Health Care in the United States: Current Perspectives, Future Directions

J. Anthony Gomes*

Professor of Medicine, Director, Clinical Electrophysiology Consultative Service and Senior Consultant, The Mount Sinai Medical Center & Icahn School of Medicine, The Zena and Michael A. Wiener, Cardiovascular Institute and The Leona M. and Harry B. Helmsley Charitable Trust Center for Cardiac Electrophysiology, Box 1030, 1 Gustave L. Levy Place, New York, New York 10029, USA

Abstract: Health care in the United States (US) is undergoing major changes. Although high end health care is probably the best in the world, primary care has been badly lacking, not to mention that in 2010, there were approximately 50 million Americans without health insurance. In 2014, The Commonwealth Fund ranked the US last among the developed countries including Canada and Australia; however we were the first in expenditure. Medicare and Health accounts for 27% of the Federal Budget, and the annual US Health care spending by households, businesses, and the government is due to reach over 3 trillion dollars in 2015. This article reviews and suggests cost containment strategies, the pros and cons of consolidation of health care, and the future of computerized medicine.

Keywords: Cost containment, Health care, Computrization.

High end health care in the United States is probably the best in the world, and should remain so; however, primary care has been badly lacking. The World Health Organization ranked our health care system 37 among 191 countries. This rating which came out in 2006 has been the subject of much debate. Some have argued that the international comparison is an exercise in futility because of the uniqueness of the United States. However, one cannot ignore the fact that in 2006 we were number one in health care spending per capita and still ranked 39th for infant mortality, 42nd for adult male mortality, 43rd for adult female mortality and 36th for life expectancy. In their latest report (2014) The Commonwealth Fund ranked the US last among the developed countries of Europe including Canada and Australia, whereas we were first in expenditure.

In 2010 there were approximately 50 million Americans with no health insurance, something unheard of in other western democracies. Many of these individuals will not seek health care until the situation is dire and then go to an emergency room. This approach also contributes to cost and poor health care services. Furthermore, adults and children with preconditions were rejected by insurance companies. Those with chronic and acute costly conditions such as cancer were readily dropped by insurance companies when they hit the limit in dollar amounts. These individuals ran the risk of losing not only heath care, but also their life savings and their home. Fortunately, the rather controversial Affordable Health Care Act, popularly known as Obamacare, was upheld by the Supreme Court, and is on the verge of remedying many of these inadequacies in our health care system. Insurance companies will no longer be able to drop patients with pre-conditions, and around 30 million of the non-insured are about to be insured. Thus, we maybe on our way to universal healthcare.

Although health care spending growth has decreased recently to about 3.7 %, the annual US Health care spending by households, businesses, and the government is due to reach over 3 trillion dollars in 2015. Medicare and Health accounts for 27% of the Federal Budget, and is expected to go up in the years to come, thus, federal spending on health care has been the source of much debate.

COST CONTAINMENT

Cost containment in health care is probably one of the most difficult issues we face. This is related to several factors: 1) aging population; 2) sick patients, young or old are living longer with their ailments; 3) scientific development of new drugs, techniques and advancing technology; 4) litigation, and absence of adequate tort reform; 5) continuing increases in insurance premiums; 6) The culture of Overkill: doing more, wanting more at a rapid pace with questionable indications. All these issues contribute to increase cost of medicine.

*Address correspondence to this author at the Professor of Medicine, Director, Clinical Electrophysiology Consultative Service and Senior Consultant, The Mount Sinai Medical Center & Icahn School of Medicine, The Zena and Michael A. Wiener, Cardiovascular Institute and The Leona M. and Harry B. Helmsley Charitable Trust Center for Cardiac Electrophysiology, Box 1030, 1 Gustave L. Levy Place, New York, New York 10029, USA; Tel: 212-2417272; Fax: 212-2419701; E-mail: Anthony.Gomes@mountsinai.org

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Any discussion regarding the cost of medicine needs to take into account several factors: 1) ours is a private system of medicine wherein patients are insured by health maintenance organizations (HMO's) that have overhead expenses that range from 18%-30%, and are for- profit entities traded on Wall Street. In contrast, the overhead cost for Medicare, which is government run is around 2%. The Canadian national health insurance program had overhead costs of 1.3%, whereas its private insurers had overhead costs of 13.2%. If our health care system is altered to reflect these statistics there could be substantial savings. Needless to say, a one-payer system rather than the multi-payer system would cut substantial overhead costs.

