Managing Chronic Conditions using Big Data

A thought paper by Scalable Health

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Five Chronic Conditions Account for 75% of Healthcare Spending

According to the CDC - chronic health problems such as cardiovascular disease, diabetes, obesity, cancer and kidney disease account for more than 75 percent of the nation's $2.7 trillion annual healthcare spending.

The Cost of Chronic Care

Cancer - The American Cancer Society estimates that the direct medical costs (total of all health care costs) for cancer in the US in 2014 were $87.7 billion. 58% of this cost is for hospital outpatient or doctor office visits. 27% of this cost is for inpatient hospital stays

Cardiovascular Disease - The American Heart Association projects that the annual cost of treating cardiovascular disease will triple between 2010 and 2030, spiking from $273 billion to $818 billion

Diabetes - The American Diabetes Association estimates that costs associated with diagnosed diabetes have risen 41 percent, from $174 billion in 2007 to $245 billion in 2012.

Obesity - The CDC now counts 1 in 3 adults and nearly 1 in 5 youths from ages 6 to 19 as obese. The cost of treating medical problems related to obesity reached an estimated $147 billion in 2008, and individual medical costs for obese patients were $1,429 higher in 2006 than those for people of healthy weight.

Kidney Disease - National Kidney Disease Education Program estimates chronic kidney disease costs $57.5 billion in U.S. annually. End-stage renal disease costs $39.5 billion. Major risk factors include diabetes, high blood pressure, and family history.

The Power of Prevention

Although chronic diseases are among the most common and costly of all health problems, they are also among the most preventable. Chronic disease prevention, to be most effective, must identify those either at high-risk or whose lifestyle puts them at risk and offer intervention as early as possible. Intervention and prevention encompass promoting healthy activities that encourage wellness and limits the potential for the initial onset of chronic diseases.

Poor lifestyle choices, such as smoking, overuse of alcohol, poor diet, lack of physical activity and inadequate relief of chronic stress are key contributors in the development and progression of preventable chronic diseases, including obesity, type 2 diabetes mellitus, hypertension, cardiovascular disease and several types of cancer. Most patients understand the need for better lifestyle choices but may not be able to implement or sustain changes long enough to benefit from improved wellness. Short-term changes can be achieved, but long-term changes to diet and exercise habits are very hard to maintain, thus constant support and intervention are needed to sustain long-term behavioral changes.
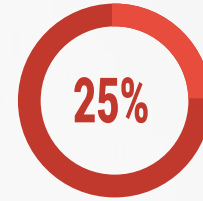
Costs of Chronic Disease

Chronic diseases account for $3 of every $4 spend on Healthcare or **$7,900** For every American with a chronic disease

Since they are frequently longstanding, people with chronic conditions are also at high risk for depression, anxiety, marital and family discord and financial burden.

About 25% of people with a chronic disease have some type of activity restriction. e.g. Mobility, Personal Care, Work or Schooling.

Even with health insurance. Chronic conditions can pose a significant financial burden, Particularly when work is affected.

People with chronic diseases are at highest risk of medical errors and Duplicated or unneeded services.

Most Disability and premature deaths in U.S. are caused by chronic diseases Such as diabetes, cancer and heart disease.

Chronic diseases cause **7** out of every **10** deaths.

Medical expenses are the **#1** cause of bankruptcy in the U.S.

Healthcare costs for a person with one or more chronic conditions are **FIVE TIMES HIGHER** Compared to individuals without a chronic disease.

1 in 3 children born today will Develop diabetes in their lifetime (1 in 2 Latino children).

Obesity in adults has doubled in the last 20 years, tripled in children ages 2-11, and **MORE THAN TRIPLED** in children ages 12-19

Overweight and obesity are the biggest public health threats of this century, causing Unprecedented Increases in the rates of diabetes, heart disease, osteoarthritis, among others.

Appropriate interventions, which include nutritional counseling, exercise training, and stress management techniques, can dramatically improve outcomes for patients at risk and those who already have common chronic diseases. Medical studies show that adults with common chronic conditions who participate in comprehensive lifestyle modification programs experience rapid, significant, clinically meaningful and sustainable improvements in biometric, laboratory and psychosocial outcomes.

