

Development of a New Strategy to Reduce the Incidence of Chronic Diseases and Their Complications

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Abstract

Prior to enactment of the Patient Protection and Affordable Care Act of 2010 (ACA), Healey, Costello, and McGowan (2007) published an article challenging whether access to healthcare services alone was the answer to improving the health of a population. The authors contend that while improved access is needed, the solution lies in minimizing the occurrence of and complications from chronic diseases. While the enactment of the ACA addresses access and lays the groundwork for an increase in preventive care and population health, it does not address the emerging evidence that good health requires an informed patient. One of the most important sources of patient education has always been the family physician. Research provides that physician-patient engagement that increases knowledge results in better patient outcomes and lower total healthcare costs. Unfortunately, current reimbursement models limit the amount of time that a physician can spend with the patient, making the opportunity for health education virtually nonexistent.

Introduction

The individual is usually the first to determine his or her illness before seeking medical care and, therefore, has a great need for up to date accurate health advice and information. This necessary information can be achieved through the process of health education that can be provided through various sources. One of the most important sources of medical information has always been the family physician. Unfortunately, it is becoming increasingly clear that our current fee-for-service reimbursement model limits the amount of time that a physician can spend with the patient, making health education a low priority. Under the fee-for-service model, physicians are incentivized to increase patient volume which in turn increases revenue leaving minimal time to educate patients about the dangers of high-risk health behaviors that may lead to the development of chronic diseases. This failure is evident in the growing epidemic of chronic diseases in our country.

The United States is spending over three trillion dollars, representing over 18 percent of the gross domestic product, on healthcare annually with poor outcomes in many of the most important health indices. According to the Centers for Disease Control (2016), the most prevalent and preventable chronic diseases (i.e., cardiovascular disease, cancer, and diabetes) contribute to increased morbidity, mortality, disability, and healthcare costs in our country. The CDC (2016)

also highlights that seven out of the top ten causes of deaths in America are the result of chronic diseases and their complications as individuals grow older. Chronic diseases and their associated complications result in approximately eighty percent of the total annual cost of healthcare spending. Challenging whether access to healthcare services alone was the answer to improving the health of a population, Healey et al. (2007) contend that while improved access is needed, the solution lies in addressing the growing epidemic of chronic diseases. This proposed solution requires a major paradigm shift in the way healthcare dollars are spent with more funding for prevention and health education and less spending on unnecessary medical testing and treatments (Morgan, Dhruva, Wright & Korestein, 2016).

In their seminal paper, Street, Makoul, Arora, and Epstein (2009) provide evidence of how clinician-patient communication influences health outcomes by direct and indirect pathways that may result in increased access to care, greater patient knowledge and shared understanding, higher quality medical decisions, enhanced therapeutic alliances, increased social support, patient agency and empowerment, and better management of emotions. Building on this emerging evidence, this paper argues that effective physician-patient communication supplemented with available technology, can serve as the building blocks underlying the achievement of better health outcomes at a lower cost.

Problems in Our Current Healthcare Delivery System

The numerous problem areas in our current healthcare delivery system have become a source of daily discussion. They usually include: cost, access, health levels, and quality of healthcare received. The continued escalation of the cost of delivering healthcare services coupled with the increasing epidemic of chronic diseases in our country is forcing health policymakers to make critical decisions involving how to best deliver healthcare services to our population. It is of vital importance that these policymakers concentrate their efforts on the root cause rather than on the symptoms of the problem. The root cause of the alarming increase in chronic diseases and their complications is the practice of high-risk health behaviors.

According to Emanuel (2017), the American healthcare delivery system continues to underperform causing escalating costs and very poor results for the enormous amount of money spent every year. The complaints that are heard from consumers on a daily basis include; impersonal care, hospital-acquired infections, rushed office visits and excessive admissions to the ICU. Mintzberg (2017) points out that our country is doing a superb job of treating diseases. However, our country does a very poor job of preventing disease, especially chronic diseases and the resulting complications from these diseases as one ages. This is because very little attention is focused on preventing diseases from occurring in the first place. It seems that when our attention is focused on the right problem we are usually very successful in solving that problem. Unfortunately, preventing disease is not profit generating, in fact, it can eliminate future revenue streams for many providers of healthcare if individuals remain well. This obsession with profit is one of the major reasons for our failing health care system resulting in our current epidemic of incurable chronic diseases.