2) Approximately 50% of cost of medicine is spent in the last year of a patient's life. There could be substantial savings in the latter if we make certain adjustments without limiting care. Here the most important question that needs to be answered: whether hospitalization and life prolonging interventions results in longer survival and significant improvement in quality of life. This information needs to be conveyed to the patient, the patient's closest relative or health proxy in a forthright and honest manner. Not uncommonly, elderly patients in their 80 and 90's with multiple medical problems who do not stand a chance of long–term survival occupy intensive care unit beds with a host of consultants for each failing organ, at the cost of unnecessary suffering to the patient who often does not understand what is happening. This approach also carries great costs to society. A hospital bed or an ICU setting is not the best place for a terminally ill patient.

3) Overkill: There is no question that we do too many tests and procedures many of which are redundant and some are not even indicated. It is estimated that in the United States there are approximately seventeen million nuclear medicine scans, and a hundred million CT and MRI scans performed annually. CT scan growth was 8% per year, MRI by 10%, ultrasound by 4%, and PET scans by 57%. Attempts at reduction of tests and procedures had been variously policed by insurance companies. They would refuse to pay for non-indicated or questionably indicated tests, procedures and treatment. However, often, they went too far, and this approach resulted in a backlash. Undoubtedly, "what is indicated and what is not" is best left to guidelines established by medical experts in health care societies like the American Heart Association, Heart Rhythm Society etc.

There are approximately 1 million stents inserted in patients with coronary artery disease. Many of these patients have repeated interventions. It has been shown that as many as 12% of drug coated stents are unnecessary, and an additional 38% were of uncertain benefit. A recent trial (COURAGE), [1] questioned the effectiveness of stents relative to drug therapy in stable coronary artery disease. Dr. Kāul, of Cedars Sinai Hospital, estimated savings of 5 billion dollars out of a total of 15 billion if the findings of COURAGE were implemented.

Although, there are guidelines [2] established by the Heart Rhythm Society and the American Heart Association, the American College of Cardiology in association with the European Heart Association of who should get an implantable defibrillator based on prospective randomized large scale studies, the risk for sudden death needs to be fine-tuned so that only patients at highest risk and with the greatest benefit should receive defibrillators. Sudden Cardiac Death is a complex entity, difficult to define appropriately; surrogates such as total mortality, cardiac mortality although in use, are problematic. A single non-invasive risk marker such as heart function (LVEF), although it captures a large pool of patients, its sole use for risk stratification is debatable. LVEF varies considerably depending on: heart rate changes, loading changes, drugs, the tests utilized to access heart function, as well as the subjectivity and objectivity of the reader. Often varying numbers in individual patients at different times, and marked variability in the methodology are seen. Recently, I encountered a young patient in his early 20's who suffers from a cardiomyopathy. His heart function was 30% by echo and therefore he qualified for a defibrillator, but the MRI showed that it is 42%, and therefore, based on the MRI he did not qualify for one. MRI is now the gold standard for measuring heart function, but most past studies, and in clinical practice, the echocardiogram is used to measure heart function. It is possible that a substantial number of patients who receive defibrillators would not qualify for one if they had an MRI; however, MRI is substantially more expensive than an echocardiogram. It is likely that staged application [3] of Risk Stratification using Major/Minor Criteria, might be superior to LVEF alone. However, this idea needs to be tested prospectively. Also, risk stratification should be a continuous process accessed at least once a year for primary prevention purposes, since coronary artery disease is an evolving condition and what is true today, need not hold static for another two or three years.

