Target Areas for Health Care Cost Reductions

The Telmarc Group, White Paper No 70

Terrence P. McGarty

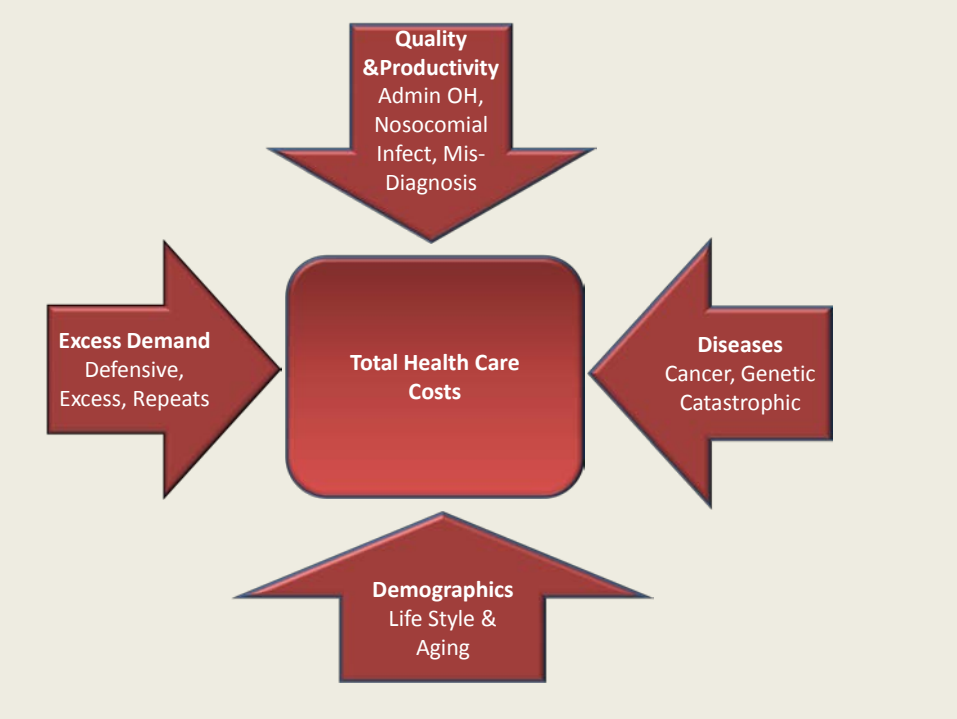
The Telmarc Group - September 2009

Contents

1 INTRODUCTION

The current argument regarding health care focuses on cost reductions and cost control. The major question is just where are the cost controllable elements. We have provided data on both preventable and controllable diseases and have estimated the costs control elements which are in each. We have also argued that a good deal of cost control is achieve via demand adjustment. In this Report we details a list of cost control elements, detail the amounts and articulate the strategies.

Health Care costs are driven by many factors. We look at four major areas, with some overlap. The areas are depicted in the figure below.



These areas are specifically:

Quality and Productivity: The area of quality and productivity is one which would be the focus of any rational business. It addresses the question on how do we do things better at a lower costs and increase the quality of the product or service delivered. Health care has massive costs associated with doing things wrong or poorly. Thus the Administrative overhead in all of health care would not be acceptable in any other industry. The number of cases of misdiagnosis, medical errors, nosocomial infections and the like must also be reduced by being monitored and managed to as close to zero as one can achieve. Yet there are exogenous factors which impede this process ranging from Government regulation to the tort system.

Diseases: This is the exogenous driver of just getting sick from factors beyond your controls such as many cancers, infectious diseases and genetic diseases. The issue here is a two-fold issue. First can we screen people in such a manner as to determine if they genetically are either susceptible or will actually come down with the disease and then can we do something to prevent or mitigate the disease? Second, can we do something to prevent the process totally?

Excess Demand: This is a more limited use of the term demand, it is the demand resulting from such things as defensive medicine, retesting due to lack of medical information transfer and the like, and outright fraudulent excess procedures.

Demographics and Lifestyle: This area is the set of costs laid upon the medical system from two major forces, an aging population and the concomitant commitment to honor the agreement which they paid for to supply health care and secondly the "life style" disease which is the euphemism for disease due directly to individually abuse of their bodies from such causes as smoking, obesity, and even drug abuses and sexually transmitted diseases. On the one hand the medical care for the aging is a contractual commitment via Medicare on the other hand the life style euphemism is a deliberate choice by an individual to incur costs on the rest of society.

In this report we will look at all of these dimensions and focus on a collection or subset which we believe can be controllable via Government policy or by the behavior of the medical profession.

1.1 Current Perceptions

Many authors have addressed the various cost elements in health care and what should be done to reduce the costs while maintaining the quality. Bodenheimer in a four part set of papers details the research to 2005 as to the various elements of cost and provides an analysis of multiple perspectives. It is useful to restate some of these perspectives to frame what we have analyzed. From Bodenheimer we have[1]:

"PERSPECTIVE 1: COSTS ARE NOT A SERIOUS PROBLEM

…When costs rise and governments reduce reimbursements, institutions serving as the safety net for the uninsured may close their doors... These effects of rising costs demonstrate that increased cost often means decreased access. In summary, while rising costs may not create major problems for the economy as a whole, they do negatively affect employers, employees, governments, and patients….

[1] From the four Bodenheimer papers.

PERSPECTIVE 2: HIGH COSTS ARE DUE TO FACTORS EXTERNAL TO THE HEALTH CARE SYSTEM

… rising health care costs are not strongly associated with the aging population and are therefore not an inevitable consequence of this demographic reality…

This conclusion in the paper is a critical one we shall address herein. The costs of Medicare for those Medicare subscribers who come to the system at 65 are first already paid for and second of a limited duration. In addition Medicare pays for a limited amount.

PERSPECTIVE 3: THE ABSENCE OF A FREE MARKET CREATES HIGH AND RISING COSTS

… competition can reduce health care costs under favorable conditions. These conditions existed for a brief period in the 1990s. With many competing health insurance plans, employers were able to reduce insurance premium growth; as long as there were a multiplicity of competing hospitals, health plans could control payments to hospitals. The consolidation of health plans and hospitals may have put an end to that brief competitive era…

This conclusion is a critical one as well. Large hospital systems, such as the one in Massachusetts, Partners, has formally institutionalized a massive consolidation of the tertiary, secondary and even primary hospitals in the state. It is far from being clear that the consolidation has done anything to reduce costs.

PERSPECTIVE 4: INNOVATION IS THE DRIVER OF HEALTH EXPENDITURE GROWTH

…technologic advance is a major driver of health care costs. Overall, these advances improve quality but create major increases in expenditures. A technology can be overused if it is offered to patients for whom the innovations provide no benefit.

The classic example is the MRI. It is used more extensively than one would like. There are many reports regarding the excess and exploding use of imaging technologies as in the papers by Mitka, that of Iglehart, and others.

PERSPECTIVE 5: HIGH COSTS RESULT IN PART FROM EXCESSIVE ADMINISTRATIVE EXPENDITURES

The implementation of Medicare expenditure targets has perpetuated inequities in payment between physicians in different specialties and geographic regions … Moreover, physician expenditure targets have little impact on overall national health expenditures because they apply only to Medicare rather than to all physician care and they do not affect hospital, pharmaceutical, and other services... These limitations notwithstanding, the ability of the public Medicare program to control costs more successfully than the

private insurance sector is demonstrated by the lower cumulative rate of growth of Medicare spending between 1970 and 2000 …Effective global budgets require a single payer of health services or close cooperation among multiple payers, conditions that give payers strong bargaining power vis-à-vis providers. Advantages of globally budgeted systems are that they keep administrative costs low, do not require micromanagement by payers, and may delegate to providers the authority to determine how the budget will be allocated. Disadvantages are that the budget may be too small to allow high-quality accessible care, decisions on which hospitals or physician groupings should receive how much money are complex, and budgets can be politicized by special interests ... International comparisons demonstrate that new technologies are introduced more slowly in globally budgeted systems but often catch up over time ….

This is a very important observation. The issue of administrative costs, within the health care provider and within the payment systems, are explosive.

PERSPECTIVE 7: PROVIDER MARKET POWER EXPLAINS HIGH AND RISING COSTS

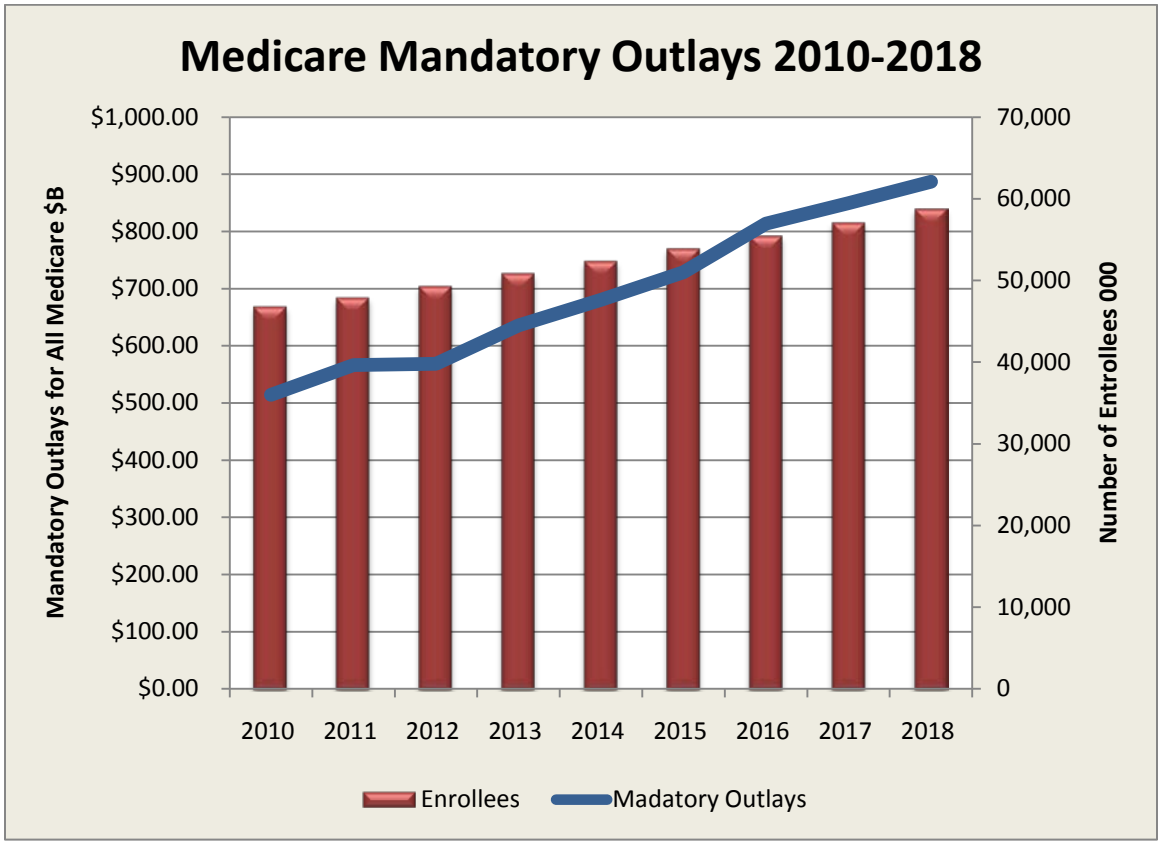
The strong historical influence of provider interests on the structure of public and private health insurance in the United States created lucrative reimbursement formulas for hospitals and physicians. As a result, hospitals and physicians in the United States were able to obtain considerably higher prices for their services than did providers of similar services in other nations … Moreover, even though the quantities of physician visits and hospital days per capita have been lower in the United States than the average developed nation…the use of expensive technologies— which is also influenced by provider market power—is higher in the United States … Thus, according to this perspective on health care costs, the gap between health expenditures in the United States and those in other nations is explained by the higher prices of all services and the greater quantities of high-technology services in the United States. Measures to control both the prices and quantities of services have been only partially and temporarily effective…"

Bodenheimer presents a clear analysis of what is true and false in many of the key perspectives. He does provide a view of the cost details but our objective herein is to dive deeper and see what specific areas have more immediate merit. At two extremes we see that on the one hand obesity is a major driver of health care costs and that obesity is a "life style" driven state and can be controlled as was smoking. On the other hand the issue of defensive medicine due to the existing tort systems in the various States being a driver stands on very weak grounds. We look at these and many other areas and provide specific recommendations.

1.2 The Medicare Distraction

Before moving on to these specific cost control elements we must address as straw man which has been set loose to be kicked about by many with little if any facts at their command. This straw man is Medicare and its alleged costs and instability. The current President has recently argued that the main problem in cost control in health care is Medicare and that the proposed legislation before Congress would cut $500 billion from Medicare expenditures and that this would have a significant impact on health care cost control. (One assumes that such a cut is over time.) We strongly disagree based upon a plethora of facts and we further will argue that the focus on Medicare is a distraction which takes the attention away from problems which are exploding on the tail ends of the cost curves.

To examine one aspect of the cost issue with regards to Medicare we first examine some general characteristics of Medicare. The following charts depicts the Government's projection for Medicare over the period considered by the current Legislation in Congress:



Now all one has to do is look at the Mandatory Outlays and see that they start at about $500 Billion in 2010 and grow the growing population to about $900 B in 2018. By

cutting $500 B from this total, one assumes, one assumes this is a cut on about 7%. If that is correct then the result is not drastic.

The problem with healthcare is not Medicare, however, it is life style disease which are exploding in the younger population which demand chronic and costly care. We detail these results herein.

The commentators on these efforts, both left and right, appear to have no understanding of the facts. A recent writing by Martin Feldstein in the Wall Street Journal states[2]:

"One reason the Obama administration is prepared to use rationing to limit health care is to rein in the government's exploding health-care budget. Government now pays for nearly half of all health care in the U.S., primarily through the Medicare and Medicaid programs. The White House predicts that the aging of the population and the current trend in health-care spending per beneficiary would cause government outlays for Medicare and Medicaid to rise to 15% of GDP by 2040 from 6% now."

The fact is that in 2009 the total health care exceeds $2.5 Trillion and the Medicare costs are $450 B, and adding Medicaid, another $200B, that is hardly half. It is $650B of $2.5 T which in my calculation is 25%! It is the false writings of people like this which give rise also to bad judgment.

Thus there is a morass of factual errors abounding in the debate on health care and further, as we have argued before, there is a mindset that looks at the past and projects it forward. It fails to look at what is changing in the delivery of health care.

In this Report we focus on what can be changed today as well as what will be changeable using the currently developing technology and techniques. The objective is to show in one simple Table what the impact of a few simple steps can have on the delivery of quality care.

1.3 An Example Of The Current Mindset

The opinions which are running rampant as regards to cost control in health care are now running to the extremes. We briefly look at a recent article which details several of these extreme proposals. George D. Lundberg, MD, is former Editor in Chief of Medscape, eMedicine, and the Journal of the American Medical Association and is a highly respected physician[3]. In a recent article he makes several proposals to reduce

[2] See: http://online.wsj.com/article/SB10001424052970204683204574358233780260914.html

[3] See http://www.thehealthcareblog.com/the_health_care_blog/2009/08/how-to-rein-in-medical-costs-right-now.html

health care costs. These proposals give an example of how extreme the arguments have become.

Lundberg suggests:

"*1. Intensive medical therapy should be substituted for coronary artery bypass grafting (currently around 500,000 procedures annually) for many patients with established coronary artery disease, saving many billions of dollars annually....2. The same for invasive angioplasty and stenting (currently around 1,000,000 procedures per year) saving tens of billions of dollars annually*."

Yes it would save billions but at what human cost. He is suggesting pharmaceutical treatment rather than surgical. However with 90% blockage or more there is no evidence that drugs will do anything. This is strange since the body of medical evidence is overwhelming that surgery and stents do have beneficial results. The question is the classic $/QALY result but even there we have a positive result.

He continues:

"3. Most non-indicated PSA screening for prostate cancer should be stopped. Radical surgery as the usual treatment for most prostate cancers should cease since it causes more harm than good. Billions saved here....4. Screening mammography in women under 50 who have no clinical indication should be stopped and for those over 50 sharply curtailed, since it now seems to lead to at least as much harm as good. More billions saved."

The evidence on breast cancer is overwhelming as well. One need just search either JAMA or NEJM and you need go no deeper into the specialty journals. There is the prostate cancer debate which really is a debate on the genetic makeup of the specific type of prostate cancer. Watchful waiting works on those indolent forms but regrettably we do not have adequate genetic markers readily available. In fact PSA screening is a great way to accumulate the data. He continues:

"*5. CAT scans and MRIs are impressive art forms and can be useful clinically. However, their use is unnecessary much of the time to guide correct therapeutic decisions. Such expensive diagnostic tests should not be paid for on a case by case basis but grouped along with other diagnostic tests, by some capitated or packaged method that is use-neutral. More billions saved...6. We must stop paying huge sums to clinical oncologists and their institutions for administering chemotherapeutic false hope, along with real suffering from adverse effects, to patients with widespread metastatic cancer. More billions saved*."

Yes on the imaging he may have a point. In the old days the physician could determine what ligament was at fault by just examining the motion of the limb and at the other

extreme one could do an ultra sound on an ovary before the MRI and CAT of the abdomen. However to distinguish between a block or bleed stroke there is no other way, you need a CAT. As to chemotherapy, take taxol and breast cancer, it does work, take the childhood leukemias, they are cured now whereas thirty years ago the child died. So I am amazed as to this out of hand dismissal of chemotherapy. Yes it is problematic with many cancers, such as melanoma, but there is clinical evidence of where it works and where it does not.

Finally he says:

"*7. Death, which comes to us all, should be as dignified and free from pain and suffering as possible. We should stop paying physicians and institutions to prolong dying with false hope, bravado, and intensive therapy which only adds to their profit margin. Such behavior is almost unthinkable and yet is commonplace. More billions saved.*"

One could not agree more. The classic phrase spoken by a dying patient is something like, "It's time to go now..." and the patient all too often knows that the end is near. Managing pain, managing and respecting dignity, they are all critical. The past blog on advance care planning speaks to that issue. Yet as we have stated there the issue is all too often a cultural and family issue, less the patient qua patient.

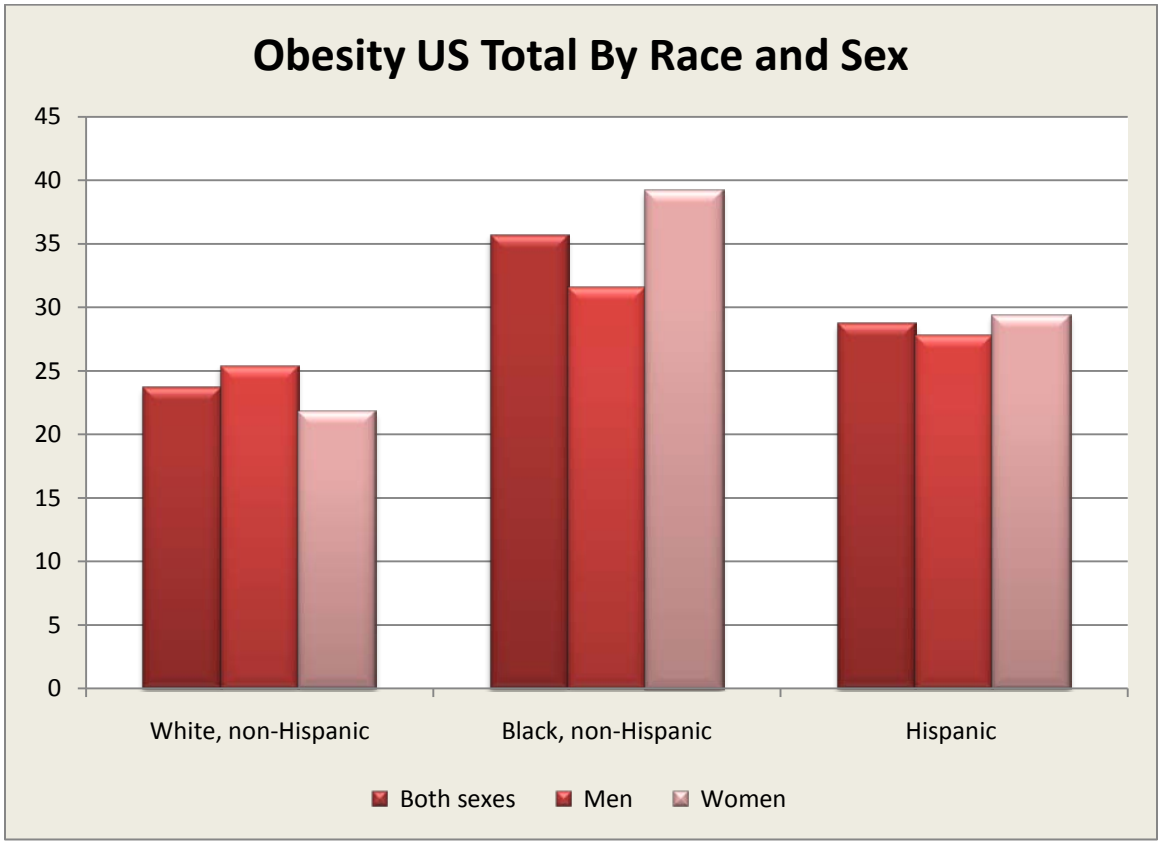
Dr. Lundberg is so respected a physician and is such a figure of prominence in the Medical profession that it is a question why he made these remarks. As one would typically ask, what is the basis for your statement, and also at what cost; human and financial?