According to Emanuel (2017), there is no question that providers and payers of healthcare services believe that our healthcare system should be moving toward rewarding high quality low cost medical care. The chronic diseases will certainly be considered high value targets for an emphasis on payment for outcomes of treatment. The emphasis should then be on better

management of chronic diseases in order to minimize medical complications from these diseases as the patient ages.

The Chronic Disease Crisis

With over 80% of our total healthcare costs focused on chronic disease management, the extant literature clearly agrees that the largest cost escalation driver in our healthcare system relates to the treatment of these diseases and their subsequent complications (Brantes & Conte, 2013; CDC, 2016). According to the CDC (2016), over half of the population is living with at least one chronic disease that contributes to over 80% of the mortality in our country, with one in four adults having two or more chronic health conditions. The chronic diseases are different in that they do not lend themselves to cure. The World Health Organization (2013) points out that the chronic diseases are very different from communicable diseases in their etiology, incubation period, prevalence, and burden to society. This escalating epidemic calls for the development and implementation of new strategies to meet the challenge of improving population health.

As stated earlier chronic diseases are caused by the practice of high-risk unhealthy behaviors (e.g., lack of exercise or physical activity, poor nutrition, tobacco use, and drinking too much alcohol) and can be prevented through modifying these poor health behaviors. Healey and Lesneski (2011) argue that since the chronic diseases have long incubation periods, the healthcare delivery system chooses not to deal with these diseases until complications develop. After disease complications manifest themselves there is no cure only costly medical procedures, disability and premature death.

The major efforts to fight the chronic disease epidemic should include health education programs and chronic disease management programs designed to prevent the chronic disease and/or the complications that may arise as the individual ages. However, the onset of chronic disease is slow with a very long incubation period complicating the prevention and disease management program and making evaluation of program success or failure extremely difficult. These programs are also very expensive to develop and sustain for every community in our country. Just because these health educational efforts pose great challenges, we are not precluded from addressing the need for an aggressive attempt to improve the health of our population. The incidence and prevalence of most chronic diseases in the United States provide clear evidence that tremendous change is necessary in the way our nation provides healthcare services to individuals.

Recognizing the chronic disease crisis, one of the key priorities of the ACA stipulates that nonprofit hospitals contribute to preventive care and population health by conducting a periodic community health needs assessment every three years and developing an implementation strategy to address identified health needs of the population they serve. Although the ACA marks the beginning of a new era in healthcare in the United States, the concern is that it has not gone far enough to minimize the occurrence of and complications from chronic disease as a means of improving our country's health and reducing our healthcare costs.

There seems to be an overriding agreement among health policy experts and those working in public health that the prevention of chronic diseases and their complications should be a priority for our healthcare delivery system. Despite the agreement that something needs to be done there is, unfortunately, no agreement on what should be done. This presents a very important opportunity for public health departments to provide a leadership role in the dissemination of

requisite information for preventing the development and continual practice of high-risk health behaviors including: tobacco use, poor diet, and practicing the sedentary lifestyle.

One way to modify health behavior and successfully combat the ramifications and challenges faced by the chronic disease epidemic is through the development of community partnerships designed to provide health education to the population. These partnerships require public health departments along with the physicians and other providers of healthcare to work together to produce a healthy community. McGinnis, Russo, and Knickman (2002) highlight that one of the most important reasons why our country has been reluctant to invest in health education programs is because there is no consensus regarding the development, implementation, and evaluation of these initiatives in the prevention of high-risk health behaviors. There is also very little evidence to support that the large investment that will be required in public health education programs will return significant improvements in the future health of the population.

The information that is necessary to prevent chronic diseases and their complications is readily available from public health departments throughout our country. The problem has always been how to get this vital information to the population at an appropriate time in their lives to prevent chronic diseases from ever developing in the first place. It is also necessary to make this information available to those who have chronic diseases to prevent disease complications from developing. This is where the healthcare delivery system needs to make certain that the healthcare provider has time available to share this valuable information with their patients.