4) Not uncommonly, physicians order a multitude of tests for fear of litigation. Undoubtedly, patients need to be protected from malpractice by medical personnel, however, in our litigation minded society, the unnecessary lawsuits add not only to insurance premiums but also to the cost of medical care. For example, a host of TV adds by law firms' advice patients who developed bleeding issues after using the newly approved blood thinners to call their offices. It is a well-known fact that the use of blood thinners can result in bleeding. These drugs are usually used in patients with atrial fibrillation (AF) that carries a considerable risk of a debilitating stroke. Indeed, there is a widely used American scoring system (CHADS2) and more recently a European scoring system (CHA2DS2-VACS) that has been adopted by most medical societies in the US that can determine the risk of stroke [4, 5]. There are national and international guidelines for the use of blood thinners in such patients. However, bleeding is a well-known complication of these drugs and therefore the use of these drugs when appropriate, constitutes neither malpractice nor does the drug constitute a bad drug. There is no question that adequate tort reform would go a long way to remedy the pervasive litigation culture in our country.

5) Wall Street Mentality to Health care: Undoubtedly, financial gain does play a role in health care costs, at least in some instances. No matter how altruistic one may consider the doctoring profession, one cannot escape from the fact that it is after all a business as well. The use of revenue related units (RVU's) to measure productivity of doctors and to remunerate accordingly has brought about a "Wall Street" mentality to the practice of medicine. Such measures of productivity did not exist in the 1980's and 1990's. Additionally, advertising by medical personnel and even drug companies was unheard of in the distant past. Undoubtedly, these attitudes carry the risk of increasing health care costs since physicians may be tempted to increase their productivity for remuneration purposes or to keep their jobs. On the other hand patients may request drugs and procedures that are heavily advertised.

Consolidation of Health Care

The number of independent private practitioners in the country has been dwindling rapidly to about 39% of the medical force as compared to around 57% in 2000. It is becoming common practice for hospitals to buy private practices. However, more often than not, the contracts favor the health maintenance organization and are based on productivity and performance. Many health care policy experts have praised this shift from independent practitioners, and consolidation of health care as a way of making the delivery of health care more uniform, less fragmented and less costly. Besides, large organizations are better capable of negotiating fees from insurance careers, and drug and device companies. Indeed, consolidation seems to be favored by some aspects of the Health Care law. Thus, at first glance this consolidation seems beneficial since patients could get health care by a group of doctors in a multi-specialty setting under the tutelage of a primary-care doctor who then calls in specialists as needed. If the primary care doctor serves as the Captain of the Team and coordinates health care, it will be a worthwhile effort to stream line health care. The use of computerized records should facilitate care and avoid wastage and repetition. Unfortunately, as the system gets larger and larger it stifles competition, there is pressure on the doctors to admit more patients to the hospital, and discharge them as fast as possible, and more often than not charges for tests in a hospital setting are higher (2-3 times more), than in office stetting. This is because hospitals have larger overhead costs as compared to private offices.

It is simply a fallacy that the increasing cost of medicine is attributable to physician charges. On the contrary: physician charges account for only 10% of the cost, whereas the bulk of the cost is hospital charges and drug costs that vary substantially from one state to another and one city to another.

The novel approach of the Cleveland Clinic which uses a multidisciplinary team approach to treat diseases involving a particular organ system, say the heart or the brain, instead of having patients bounce from one specialist to another on their own, is a system worthwhile studying both in terms of cost savings and betterment of health care. For example a patient with coronary artery disease and high blood pressure and diabetes, should be seen simultaneously or sequentially not by the cardiologist alone but also by a nutritionist who can advise on a proper healthy diet beneficial in all three conditions that interact with each other. However, this is possible and attractive if reimbursement is better than what it is today for primary care. Our system has rewarded specialist and procedures and ignored primary and preventive care medicine.

The American society as a whole is against cutting health care costs by rationing medical care. However, ideas need to be explored and tested on a prospective