1.4 The True Major Threat to Health Care Cost Explosion

The CDC has recently released data on obesity in the US[4]. This is obesity and not just overweight. Obesity is a BMI in excess of 30, you are obese, you most likely will come down with Type 2 Diabetes, then kidney failure, nephropathy, eye problems, heart problems, you costs hundreds of billions[5]. The data for the US is shown below by race:

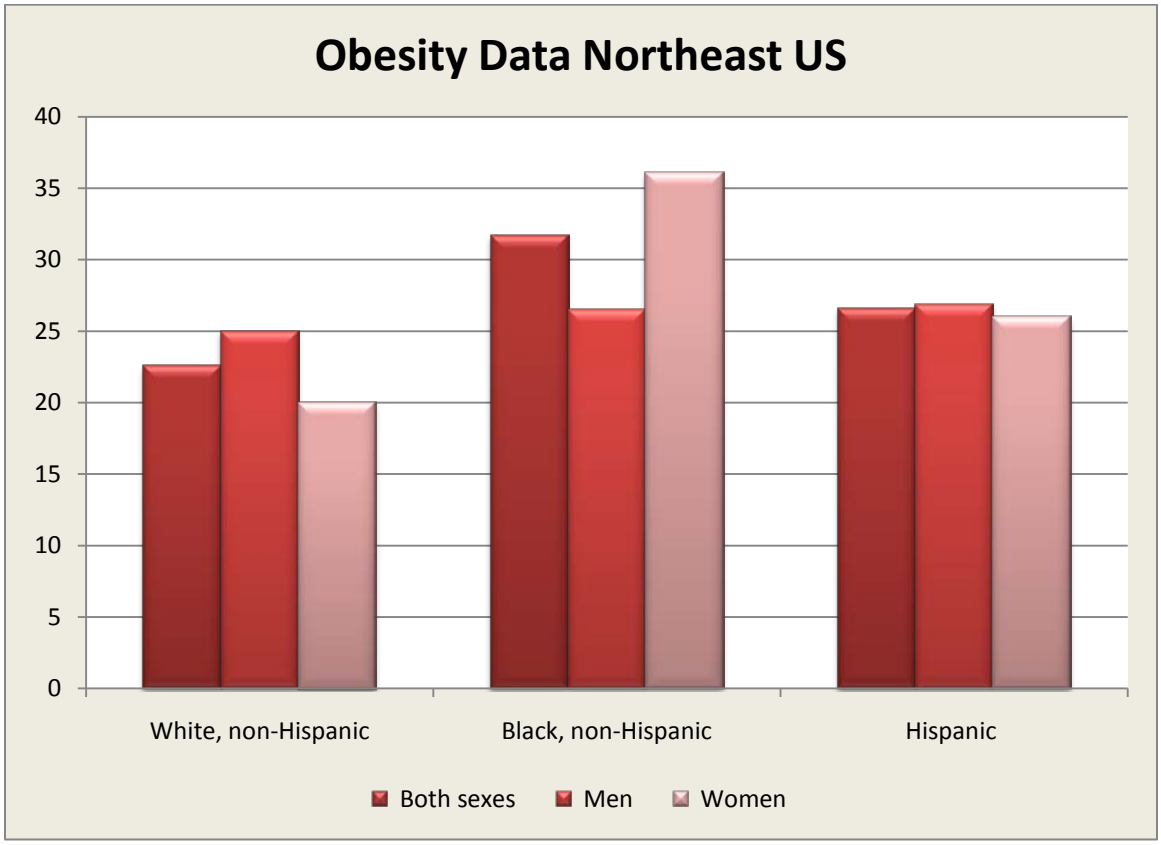
[4] See: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5827a2.htm?s_cid=mm5827a2_e

[5] See the paper by Hu et al.

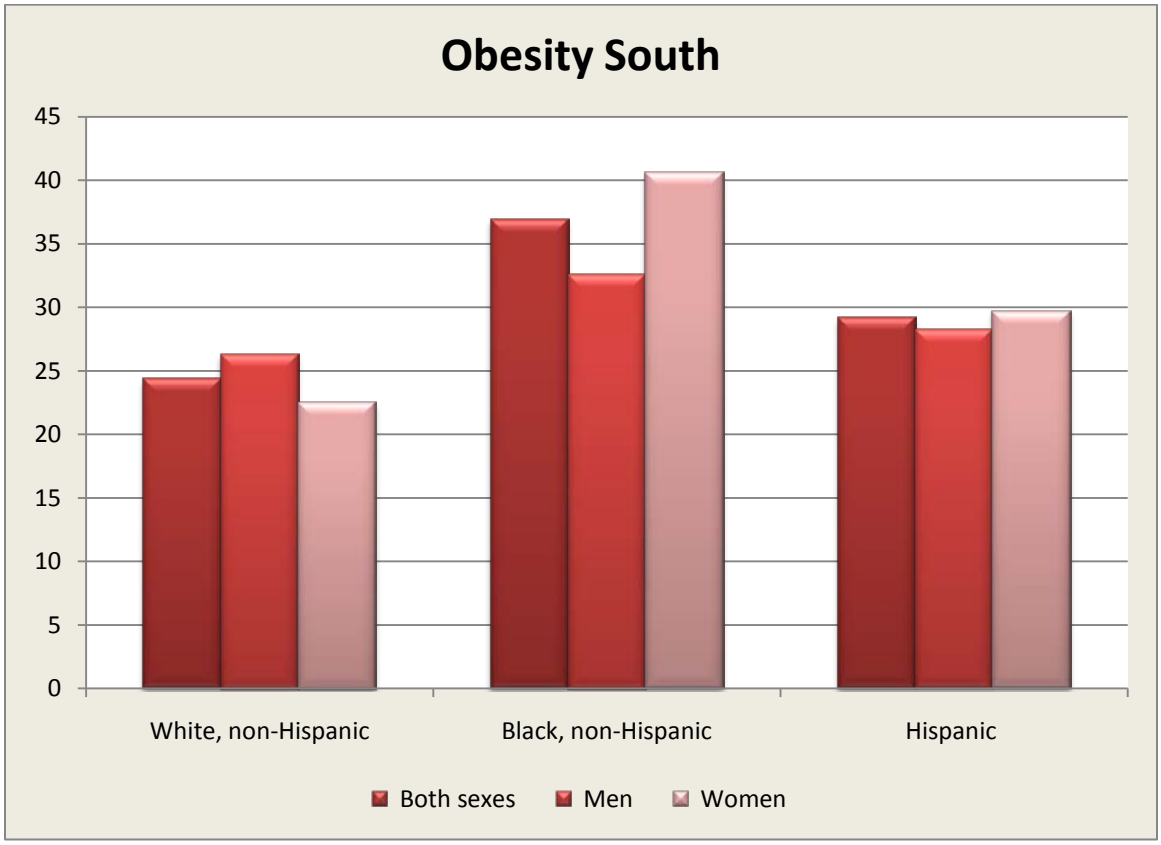


The rates amongst blacks is greatly above whites but Hispanics are also at an elevated rate. No matter all rates are excessive. As it stands Type 2 Diabetes costs almost $300 billion annually in a $2.5 Trillion health care bill. The solution is simple, stop eating, just like stop smoking. The way to achieve it is also simple, tax the heck out of it! Why tax small business to get them to provide health insurance when you can go to the source of the problem, fat people! We all pay for their ailments.

The data for the northeast is shown below:



The data for the south is shown below;



The south shows a greater disproportion of obesity amongst blacks. This results in a proliferation of Type 2 Diabetes diseases. We have analyzed this in one of our White Papers.

The CDC report continues:

"*Obesity is associated with increased health-care costs, reduced quality of life, and increased risk for premature death... Common morbidities associated with obesity include coronary heart disease, hypertension and stroke, type 2 diabetes, and certain types of cancer... As of 2007, no state had met the Healthy People 2010 objective to reduce to 15% the prevalence of obesity among U.S. adults... An overarching goal of Healthy People 2010 is to eliminate health disparities among racial/ethnic populations.*

To assess differences in prevalence of obesity among non-Hispanic blacks, non-Hispanic whites, and Hispanics, CDC analyzed data from Behavioral Risk Factor Surveillance System (BRFSS) surveys conducted during 2006--2008. Overall, for the 3-year period, 25.6% of non-Hispanic blacks, non-Hispanic whites, and Hispanics were obese. Non-Hispanic blacks (35.7%) had 51% greater prevalence of obesity, and Hispanics (28.7%) had 21% greater prevalence, when compared with non-Hispanic whites (23.7%). This pattern was consistent across most U.S. states."

If we solve the obesity problem we save a dramatic portion of the health care costs.

1.5 The Primary Areas of Focus

We can now provide a preliminary focus on the areas of maximum impact. Unlike the uncontrollable areas such as genetic diseases, many cancers, and catastrophic and accidental care, the areas we focus on are directly impactable on health care costs in a short term.

The following is a list of the key areas we will focus on herein.

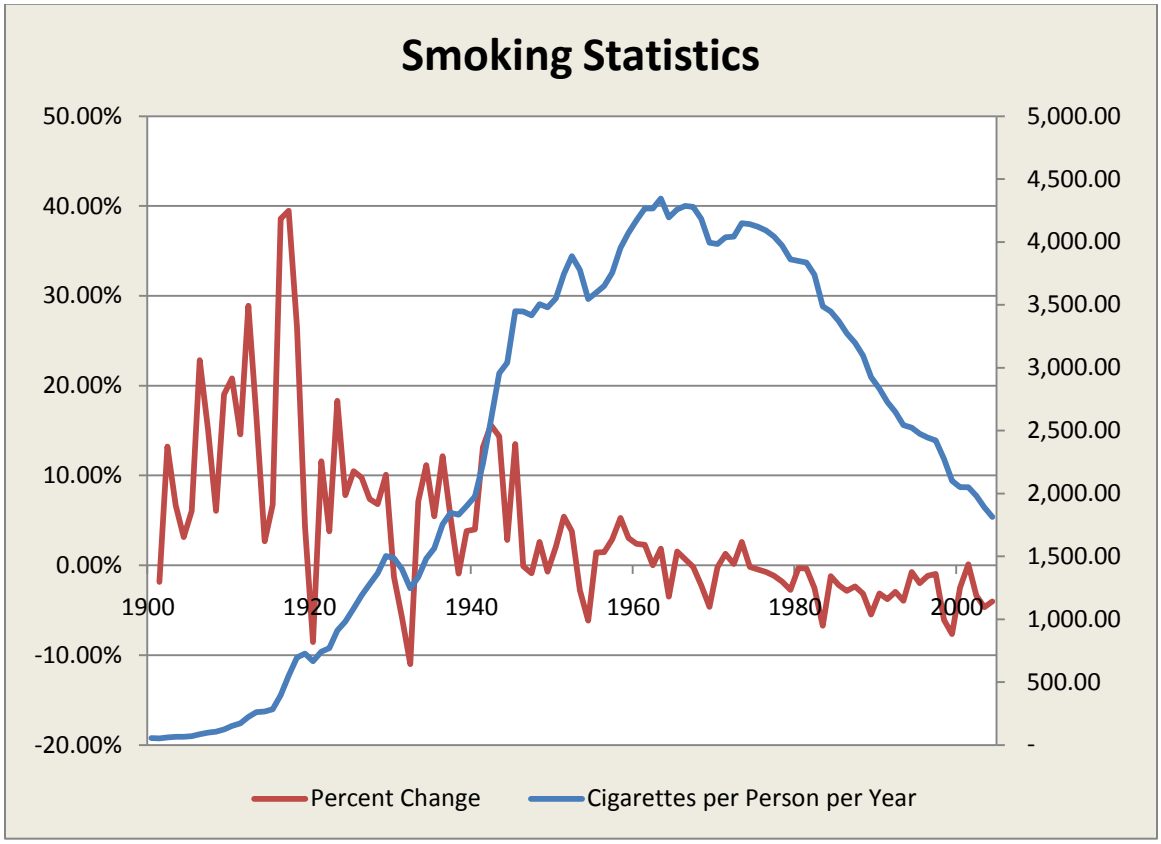
Type 2 Diabetes and Obesity: This is a major area. Obesity and overweight are the major drivers for Type 2 Diabetes as well as a plethora of other health related illnesses. We examine this briefly here for we have examined it in detail elsewhere[6]. Simply stated the cost of Type 2 Diabetes is approximately $220 Billion in 2008 and this represents 12% of all expenses. Not only will this remain but we estimate it growing at twice the base rate of health care expenditures in general. In fact it will reach 25-30% by 2030. This is true if we do not modify the explosive problem amongst children and adults. This will further exacerbate Medicare in the out years since the age of obesity is occurring in the teens as well as 20s and 30s. The only way to mitigate against this is to tax in some manner the consumption of calories especially carbohydrates. As was done with smoking, a tax at the point and time of consumption appears to work. The funds raised in that tax must be returned to the health care plans and NOT the general fund.

Smoking Related Diseases: The CDC states; "Tobacco use is the single most preventable cause of disease, disability, and death in the United States. Each year, an estimated 443,000 people die prematurely from smoking or exposure to secondhand smoke, and another 8.6 million have a serious illness caused by smoking. For every person who dies from smoking, 20 more people suffer from at least one serious tobacco-related illness. Despite these risks, approximately 43.4 million U.S. adults smoke cigarettes[7]." It then continues to state: " Coupled with this enormous health toll is the significant economic burden of tobacco use—more than $96 billion per year in medical expenditures and another $97 billion per year resulting from lost productivity." Thus from CDC analysis the cost of smoking burden on health care is approximately $100 billion. CDC further states: "Economic Costs and Years of Potential Life Lost Associated with Cigarette Smoking are as follows: (i) During 2000–2004, cigarette smoking was estimated to be responsible for $193 billion in annual health-related economic losses in the United States ($96 billion in direct medical costs and approximately $97 billion in lost productivity).[3] (ii) The total economic costs (direct medical costs and lost productivity) associated with cigarette smoking are estimated at $10.47 per pack of cigarettes sold in

[6] See McGarty, Health Care Policy, Chapter 6.

[7] See http://www.cdc.gov/nccdphp/publications/aag/osh.htm

the United States.[14] (iii)Cigarette smoking results in 5.1 million years of potential life lost in the United States annually.[8] "



Defensive Medicine: The term Defensive Medicine refers to the practice of performing excessive tests, procedures, consults, and the like in an attempt to avoid potential litigation. The actual determination of the prevalence and costs of this are somewhat difficult to determine. One of the major works in this area was the paper by Kessler and McClellan in the late 1990s. Simply stated what they did was to look at several procedures in cardiology via the Medicare databases. They looked at States with tort reform and those without. They concluded that in States with tort reform there were fewer procedures than in States without, and further they looked at the outcomes and found them to be the same. Thus they concluded that the cardiologists practiced defensive medicine with no improvement in outcomes. The problem was that the analysis had many caveats as well as not being applicable to other areas[9]. The current

[8] See Federal Trade Commission. Smokeless Tobacco Report for the Years 2002–2005. (PDF–619 KB) Washington, DC: Federal Trade Commission; 2007[accessed 2008 Nov 24]; Centers for Disease Control and Prevention. Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses—United States, 2000–2004. Morbidity and Mortality Weekly Report. 2008;57(45):1226–1228 [accessed 2008 Nov 24] and Centers for Disease Control and Prevention. Sustaining State Programs for Tobacco Control: Data Highlights 2006 (PDF–1363 KB). Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006 [accessed 2008 Nov 24].

[9] Baker provides a critiques of this work in some detail. We will rejoin the analysis later in this Report.

state of opinion in this area is that we really do not know. One believes that via many anecdotes that physicians practice defensive medicine but the data is lacking.

Misdiagnosis: In the paper by Toker et al they define misdiagnosis as follows:

"Diagnostic error can be defined as a diagnosis that is missed, wrong, or delayed, as detected by some subsequent definitive test or finding.1 However, not all misdiagnoses result in harm, and harm may be due to either disease or intervention. Misdiagnosis-related harm can be defined as preventable harm that results from the delay or failure to treat a condition actually present (when the working diagnosis was wrong or unknown) or from treatment provided for a condition not actually present."

They go on to state:

"…An estimated 40 000 to 80 000 US hospital deaths result from misdiagnosis annually … Diagnostic errors often are unrecognized or unreported, and the science of measuring these errors (and their effects) is underdeveloped.."

Misdiagnosis is not a common occurrence but it is not uncommon and it has costs, human and dollar costs. The best way to deal with it is to discuss it openly and to drive its occurrence to as low a level as possible. However here the tort process would interfere. If there was no intent then perhaps a modification of the tort laws would help.

Nosocomial Infections: Hospital caused infections are well known and costly. MRSA is the current prototypical infection but there are a massive collections of micro-organisms running loose. Changes in medicine in the last fifty years have in many ways created an environment for these to cause even greater human and financial harm. The lack of religious adherence to hand washing, the wearing of medical scrubs in and out of the wards, the lack of training of the staff regarding sanitary procedures, and the very physical structures of hospitals, the use of rugs and the free flow of visitors, creates an environment which introduces massive amounts of potentially lethal agents.

Re-hospitalizations: Re-hospitalizations have become a cost element of growing concern. Patients, especially those on Medicare, are released and then all too often are readmitted for either complications resulting from the initial treatment or from secondary infections. The classic example is hip surgery and the resulting infection or pulmonary embolism. In a recent paper in NEJM by Jencks et al the authors state:

"Almost one fifth (19.6%) of the 11,855,702 Medicare beneficiaries who had been discharged from a hospital were rehospitalized within 30 days, and 34.0% were rehospitalized within 90 days; 67.1% of patients who had been discharged with medical conditions and 51.5% of those who had been discharged after surgical procedures were rehospitalized or died within the first year after discharge. In the case of 50.2% of the patients who were rehospitalized within 30 days after a medical discharge to the

community, there was no bill for a visit to a physician's office between the time of discharge and rehospitalization. Among patients who were rehospitalized within 30 days after a surgical discharge, 70.5% were rehospitalized for a medical condition. We estimate that about 10% of rehospitalizations were likely to have been planned. The average stay of rehospitalized patients was 0.6 day longer than that of patients in the same diagnosis-related group whose most recent hospitalization had been at least 6 months previously. We estimate that the cost to Medicare of unplanned rehospitalizations in 2004 was $17.4 billion."

Retesting, Repeat and Unecessary Procedures: The retesting and repeat procedures are those repeats and retests that result in the referral process. Namely if a patient has to have a colonoscopy and the family practitioner refers them to a GI endoscopist there may be a need for retesting and added lab work. This may occur with cardiologists and the like. The other element of this process is the unnecessary procedure. For example the use of a thyroid panel when a simple CBC would suffice, the testing of testosterone when a PSA is needed. These added tests are not diagnostic of any presenting symptom and are costly and unnecessary[10].

Excess Procedures: The excess procedures costs are those costs resulting from procedures and tests used and taken beyond what would be reasonably required for the diagnosis and treatment, and this excludes any such which would relate to those for defensive medicine reasons. This, like the case for defensive medicine, is difficult to assess. Yet, in contrast to defensive medicine procedures and tests, there is a basis of criminal cases against health care providers who have performed excess procedures and have done so in a Medicaid or Medicare environment and have been accused and convicted of criminal fraud. Unfortunately there has been no analysis of this data and in addition this data may be just the "tip of the iceberg" of such practices.

Genetically Controllable Diseases: Genetic testing allows for the early detection of inherited disease potentials. If targeted correctly these tests may be able to allow the patient to be treated early and remediate the disease early and at dramatically lowered costs. The following is a modified list of what one company, Correlagen, has available for remediable genetic disorders[11]. It is anticipated that through targeted testing that each of these genetic diseases may be remediated at dramatically lower costs than waiting until they present themselves and require significant medical study. This effort is in the early stages and will be developed over the next few years.

Disease	*Gene*	*Specialty*
Early-Onset Coronary Heart Disease	APOB	Cardiology
Early-Onset Coronary Heart Disease	LDLR	Cardiology

[10] The classic paper by Tierney et all in NEJM 1990 is the initial; benchmark in this area.

[11] See http://www.correlagen.com/index.jsp

Early-Onset Obesity	MC4R	Endocrinology
Endocrine Hypertension	HSD11B2	Endocrinology
Growth Hormone Deficiency	GH1	Endocrinology
Growth Hormone Deficiency	GHRHR	Endocrinology
Growth Hormone Insensitivity	GHR	Endocrinology
Marfan Syndrome	FBN1	Cardiology
MODY1	HNF4A	Endocrinology
MODY2	GCK	Endocrinology
MODY3	TCF1	Endocrinology
MODY4	IPF1	Endocrinology
MODY5	TCF2 (HNF1B)	Endocrinology
MODY8	CEL	Endocrinology
Multiple Endocrine Neoplasia Type 1	MEN1	Endocrinology
Multiple Endocrine Neoplasia Type 2	RET	Endocrinology
Neonatal Diabetes Mellitus	GCK	Endocrinology
Neonatal Diabetes Mellitus	IPF1	Endocrinology
Neonatal Diabetes Mellitus	KCNJ11	Endocrinology
Nephrogenic Diabetes Insipidus	AQP2	Endocrinology
Nephrogenic Diabetes Insipidus	AVPR2	Endocrinology
Noonan Syndrome	PTPN11	Endocrinology
von Hippel Lindau Disease	VHL	Endocrinology
Wiskott-Aldrich Syndrome	WAS	Immunology

Controllable Diseases: Many of the assumptions made by the analysts and policy makers in Health Care are akin to what would be done a century ago where we would be concerned about TB and infectious diseases. At that time they were growing in incidence and were causing major problems in the area of public health. If one made health care decisions based on extrapolating that world sans antibiotics and expanding public health then the results would also have shown catastrophic results. We argue herein that there is a major change occurring in the field of controllable diseases like major cancers. This means that it may be possible to intervene early, as we are seeing with prostate, breast, melanoma, and other cancers and take remedial action. The next step is to do so earlier using genetic markers.

Thus it is anticipated that in the next ten years we may readily find the genetic markers for major cancers, not cures, but predispositions and also markers relating to specific treatments. We argue that if we look forward into a world with these changes then we can readily look at developing heath care policy with a forward look hopefully more consistent with the reality we are to face. The analysis that we have performed shows the total first year costs growing from $105 billion in 2008 and reaching $125 billion in 2030 in constant dollars. This may be further increased by age adjustments in the population. However the age changes are problematic because we also see major ethnic changes as well and this distribution in the incidences may see a considerable mix when all of these factors are combined.

Drug Control: This is the area which focuses on the use of generics and the use of less costly drugs. As we discussed in the area of repeat and unnecessary tests and procedures, the work of Tierney et al as referenced initially looked at drug prescriptions and not procedures. This problem has been exacerbated by the significant amount of pharma advertising over the past decade with patients requesting a specific drug and the physician acquiescing and the costs exploding.

Malpractice Costs: This is the basic costs of malpractice. Here there is a debate amongst those who feel that tort laws and lawsuits allow for a clearing of the market, getting rid of the bad eggs, as Baker would imply, and on the other side that this cost is excessive and that via a multiple set of alternatives ranging from safe harbor provisions and the like can be dramatically reduced.