Reframing the Chronic Disease Problem

The chronic disease epidemic has the capacity to bankrupt the American healthcare system. Solving this problem requires our entire healthcare system to focus attention on the development of initiatives that are designed to prevent the occurrence of chronic diseases and their complications. Success in this initiative requires that we agree on what the real problem entails. Once agreement on the problem is reached, collaboration between all of the important players in healthcare services delivery must occur, with the most important player continuing to be the physician.

The major public health efforts to fight the chronic disease epidemic include health education programs and management programs designed to prevent the disease and/or the complications that may arise as the affected individual grows older. However, the onset of chronic disease is rather slow, with a very long incubation period, complicating the prevention and disease management program development process and making evaluation of program success or failure extremely difficult. These programs are also very expensive to develop and sustain with limited evidence to support that the large investment in programming will return significant improvements in the future health of the population. Just because these health education efforts pose challenges is no excuse for not addressing the need for a more aggressive attempt to improve the overall health of the population. In fact, Cecchini et al. (2010) point out that several population-based prevention policies and programs are capable of improving health while largely paying for themselves through the reduction of future health care costs.

Emanuel (2017) points out that 84 percent of health dollars are spent on the management of chronic diseases, with only 10 percent of the total number of patients being responsible for 67 percent of the annual cost of healthcare services. This information is supported by a 2015 study

completed by the United States Government Accountability Office. This report found that 5% of Medicaid patients account for half of the program's total costs. A majority of these individuals have chronic diseases with over 20% having Type2 diabetes. Indeed, those are the patients who have complications from chronic diseases and their costs could be reduced and quality of life could be improved with better and earlier chronic disease care management. The question that we need to answer is: why are we not doing a better job of managing the chronic disease epidemic in our country? Unfortunately, the answer to this important question seems to involve the fact that the prevention of disease is not profitable.

Mintzberg (2017) argues that “instead of pointing the finger at each other, they should be pointing their fingers together at the procedures and structures that set them apart.” The starting point for this collaboration should begin with a united definition of the chronic disease problem facing the United States today. The physician, especially the primary care doctor, has the most challenging role in winning the war being waged against the very costly and deadly chronic diseases and their complications. As the usual first point of contact for patients with health concerns, the ability of the primary care physician to disseminate vital information to those with or at risk for developing chronic diseases should be supported with both time and resources. The challenge involves convincing patients, through advice supplemented with the use of available technology, to reduce the practice of high-risk health behaviors. For those patients who have a steady, trusting professional relationship with a primary care doctor, the job is easier because of the trust that can develop over time.

Indeed, success in our goal of lower cost, higher quality health services delivery is highly dependent on the reduction of complications from chronic diseases as our population ages. The sooner that valuable preventive patient education takes place on a consistent basis, the more likely we are to achieve the goal successfully.

The Physician-Patient Communication Solution

Brownson, Remington, and Davis (1998) maintain that over the past several decades the diseases threatening our population health have shifted from treatable communicable diseases to the uncontrollable and untreatable chronic diseases. Halvorson (2013) argues that this epidemic of chronic diseases has continued into the twenty first century resulting in the patients with chronic diseases and their complications becoming our most expensive patients. Unfortunately, most Americans are under the impression that chronic diseases can be cured by simply entering the medical care system, no matter how long they've waited to present for care. This incorrect information allows for chronic disease to erode the patients' state of health, burden their life with troublesome medical signs and symptoms, and quite often lead to a premature death. The most effective way to prevent chronic diseases and their complications is through health education programs begun early in life and continued through the life continuum (Marmot, 2015). This education needs to be supplemented through interactions with his or her family physician.

Topol (2015) points out that physicians need to move past a paternalistic view of patients and begin educating the patient about becoming an active participant in their own good health practices. Topol also provides a solid argument for the physician partnering with the patient in making important medical decisions because of the trust and respect accorded to the physician by most patients. Carman et al. (2012) supports this shared decision making by pointing out that a prerequisite for the improvement of the health of the population can be found in patient and

family engagement in the delivery of appropriate healthcare services. Their research utilizes the concept of patient activation, which means the ability of a patient to manage their own health care through improvement in their knowledge, skill, and confidence concerning the value of preventive healthcare. At the root of patient activation is education by trained medical professionals and the availability of preventive medical information.