The CDC estimates that an investment of $10 per person per year in community-based programs tackling physical inactivity, poor nutrition, and smoking could yield more than $16 billion in medical cost savings annually within 5 years.

Prevention also embraces early detection efforts, such as screening at-risk populations, as well as strategies for appropriate management of existing diseases and related complications.

- **Early detection of disease and scheduling of screening examinations.** The earlier detection of a disease may lead to more cures or longer survival. Special examinations exist for many chronic diseases, which can diagnose the disease while it is asymptomatic, with no signs or symptoms. Because of the improved outcomes resulting from early interventions, many public health programs recommend at risk patients have periodic screening examinations for detecting specific chronic diseases, for example, cancer, diabetes, cardiovascular disease and so on.

- **Chronic Disease Management** -Patients who do not adhere to medical plans will actually have higher medical costs. It is estimated that if we looked at diabetes alone medication could save patients $4.7 billion dollars. If we look at the industry as a whole nonadherence can cost the healthcare system up to $100 billion dollars per year. Non-Adherence has multiple causes including the complexity of the prescribed plan, a lack of communication between patient and provider, and socioeconomic barriers for patients. With a whole host of medical wearables, caregivers can closely monitor vitals to detect red flags and intervene before further disease progression occurs.

Making a Difference with Big Data

There are many potential use cases where big data analytics can potentially both improve the quality of care and reduce the costs associated with chronic conditions. For example -

- **Identify High-Risk Potentials** - High-risk patients can be identified through data analytics offering an opportunity for preventative engagement. For example, 86 million adults aged 20 years and older have pre-diabetes. Results of a large U.S. nationwide study released in August 2001 showed that even if you are at risk of developing type-2 diabetes, you can reduce your risk by 58% through sustained modest weight loss and increased moderate-intensity physical activity, such as walking 30 minutes a day. Maintaining patient health and preventing disease progression offers payers considerable savings on health care costs.

Analyzing members' journey allows payers to derive actionable insights to increase wellness and reduce readmissions resulting in better care outcomes and reduced overall medical expenses.

- **Preventive Care** - Stratifying the population, identifying patients at risk, analyzing gaps in care and elevating pre-care planning are among the use cases in which advanced analytics can drive thoughtful and effective preventive care strategies. education materials can be dispatched. This proactive engagement can potentially reduce readmission rates by over 30%.

To reduce chronic disease, Big Data offers healthcare providers actionable insights into high-risk patients offering the opportunity for intervention even when they are asymptomatic. It is essential to have a coordinated, strategic prevention approach that promotes healthy behaviors, expands early detection and diagnosis of disease, supports people of every age, and eliminates health disparities.

A Value Based Care approach to Chronic Disease Management

In value-based models, doctors and hospitals are paid for helping keep people healthy and for improving the health of those who have chronic conditions in an evidence-based, cost-effective way.

This is a departure from the traditional fee-for-service approach. With fee-for-service, doctors and hospitals are paid based on the number of health care services they deliver, such as tests and procedures. Payment generally has little to do with whether their patients' health improves.

Research has shown that to improve healthcare outcomes for those at high-risk for chronic conditions, healthcare providers must offer preventative care and disease management programs and other efforts to both improve care quality and reduce the costs of conditions such as diabetes, asthma, hypertension, heart disease, and obesity.

The benefits of preventive care support a value-based approach to disease management.

mHealth wearables allow for real-time data collection and transmission to care teams. Changes in key indicators trigger notifications to the care team allowing for intervention or changes in treatment options.

Patients are able to adopt healthier lifestyle choices known to reduce advancement of chronic diseases and other co-morbidity factors, thus enjoying greater wellness and reduced treatment needs. Health care providers are able to closely monitor patients and their progression allowing them to intervene earlier to offset disease progression. Health care organizations benefit from few patients advancing to advanced-stage illnesses resulting in lower healthcare costs. And finally, from a population health perspective, health care professionals gain greater insights into chronic disease triggers and can design wellness programs to offset the effects of chronic diseases that will impact about half of all adults.

About Scalable Health

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