2 WHERE NOT TO CUT

Before commencing on the details of the list it is first necessary to details some of the facts on Medicare. The current President and commentators on both the left and the right have been targeting Medicare. In this section we present a simple summary of the facts. Simply:

1. Medicare just does not cost that much.

2. Medicare recipients in almost all cases have contributes an average of 65% more in payment to the system than what they will receive from the system. Thus Medicare is NOT something that the current taxpayers are paying for, it was already paid for.

3. The Press and commentators, both left and right, fail to deal with any of the facts. They attack Medicare as the problem. The real problem is NOT Medicare but obesity.

2.1 Basic Medicare Numbers

Here are a few numbers regarding Medicare and the totality of health care costs. We use 2008 as a base year and round up all costs to $2.5 trillion.

Metric	(2008)
Total Pop (000)	304,000
Medicare PoP (000)	45,221
Total Costs $000,000.000	$2,500
Medicare Costs $000,000,000	$454
Percent Medicare PoP	14.9%
Percent Medicare Costs	18.2%
$ per Medicare	$10,046
$ per Others	$7,905
Lifetime Non Medicare	$513,838
Lifetime Medicare	$120,555

Now some observations:

1. The Medicare patient costs on average $10,046 per year and since they live on average at most 12 years their total burden with 2008 care levels is $120,555.

2. In contrast the non Medicare patient costs $7,905 per year and has a total burden till Medicare kicks in of $513, 838. This is five times the Medicare burden.

3. 15% of the population are on Medicare and 18% of the health care costs go to Medicare. Considering that Medicare patients are much older, by definition, this is not an unreasonable spread.

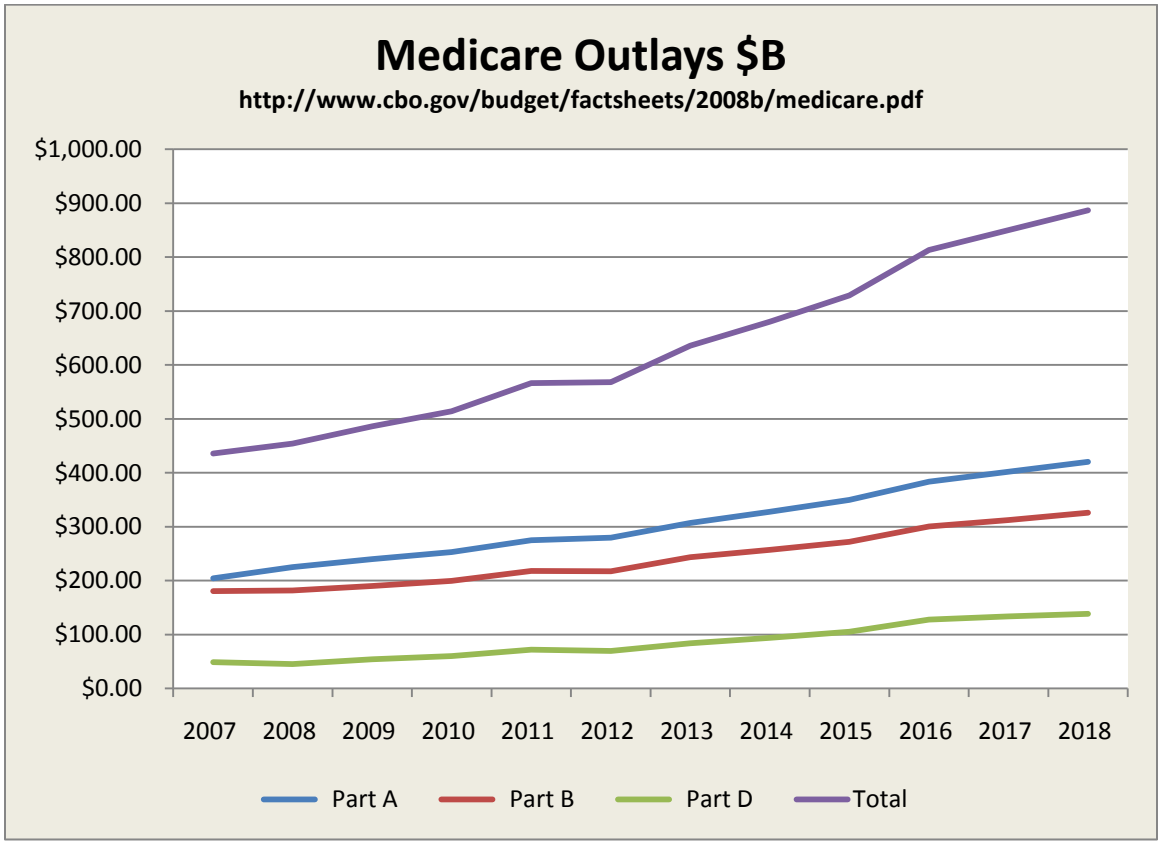
4. 40 million of the people who should have insurance do not, so as a back of the envelope calculation they cost about $320 billion per year, whereas Medicare costs $454 billion. However the Medicare patient has for the most part contributed to Medicare but the uninsured has made no contribution. In fact it is reasonable to assume that this pool of uninsured, due to desire or inability, may very well be more costly than Medicare. They are the ones with morbid obesity and they are the ones driving up the health care costs per GDP and they are the one hanging around in a chronic state of health. If choices should and must be made let us look there as well if not first perhaps. We truly need the wisdom of a Jonathan Swift to make things clear.

On the basic principle of fairness and equity, the person who contributed should receive before the person who has not. It is not at all clear if Congress and the Press have the slightest insight into the facts.

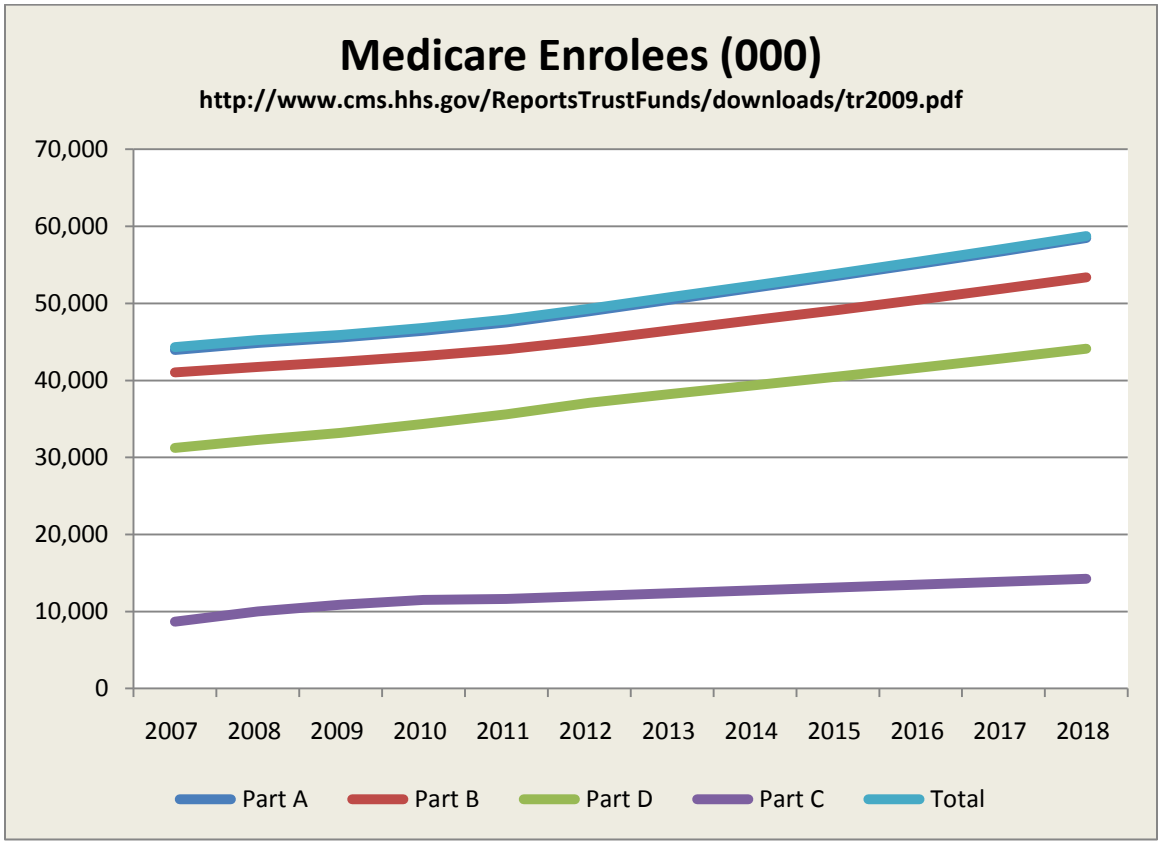
2.2 Costs and Contributions to Medicare

The following data are three further facts on Medicare. We present the CBO estimated costs, the HHS estimates of participants and the cost participant per year.

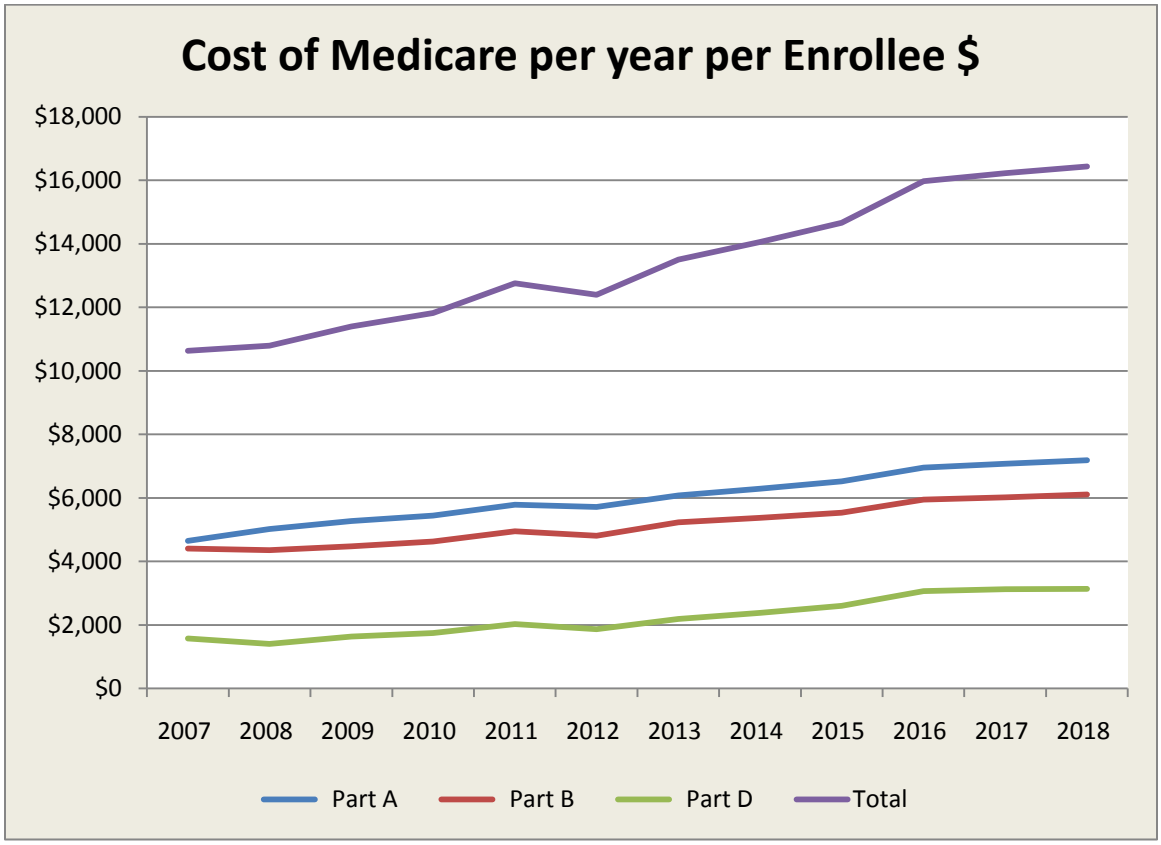
The CBO Cost Estimates are presented below. We show Parts A,B and D as well as the total. The growth in the total is substantial over the period to 2018 dominated by the inflow of the Baby Boomers.



The total participants are presented below. These are the Baby Boomers referred to above. One should remember that the enrollment starts at 65 and that the average life span for a male is about 75 and a female 79. Thus there will be a dominance of females receiving benefits even if many had not contributed as much as the males, although that is shifting as the younger group of working females is included. What that means is as we approach 2018 the females will have contributed equal to the males so the "free rider" status which may have been attributed before is no longer the case. All Medicare participants will have contributed as we have discussed before.



The cost per participant calculated from the above two is presented below. Given our previous analyses and the above comments regarding contributing participants, we see that the expenditures for the period thru 2018 are still less than the contributions from participants!



We thus argue that the Medicare participants will have contributed substantially in excess of their withdrawals by 2018 and that the excess has been spent by the Government rather than being used as specified. In addition we assumed in our earlier calculation a 20 year life for males and females post 65 and we know that it is substantially lower, only 10 for males and 14 for females. This makes the contribution excess even greater. This clear cold fact must become an element in the debate, and not a victim.

2.3 Medicare Enrollee Payments

It is worthwhile to perform a simple calculation on how much a Medicare Enrollee has contributed to the system. Let us make several realistic and simple assumptions.

1. Assume an enrollee starts employment in 1970 making $16,000 per year. This is a reasonable salary for a professional at that time.

2. Assume that salaries increase at 5% per year and that the average annual interest rate or return on investment was 6%. Namely the economy from 1970 to 2005 grew along with inflation at 6%. This means that as his salary grew the contributions were collected and prudently invested as one would do with any future annuity fund.

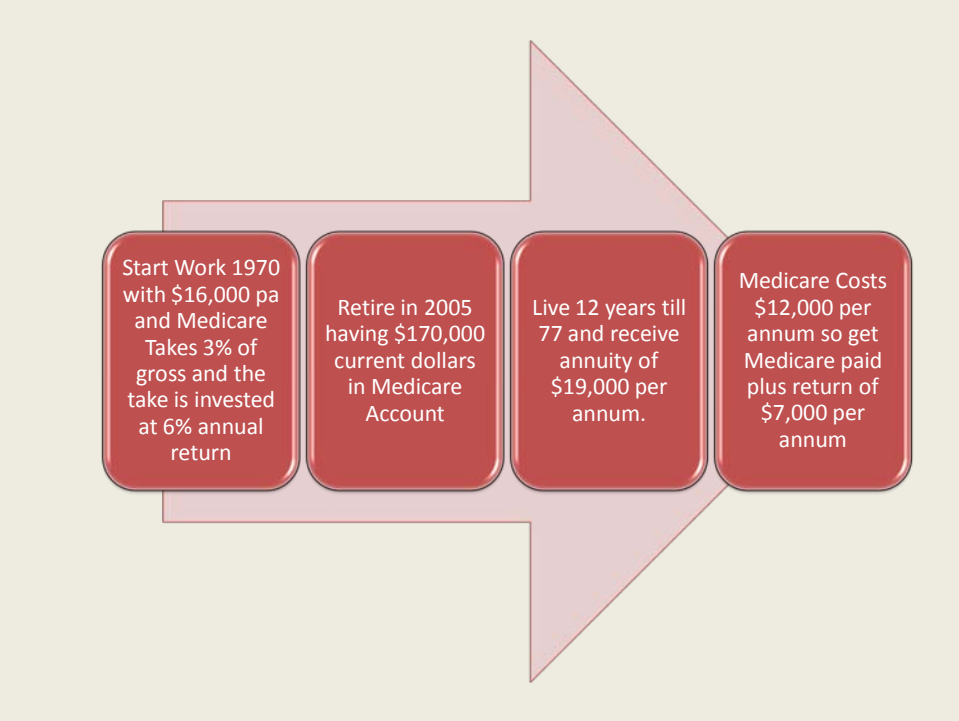
3. Assume that per the law the employee contributed his 3% of his gross salary to the Medicare fund, which was the law starting in 1965. He contributed directly 1.5% and his employer contributed 1.5%.

4. Assume that the person retires at the end of 2005 at the age of 65. He has statistically 12 years to live.

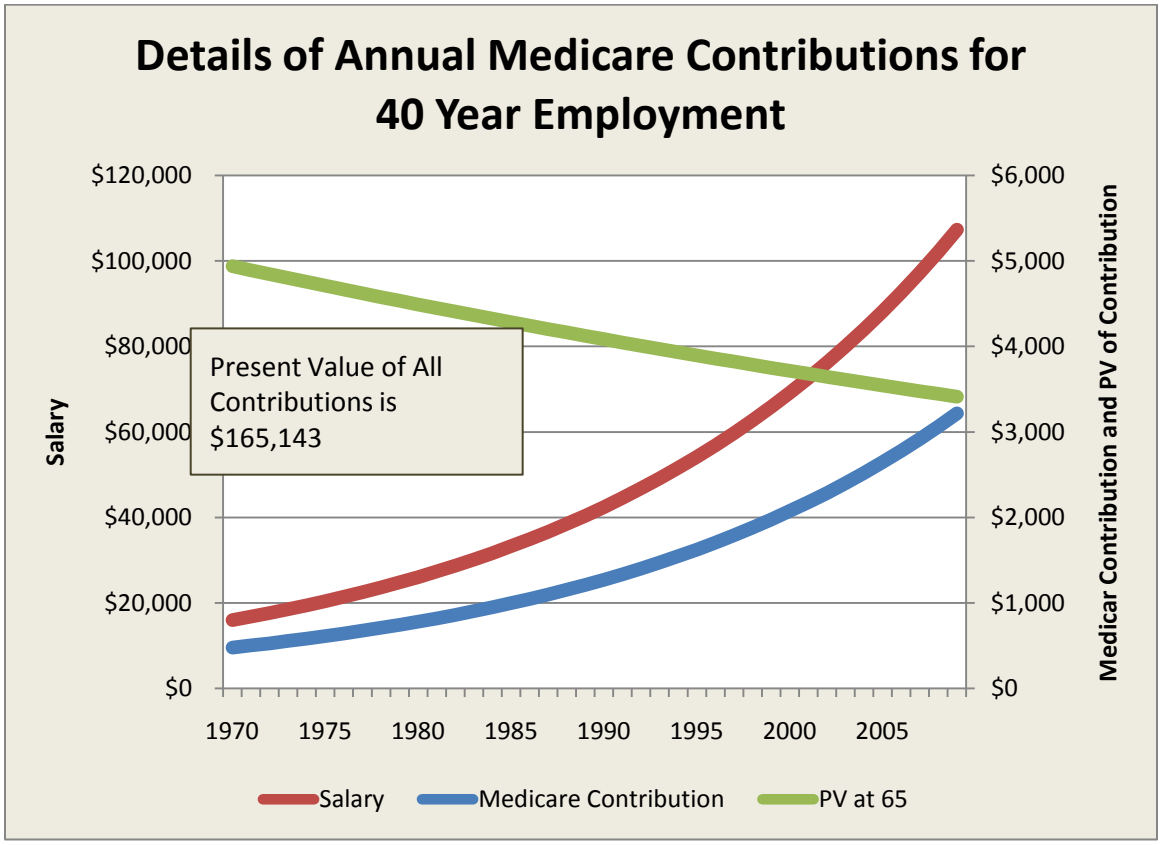
5. Using a simple calculation we see that in 2005 he has accumulated about $166,000 in his Medicare fund which can now pay out for the next 12 years.

6. Now assume we take the $166,000 and invest it in a similar fund to payout over 12 years we find the annual payout would be $20,000 per year.

7. However, his Medicare costs are only $11,000 per year so that he should also get an additional check of $9,000 per year! That does not happen!



We show the summary details of this model below. The fact also is that this simple model scales, namely we can cut the starting salary in half, to $8,000 per year in 1970 and we still have paid for Medicare!



This is a rather powerful chart. It belies all the "facts" that those who maliciously attack Medicare present. Let us look at a person who works for 40 years. The typical American. This person goes to college and then starts work in 1970 at $16,000 per year and gets annual raises at 5% per annum. This is NOT some corporate executive and NOT some uneducated worker. It is in many ways the typical American. The engineer, the school teacher, the salesperson, the person on the GM factory line, the police officer and the like. They contribute 3% of their gross to Medicare. We assume it is saved and invested at say 6% per annum by the Government, a real bad assumption.

Then at 65 we add all of the savings up and we get a total of $165,143 in a lump sum amount. Now we assume that this person lives another 20 years and we ask what is the payout per assume that this person gets. It is $14,398, well in excess of their personal cost of an insurance plan even at the rate of today's private plans. Furthermore it is substantially less than any Medicare benefits.

Thus what is the problem with Medicare. This simple back-of the-envelope calculation, which can be performed by any high school student seems to be missed by the economic brains in the current Administration. Any VC, any entrepreneur, any banker, could do this calculation. Also the Medicare recipient pays an additional amount into the fund on an annual basis and the Medicare payments typically cover at most 60% of the actual costs, thus leaving a substantial amount to be paid by the Medicare recipient.

The conclusions of this simple calculation are as follows:

1. The Medicare recipients who work a lifetime get much less than what they contribute.

2. The money is wasted by the Government, not by the Medicare recipient.

3. Those who run Medicare are doing what they are doing to establish a national single payer plan, which if Medicare is an example will end up costing people more for less and yield poorer health care.

4.Medicare has also become a dumping ground for many who have not reached 65 and have not contributed. It is an SSI dumping and loading ground.

One must ask why those who represent the elderly such as AARP would even allow such a plan to continue. It is outright highway robbery of the elderly. Does one suspect that the good Senator Kennedy gets his healthcare from Medicare, doubtful. It is essential to run the numbers and see the results.

2.4 Commentators' Scotomas

In recent NY Times articles there were two op-ed pieces on Medicare. One from their erstwhile conservative voice and one from an author of a book.

Let me start by stating two facts:

Fact 1: Medicare is an entitlement because the people entitled to it paid for it. As we have demonstrated several times, the average worker in the US puts 65% more into Medicare than they will ever get out! Where does the money go, well Congress takes it and spends it. Medicare funding is NOT the problem, Congress is! On average a Medicare beneficiary lives 12 years and costs $12,000 per year. Then they die! Yet as Douthat pompously states:

"*In this future, somebody will need to stand for the principle that Medicare can't pay every bill and bless every procedure. Somebody will need to defend the younger generation's promise (and its pocketbooks). Somebody will need to say "no" to retirees...That's supposed to be the Republicans' job. They should stick to doing it*."