Ofri (2017) points out that despite all the new testing and technology available the conversation between doctor and patient remains the most important diagnostic tool. It is also interesting to note that the patient still exhibits a great deal of trust in the recommendations made by his or her physician. Healey and Evans (2015) remind that a strong awareness of the trusting dynamics in the health care provider-patient relationship should be in place, which is central to the successful provision of health care services. Physicians should renew their awareness of this vital two-way relationship which holds the dynamic of one who offers the care and services, and another who freely and willingly agrees to accept such. Inherent with this is the fact that the process of seeking out health care involves a certain level of vulnerability for the patient, as there is a clear power imbalance between the educated ones who provide the care, and those who in the position of need. The level of trust that underlies this relationship can have a positive effect on the patient, as the peace of mind that comes from a trusting situation can go a long way towards facilitating healing.

As care is provided over time, a trusting physician-patient relationship facilitates communication between the parties, and also the disclosure of necessary facts and information from the patient – which can only serve to improve the care provided. Unfortunately, this very important physician-patient relationship can be diminished by the physician paying more attention to his or her computer, rather than listening to his or her patient. This is a point of education for the physicians, as it is necessary to be present to the patient as communication occurs, while recording all that is needed via computer during or immediately after the appointment is concluded.

The focus then needs to be on communicating preventive information regarding the complications that may arise from having a chronic disease such as diabetes over a prolonged period of time. The catalyst to living a healthy life despite having a chronic disease depends on the patient being aware of and then practicing healthy behaviors thus preventing the complications that may arise from having a chronic disease. Ofri (2017) supports that good communication between physician and patient greatly improves the chances of successful medical outcomes for the patient in the encounter. Unfortunately, a well-developed communication process between physician and patient takes a long period of time to develop and grow. Our current model of healthcare delivery does not support a continuing relationship between a physician and his or her patient.

Reinvention of the disease model of healthcare

According to the World Health Organization (2013) there is no question that chronic diseases have surpassed communicable diseases as the major threat to the health of our population. Our current healthcare delivery system has had very little success in dealing with the epidemic of chronic diseases currently found in the United States. In fact, public health departments throughout our country have failed in their attempt to reduce the high-risk health behaviors that

place Americans at great risk of developing chronic diseases and their complications. Nowhere are these failures more evident than with our current epidemic of obesity throughout our nation. This obesity epidemic alone is in turn increasing the occurrence of additional chronic diseases.

Schimpff (2012) highlights that over forty percent of all deaths in our country are a direct result of patients practicing unhealthy behaviors, and could be modified through better patient knowledge. This knowledge could be made available to patients through combining public health information and physician patient engagement. This represents a tremendous paradigm shift in the way medicine is currently practiced in our country. This paradigm shift can only occur if the payment system of healthcare delivery focuses less on activities such as diagnostic testing, and more on preventive services which support improved patient health outcomes.

One of the missing ingredients to improving the health of the population is the encouragement of physicians to communicate with their patients at every opportunity about the dangers of chronic diseases and high-risk health behaviors (Kaplan, Haas & Warsh, 2016). By having the physician spend time discussing chronic diseases with their patients, there is a much better chance that the patient will take these diseases seriously and adhere to treatment plans. This assertion is supported by studies that have shown that talking time improves patient expectations concerning the outcomes of their care management and can positively influence patient health outcomes (Ofri, 2017). If we are serious about the achievement of personalized healthcare, our delivery system must focus on the patient (Taylor, 2016). The patient needs his or her physician to become an advisor concerning good health behaviors. This is not the case in our fee-for-service system of healthcare delivery, where a patient usually receives only a few minutes of focused attention from the average physician. This is very unfortunate, because the physician still has tremendous influence over the health practices of his or her patients, and can impact on whether they continue to practice high-risk health behaviors. Awareness of this influence can, at times, be taken for granted.

According to Sullivan & Zutavern (2017), a potential solution to this perplexing problem may have become available from a professor and public health expert from university of Michigan by the name of Victor Strecher. His new company named JOOL has been focused on improving the health of our nation. JOOL has created a platform designed to better manage population health. When you enroll in the service, you download an application that allows you to receive daily guidance in a methodology that is designed to improve your life.