basis. Areas of interest include; 1) a pre-defined system for diagnosis. For example the stepwise incremental tests such as an echocardiogram, exercise test, exercise nuclear perfusion test, CAT Scan to assess coronary anatomy and calcium score, and cardiac catheterization and coronary angiography for the diagnosis of coronary artery disease should begin with the information the physician seeks and the best predictive value for the cost, and accordingly used as the first choice. Sometimes patients have as many as four of the above five tests when one or two at best would provide the information that is needed. Similarly, often a multitude of tests are used to diagnose the cause of "syncope" or fainting spells, when a good history and an EKG can point to the tests that need to be done, as well as provide a good measure of the possible diagnosis. 2) A pre-defined system of management once a diagnosis is established with assignment of X amount of dollars/per annum, to be revised every year. For example in CVD, most supraventricular arrhythmias, except for atrial fibrillation, can be cured with radiofrequency ablative therapy, which is costly to begin with but highly cost-effective with a complete cure rate of over 95% in some tachycardias such as atrio-ventricular nodal reentry. Besides, these patients don't have to remain on drugs and need only one follow-up exam after the procedure. In such patients, drug therapy, although non-invasive, and saves cost initially, is pointless as the first line approach. The same does not hold for stable coronary artery disease where drug therapy is preferred to stents as initial approach. Similarly, in patients who have severe coronary artery disease in association with diabetes with or without decreased heart function, coronary bypass surgery should be the initial approach rather than stenting. In patients with AF, the choice of drugs vs. ablation should depend on the type of fibrillation (paroxysmal vs. persistent), symptomatology, underlying heart disease, AF induced cardiomyopathy, and heart failure. One can expect a higher success rate in paroxysmal AF of around 80% in contrast to persistent where the success rate is at most 60% and more than one third of patients will need a repeat procedure. In persistent AF, only if drug treatment fails than ablation may be considered. However, since AF ablation is not devoid of risks, even in paroxysmal AF, a drug trial is preferred before resorting to ablation. The American Heart Association and American College of Cardiology in association with the Heart Rhythm Society have spelled out guidelines for the treatment of AF. Undoubtedly, sometimes the approach may need to be individualized, but most of the time such algorithms and guidelines are workable and should be assessed prospectively.

In the hospital setting, where specialists and super specialist abound there is an inherent risk that patients will be subjected more often towards an invasive approach. The invasive approach is costlier; however, if highly effective and a one-time affair it will save dollars. On the other hand, if the invasive approach needs repeated intervention, it will be costlier in the long run. The availability of high end and complex technology and a plethora of specialists in most American hospitals even in the suburbs, unlike in Europe and elsewhere—make the availability of complex high technology procedures such as stenting, coronary bypass, ablative therapy, spinal surgery, etc. readily available with no waiting time, and therefore they are bound to be more utilized, and since they are advertised, are likely to be even requested by the technology enthralled patient. 3) The Chain and Menu Idea: In a recent article in the New Yorker [6], Dr. Atul Gawande gives the example of the Cheesecake Factory. He writes: "In medicine, too, we are trying to deliver a range of services to millions of people at a reasonable cost and with a consistent level of quality. Unlike the Cheesecake Factory, we haven't figured out how. Our costs are soaring, the service is typically mediocre, and the quality is unreliable. Every clinician has his or her own way of doing things, and the rates of failure and complication (not to mention the costs) for a given service routinely vary by a factor of two or three, even within the same hospital." In this article, Dr. Gawande seems to favor chains claiming that it will make medical care better and more efficient. He also seems to favor recipes, something akin to what I described previously. All this sounds great, but practically speaking is the allegory of a restaurant chain applicable to heath care? Can health care be constructed as chains of restaurants or assembly lines? After all, raw or processed food or cooked food is lifeless organic matter. Where is the human element in all this? Yes, indeed, we have protocols for grades of different cancers and "recipes," can be readily equated to protocols, but it is noteworthy to remember that the same recipe may not fit all, and some may respond with side effects and even death from some forms of treatment including drugs, devices, surgery and anesthesia. Moreover, Dr. Gawande himself goes on to question many of his propositions. He writes: "Yet it seems strange to pin our hopes on chains. We have no guarantee that Big Medicine will serve the social good. Whatever the industry, an increase in size and control

creates the conditions for monopoly, which could do the opposite of what we want: suppress innovation and drive up costs over time. In the past, certainly, health-care systems that pursued size and market power were better at raising prices than at lowering them." 4) Some large corporations have launched programs for their employees undergoing costly procedures such as spine, heart, and transplant by aligning with chosen "centers of excellence." The approach provides good surgical results, low complication rates, and dollar savings since the corporations receive a prearranged fixed package price.

Undoubtedly we need changes in our health care system at several levels: preventive care, diagnostic cost effective methods, and adequate treatment approaches that have good and established outcomes, and are cost effective. Only prospective studies will tell us whether the changes are good not only in cutting health care costs, but also for better delivery of health care.