It appears as if Douthat wants Republicans then to "Kill Grandma!" as the phrase goes. One should inform Mr. Douthat that the Medicare recipient just wants some portion of their contribution back! One could also look at Mr. Douthat and see that his BMI is rapidly increasing and that he may very well be a burden to the health care system.

On the left side of the Times spectrum, well more likely in their center, a Mr. Dooling states:

"*With so much evidence of wasteful and even harmful treatment, shouldn't we instantly cut some of the money spent on exorbitant intensive-care medicine for dying, elderly people and redirect it to pediatricians and obstetricians offering preventive care for children and mothers? Sadly, we are very far from this goal. A cynic would argue that this can't happen because children can't vote (even if their parents can), whereas members of AARP and the American Medical Association not only vote but can also hire lobbyists to keep the money flowing*."

Again, for Mr. Dooling, it is not his money but it was the money of the patient getting the care. I agree with the principles of advance directives and I have seen all too frequently the death of a loved one from a debilitating disease, cancer, and the like, and one recognizes that reasonable care is required.

You cannot "save" a person with multiple brain mets from a malignant melanoma, or a colon cancer patient with massive ascites from the met to the liver or a prostate patient with hundreds of bone mets. You can hopefully minimize their pain. The question is what basis does Dooling have for the massive amount of "exorbitant intensive care". As I look at the data and examine the processes the evidence for such explosive costs of the elderly are not there.

Fact 2. The Dominant Costs in Health care are from Lifestyle Disease States

As Mackey from Whole Foods stated:

"*Unfortunately many of our health-care problems are self-inflicted: two-thirds of Americans are now overweight and one-third are obese. Most of the diseases that kill us and account for about 70% of all health-care spending —heart disease, cancer, stroke, diabetes and obesity—are mostly preventable through proper diet, exercise, not smoking, minimal alcohol consumption and other healthy lifestyle choices*."

Also Leonhardt states:

"*The promise of that system is undeniably alluring: whatever your ailment, a pill or a procedure will fix it. Yet the promise hasn't been kept. For all the miracles that modern medicine really does perform, it is not the primary determinant of most people's health. J. Michael McGinnis, a senior scholar at the Institute of Medicine, has estimated that only 10 percent of early deaths are the result of substandard medical care. About 20 percent stem from social and physical environments, and 30 percent from genetics. The biggest contributor, at 40 percent, is behavior.*"

In the analysis of my recent Book I clearly make this point using data and projecting forward. The problem is not the old folks who have contributed to their Medicare twofold but the young fat folks who will have lifestyle disease well ahead of any 70 year old who has at best 7 more years of life.

The Press, on both left and right, seem to be at war with the old folks, their parents, those in Medicare. This is not going to end well.

3 DETAILED ELEMENT ANALYSIS

In this section we go back to the twelve areas and discuss them in further detail. Specifically we deal with the primary source references and then analyze the results to ascertain several key factors; the costs, percent of total health care costs, growth rates and remediation possibilities.

3.1 Analysis of Areas

The twelve areas are detailed in this subsection. Several of these we have already written on in detail such as diabetes, smoking, and cancer or controllable diseases. The interesting metric amongst these three is that smoking and the other cancers are all decreasing on an annual basis. The increase in obesity well exceeds and decrease in the first two. Thus obesity and the resulting Type 2 Diabetes will as we have argued become the dominant health care problem going forward.

3.1.1 Type 2 Diabetes

In a recent article in Science the author does a wonderful job in providing an up to date review of just where the research is on Type 2 Diabetes and obesity.

The author concludes:

"*One observation that seems indisputable is that when individuals lose weight, they become more insulin sensitive. If nothing else, this has given researchers the confidence to assume that excess body fat—particularly in the abdomen and around the internal organs— is a fundamental cause of insulin resistance. But that still avoids the question of what causes insulin resistance in lean individuals. This is something few researchers will even address, although one possibility is that they, too, simply can't store fat safely in subcutaneous pads.*

"The biggest question in the whole field of insulin resistance is still this direction of causality," says O'Rahilly. "Does obesity make you insulin resistant? Or does underlying factor x cause both obesity and insulin resistance?""

Yet the remaining fact is that Type 2 Diabetes is prevalent in obese people 100 to 1 more times in those not and the article does articulate the fact that fat is the primary cause of inflammation which in turn is a causative factor in the insulin collapse chain.

In a recent article by Megan McArdle entitled A Rambling Response On Obesity in the Atlantic, the author contends:

"*I do agree with some ... core propositions: - Study after study shows that most people are unable to lose more than a small percentage of their body weight and keep it off .....*"

That is a true fact but the contrary fact is that a few do manage to keep the weight off. Why the few, well the answer I have from experience is "will power". If you know what happens when you have nephropathy from Type 2 Diabetes, a direct result of excess weight, then you heed the call of the portent and change. Most people lack the will power, just as we control smoking and alcohol, we have a duty to control obesity. It harms the obese person and it harms the others who have managed to control their weight by having them pay the incumbent costs. Remember the basic formula of physics:

Input - Output = Net Accumulation

And with weight it is 3500 kcal per pound. You burn 2000 kcal per day and you eat 2500 kcal per day, those cookies and sodas, then it is 1 pound per week or 52 pounds per year! It is no more difficult than that. She continues:

"- *There is evidence to show that this is physiologic rather than psychological--it is nearly impossible for very heavy people to simply "eat less and exercise more" to a "normal" weight* ....."

This is just wrong. It is the law of mass balance which controls the process. She continues:

"- *The fact that this often operates through the appetite system does not mean it's "all in their heads" or a lack of will power.* ..."

It is pure and simple will power. Do not eat that candy, do not drink that soda, diet all the time, yes it is painful but eventually you will get used to it, just weigh yourself.

"-*Much of the panic about the obesity epidemic comes from lumping all weights together--everyone over a BMI of 30 becomes an obese people with high relative risks for various diseases, even though the whatever health risks exist among the lower overweight ranges are not anything like the dire health effects of morbid obesity*..."

This I do not think I fully understand. Obesity, BMI above 30, results in excess inflammatory responses in the body. Inflammatory responses result in retinopathy, nephropathy, and neuropathy, as well as cardiovascular deterioration and cancers. The inflammatory responses reduce the immune responses of the body. Yes, a BMI of 22 in a person will not guarantee that they will not get a melanoma. Less sun exposure may help but most likely they have the gene that predisposes them. In contrast a BMI of 33

or excess alcohol in a person with prostate cancer may exacerbate it and turn it into an aggressive form.

She continues:

"- *At the moment, it's unclear whether there are any adverse health effects associated with overweight or even mild obesity, and to the extent that there are adverse effects, it is also unclear whether they are a result of the body fat, ...*"

This regrettably is just wrong. The author then takes her erstwhile libertarian stand and says:

"*To be sure, even I, the pessimistic libertarian, do not see any actual means for the government to prevent food processors from making their food taste very good. ...The government could raise the price of fat, salt, and sweeteners, processed food, and restaurant meals. But I very much doubt that if our legislators actually enacted a food tax adequate to prevent obesity, they would get much thanks from anyone except the sort of people who ask each other, with wide eyes, if anyone else has noticed how disgustingly fat all the people are at the mall--and never eat at Cheesecake Factory. So I think that this, too, is unlikely. "*

But these people are costing the rest of us considerable sums. As we had shown in an earlier entry obesity is the major driver for the increase in health care costs. That means those of us who manage to keep within the limits are paying for those who do not. In auto insurance those who have multiple speeding tickets pay more than those who have none.

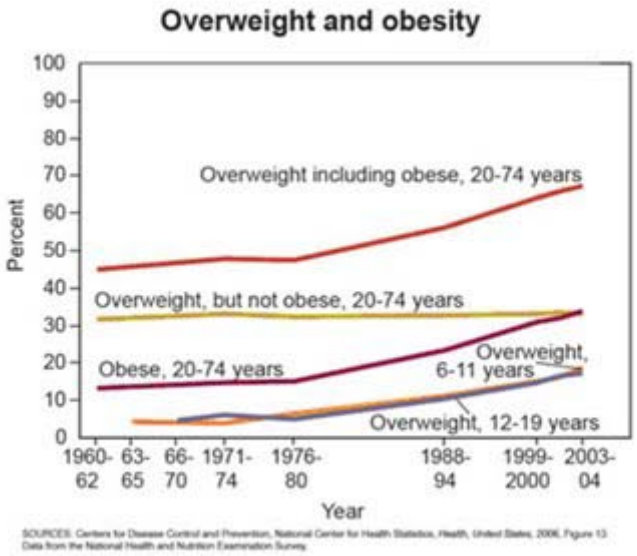
It is a fundamental principle of fairness. Libertarians believe that people should be allowed to do whatever they want IF it does no harm to others. Obesity costs me money, that is harm, thus you have no right to over eat especially if we mandate universal health care, or even if we as a society agree to give you dialysis treatments for your failed kidneys as a benefit from the taxpayers.

Whenever I read dicta of this type I am amazed that they are built on a total lack of information and presented with pomposity only found in journalists! Yes, this was a rambling response that she presented and lacking in logic and facts.

One can perform an interesting study to see what effect certain diseases have on health care costs. Cancer incidence has not changed dramatically, other than being able to detect it sooner, such as in prostate cancer, and other non-obesity related diseases have also not changed greatly in incidence.

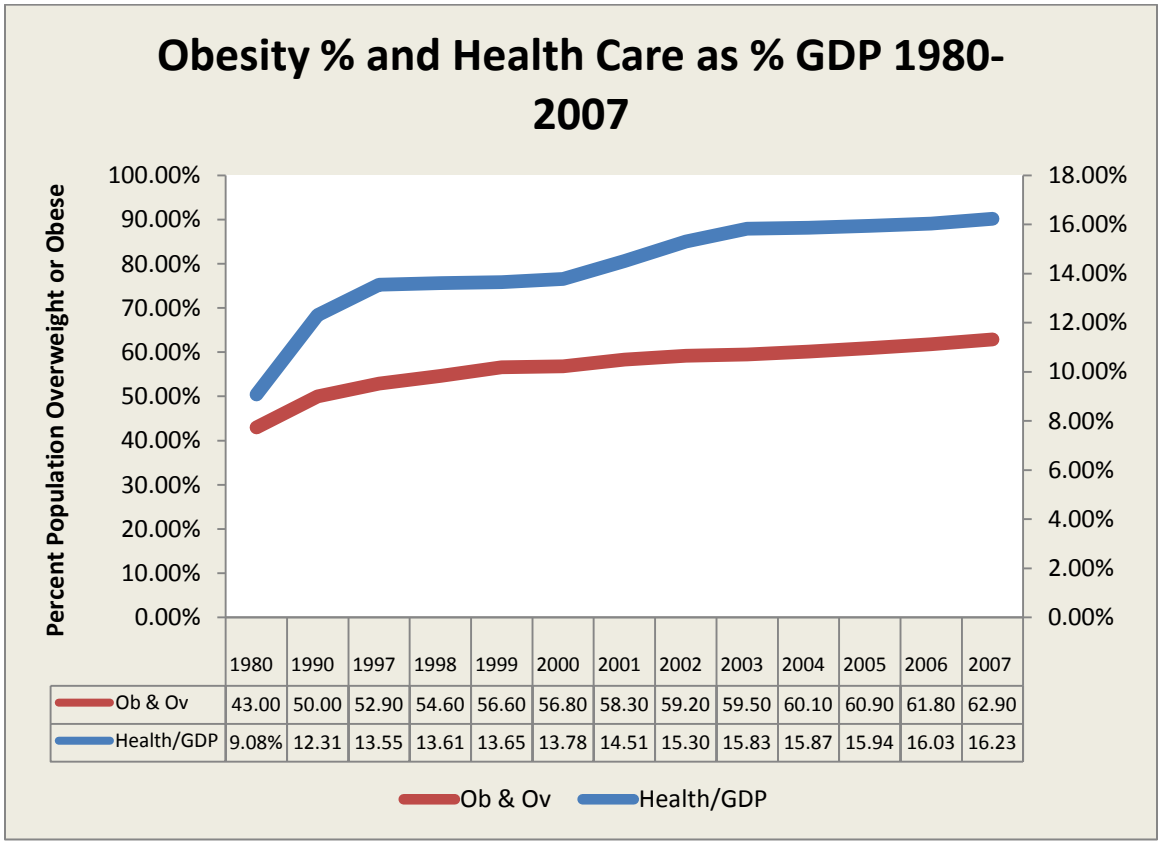
The word from the pundits is that we are spending more on health care, delivering too much to people. They never ask if the "people" have increased the demand as a result of some controllable exogenous factor, separate and apart from how health care works.

Well let's do something new, let us look at the data. First a chart from the CDC on obesity and overweight ("O&O") prevalence in the US. We show it below.



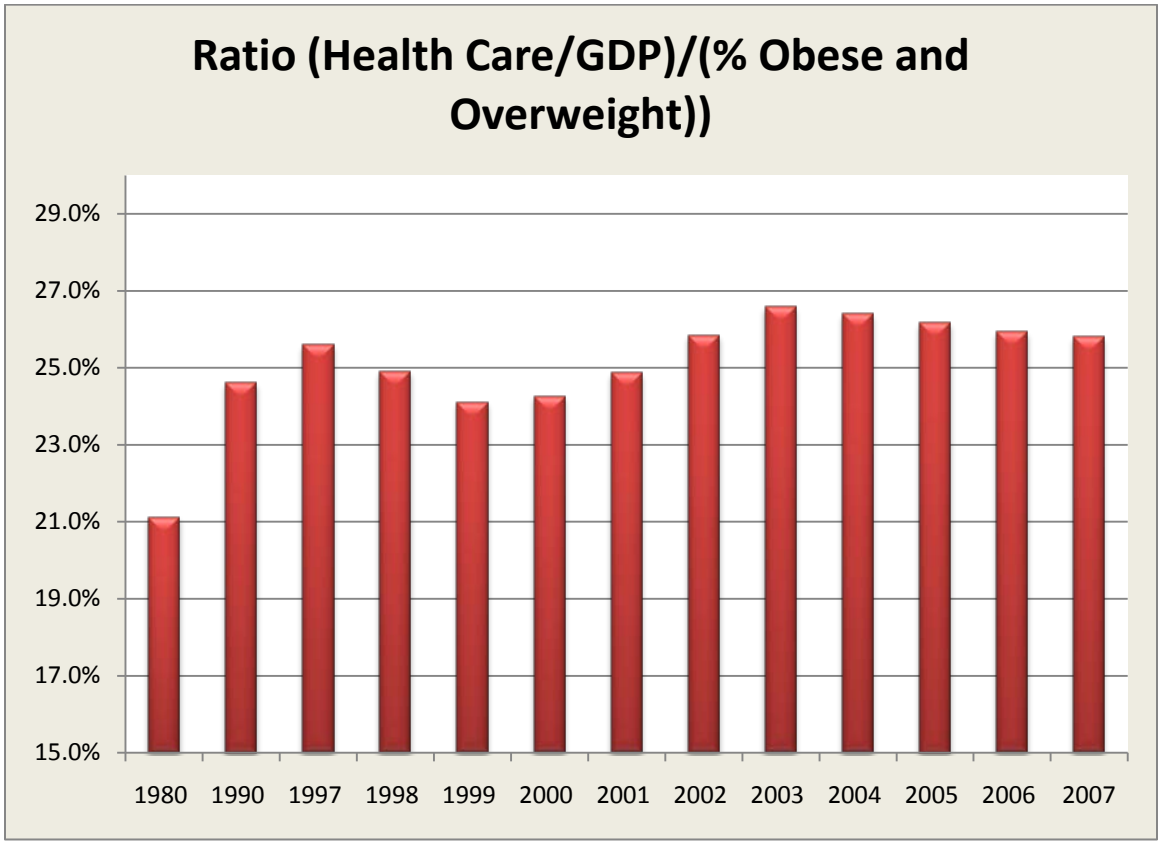
This shows a growth in the O&O factors tremendously over the past fifty years. Perhaps there is a correlation with costs of health care and perhaps, just perhaps the O&O is causative. And then perhaps we can see how large it will become if O&O reaches 100%! And even then we can ask what can we do about it? After all we could do the same thing if we calculated what would happen is we had every driver drive drunk! And at 90 mph on top of that!

Now let us plot the O&O and the Health Care Costs as a percent of GDP (HC/GDP) for the periods.

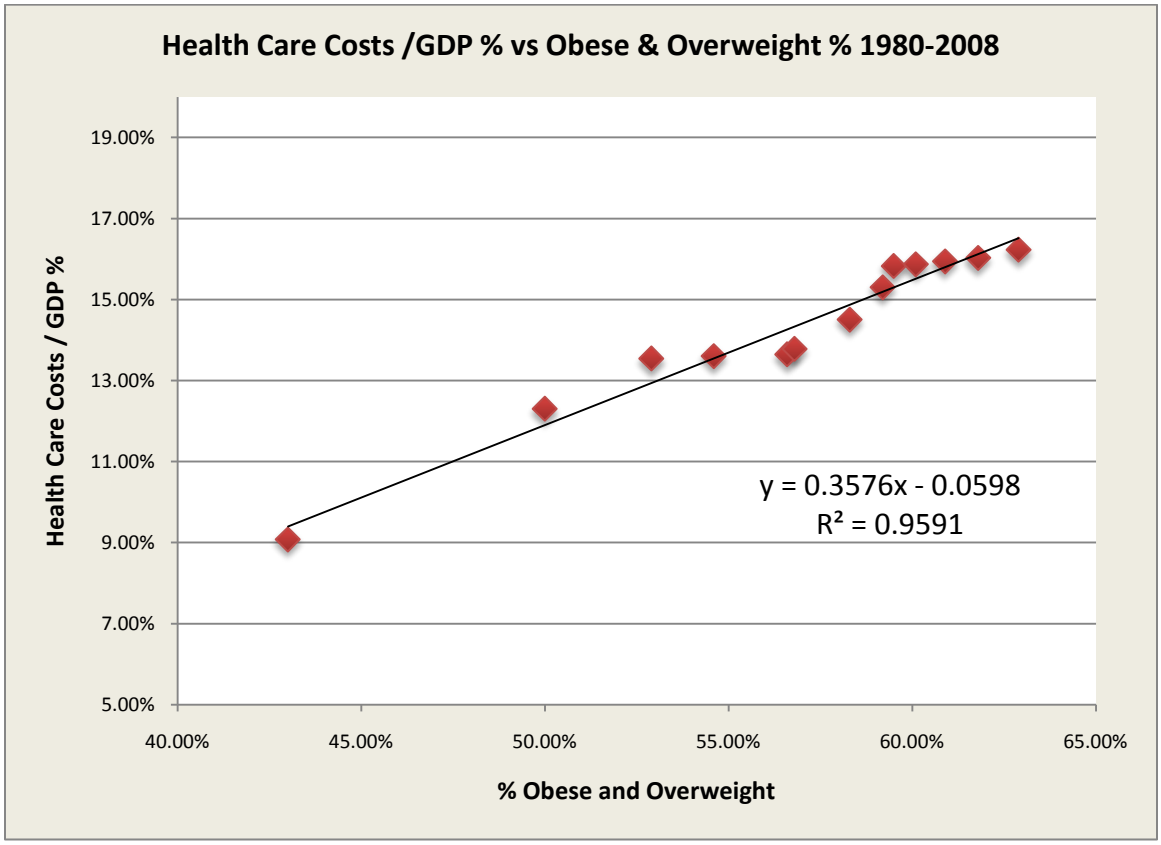


	1980	1990	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Ob & Ov	43.00	50.00	52.90	54.60	56.60	56.80	58.30	59.20	59.50	60.10	60.90	61.80	62.90
Health/GDP	9.08%	12.31	13.55	13.61	13.65	13.78	14.51	15.30	15.83	15.87	15.94	16.03	16.23

A pattern begins to form. Now we can plot the ratio of HC/GDP to O&O, to see if that ratio has remained somewhat constant, implying a possible causal relationship. It appears below:



The result is interesting, it is somewhat constant. Thus we then plot a scatter plot of these two variable as below:



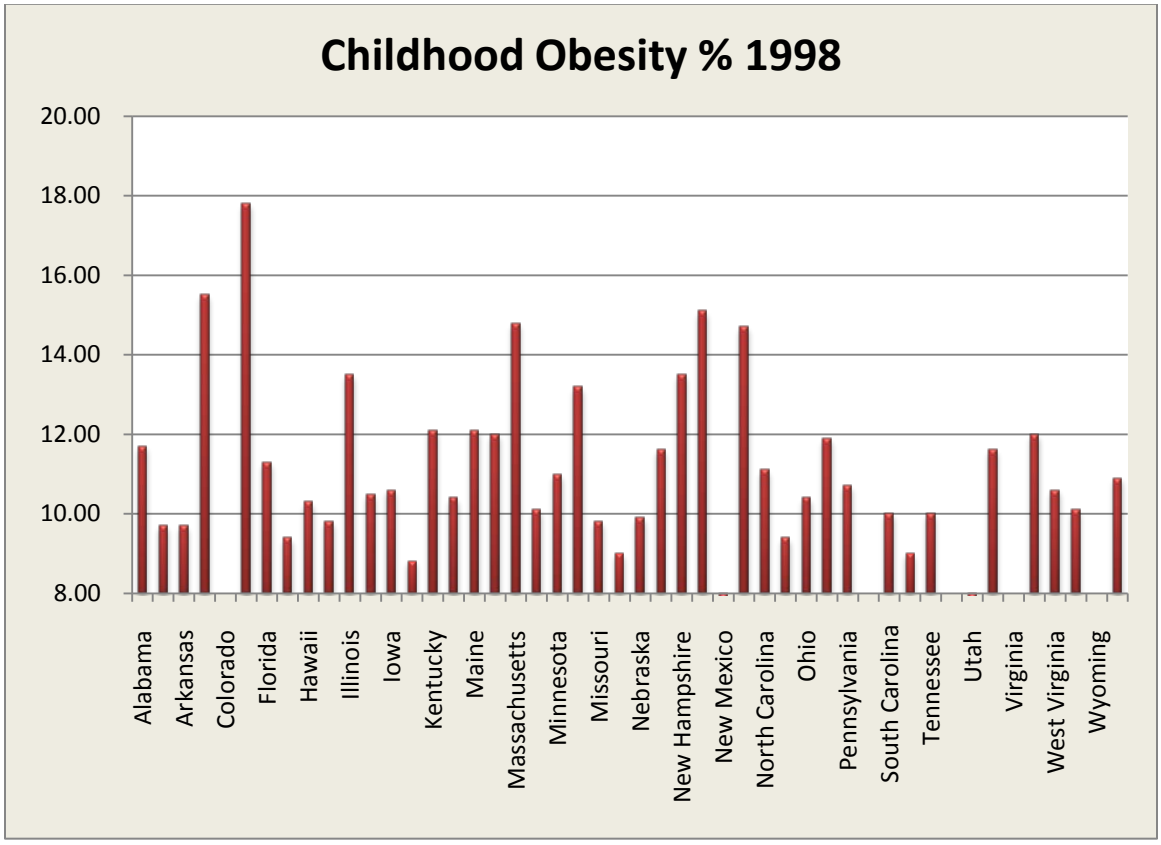
We see that the growth in HC/GDP correlates very well with O&O prevalence! Perhaps the main driver, as we have argued in more details elsewhere, is the explosion in O&O? If that is what it seems to be, then the current Administration's approach to control HC/GDP growth will never work other than by rationing and letting old people just die!