Instead of criticizing individuals for practicing high-risk health behaviors and filling out health assessments, JOOL, which has a first week retention rate of greater than 60%, focuses on helping individuals add purpose to their life through better health. The success of this program is a reflection of asking difficult questions. These questions can then be answered for each individual participant using the “Aristotle Insight Engine.” This algorithm-based product produces thirty second tips that are designed to improve purpose along with individual willpower, which are both important for improved health.

Sullivan & Zutavern (2017) point out that the market for prevention and personalized health is finally becoming profitable, and is now a \$250 billion-dollar industry growing at over fifteen percent per year. It seems obvious that most people would like to remain well and live a long healthy life free of chronic diseases and their complications. It is also becoming very evident that the entire healthcare delivery system in our country is ripe for disruptive innovation. Another indication that innovation has entered the field of preventive healthcare can be found in the

recent updates added to the Salesforce Health cloud that is focusing on improving ways to engage with patients outside the doctor's office. These kinds of communications are turning out to be every bit as important as medical procedures in helping patients to avoid chronic diseases and complications.

In fact, CNBC (2017) reported that Apple is working on a new application for the iPhone designed to become a "one stop shopping center for all of your medical information". This new application for your phone may allow storing of medical information along with health education information and even a way to communicate with physicians for additional advice.

The availability of digital disease prevention information supplemented by physician advice may very well be the way to reduce and eventually eliminate high-risk health behaviors for many Americans. Once we open up to technology innovations, there is no limit to our possible successes with the abatement of the chronic disease epidemic. Rosenthal (2017) argues that tremendous medical benefits could be gained from the use of new technology if it were used to actually improve health rather than just bureaucratic record keeping.

Emanuel (2017) argues that two changes are required to get our healthcare system to focus on keeping our population healthy. They require paying providers for delivering higher-value care, and better reporting of physician and hospital quality. To make health education programs a significant part of the way healthcare is delivered by physicians in our country, there needs to be a change in the current incentive model. Incentives represent a force that has the ability to encourage a person or an organization to take one action over another (Brantes & Conte, 2013). The current fee-for-service payment system incentivizes healthcare providers to offer more services to patients while spending less time with each patient, and was never designed to promote the prevention of chronic disease and control the long-term expense of complications. There is absolutely no financial incentive for a physician to spend time communicating with patients or providing them with knowledge designed to improve overall health. Many physicians want to do the right thing for their patients, which would be less testing and more education, but the incentives in place reward volume and not quality health outcomes. Furthermore, most health education interventions only result in significant returns many years after they have occurred thus minimizing their perceived value. Unfortunately, we tend to believe that diagnostic tests and interventional procedures have greater value than having a discussion concerning healthy behaviors with a patient.

It has become evident that our current method of fee-for-service to pay physicians for the delivery of healthcare services is an inappropriate model to prevent disease and complications from occurring, and has failed to improve health outcomes. Physicians have been forced to see more patients in less time daily. They no longer have time to listen to patients' health questions, and are unable to spend time educating their patients about the dangers of high-risk health behaviors that may result in the development of chronic diseases and their complications. This failure is also evident in the fact that health costs are continually rising, while the quality of care delivery has diminished.

While Medicare is aggressively shifting from a volume based fee-for-service reimbursement model to a value based quality model, a growing number of health policy experts believe we need to develop similar physician incentive models to change the behavior of our healthcare market. This is where physicians can make a great contribution to future health policy initiatives throughout the United States. Physicians can assume a leadership role in lobbying the need to

play a much larger role in offering preventive health education to their patients, and need to be incentivized for achieving improved health outcomes.

The Chronic Disease Cassandra Event

There is a new book available that helps us sort out the potential ramifications of ignoring the chronic disease crisis. It is titled “Warnings: Finding Cassandras to Stop Catastrophes” authored by Richard A. Clarke and R.P. Eddy. According to Clarke & R.P. Eddy (2017), in Greek mythology, Cassandra could see future catastrophes, but was cursed by the gods to be ignored. In this new book, the authors reveal several catastrophes that were warned by numerous Cassandras but unfortunately, they were ignored. For example, consider Hurricane Katrina, pandemic disease, Madoff’s Ponzi scheme, and the formation of ISIS. We would like to offer the chronic disease epidemic as a future catastrophe if the data and the warnings are ignored. More than an adequate amount of data exists to signal the potential for catastrophe if change does not occur, and occur very soon.

