRACT

To lower health care costs, it is necessary to improve the care of patients who suffer from chronic diseases such as diabetes and heart disease to help them remain in good health, out of emergency rooms and out of hospitals where patients often contract infections. Due to the trend of aging Americans, health care costs are rising due to aging adults experiencing changes in chronic health conditions which often limit activities. Yet, despite physical limitations, elderly Americans prefer to live in their own homes, which could reverse increasing health care costs. As a result, many elders may require a home system to monitor their safety and their health. To effectively care for patients across a range of settings, remote monitoring of people with chronic diseases, and more, is a promising technology. DynoSense Corporation, a medical device company and creator of the world's first fully integrated multi-scan health scanner, has developed a product called "Dyno," a device that fits well within the new paradigm of preventive healthcare delivery.

KEYWORDS: Digital, Health, Remote, Monitoring, Sensors, ECG, Blood Pressure.

Introduction

To lower health care costs,it is necessary to improve the care of patients who suffer from chronic diseases such as diabetes and heart disease to help them remain in good health, out of emergency rooms and out of hospitals where patients often contract infections which cost "between $200 and $400 million each year" (Rising Cost, 2008, para. 15). Globally, 68% of deaths in 2012 were from 4 primary non-communicable diseases: "cardiovascular diseases, cancers, diabetes and chronic lung diseases" (WHO, 2014a, para. 1).

Various studies show that hypertension is the single greatest attributable risk factor for death and disease burden worldwide. It is responsible for "at least 45% of deaths due to ischemicheart disease and 51% of deaths due to stroke, which together account for 14 million deaths globally each year" (Nagai, 2010, p. 116). Additionally, hypertension isthe key"contributor to dementia, which affects 8% of the population today but is expected to triple by 2050, with 70% of cases expected to be in low-and middle-income countries"(Nagai, 2010, p. 116).

To effectively care for patients across a range of settings, remote monitoring of people with chronic diseases and more is a promising technology. Twenty five years ago, monitoring health of people was limited to laboratory measurement of blood gases and electrolytes, but today sensor applications can be used to remotely measure and link the data to any mobile device and/or the cloud (Sensors in Medicine, 2014). According to Dunker & Greenberg (2000), the

growth in the aging American population is expected to rise through 2030, which will double the 2002 category of Americans over the age of 65 (Mann, W., Marchant, T., Tomita, M., Fraas, L.,& Stanton, K, 2002). Simultaneously, with this aging trend, health care costs are rising due to aging adults experiencing changes in chronic health conditions which often limit activities. Yet, despite physical limitations, elderly Americans prefer to live in their own homes, which couldreverse increasing health care costs (Tinker, Wright, McCreadie, Askham, Hancock, & Holmans, 1999). As a result, many elders may require a home system to monitor their safety (Mann et al., 2002) and their health.

Globally, health care needs differ between the high resource settings and low-resource settingscharacterized by chronic poverty. According to Taylor, Merritt, & Mullany (2011), studies on low-resource settings indicate a deficiency of safe"access to adequate nutrition,clean water, and sanitation, together with little or noaccess to health care services" (Taylor et al., 2011). Consequently, some patients become ill or die from medical circumstances (Taylor et al., 2011).Thereby, the implementation plan of the Global Strategy for Prevention and Control of Non-Communicable Diseases (NCDs) was endorsed by the World Health Assembly in May 2008.

One of the action plans of World Health Organization (WHO, 2014b) to member states is to "implement and monitor cost-effective approaches for the early detection of cancers, diabetes, hypertension and other cardiovascular risk factors" and institute "standards of health care for common conditions like cardiovascular disease (CVD), cancers, diabetes and chronic respiratory diseases, integrating, whenever feasible, their management into primary health care" (WHO, 2014b).

Due to the aging population in America, the fast-growing home healthcare market is creating opportunities for hospitals, private firms, (Ellis, 1992) and providers of digital health products and services. Population growth is creating a need for efficient and practical healthcare services, particularly in low resource settings with inadequate delivery of health care, and home health monitoring to reduce health-care costs. It is important toeducate the public how to be in control of individual health by remotely monitoring health care in person at homeand communicating the results directly to a doctor using advanced technology.

Remote patient monitoring faces some huge difficulties, however. The technology is an unfamiliar space for the older patients, and people of all ages still have to be persuaded to use it. In addition, there is little standardization among the devices because of the number of companies in the market, so digital technology is faced with the difficulty of getting new devices to integrate with existing electronic records (Health Devices, 2012, p.107).

It is important to note that in 2010, the Affordable Care Act required the Department of Health and Human Services to establish a readmission-reduction program. Remote patient monitoring done right could significantly reduce the likelihood of readmission by heading off small problems before they become critical. Thereby, it's in the best interest of hospitals to prevent readmissions (Leventhal, 2013).

DynoSense Corporation, a medical device company and creator of the world's first fully integrated multi-scan health scanner, has developed a product called "Dyno," a device that fits well within the new paradigm of preventive healthcare delivery. With this device, patients and their medical professionals can monitor allthe critical vitals (ECG, heart rate, blood oxygen, respiration rate, breathing efficiency, blood pressure change, body temperature, plus others in development) at home. With very little effort, this information can be forwarded to healthcare

professionals on-demand or routinely for the purpose of early detection and prevention or as a follow-up maintenance to care that has already been given. Health care professionals require real-time and accurate data in order to better diagnose their patients, but there is a lack of technology awareness among physicians. As such, sensor and device manufacturers need to apply greater promotion and education in this area (Thusu, 2011).

To solve this problem, the Dyno device uses an array of nine sensors, in which it collects 33 different health metrics which are measuring hemoglobin pulmonary vein isolation in just 60 seconds, using analytics to alert users to potential health problems.

Dyno is a great example illustrating what remote health monitoring can do today. The benefits will help provide better treatment as physicians will have access to real-time patient data.

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