Perhaps the problem is less the old folks but more that the obese and overweight young folks who will cause the major chronic health care loads in the future. If we let O&O go to 100%, the HC/GDP ratio goes to 30%! Close to the number we have all seen in the scare tactics of the current Administration. Yet the problem is NOT the health care system it is the people who allow themselves to explode on unhealthy diets and become morbidly obese! They are the ones who are costing the system. They are the ones who can be controlled!

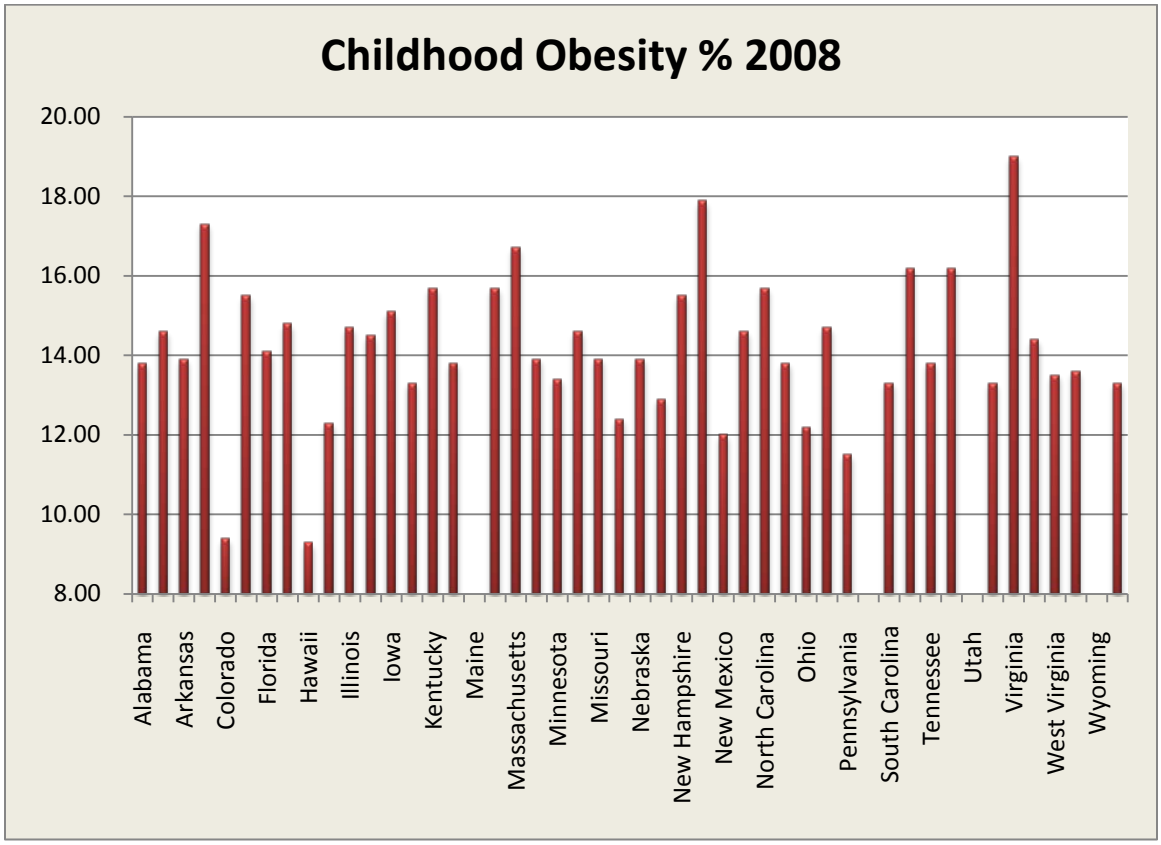
Thus what can be done. Despite my dislike of the Mankiw idea of the Pigou Club of taxing to reduce demand, here I believe it works and works well for beneficial purposes. If you cannot tax excess BMI, a fee say $1,000 per year per 1.0 in excess of 25.0, then tax the foods which get there, processed and fast foods!

There is a recent CDC report on Childhood Obesity. I present the data in a somewhat different form than the CDC as below.

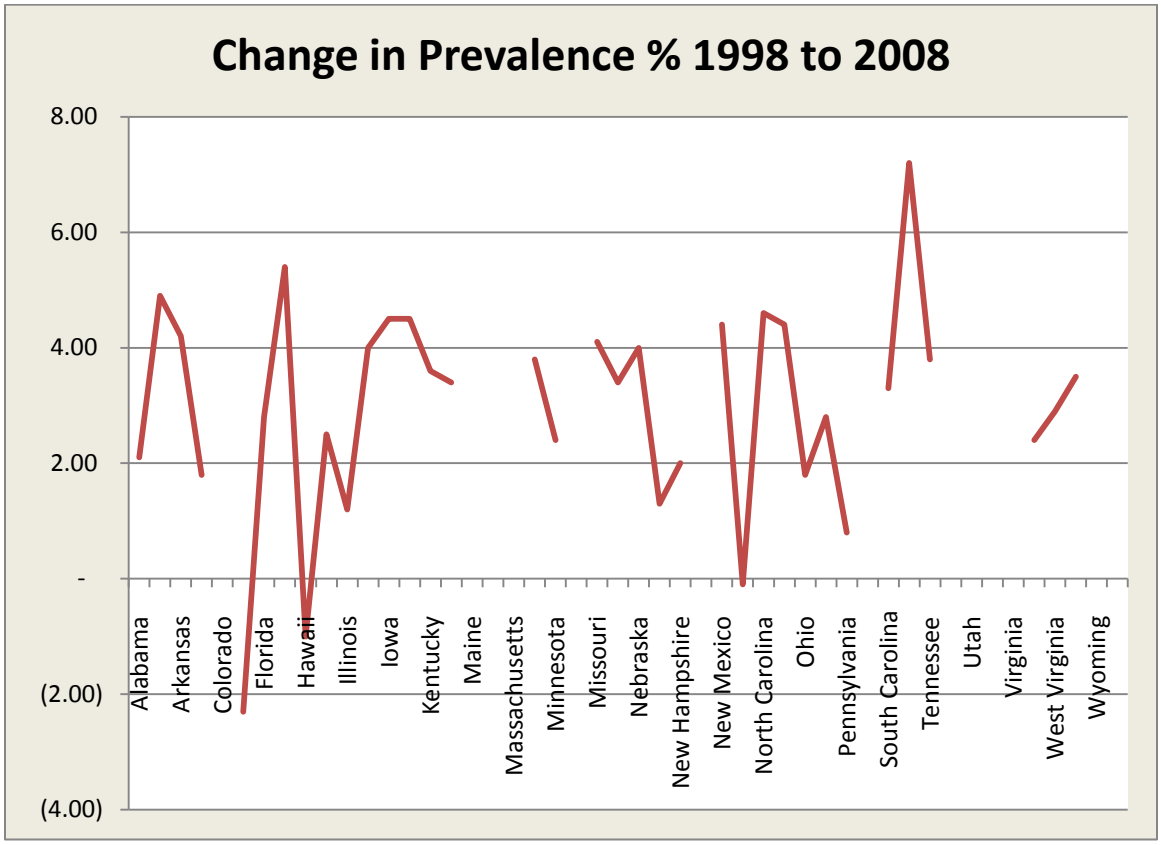
(i) CDC presents the 1998 stats on percent of 2-4 year olds in 1998. Note the variation between the states.



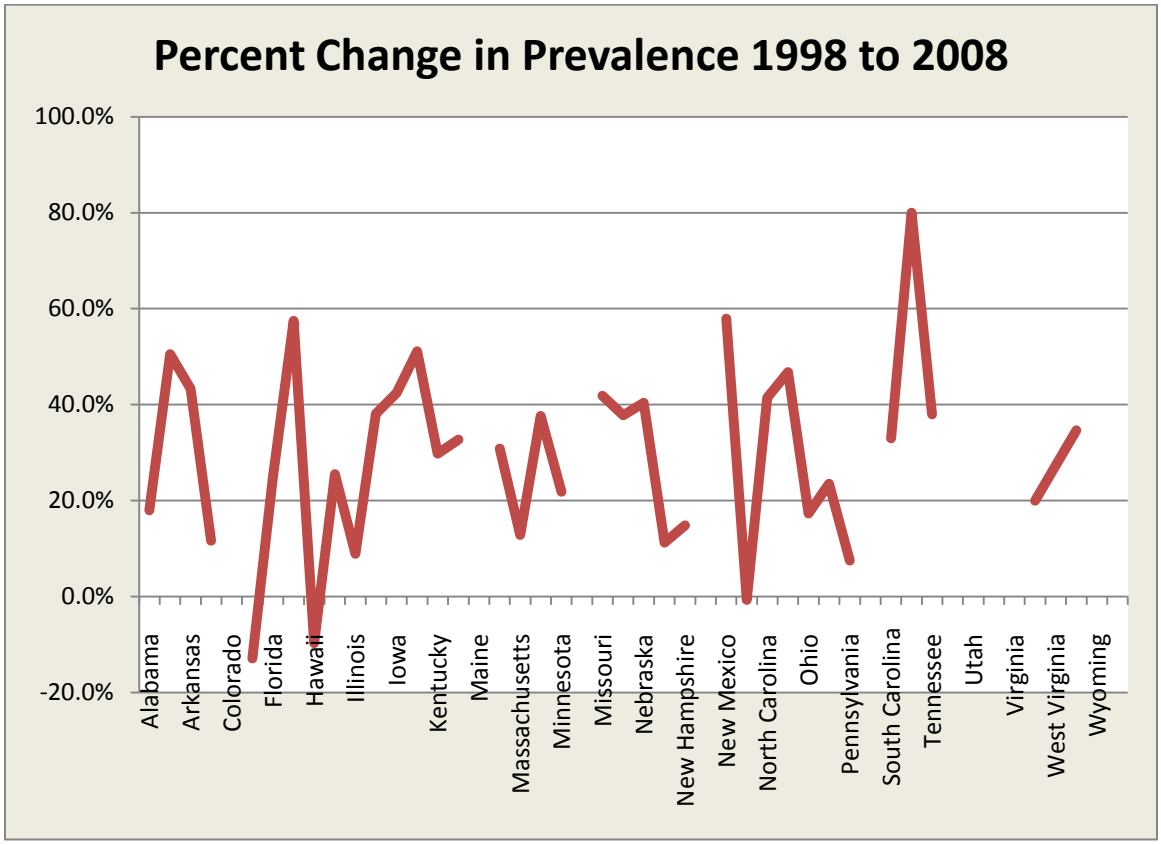
(ii) Now the percent of 2-4 year olds in 2008. Now not the sudden upward explosion and the growth in certain states. New Jersey and Virginia have the largest prevalence in this data set.



(iii) Now the change in actual prevalence from 1998 to 2008. This is instructive but we use the following chart for better resolution.



(iv) Finally the percent change in prevalence in the same time period. This shows the explosive growth, appearing at 20% over this period. This is for 2-4 year olds! Not teenagers of older people. They will never get rid of this problem and this is the ticking time bomb of health care.



The CDC study states:

"*The findings indicated that obesity prevalence among low-income, preschool-aged children increased steadily from 12.4% in 1998 to 14.5% in 2003, but subsequently remained essentially the same, with a 14.6% prevalence in 2008. Reducing childhood obesity will require effective prevention strategies that focus on environments and policies promoting physical activity and a healthy diet for families, child care centers, and communities*."

There also is a cost analysis of obesity in Health Affairs. It is by Finkelstein et al and it reports:

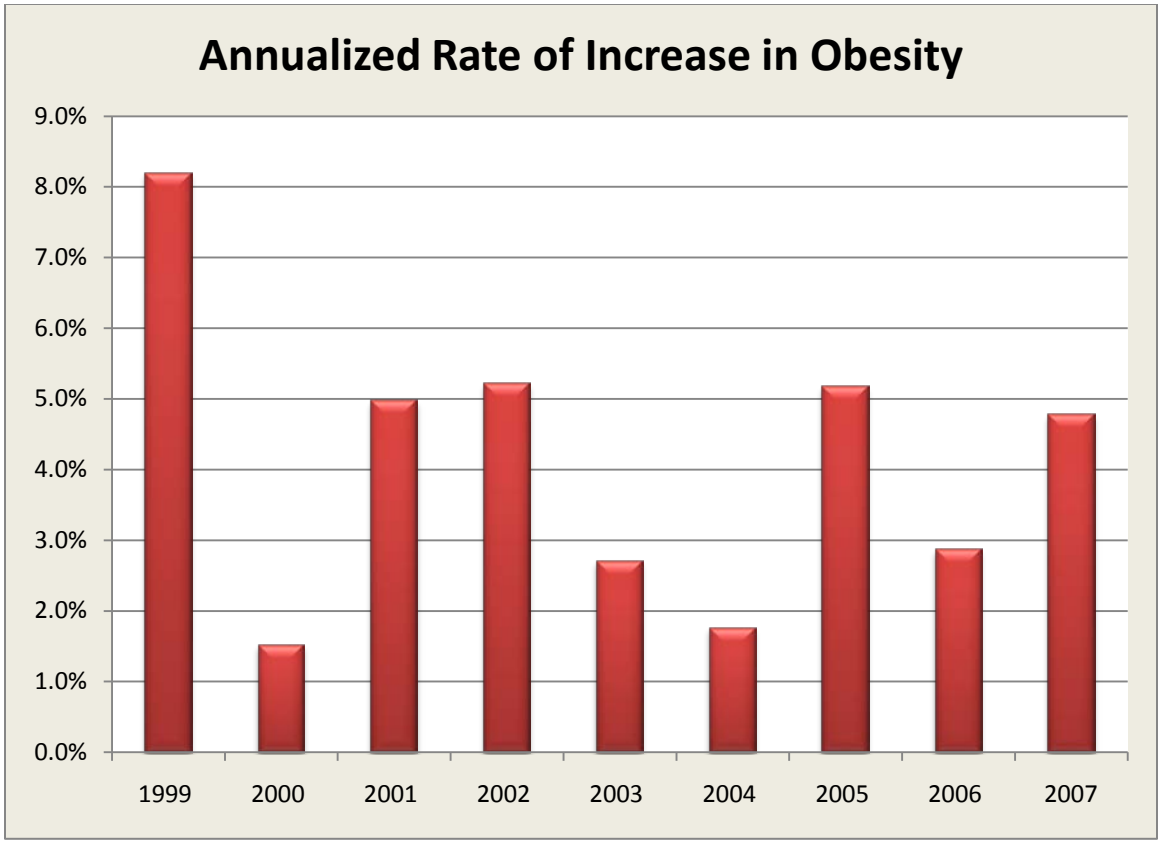
"*In 1998 the medical costs of obesity were estimated to be as high as $78.5 billion, with roughly half financed by Medicare and Medicaid. This analysis presents updated estimates of the costs of obesity for the United States across payers (Medicare, Medicaid, and private insurers), in separate categories for inpatient, non-inpatient, and prescription drug spending. We found that the increased prevalence of obesity is responsible for almost $40 billion of increased medical spending through 2006, including $7 billion in Medicare prescription drug costs. We estimate that the medical costs of obesity could have risen to $147 billion per year by 2008...*"

Their approach is about $130 Billion lower than the estimate we have made in our Diabetes White Paper where we stated:

"*... demonstrates the potential impact an economic control of behavior can have in reducing a major health care cost. Type 2 Diabetes is caused by obesity in almost all cases. It currently, in 2008 costs, accounts for almost $275 billion annually or 12% of all health care costs. We estimate that by 2020 it will account for 25% of health care costs and is growing at 10-11% per annum. It is possible to control this at the source by taxing "carbs" as we have taxed tobacco. This paper presents the case from the perspective of the medical evidence, costs factors and economic control models*."

In our approach we did a bottom up analysis based upon prevalence and incidence of disease states and costs per year per disease state. The Finklestein approach was performed by a statistical study of patients. Although they are half of our value they we fell justify the numbers we have arrived at. Clearly Type 2 Diabetes is and will explode as a major driver for health care costs. The Medical Home approach just institutionalizes this. We still firmly believe that the solution is via some form of controlling taxation as was done with tobacco.

The following is an analysis depicting the annualized rate of increase in obesity.



The average growth rate is approximately 4% per annum. Given the large base which already exists, however, this 4% compounded growth rate and the even greater growth rate amongst children, portends a dire future. The main problem with Type 2 Diabetes as compared to smoking is that smoking often ends in carcinoma of the lung, a short and always terminal disease. Type 2 Diabetes is a slow chronic and highly costly process. The contrast means that the forward looking costs of obesity will dominate health care costs, exceeding by an order of magnitude all Medicare expenditures, removing any Diabetes costs.

3.1.2 Smoking Related Diseases:

Smoking related disease have been recognized for decades as a major driver of health care costs. They range from chronic conditions such as emphysema and acute conditions such as lung cancer.

The CDC reports the following data on smoking[12]:

- An estimated 371 billion cigarettes were consumed in the United States in 2006,[1] and cigarettes account for approximately 91% of expenditures on all tobacco products in this country.[2] Total United States expenditures on tobacco were estimated to be $88.7 billion in 2005,[2] of which $82 billion were spent on cigarettes.[2]
- Five cigarette companies accounted for more than 90% of all sales in the United States in 2006.[3] They were Altria Group Inc. (Philip Morris USA; 49.2%), Reynolds American Inc. (27.8%), Lorillard (9.7%), Commonwealth Brands (3.7%), and Liggett (2.4%).[3]
- Total reported company revenue for the five largest cigarette companies were as follows: Altria Group Inc. (parent company of Philip Morris USA), $10.4 billion (2005); Reynolds American Inc., $1.2 billion (2006); Loews Corporation (parent company of Carolina Group, which owns Lorillard), $2.49 billion (2006); Houchens Industries (parent company of Commonwealth Brands), $2.36 billion (2005); and Vector Group Ltd. (parent company of Liggett), $52.4 million (2005).[4] Altria Group Inc. was ranked 20th, Loews 145th, and Reynolds American Inc. 280th on the Fortune 500 list of the largest corporations in the United States in 2006.[4]
- In 2005, cigarette companies spent $13.11 billion on advertising and promotion, down from $15.12 billion in 2003,5 but nearly double what was spent in 1998.[5] This amounted to more than $36 million per day,[5] more than $45 for every person in the United States,[5,6] and more than $290 for each U.S. adult smoker.[5,7]
- Tobacco is grown in 21 states.[8] The largest tobacco producing states are Kentucky and North Carolina, accounting for two-thirds of tobacco grown in the

[12] See http://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm

United States.[8] The number of tobacco-growing farms declined from 512,000 in 1954 to approximately 57,000 in 2002.[9]

- United States Tobacco, Conwood, and Swedish Match are the largest smokeless tobacco companies in the United States, accounting for nearly 90% of total sales.[10] Altadis USA and Swisher International Inc. are the largest cigar companies, accounting for about 60% of total United States sales of large cigars, cigarillos, and little cigars.[11]
- In 2005, consumers in the United States spent $2.61 billion on smokeless tobacco products,[12] and more than $1 billion on cigars each year.[11]

The CDC states regarding the Economic Costs and Years of Potential Life Lost Associated with Cigarette Smoking the following:

- During 2000–2004, cigarette smoking was estimated to be responsible for $193 billion in annual health-related economic losses in the United States ($96 billion in direct medical costs and approximately $97 billion in lost productivity).[13]
- The total economic costs (direct medical costs and lost productivity) associated with cigarette smoking are estimated at $10.47 per pack of cigarettes sold in the United States.
- Cigarette smoking results in 5.1 million years of potential life lost in the United States annually.

The CDC further states[13]:

Cigarette smoking and exposure to tobacco smoke are associated with premature death from chronic diseases, economic losses to society, and a substantial burden on the United States health-care system. Smoking is the primary causal factor for at least 30% of all cancer deaths, for nearly 80% of deaths from chronic obstructive pulmonary disease, and for early cardiovascular disease and deaths (*1*). In 2005, to assess the economic and public health burden from smoking, CDC published results of an analysis of smoking-attributable mortality (SAM), years of potential life lost (YPLL), and productivity losses in the United States from smoking during 1997--2001 (*2*).

The analysis was based on data from CDC's Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) system,* which estimates SAM, YPLL, and productivity losses based on data from the National Health Interview Survey and death certificate data from the National Center for Health Statistics. This report presents an update of that analysis for 2000--2004, the most recent years for which source data are available. The updated analysis indicated that, during 2000--2004, cigarette smoking and exposure to tobacco smoke resulted in at least 443,000 premature deaths, approximately 5.1 million YPLL, and $96.8 billion in productivity losses annually in the United States.

[13] See http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5745a3.htm

Comprehensive, national tobacco-control recommendations have been provided to the public health community with the goal of reducing smoking so substantially that it is no longer a significant public health problem in the United States (*3,4*).

The adult and the maternal and child health SAMMEC software modules were used to estimate SAM, YPLL, and productivity losses attributed to diseases caused by smoking. Sex- and age-specific smoking-attributable deaths were calculated by multiplying the total number of deaths for 19 adult and four infant disease categories (Table) by estimates of the smoking-attributable fraction (SAF)[†] of preventable deaths.