COMPUTERIZATION OF MEDICINE

Computerized charts are already a fact of life. They are expected to save money, time, repetition, and make the delivery of health care easy relative to the chart system of old; besides, patients can have access to their computerized records. The American Recovery and Reinvestment Act (ARRA) of 2009, signed into law in February 2009, included new funding for Health Information Technology (HIT). A substantial portion of monies amounting to $17 billion for the funding for HIT will go for support of incentives for physicians who have adopted Electronic Health Records (EHRs). Doctors who treat outpatient Medicare patients and demonstrate that they are using a "certified" EHR in an appropriate way are eligible to earn incentive payments totaling up to $44,000 (per physician) over a 5 year period. On the other hand, beginning in January 1, 2015, Medicare reimbursement rates will be reduced 1% for physicians who do not meet this requirement. Similarly, doctors who treat Medicaid patients and demonstrate that they are using an EHR will be eligible for incentive payments totaling up to $63,750 (per physician) over 6 years. Undoubtedly, doctors with small practices, and older physicians with a lack of computerized skills will be at a considerable disadvantage.

Computers will radically change the diagnosis and the management of diseases in the future with less and less physician involment [7]. After I completed my medical residency training in 1973, I felt confident that I had mastered the knowledge of Medicine; this was also a forgone conclusion after I completed my Fellowship training in Cardiovascular Medicine. However, in today's day and age, with significant advancements in a host of medical fields from cancer to cardiology to infectious diseases etc., the recognition of new diseases, and a multitude of tests, new drugs, protocols, devices and procedures, the accumulated data is almost impossible to master. On the other hand, it is possible for a computer to store and analyze massive amounts of data. Thus, in the future, computers will be able to make a diagnosis and even provide the best treatment options. Under these circumstances, doctors will be used to confirm and to agree or disagree and provide treatment.

For some time now patients with pacemakers and defibrillators have home monitoring devices that transmit pacemaker and defibrillator readings *via* telephone transmission to a station that is mostly manned by a technician and a nurse practitioner. This avoids visits to a doctor's office. It is unnecessary for these patients to see a doctor for follow-up at least for a six month period. If any problem is detected both the patient and the doctor are alerted immediately. This approach for pacemaker and defibrillator follow-up saves time, effort and health care dollars.

The future of medicine is about to see a revolution in the use and application of smartphones. Already, computerization has radically changed our everyday living with messaging, texting, banking, and shopping. The development of new tools such as attachments that can make a diagnosis, track a heart rhythm abnormality, and even *apps* that can monitor mental health will soon be available. Already, smartphones can be utilized to take heart rate, blood pressure reading, and ECG (approved by the FDA) *via* ECG *apps* which are capable of analyses, graphing, data display, storage and sharing. This simply means that the patient is capable through his/her smartphone to send an ECG recording with a diagnosis to his/her physician and seek advice.

Even more fascinating is the development of wearable wireless sensors, such as wrist-watch sensors, capable of continues monitoring of vital signs, necklaces to monitor heart function and fluid in the lungs, contact lenses that can measure eye pressure for glaucoma patients, head bands to capture brain activity, sensors that can measure blood-oxygen, blood glucose levels, etc. Furthermore, the development of

nanosensors to be embedded into the blood stream could be used to monitor, and serve as surveillance tools for the appearance of a host of diseases from cancer to autoimmune illnesses. All of these future developments suggest that we are at the threshold of entering a brave new world in which we will have the option to take control of our body and its function.

However, all these novel developments do raise more questions than they provide answers. These include: 1) The accuracy of these tools need prospective testing and comparative analysis before widespread use. For example, many years ago, a device company developed a sensor to assess the presence of fluid in the lungs in patients with defibrillators. It sounded very promising initially. However, it turned out to be non-specific and is currently not used in the decision making process. 2) Issues of personal privacy and risk of hacking have not been addressed. 3) How will all of this amassed data going to effect the psyche of an individual? Do we want to monitor ourselves at all times to be reminded of our illness, something that is currently done when one is acutely sick in coronary care units and step-down units? 4) How will the patient-doctor relationship be affected? 5: Will all of this lead to de-humanization of medicine? All these are tall questions that only time and research are capable of answering.

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