The data made available through this paper is very clear that the chronic disease epidemic is growing very rapidly, will produce epidemic health complications, and will in turn increase healthcare costs while reducing the quality of life for millions of Americans. This will result in a bankrupt healthcare delivery system. The most important question that needs to be asked and answered as we end our paper, is why are we allowing this to happen?

Unfortunately, no one responsible for healthcare delivery in our country will like the answer. The only way to reduce the incidence and prevalence of chronic disease is to shift some of the money spent on healthcare from the treatment of disease, to the prevention of disease. This solution has been continually rejected by those who profit from illness, and not wellness. For example, government ignores the data and the Cassandra because health education costs money in the short-term, and produces results only in the long-term. Providers of healthcare services currently are paid for activities related to illness, and not wellness. Health insurance companies profit by administering complicated insurance plans that work with illness, and not wellness.

Discussion

This paper has attempted to convince the reader that a new model of healthcare delivery is mandatory in order to be successful in our goal of reducing costs while improving the quality of healthcare for our population. The rationale for this change is found in the epidemic of chronic diseases currently facing our nation. The prevention and management of chronic diseases requires a different business model of care delivery in order to be successful (Christensen, Grossman, & Hwang, 2009). Christensen, Hall, Dillon, & Duncan (2016), in their book about innovation, continually question the job to be done by various products and services. If we extend this questioning to healthcare services delivery, we would probably respond by saying the job to be done by healthcare providers is to keep people healthy. It then becomes a very interesting experiment to question the job to be done by our healthcare delivery system in relation to the physician in charge of the patient’s care. It stands to reason that the answer to this very important question would entail the improved health of the patient at an affordable cost. This is clearly not the case in today’s healthcare environment. The results made available through this brief review of the literature clearly supports the potential value available through an

educational approach led by the physician designed to reduce the incidence of chronic diseases and their complications.

According to Carman et al. (2012), high engagement between an empowered patient and an involved healthcare provider allows for superb information flow along with shared decision-making responsibilities. As more information accumulates about the importance of patient engagement, it becomes clearer that this engagement can result in the improved quality of healthcare services, improved population health, and greater efficiency in health services delivery. Physicians play a very important role in the process of delivery healthcare by motivating patients to make earlier, more appropriate decisions regarding their health (Kaplan et al., 2016). Physician-patient communication is a less expensive and more successful answer to improving patient compliance in the practice of good health behaviors for the long-term. The value of trust in the physician-patient relationship should be highlighted, and not taken for granted.

If we also include some of the disruptive healthcare technology now available for patients trying to remain healthy, we have a great opportunity to meet the challenges present in the chronic disease epidemic. Communication and technology have a great potential for bringing up to date preventive knowledge to all patients. It is time for those of us working in healthcare to admit our past failures, and move on in our quest to improve the health of our population. Our healthcare delivery system needs to move away from a sickness model to a wellness model of healthcare.

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Background Postoperative pulmonary complications (PPC) are the most frequently observed complications following lung resection, of which pneumonia and atelectasis are the most common. PPCs have a significant clinical and economic impact associated with increased observed number of deaths, morbidity, length of stay and associated cost. The aim of this study was to assess the incidence and impact of PPCs and to identify potentially modifiable independent risk factors. Added attention to postoperative strategies shown to improve outcomes is warranted in high-risk groups. Does physiotherapy reduce the incidence of postoperative complications in patients following pulmonary resection via thoracotomy? A protocol for a randomised controlled trial. Chronic disease management has emerged as a new strategy for chronic disease care, but a consistent definition has not been utilized. Our objective is to present an operational definition of chronic disease management. Based on prior systematic reviews of chronic disease management programs, we propose a definition encompassing the main constructs noted in our reviews. We define chronic disease management in the clinical setting as an organized, proactive, multi-component, patient-centered approach to healthcare delivery that involves all members of a defined population who have a specific dis...