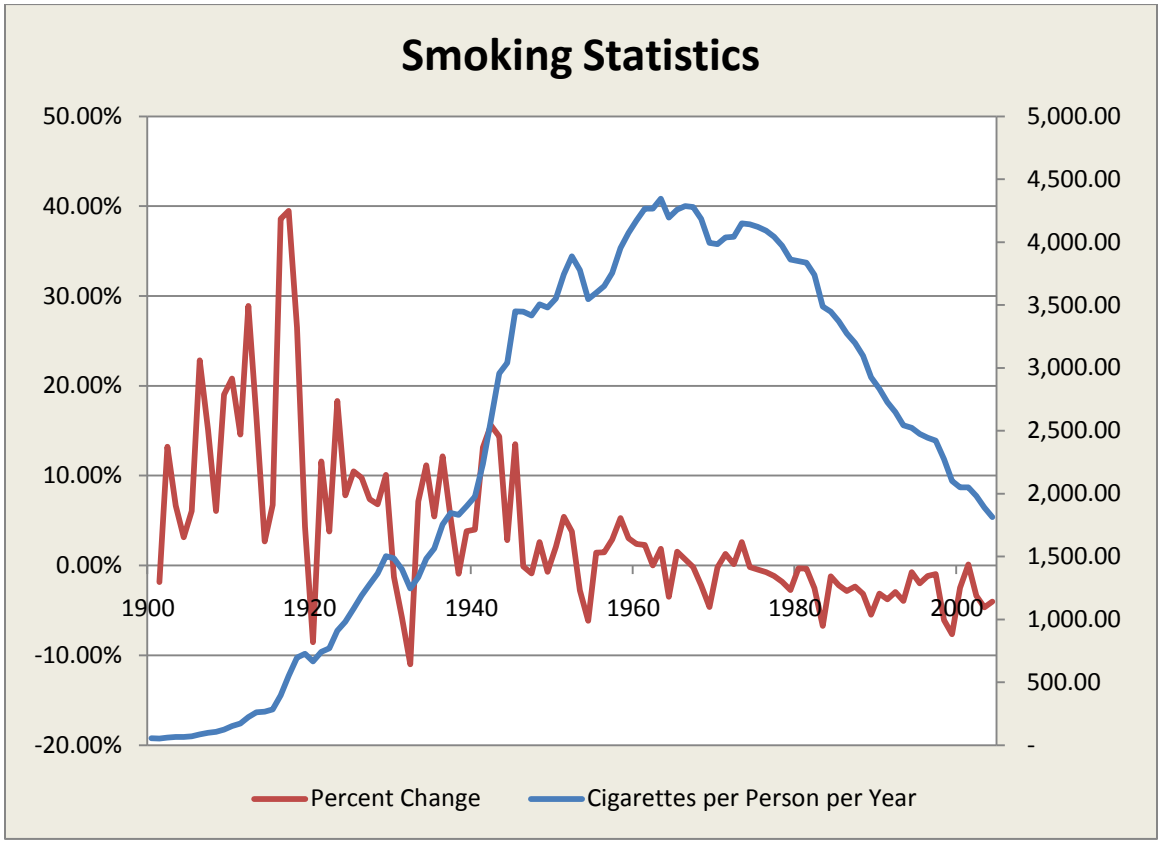
The attributable fractions provide estimates of the public health burden of each risk factor and the relative importance of risk factors for multifactorial diseases. Because of the effect of interactions between various risk factors, attributable fractions for a given disease can total more than 100%. For adults, SAFs were derived using sex-specific relative risk (RR) estimates from the American Cancer Society's Cancer Prevention Study-II (CPS-II) for current and former smokers for each cause of death for the period 1982--1988.

For ischemic heart disease and cerebrovascular disease deaths, RR estimates also were stratified by age (35--64 years and ≥65 years). Sex- and age-specific (35--64 years and ≥65 years) current and former cigarette smoking prevalence estimates from the National Health Interview Survey also were used to calculate SAFs. For infants, SAFs were calculated by using pediatric RR estimates and maternal smoking prevalence estimates from birth certificates.

Smoking-attributable YPLL and productivity losses were estimated by multiplying sex- and age-specific SAM by remaining life expectancy (*5*) and lifetime earnings data (*6*). In addition, smoking-attributable residential fire-related deaths (*7*) and lung cancer and heart disease deaths attributable to exposure to secondhand smoke (*8,9*) were included in the SAM, but not in YPLL and productivity loss estimates.

During 2000--2004, smoking resulted in an estimated annual average of 269,655 deaths among males and 173,940 deaths among females in the United States (Table). The three leading specific causes of smoking-attributable death were lung cancer (128,922), ischemic heart disease (126,005), and chronic obstructive pulmonary disease (COPD)[§] (92,915). Among adults aged ≥35 years, 160,848 (41.0%) smoking-attributable deaths were caused by cancer, 128,497 (32.7%) by cardiovascular diseases, and 103,338 (26.3%) by respiratory diseases (excluding deaths from secondhand smoking and from residential fires). Smoking during pregnancy resulted in an estimated 776 infant deaths annually during 2000--2004. An estimated 49,400 lung cancer and heart disease deaths annually were attributable to exposure to secondhand smoke. The average annual SAM estimates also included 736 deaths from smoking-attributable residential fires.

During 2000--2004, on average, smoking accounted for an estimated 3.1 million YPLL for males and approximately 2.0 million YPLL for females annually, excluding deaths from smoking-attributable residential fires and adult deaths from secondhand smoke. Estimates for average annual smoking-attributable productivity losses were approximately $96.8 billion ($64.2 billion for males and $32.6 billion for females) during this period



3.1.3 Defensive Medicine

Defensive Medicine is a term which has raised a great deal of controversy. It is generally defined as those procedures or tests, or consults which were obtained in excess of what is required for the purpose of protecting the health care provider from subsequent liability and the use of such procedures, tests, consults and the like provide not improvement of patient outcomes.

The definition has fundamentally two parts: (i) the use of some form of excess due to a fear of legal action, and (ii) the excess actions do not improve the outcome. This is congruent with the original Kessler definition.

From a 2003 GAO Report we have[14]:

"*Most research that has attempted to measure defensive practices has examined physician practices under specific clinical situations.*[41] *For example, based on clinical scenario surveys, records review, and a synthesis of prior research, a 1994 study concluded that the percentage of diagnostic procedures related to defensive medicine practices is higher in specific clinical situations, such as the management of head injuries in ERs and cesarean deliveries in childbirth, but lower when measured across multiple procedures.*[42]

The same study also surveyed physicians about nine hypothetical clinical scenarios likely to encourage defensive medicine practices and found the share of physicians reporting taking at least one clinical action primarily out of concern about malpractice varied widely depending on the situation—from 5 percent for back pain to 29 percent for head trauma. A more recent 1999 study that used records review found that reduced malpractice premiums for OB/GYNs were related to a statistically significant but small decrease in the rate of cesarean sections performed for some groups of mothers, a procedure researchers believe to be influenced by physicians' concerns about malpractice liability."

3.1.4 Misdiagnosis

In a 2002 article in NEJM by Blendon et al, after the publishing of the IOM report on medical errors. The authors introduce their definition of medical errors as follows:

"After answering the open-ended question, respondents in both surveys were given the following statement defining "medical error" to ensure that they had a common understanding of the term: "Sometimes when people are ill and receive medical care, mistakes are made that result in serious harm, such as death, disability, or additional or prolonged treatment. These are called medical errors. Some of these errors are preventable, whereas others may not be." "

This definition will appear again and again as this study is continued. It is a critical definition and in the practice such errors are all too often common.

Then the authors state:

Of the 11 items listed as possible causes of medical errors, only 2 were thought by at least half the physicians to be very important causes: understaffing of nurses in hospitals (53 percent) and overwork, stress, or fatigue on the part of health professionals (50

[14] See GAO Report, MEDICAL MALPRACTICE Implications of Rising Premiums on Access to Health Care, 2003.

percent) (Table 3). In the survey of the public, at least half the respondents considered seven of the causes very important. The top four causes considered to be very important were physicians' not having enough time with patients (72 percent); overwork, stress, or fatigue on the part of health professionals (70 percent); failure of health professionals to work together or communicate as a team (67 percent); and understaffing of nurses in hospitals (65 percent).

They proposed solutions were as follows:

"Of the 16 proposed solutions, a majority of physicians thought that 2 would be very effective at reducing the number of medical errors: requiring hospitals to develop systems for preventing medical errors (55 percent) and increasing the number of nurses in hospitals (51 percent) (Table 4). A majority of the respondents in the survey of the public rated eight items as very effective. The top four items were giving physicians more time to spend with their patients (78 percent), requiring hospitals to develop systems for preventing errors (74 percent), providing better training of health professionals (73 percent), and using only physicians trained in intensive care medicine on intensive care units (73 percent)"

In a 2009 JAMA paper Newman-Toker and Pronovost state:

"An estimated 40 000 to 80 000 US hospital deaths result from misdiagnosis annually.[4] Roughly 5% of autopsies reveal lethal diagnostic errors for which a correct diagnosis coupled with treatment could have averted death.[5] In the Harvard Medical Practice Study, physician errors resulting in adverse events were more likely to be diagnostic than drug related (14% vs 9%), and misdiagnoses were more likely to be considered negligent (75% vs 53%) and to result in serious disability (47% vs 14%).[6] Not surprisingly, tort claims for diagnostic errors are nearly twice as common as claims for medication errors and result in the largest payouts.[7] As with all types of medical error, the human toll of misdiagnosis on an individual or family can be tremendous, particularly when a healthy patient experiences an adverse event.

Diagnostic errors often are unrecognized or unreported, and the science of measuring these errors (and their effects) is underdeveloped. [1,2] Available statistics consider neither deaths due to misdiagnosis in outpatients nor misdiagnosis-related morbidity and associated costs. For example, stroke, the leading cause of serious, long-term disability in the United States, affects 780 000 Americans annually.[8] Opportunities to prevent disabling stroke are missed when patients experiencing mild or transient warning symptoms receive misdiagnoses. According to a recent systematic review, 9% of all cerebrovascular events are missed initially, and the odds of misdiagnosis increase at least 5-fold when symptoms are mild or transient."

Their recommendations are as follows:

"Because it is impossible to eliminate all diagnostic errors, open dialogue is necessary about how much diagnostic safety medicine can afford. ***Tort reform is needed to reduce excessive testing associated with the practice of "defensive medicine,"*** *[1]* ***and defining acceptable error rates should be a policy imperative****. These complexities notwithstanding, with* ***nearly 10 years having passed since publication of To Err Is Human****, there is cause for optimism that the next decade will see diagnostic errors "get the respect"*[3] *they deserve. A scientific community is starting to form. In 2007, AHRQ announced a special emphasis on funding diagnostic errors research,*[14] *and in 2008, the inaugural Diagnostic Error in Medicine conference was convened for investigators to share their work on misdiagnosis.*[15] *With funding and collaboration, researchers are poised to increase the visibility of diagnostic errors and to advance the science of how to identify and prevent them. As with most scientific advances, this will likely be a long and arduous journey, but the next frontier for patient safety is in plain view.*

Thus the problem of diagnostic errors continues and is a costly direct component of medical costs. However the problem is one which requires a systemic change in the practice of medicine and law. Any physician can always relate in the privacy of their own confessional the misdiagnoses they have made. They rushed and missed a shadow on a mammogram, a shadow on an ovary, the nevus which they should have looked at closer, and the list continues. That is why the persistence of the patient is critical and why the use of specialists are a must.

3.1.5 Nosocomial Infections

In a March 2009 report from the CDC by Scott, the summary states[15]:

"Because it is impossible to eliminate all diagnostic errors, open dialogue is necessary about how much diagnostic safety medicine can afford. Tort reform is needed to reduce excessive testing associated with the practice of "defensive medicine," [1] *and defining acceptable error rates should be a policy imperative. These complexities notwithstanding, with nearly 10 years having passed since publication of To Err Is Human, there is cause for optimism that the next decade will see diagnostic errors "get the respect"*[3] *they deserve. A scientific community is starting to form. In 2007, AHRQ announced a special emphasis on funding diagnostic errors research,*[14] *and in 2008, the inaugural Diagnostic Error in Medicine conference was convened for investigators to share their work on misdiagnosis.*[15] *With funding and collaboration, researchers are poised to increase the visibility of diagnostic errors and to advance the science of how to identify and prevent them. As with most scientific advances, this will likely be a long and arduous journey, but the next frontier for patient safety is in plain view."*

[15] See : Klevens RM, Edwards JR, Richards CL, Horan T, Gaynes R, Pollock D, Cardo D. Estimating healthcare-associated infections in U.S. hospitals, 2002. *Public Health Rep* 2007;122:160-166.

As to the remedies, in a paper by Schwegman he summarizes the recommendations[16]:

"Numerous organizations worldwide including the World Health Organization (WHO) and the Infection Control Practices Advisory Committee at the Centers for Disease Control and Prevention (CDC) have developed recommendations on protecting patients and health care workers from HAIs. The foundation of HAI prevention is proper hand-hygiene technique, and the CDC 2002 guidelines explicitly cover indications for handwashing and hand antisepsis, hand-hygiene technique, surgical hand antisepsis, and selection of hand-hygiene agents.[14] If health care workers achieved 100% compliance with proper hand-hygiene techniques it would significantly reduce the spread of HAIs. Unfortunately, studies have found hand-hygiene compliance rates to be consistently less than 50%.[15,16]

Perceived barriers to hand hygiene include skin irritation, inaccessible supplies, interference with worker-patient relation, patient needs perceived as priority, wearing gloves, forgetfulness, ignorance of guidelines, insufficient time, high workload and understaffing, and lack of scientific information demonstrating impact of improved hand hygiene on hospital infection rates. Eliminating perceived barriers to hand hygiene is an important first step in improving hand-hygiene compliance rates and reducing HAIs.

The CDC has also published clear guidelines for isolation precautions, prevention of hospital-acquired pneumonias, intravascular device-related infections, surgical site infections, and catheter-related urinary tract infections, and these guidelines must also be closely followed to achieve maximum patient safety.

CDC recommendations regarding indirect transmission through patient care devices and environmental reservoirs are less specific than the recommendations listed and require some interpretation. The recommendations include:[17]

1. Establish policies and procedures for containing, transporting, and handling patient-care equipment and instruments/devices that may be contaminated with blood or body fluids.

2. Remove organic material from critical and semi-critical instruments/devices, using recommended cleaning agents before high-level disinfection and sterilization to enable effective disinfection and sterilization processes.

3. Wear personal protective equipment (PPE), such as, gloves and gowns, according to the level of anticipated contamination when handling patient-care equipment and

[16] See http://www.welchallyn.com/documents/Blood%20Pressure%20Management/FlexiPort%20Blood%20Pressure%20Cuffs/ICT_article2_OLC.pdf the latest CDC guidelines are in: http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf

instruments/devices that are visibly soiled or may have been in contact with blood or body fluids."

Thus this a remediable problem.

3.1.6 Re-hospitalizations

In the NEJM paper by Jencks et al they state:

"*Medicare payments for unplanned rehospitalizations in 2004 accounted for about $17.4 billion of the $102.6 billion in hospital payments from Medicare,*[21] *making them a large target for cost reduction. (This cost estimate is derived by multiplying the 19.6% rehospitalization rate by 90%,which represents the percentage of unplanned rehospitalizations, and multiplying that product by 96%, since DRG-based payments for rehospitalizations are 4% lower than those for index hospitalizations.) Convincing estimates of potential savings must await evaluation of large-scale improvement effort*s."

The NEJM paper then recommends:

"Five lines of evidence suggest that rates of rehospitalization might be reduced.

First, controlled studies have shown that certain interventions at the time of discharge sharply reduce the rates of rehospitalization among patients with heart failure and other Medicare beneficiaries, and preliminary reports suggest that these and other interventions are more effective when used more widely. In contrast, coordination-of-care interventions that are limited to community settings appear to be ineffective in reducing rehospitalization. …

Second, the absence of a bill for an outpatient physician visit in the case of more than half of the patients with a medical condition who were readmitted within 30 days after discharge to the community is of great concern and suggests a considerable opportunity for improvement. Our concern is heightened by the same finding among patients with heart failure, who are known to have a response to intensified care. Hospitals and physicians may need to collaborate to improve the promptness and reliability of follow-up care.

Third, although claims data are less informative about follow-up care after surgical procedures (because of the global surgical fee), many patients who are discharged after a surgical procedure may benefit from earlier medical follow-up, since a substantial majority of postsurgical rehospitalizations are for medical conditions.

Fourth, our estimate that 90% of rehospitalizations within 30 days after discharge are unplanned suggests that rehospitalization is probably not primarily driven either by

clinical practices (e.g., staged surgery) that cannot be efficiently rendered in one hospitalization or by profit seeking division of services into multiple hospitalizations.

Fifth, the variation among states (Fig. 1) and hospitals suggests that improvement on a national scale may be possible, but the data do not show which practices cause the differences or whether the differences are exportable."

3.1.7 Retesting

Retesting is not an excess procedure because it is a health care procedure done due to the inability to obtain the results from when it was performed prior times. Thus the continual retesting of blood, CAT, MRI, and the like. The argument is that such procedures can be reduced by the use of the electronic medical record.

The classic report on this was written at Rand by Kateryna Fonkych and Roger Taylor and was sponsored by Sponsored by Cerner Corporation, General Electric, Hewlett-Packard, Johnson & Johnson, and Xerox. Needless to say the recommendations support the products of the sponsors. The irony is that no one in the Press seems to see this fact and that the report was diminished by these sponsors. The report results are valid but suspect.

In the paper by Hillestad et al the authors state[17]:

"At 90 percent adoption, we estimate that the potential HIT-enabled efficiency savings for both inpatient and outpatient care could average more than $77 billion per year (an average annual savings of $42 billion during the adoption period). Exhibit 2 shows the most important sources of the savings we estimated: The largest come from reducing hospital lengths-of-stay, nurses' administrative time, drug usage in hospitals, and drug and radiology usage in the outpatient setting…"

Thus we estimate a savings of $40 B per annum.

3.1.8 Excess Procedures

Excess procedures are those procedures which are NOT Defensive Medicine procedures but those which are simply excess and done to increase the health care providers income. The classic example was the rampant use of tonsillectomies in the 1950s. They showed no benefit, and even subjected the young patient to the massive risk of a general anesthesia.

[17] See Hillestead et al, Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, And Cost, Health Affairs, Vol 24, No 5.

As we had stated earlier, this generally is fraud and to date no detailed studies seem to be available. HHS issues annual reports on medical fraud[18]. The results for 2006 state:

"*During FY 2006, the Federal Government won or negotiated approximately $2.2 billion in judgments and settlements, and it attained additional administrative impositions in health care fraud cases and proceedings. The Medicare Trust Fund received transfers of approximately $1.5 billion during this period as a result of these efforts, as well as those of preceding years, in addition to $177.1 million in Federal Medicaid money similarly transferred separately to the Treasury as a result of these efforts. The HCFAC account has returned over $10.4 billion to the Medicare Trust Fund since the inception of the program in 1997*."

The cost or retrieving this is in excess of the amount retrieved. There is no targeted process and it appears as if it is a catch as catch can approach. The insurance industry states[19]:

"In fact, fraud is a significant cost driver in the bloated healthcare system. Private health insurers and taxpayer health programs such as Medicare and Medicaid alone could easily lose $100 billion annually to cheaters, guesstimates the National Health Care Anti-Fraud Association. "

Furthermore it states:

"Consider also: The credit-card industry's threshold of acceptable risk is one tenth of a percent of transaction volume. The health industry routinely estimates losses of about 10 percent— 100 times the credit-card industry's risk level, Harvard's Malcolm Sparrow says."

The industry recommends:

"Embed accountability. A federal fraud czar within the Department of Health and Human Services should direct the anti-fraud effort, and be accountable for results. … Dozens of federal and state agencies, private and taxpayer-funded insurers, law enforcement and others must work in tandem.

Impose overwhelming force. Medical schemes must be hunted down with crushing force. …

Empower state crackdowns. Many medical fraud schemes are first detected by state and local agencies. But they're often the least-funded and worst-equipped to combat medical fraud. …

[18] See http://oig.hhs.gov/publications/docs/hcfac/hcfacreport2006.pdf

[19] See http://www.insurancefraud.org/downloads/FF-Summer2009.pdf

Mine better field intel. Incredibly, this multi-trillion-dollar business lacks decent fraud data. Databases are scattered and not connected, and modern datamining often is limited. …

Ensure tough penalties. … a valid threat of tough but fair punishment can deter wrongdoers, sweep convicted cheaters off the streets, and recover stolen money…

Litigation protection. Whistleblowers who report fraud in the Medicare program are granted protection from medical providers filing suit against them. The same protection should be extended to private insurers and other individuals to encourage more cooperation with federal law enforcement.

Change toxic attitudes. Medical fraud can't be arrested out of existence. We must reverse lax attitudes that allow schemes to thrive.

A long term public outreach campaign must be funded. But whether these and other antifraud provisions will end up in the final healthcare package, the Obama Administration has signaled it's getting serious about stanching Medicare fraud, waste and abuse.

President Obama says he plans to pump an added $311 million into muscling up Medicare crime-busting next year—a 50-percent hike over current spending. This will save $2.7 billion over five years, the Administration says. Medicare suffers from lax oversight and inadequate anti-fraud resources".

3.1.9 Genetically Controllable Diseases

The opportunity of using genetic markers at an early stage to mediate disease and prevent costly sequellae is an achievable step at this stage. We have included it here as an example of a place marker for future cost reduction steps which can be taken.

3.1.10 Controllable Diseases

Cancers of many types are now reaching the stage of being controllable if not preventable. Cancer incidence rates have been continuing to decline and mortality is declining even faster. As the CDC reports[20], the three most common cancers among men include:

- Prostate cancer (142.4): First among men of all races and Hispanic origin populations.

[20] See http://www.cdc.gov/Features/CancerStatistics/

- Lung cancer (84.6): Second among men of all races and Hispanic origin populations.
- Colorectal cancer (58.2): Third among men of all races and Hispanic origin populations.

The leading causes of cancer death among men are:

- Lung cancer (69.4): First among men of all racial and Hispanic origin populations.
- Prostate cancer (25.4): Second among white (22.7), black (54.1), American Indian/Alaska Native (18.0), and Hispanic (18.7) men.
- Liver cancer: Second among Asian/Pacific Islander men (14.5).
- Colorectal cancer (21.0): Third among men of all races and Hispanic origin populations.

The three most common cancers among women include:

- Breast cancer (117.7): First among women of all races and Hispanic origin populations.
- Lung cancer (55.2): Second among white (56.6), black (50.9), and American Indian/Alaska Native (37.6) women, and third among Asian/Pacific Islander (26.9) and Hispanic (25.2) women.
- Colorectal cancer (41.9): Second among Asian/Pacific Islander (32.2) and Hispanic (33.9) women, and third among white (40.8), black (49.4), and American Indian/Alaska Native women (24.5).

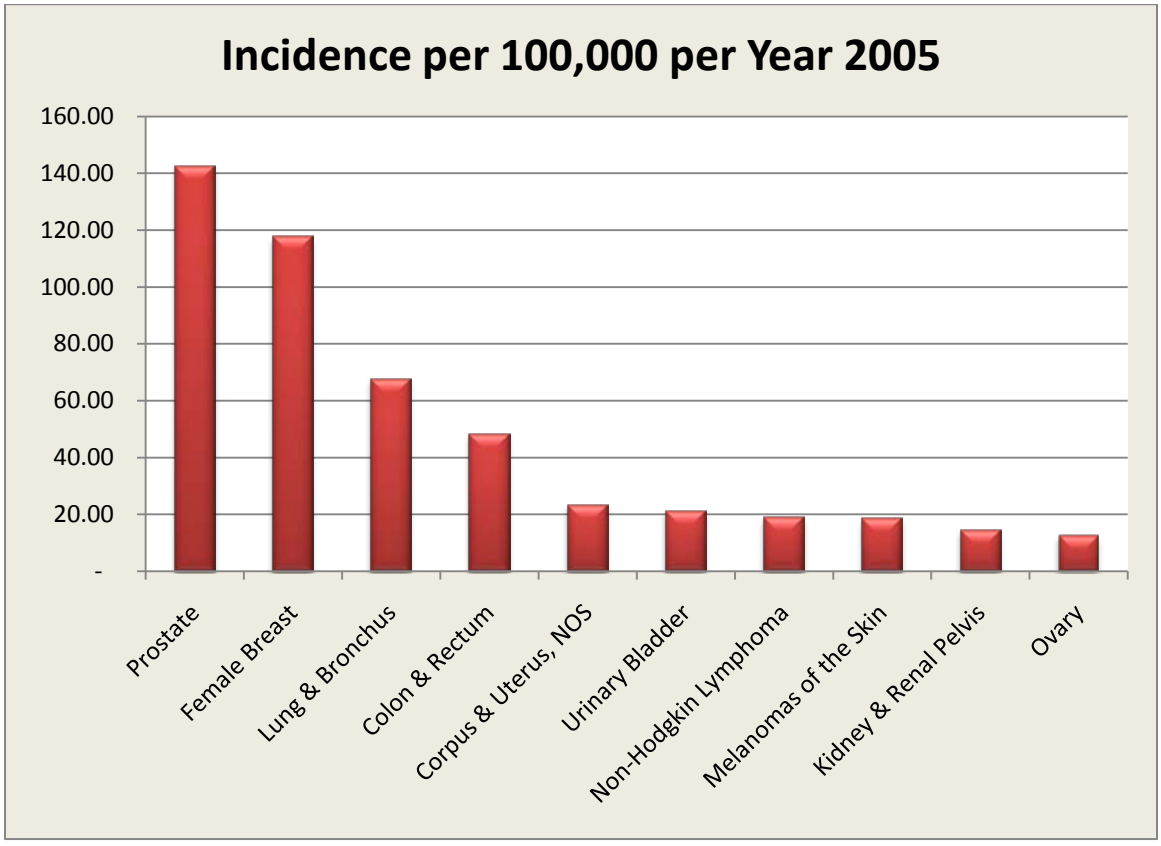
The leading causes of cancer death among women are:

- Lung cancer (40.6): First among white (41.6), black (40.2), Asian/Pacific Islander (18.2), and American Indian/Alaska Native (29.2) women, and second among Hispanic women (14.4).
- Breast cancer (24.0): First among Hispanic women (15.1), and second among white (23.3), black (32.9), Asian/Pacific Islander (12.3), and American Indian/Alaska Native (15.3) women.
- Colorectal cancer (14.6): Third among women of all races and Hispanic origin populations.

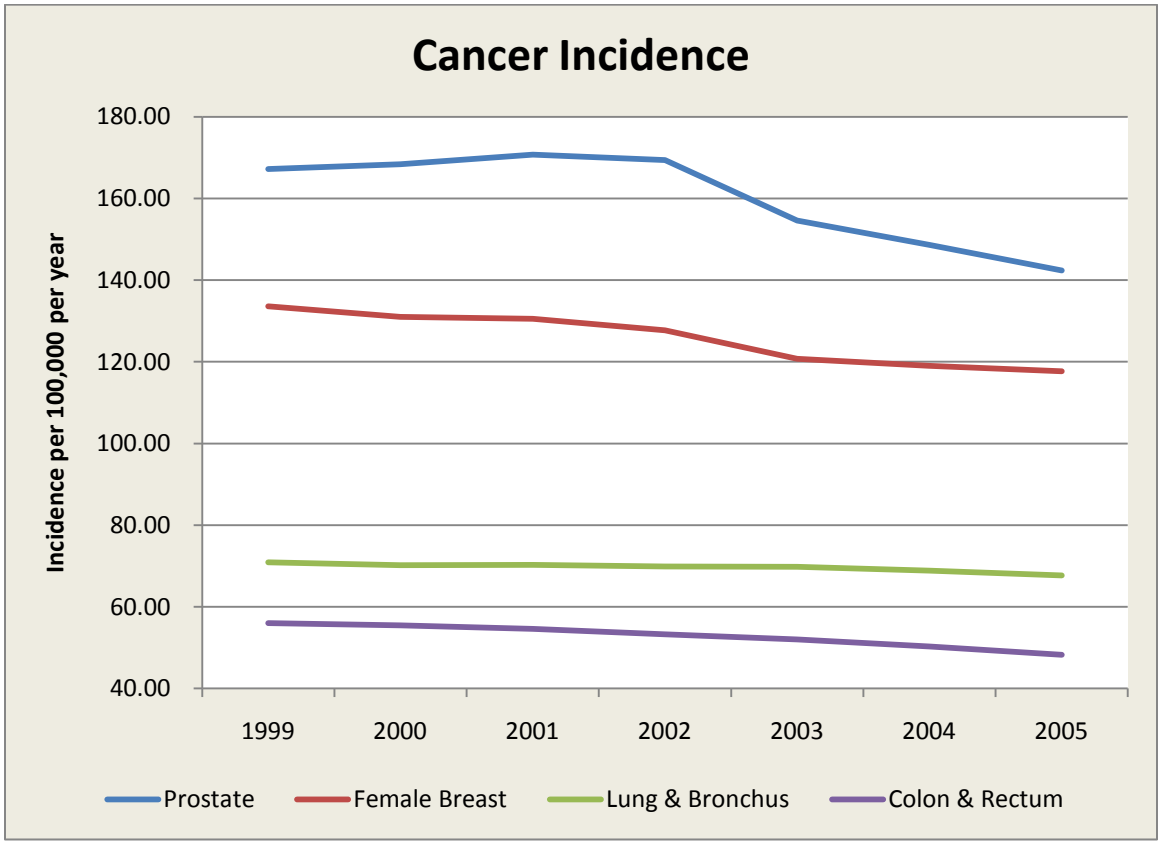
Among four races and Hispanic origin, for all cancers combined:

- American Indian/Alaska Native men have the lowest incidence rates of cancer; however, Asian/Pacific Islander men have the lowest death rates from cancer.
- White women have the highest incidence rates of cancer; however, black women have the highest death rates from cancer.
- American Indian/Alaska Native women have the lowest incidence rates of cancer and the third-highest cancer death rates.

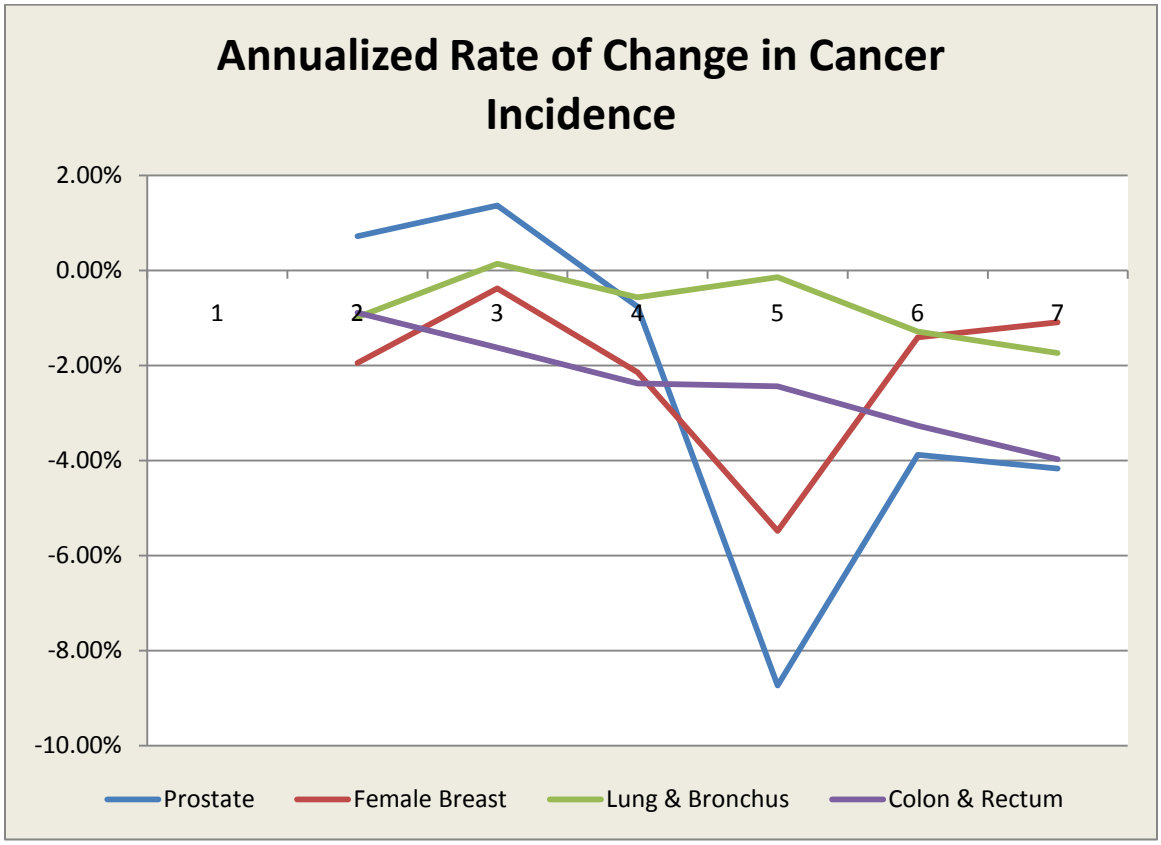
The following chart depicts the incidence of the top ten cancers in 2005. The dominant ones are prostate and then breast cancer. Prostate is a difficult one because there are various types, whose genetic fabric is still unknown, and they types may be indolent or highly aggressive. It is not possible to differentiate between them at this stage. Thus treating prostate cancer is not just a watchful waiting strategy, it must become gene dependent.



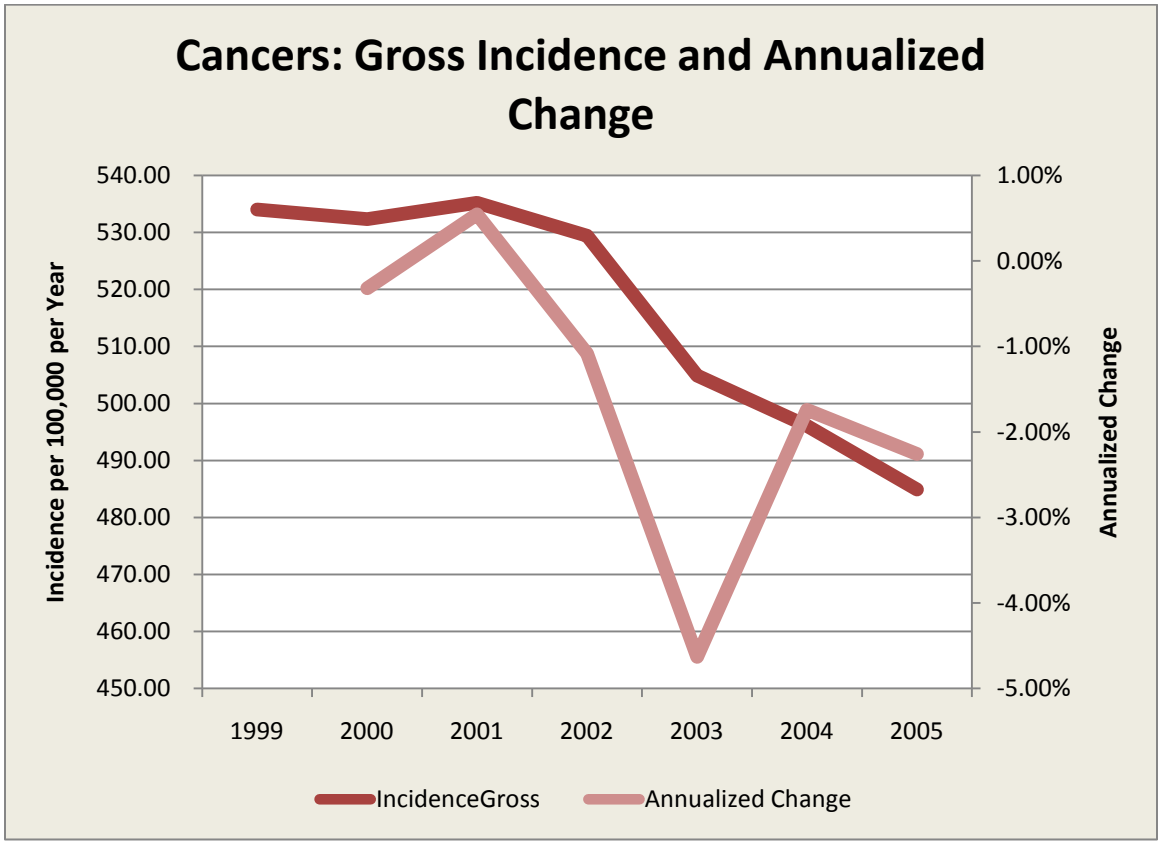
The following chart depicts the change in incidence over the past decade and it clearly shows a consistent decline. This is incidence and mortality has shown an even better decline.



The next graph shows the annualized rate of decline. We are now seeing a 4% per annum decline in these cancers across the board. To determine the drivers of this decline is complex. Clearly for colon cancers early detection of adenomas must be a significant factor. In fact it is almost possible to state that colon cancer could be eliminated if everyone had a bi-annual colonoscopy, but at what cost would be the retort.



The final chart is the gross incidence and gross annualized change. This is across all top ten cancers.



3.1.11 Drug Control

There are two elements of costs savings in drug control; control of proper administration, namely avoiding drug errors, and avoidance of excessive and costly drug prescription. We address both here.

Regarding drug errors a recent paper in JAMA by Bates et all states:

"HOSPITALS, health care delivery systems, and health care providers all aim to provide the safest care possible. However, many injuries occur during hospitalization. Estimates have suggested that 1.3 million injuries may occur in the United States annually.[1] Although many hospital injuries are unpredictable and unavoidable, 20% to 70% may be preventable.

Adverse drug events (ADEs) are an important source of injuries. In the Harvard Medical Practice Study, ADEs accounted for19% of injuries in hospitalized patients and represented the single most common cause of injury. In addition to their human costs, ADEs are costly to health care systems. Nationally, ADEs occurring after hospitalization have been projected to cost hospitals $2 billion per year, not including malpractice costs or the costs of injuries to patients.[6,7] Hospitalizations initiated by ADEs appear to be at least as expensive. "

A 2008 CBO Report, Evidence on the Costs and Benefits of Health Information Technology, states regarding the cost issue:

"*The EHR would automatically check any prescriptions for errors in dosing, allergies, and drug interactions; if the patient's health insurance plan included a formulary (a list of prescription drugs approved for use), the physician could discuss information about prices and copayments while the patient was still in the office. The EHR might also have a feature that could suggest a drug that might be a better choice, given the specifics of the patient's condition. The prescription would then be delivered electronically to the patient's pharmacy….*

For integrated systems (such as Kaiser Permanente and the VA), more savings are internal than would be the case for providers that are not part of an integrated system. For example, integrated systems often have contracts with health insurance plans entailing that the systems assume the financial risk for the cost of prescription drugs and diagnostic tests, among other things, for the patients covered by those plans. As such, the systems can capture the savings from shifting their prescribing patterns toward generic drugs and reducing the number of duplicated diagnostic tests….

Wang and colleagues (2003) estimate that health IT systems in the offices of primary care physicians could save 15 percent of total drug costs per year in capitated plans, but that number is based on the opinions of an expert panel and not on actual data. Given that capitated plans already have a powerful incentive to encourage the use of less expensive drugs, an effect of 15 percent may be overly optimistic. Some research also indicates that some providers apparently have trouble using the prescribing functions in health IT systems (Wang and others, 2003; Grossman and others, 2007)…. "

Thus we conclude that a substantial amount can be saved on both the prescribing of drugs as well as the concomitant errors and harm resulting from their misuse.

3.1.12 Malpractice Costs

The following is for 2001 and from a 2002 HHS report entitled, Confronting the New Health Care Crisis: Improving Health Care Quality and Lowering Costs By Fixing Our Medical Liability System.

	OB/GYN	Surgeon	Internists
Florida	$143K-203K	$63K-159K	$27K-51K
Michigan	$87K-124K	$67K-94K	$18K-40K
Illinois	$89K-110K	$50K-70K	$16K-28K
Ohio	$58K-95K	$33K-60K	$11K-16K
Nevada	$60K-95K	$32K-57K	$9K-$16K
New York	$34K-115K	$19K-63K	$6K-22K
* West Virginia	$63K-85K	$44K-56K	$8K-16K
California	$23K-72K	$14K-42K	$4K-15K

The CBO reports that[21]:

"*In 2003, about 181,000 severe medical injuries occurred in U.S. hospitals (representing 0.5 percent of all hospital admissions) that were attributable to negligence…. Only about 17 percent of affected patients chose to file a malpractice claim. Patients who did not file a claim may have been unaware that negligence had occurred, or they may have been discouraged from filing a lawsuit because of the time, effort, and expense involved*"

Thus malpractice is smaller than it could be in terms of incidence. The report goes on to state:

"In 2008, health care providers are likely to spend more than $30 billion to defend against and pay medical malpractice claims.57 Although that amount of money is substantial, it represents about 1.5 percent of national health expenditures and less than 3 percent of total payments to doctors and hospitals. Administrative costs in the medical malpractice system—including legal fees, administrative costs for malpractice insurers, and court costs—have been found to account for about half of the total spending on malpractice claims.58 That high percentage primarily reflects the current legal process of determining whether negligence occurred and what the compensatory payment should be."

Thus malpractice costs approximately $30 billion per annum and seems to scale with total costs.

3.2 Summary of Impact

The following Table summarizes the above twelve areas. It presents:

The Area: These are just the twelve areas we discussed above.

The Medical Issues: This is a brief description of the medical implications of the specific area.

Costs in 2008 Dollars: These are the estimates of the costs of this area in 2008 dollars in the 2008 health care expenditures.

Percent of 2008 Health Budget: This represents the percent of the 2008 health care expenditures.

Growth Rates: These are the growth rates. It is interesting to note the large growth for Type 2 Diabetes and weight related disorders and the negative rates for Smoking and Remediable cancers.

[21] See CBO, *Key Issues in Analyzing Major Health Insurance Proposals*, Dec 2008.

Remediation Options: This is a simple statement of the strategy to remediate the area in a policy perspective.

References: These are the references from which we have drawn the information and analyses. Many of these refer to the detailed analyses we have performed separately. Several areas such a defensive medicine need study and genetically controllable diseases is a work in progress in our own analyses.

Cost Element	*Issue*	*Cost $000,000,000*	*Percent Total*	*Annualized Growth Rate*	*Controls*	*Reference*
Type 2 Diabetes	This is all Type 2 Diabetes related costs.	$252.00	11.5%	3.9%	Take remedial steps to reduce consumption of carbohydrates via actions at point of purchase and/or point of consumption	Telmarc Study
Smoking Related Diseases	This relates to all smoking related diseases.	$110.00	5.0%	-3.1%	Take remedial steps to reduce consumption of carbohydrates via actions at point of purchase and/or point of consumption. This has been successful with taxes directly on tobacco.	CDC
Defensive Medicine	This is the issue of performing excess tests, procedures and referrals in order to defensively avoid malpractice claims				This has been a difficult area to quantify. It could be mitigated via some form of tort reform. It is known that actions are taken but it is difficult to assess whether the actions are within clinically acceptable guidelines.	Kessler et al
Misdiagnosis	This is the cost associated with misdiagnosis of what would otherwise be a remediable disease.	$3.50	0.2%		This is driven by concerns for Tort liability. To reduce the number of such misdiagnoses it is necessary to recognize them and in turn address why the occurred and how to remedy them. This is problematic in a Tort environment.	IOM Report
Nosocomial Infections	This is the cost of hospital acquired infections	$11.20	0.5%		This is simply remedied by the application of readily known procedures of medical hygiene and reinforcement.	CDC Report
Re-hospitalizations	This is the costs of re-hospitalizations of patients who should have been treated in their first stay.	$22.00	1.0%		This can be remedied by a multiple set of procedures regarding the patient release and the education of the patient before release, as well as follow up upon release.	NEJM 2009

Cost Element	*Issue*	*Cost $000,000,000*	*Percent Total*	*Annualized Growth Rate*	*Controls*	*Reference*
Retesting	This relates to the EMR ability to have on line test results which are shareable	$40.00	1.8%		This can be dramatically mediated via EMR patient record sharing as well as identifying incremental costs associated with repeat procedures.	Rand Study EMR 2005 p 14
Excess Procedures	This is the cost of excess procedures that physicians perform for purposes other than determining diagnosis and care or as a defensive mechanism against litigation. Frequently these are also referred to as added revenue procedures.				Placing cost data and alternatives at the point of prescription using EMR technology	Tierney JAMA 1993
Genetically Controllable Diseases	These are the net costs which could be saved if genetic screening and staging were used for currently know disorders.				Screening of patients can dramatically reduce incidence and mortality rates as well as reduce costs of advanced states.	Telmarc TBD
Controllable Diseases	These are the costs associated with the care and treatment of patients with controllable diseases who can be less expensively treated if they are screened and monitored more effectively. Example would be prostate, colon, and breast cancers.	$120.00	5.5%	-1.6%	Screening of patients can dramatically reduce incidence and mortality rates as well as reduce costs of advanced states.	Telmarc Study
Drug Control	This is the amount which could be saved if physicians had access to costs on prescriptions at the point of issuance to the patient.	$35.00	1.6%		Placing cost data and alternatives at the point of prescription using EMR technology	Tierney JAMA 1993
Malpractice Costs	This is the current total out of pocket costs of malpractice insurance and claims related thereto	$30.00	1.4%		This is a cost which can be reduced via tort reform.	CBO 2004 Report
Total		$623.70	28.35%			

4 CONCLUSIONS

We have used the four factors presented in the Introduction to structure an analysis of major cost reductions efforts. We have argued that there are actions which can be taken in certain areas such as obesity which have lasting productive results, actions in Medicare regarding efficiency and care, and actions which we at this time still have limited visibility on yet may have substantial gains.

WE now want to take a look at the other costs factors, the total cost factors and then how we would prioritize the items we analyzed herein.

4.1 Administrative Cost Factors

There are many other costs factors which could be considered. We name one which most people focus on; administrative and overhead costs. In the 2003 NEJM paper by Woolhandler et al the authors state[22]:

"In 1999, health administration costs totaled at least $294.3 billion in the United States, or $1,059 per capita, as compared with $307 per capita in Canada. After exclusions, administration accounted for 31.0 percent of health care expenditures in the United States and 16.7 percent of health care expenditures in Canada. Canada's national health insurance program had overhead of 1.3 percent; the overhead among Canada's private insurers was higher than that in the United States (13.2 percent vs. 11.7 percent). Providers' administrative costs were far lower in Canada. Between 1969 and 1999, the share of the U.S. health care labor force accounted for by administrative workers grew from 18.2 percent to 27.3 percent. In Canada, it grew from 16.0 percent in 1971 to 19.1 percent in 1996."

Scaling this up to 2009 we would have almost $2,500 per capita of the total $7,300 per capita costs in 2009. One need go into any general practice office or worse yet a hospital and masses of people wandering about doing their tasks. If this were any business it would have gone bankrupt years earlier. It is not that people are not performing functions, it is that the overhead is managed in a cumbersome and highly costly manner. This means that 33% of our health care expenditures is driven by inefficient management of the system itself. One must be careful to add this to the previous numbers because the overhead has in many cases already been factored in, such as for Type 2 Diabetes and Cancer costs.

4.2 All Other Cost Factors

[22] See Woolhandler et al, Costs of Health Care Administration in the United States and Canada, NEJM, August 2003.

As to the overall set of cost numbers there is a Price Waterhouse Coopers report in 2006 which states:

"As shown below, the bulk of the premium dollar goes towards paying for:

1. *Physician services (24%)*

2. *Outpatient costs (22%) This includes free-standing facilities and outpatient departments of hospitals.*

3. *Inpatient hospital costs (18%)*

4. *Prescription drugs (16%)*

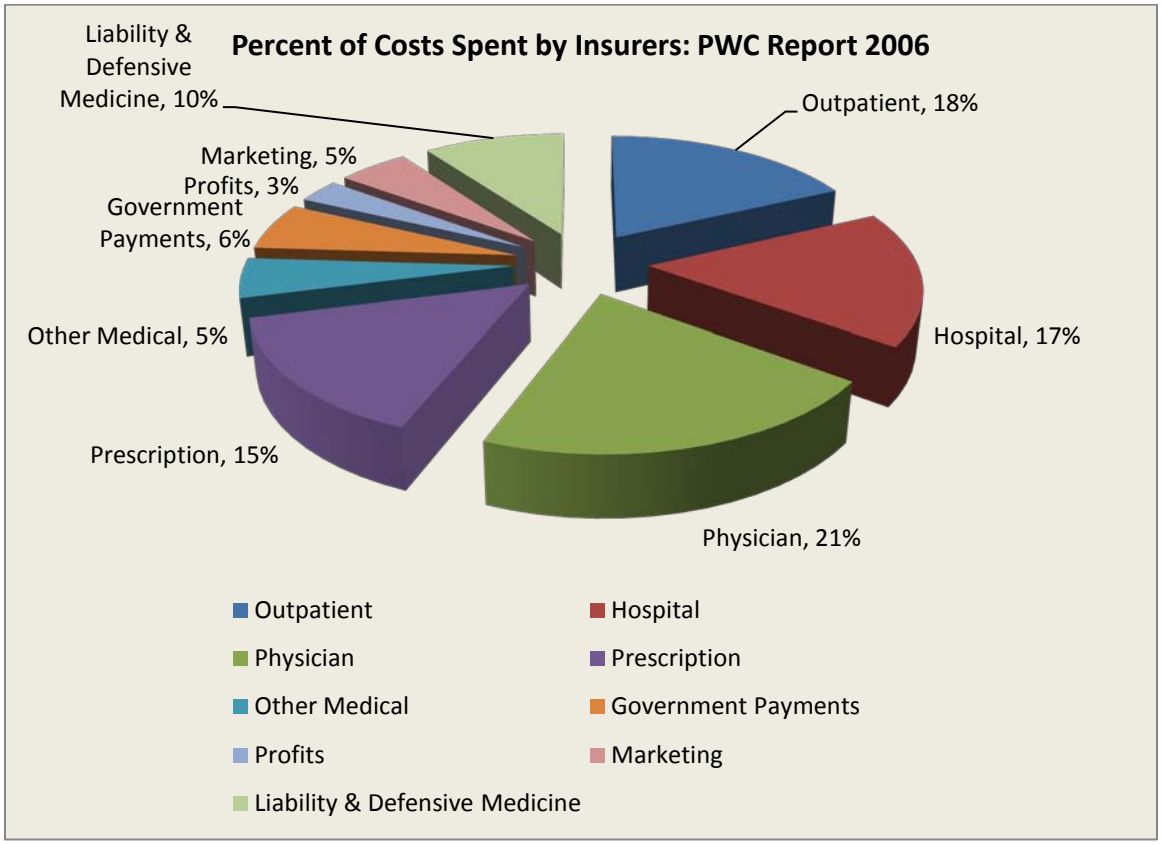
5. *Other medical services (6%). This includes durable medical equipment, nondurable medical equipment, home health, other health professionals, and other personal care.*

6. *Consumer services, provider support and marketing (5%). In addition to marketing and sales, this component includes communications with consumers regarding their existing and new benefits, disease management programs, care coordination, health promotion, wellness and prevention programs, and investments in health information technologies that benefit consumers.*

7. *Government payments, compliance, claims processing and other administration (6%) Taxes on premiums, costs of complying with government laws and regulations such as filing and reporting requirements and the recent Health Insurance Portability and Accountability Act are included in this cost component as well as the costs associated with claims processing, premium and eligibility processing and other administrative activities that support health plan operations. Health plan claims processing procedures rely on a significant investment in technology and training to provide timely coverage determinations to consumers and timely payment to providers as well as guard against fraudulent billing practices.*

8. *Health plan profits (3%). Health plan profits are available to meet risk-based capital needs, to support continued reinvestment into the system, and to provide a reasonable return to attract investors*."

We depict these numbers below. What should be noted for those who desire a public plan is that it takes a long while and great expertise to both understand and to control these costs.



Finally PWC analyzes the cost increases above those of inflation. They state them as:

" ***Cost Shifting:*** *We estimate that cost shifting from public providers and the uninsured to private payers increased premiums by 0.5 percent in 2005. Data from the American Hospital Association shows that the ratio of Medicaid hospital payments to hospital costs fell from 96.1 percent in 2002 to 92.3 percent in 2003.[7] The number of uninsured as a percent of the population increased from 15.6 percent to 15.7 percent between 2003 and 2004.[8] The costs associated with these trends tend to be picked up by other payers, especially private health insurance plans.*

Higher Priced Technologies: *New technologies increase prices because they are frequently more expensive than existing technologies. Newer prescription drugs, in particular, tend to replace older drugs and generic drugs. New imaging technologies are being introduced into the market at a higher cost. We estimate that the cost of new technologies increased premiums by 1.0 percent in 2005.*

Broader-Access Networks/Provider Consolidation: *Market forces, and, in some cases, state laws, have prompted a movement towards plans with broader provider networks. Additionally, many plans have introduced open-access products that minimize the role of the primary care physician in facilitating consumer access to specialists. While many consumers have expressed a preference for broader provider networks, such networks*

tend to reduce the amount of competition in the system. In addition, there have been instances of provider consolidation that have similarly reduced levels of provider competition in some markets. For example, in one recent ruling, it was found that the enhanced post-merger market power of one health organization allowed it to obtain price increases that were one-third higher than the average increase obtained by other area hospitals. We estimate that these market directions contributed 1.1 percentage points to premium increases in 2005.

INCREASED UTILIZATION: ***Increased utilization was the most important factor in the 8.8 percent increase contributing 3.8 percentage points of the increase****. As shown in Exhibit 6, the major factors that drive utilization are increased consumer demand, new treatments, and more intensive diagnostic testing. The aging population and lifestyle changes also contribute to increased utilization.*

Aging: It is widely recognized that the population is aging as Baby Boomers approach retirement. We estimate that the aging of the population enrolled in health plans contributed a half a percentage point in 2005.

Lifestyle: Lifestyle challenges, including obesity, smoking, drug abuse, and physical inactivity have contributed to an increase in the utilization of health services. We estimate that continued deterioration in lifestyle contributed three tenths of a percentage point to premium increases in 2005.

New Treatments: New treatments come in the form of new imaging technologies, biologics, injectables for existing serious illnesses as well as "lifestyle" drugs for conditions that were once not considered illnesses, or at least were not commonly and effectively treated using prescription drugs. We estimate that increased utilization of new treatments contributed a percentage point to premium increases in 2005.

More Intensive Diagnostic Testing/Defensive Medicine: We estimate that more intensive diagnostic testing contributed eight tenths of a percentage point to premium increases in 2005. The practice of defensive medicine is one factor contributing to these increases in diagnostic testing.

Increased Consumer Demand: The increase in consumer demand is fueled by factors including the proliferation of information on medical treatments and demand pull strategies such as direct-to-consumer advertising. We estimate that increased consumer demand contributed 1.2 percentage points to premium increases in 2005."

Thus we argue that much of the cost increases as shown by PWC are the increased utilization and the factors there are lifestyle. This is a somewhat long route to reach the conclusion we have been bearing down on repeatedly. Ageing is something we can do little about, other than ridding society of any old person who is sick. I suspect that such

is still illegal. The issue is preventing the young from aging as life style chronically ill people.

4.3 Assessment of Target Areas

We can now return to the target areas we have analyzed and rank them in several categories as we have done in the following Table.

	Quality and Productivity	Diseases	Demographics	Excess Demand
Target Areas	1. Nosocomial Infections 2. Misdiagnosis 3. Drug Administration 4. Administrative Overhead	1. Catastrophic 2. Genetic 3. Cancer 4. Heart	1. Medicare/Aging 2. "Life Style"	1. Excess Procedures 2. Defensive Medicine 3. Repeat Procedures 4. Re-Hospitalizations
Actions	1. Nosocomial infections are as much a result of cultural changes as they are endemic to the system. Hospitals MUST return to medicine of the 1920s where sanitary conditions prevailed. 2. Misdiagnosis and drug management for errors and costs can be managed by EMR technology. 3. Admin OH is an uncontrollable demon and having a Government plan may just exacerbate it.	1. Catastrophic diseases are the most devastating to our citizens and it should receive the first focus. Just insuring people for catastrophic coverage would be a first step. 2. Genetic diseases will soon be screenable and possible controllable. 3. Cancers have shown decreases due to research and education.	1. There is nothing one can do about aging. However efficiencies and proper utilization is achievable. Driving out overhead costs and controlling rehospitalizations and errors will help. 2. "Life Style" we have argued is the greatest and most amenable to Governmental influence.	1. The use of the EMR, in an evolutionary manner, will have a strong impact on the repeat procedures and perhaps in detecting excess fraudulent procedures. 2. Defensive medicine is still not quantifiable and is anecdotally determined. Tort reform may help.

5 REFERENCES

1. Arrow, K., Uncertainty and the Welfare Economics of Medical Care, The Am Eco Rev, V LIII N 5, Dec 1963.
2. Baker, T., The Medical Malpractice Myth, U Chicago Press (Chicago) 2005.
3. Blendon, R., et. al, Views of Practicing Physicians and the Public on Medical Errors, NEJM, V 347, N 24, 2002.
4. CBO, Limiting Tort Liability for Medical Practice, Jan 2004.
5. Comm on Drugs and Comm on Hosp Care, American Acad Pediatrics, Prevention of Medication Errors, Pediatrics, V 102, N 2, 1998.
6. Conover, C., Health Care Regulation, A $165 B Hidden Tax, CATO Inst Oct 2004.
7. Djousse, L., et al, Relation Between Modifiable Lifestyle Factors and Lifetime Risk of Heart Failure, JAMA, V 302, N 4, 2009.
8. Dodenheimer, T., High and Rising Health Care Costs Part 1, Ann Int Med, V 142, N 10, 2005.
9. Dodenheimer, T., High and Rising Health Care Costs Part 2, Ann Int Med, V 142, N 11, 2005.
10. Dodenheimer, T., High and Rising Health Care Costs Part 3, Ann Int Med, V 142, N 12, 2005.
11. Dodenheimer, T., High and Rising Health Care Costs Part 4, Ann Int Med, V 143, N 1, 2005.
12. Finkelstein, E., et al, Annual Medical Spending Attributable to Obesity, Health Affairs, Data Watch, July 2009.
13. Flier, J., et al, Health Care Reform, A Free Market Perspective, Diabetes Reviews, V 2, N 4, 1994.
14. Girosi, F., et al, Extrapolating Evidence of HEALTH Information Technology Savings and Costs, RAND, 2005.
15. Hampers, L., et al, The Effect of Price Information on Test Ordering, Pediatrics, V 103 N 4, 1999.
16. Haydel, M., Clinical Decision Instruments for CT Scanning in Minor Head Injury, JAMA, V 294, N 12, 2005.
17. Hennesy, K., The Effects of Malpractice Tort Reform and Defensive Medicine, Issue in Political Economy, V 13, Aug 2004.
18. Hu, F., et al, Diet Lifestyle and the Risk of Type 2 Diabetes, NEJM, V 345, N 11, 2001.

19. Iglehart, J., The New Era of Medical Imaging, NEJM, V 354, N 26, 2006.
20. Jenks, S., et al, Rehospitalizations among Patients in the Medicare Fee for Service Program, NEJM, V 360, N 14, 2009.
21. Kang, J., The Existence of Defensive Medicine in Cardiology, Thesis, Duke Univ, 2006.
22. Kessler, D., The Effects of the US Malpractice System, Working Paper, Stanford Univ, 2002.
23. Krugman, P., Why Markets Can't Cure Healthcare, NY Times, July 25, 2009.
24. MacKey, J., The Whole Foods Alternative, Wall Street Journal, August 11, 2009.
25. McGinnis, J., Can Public Health and Medicine Partner in the Public Interest, Health Affairs, V 25, N 4, 2006.
26. Mitka, M., Costly Surge in Diagnostic Imaging Spurs Debate, JAMA, V 293, N 6. 2005.
27. Mokdad, A., et al, Actual Causes of Death in the US, 2000, JAMA, V 291, N 10, 2004.
28. Neergarrd, L., Medication Errors, Boston Globe, July 21, 2006.
29. Newman-Toker, D., et al, Diagnostic Errors, JAMA, V 301 N 10, 2009.
30. Ogden, C., et al, Prevalence of Overweight and Obesity in the US, 1999-2004, JAMA, V 295, N 13, 2006.
31. Ogden, C., et al, Prevalence of Overweight and Obesity in the US, 1999-2002, JAMA, V 291, N 23, 2004.
32. Ogden, C., et al, Prevalence of Overweight and Obesity in the US, 1999-2000, JAMA, V 288, N 14, 2002.
33. Ornstein, S., et al, Medication Cost Information, Arch Fam Med, V 8 Mar 1999.
34. Poley, M. et al Cost Consequences of Implementing Electronic Decision Support, Clinical Chemistry, V 53:2, 2007.
35. PWC, The Factors Fueling Rising Healthcare Costs 2006, PWC Jan 2006.
36. Scott, D., The Direct Medical Costs of Healthcare Associated Infections, CDC, March 2009.
37. Sidorov, J., It Ain't Necessarily So, The Electronic Health Record, Health Affairs, V 25 N 4, 2006.
38. Solomon, D., et al, Techniques to Improve Physician's Use of Diagnostic Tests, JAMA V 280, N 23, 1998.
39. Studdert, D., et al, Defensive Medicine Among High Risk Specialist Physicians, JAMA, V 293 N 21, 2005.
40. Studdert, D., et al, Medical Malpractice, NEJM, V 350, N 3, 2004.

41. Taubes, G., Prosperity's Plague, Science, V 325, July 2009.

42. Tierney, W. et al, Physician Inpatient Order Writing on Microcomputer Workstations, JAMA, V 269, N0 3, 1993.

43. Tierney, W., et al, The Effect of Test Ordering of Informing Physicians of the Charges for Outpatient Diagnostic Tests, NEJM, V 322, N 21, 1990.

44. Toker, D., et al, Diagnostic Errors, JAMA, V 301, N 10, 2009.

45. US HHS, Confronting the New Health Care Crisis, Asst Secy Plan & Eval, July 2002.

PREVIOUS TELMARC WHITE PAPERS

NO 63 REMEDIABLE DISEASES AND HEALTH CARE ECONOMICS (APRIL 2009)

NO 62 CAP AND TRADE (MARCH 2009)

NO 61 TYPE 2 DIABETES: A CONTROLLABLE EPIDEMIC (MARCH 2009)

NO 58 OBSERVATIONS ON HR1: THE STIMULUS PACKAGE

NO 57 HEALTHCARE POLICY REDUX (FEBRUARY, 2009)

NO 56 A DIFFERENT VIEW OF MACROECONOMICS (JANUARY 2009)

NO 52 THE ECONOMY BY OBAMA: WOULD YOU INVEST IN THIS BUSINESS PLAN? (JANUARY 2009)

NO 51 EUROPEAN CONTROL OF WORLD FINANCIAL MARKETS: A DECLARATION OF WAR? (JANUARY 2009)

NO 49 THE OBAMA DIGITAL REVOLUTION IN HEALTHCARE: IS THIS JUST ANOTHER FIASCO? (JANUARY 2009)

NO 48 THE CRISIS IN EDUCATION: ARE WE BANKRUPTING OUR FUTURE? (JANUARY 2009)

NO 47 BROADBAND INFRASTRUCTURE, YOU CAN'T MAKE THIS STUFF UP! (JANUARY 2009)

NO 46 IF ELEPHANTS HAD WINGS, WHAT MACROECONOMISTS THINK, I THINK? (DECEMBER 2008)

NO 45 SOCIALISM: THEN AND NOW (DECEMBER 2008)

NO 42 POLICY AND PLANS, WHO WILL THE BROADBAND CZAR BE? (DECEMBER 2008)

NO 41 THE DEBT MARKETS, UNCERTAINTY AND WHAT WILL FALL NEXT, THE SEVEN CRISES (NOVEMBER 2008)

NO 39 INTERNET MARGINS (AUGUST 2008)

NO 32 SPRINT, GOOGLE: GROUP GROPE (MAY 2008)

NO 31 SKYPE AND UNBUNDLED WIRELESS (APRIL 2008)

NO 30 WHITE SPACES AND NEW SPECTRUM (APRIL 2008)

NO 29 COMCAST AND NET NEUTRALITY (MARCH 2008)

NO 28 YAHOO V GOOGLE (MARCH 2008)

NO 27 THE PUBLIC INTELLECTUAL (FEBRUARY 2008)

NO 26 OPERATORS VS. VENDORS (FEBRUARY 2008)

NO 25 SOME OBSERVATIONS ON CLEARWIRE (FEBRUARY 2008)

NO 24 PATENT BATTLES (FEBRUARY 2008)

NO 23 SPECTRUM VALUE 700 MHZ (JANUARY 2008)

NO 22 MUNI WIFI REDUX AND MERAKI (JANUARY 2008)

NO 21 WRITING SOFTWARE (FEBRUARY 2008)

NO 20 PUBLIC INTELLECTUALS AND THE INTERNET (FEBRUARY 2008)

NO 19 GOOGLE AND THE ELECTRONIC SHOPPING MALL (JANUARY 2008)

NO 18 GOOGLE V VERIZON (DECEMBER 2007)

NO 17 THE G PHONE (NOVEMBER 2007)

NO 16 THE 21ST CENTURY TELEPHONE COMPANY (SEPTEMBER 2007)

NO 15 BANDWIDTH AND GOOGLE (AUGUST 2007)

NO 14 INTERNET NEUTRALITY AGAIN (OCTOBER 2006)

NO 12 CATV OPTIONS: CABLE'S RESPONSE TO FIBER (AUGUST 2006)

NO 11 FTTH AND VERIZON'S COSTS (AUGUST 2006)

NO 10 INTERNET NEUTRALITY AND PROPERTY RIGHTS (JULY 2006)

NO 08 FIBER V WIRELESS (MARCH 2006)

NO 07 PERSISTENCE OF COMMON CARRIAGE (FEBRUARY 2006)

NO 05 EVOLUTIONARY CHANGE IN TELECOM (JANUARY 2006)

NO 04 TELECOM REGULATION CHANGES (DECEMBER 2005)

NO 02 VERIZON'S FUTURE (NOVEMBER 2005)

NO 01 HIDDEN COSTS OF BROADBAND (OCTOBER 2005)

The Telmarc Group