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Part I: Naively optimistic

One of the hot button issues of the last ten years has been health care in the United States. Liberals and conservatives have largely been divided on how to go about "fixing" the problem. Unfortunately for the general public, most of our politicians are not medical professionals, and have no idea how the industry moves and functions at a low, day-to-day level. The US's health care system is seen as a monolithic entity when in reality, it is anything but. Indeed, if it were a monolithic entity, we wouldn't have some of the problems that we face today, most notably the lack of information portability. Political realities being what they are, most of the solutions bandied about have been incomplete, ignorant, and have consisted of little more than pandering to one or more groups of constituents. Coupled with the relatively short 4-6 year election cycle, America has been caught in a destructive positive feedback loop of short-sighted, short-term thinking. There has been no strategy, and the public, the health care industry, and the nation as a whole pays the price.

Given the sheer number of parties involved in health care, it is helpful to address each of them one by one. Each has different things at stake, so both high- and l0w-level views of the field are necessary and useful for crafting real, meaningful reform. Nurses, physicians, pharmacists, and low-level support staff each have their own needs and goals. Hospitals must survive as viable businesses, even though they do not play in the same "free market" that normal industries exist in. Unfunded legislation like the Emergency Medical Treatment and Active Labor Act (EMTALA) make hospitals responsible for enormous costs that they must then shift on to those without health insurance. While federal care mandates aren't a bad thing, no other industry is forced to eat the cost of serving a particular demographic at the risk of being sued or worse. Conservatives often champion the free market, but it is clear that the health care market is anything but "free". Distortions are everywhere, and inefficiencies are necessarily part of the grain due in part to bad legislation, consumer expectations, and America's unique place in the world as a subsidizer of health care in other nations.

Technology and waste

President-Elect Barack Obama has beaten the technology drum as a way of saving time and money. While he is partially right, and where technology has historically either lowered production costs or moved industry to an isoquant closer to the origin, technology has done no such thing in health care. Indeed, new technology is one of the primary drivers of health care costs in the nation. While he is obviously referring to systems like electronic medical records (EMRs/EHRs), he must be wary of the "more technology is better" mindset because the marginal utility of a dollar spent on a PET scan is difficult to measure, even when we take a long-term view of its efficacy in rooting out cancer down to the last cell.

Another problem with technology adoption has been justifying and subsidizing its adoption. Small primary care offices consisting of just one or two physicians may not have the extra money lying around for a $15,000-25,000 capital investment that most EMR setups require. While it is true that the VA's computer system is excellent (and patient-centric rather than billing-centric), and freely available, packages that make the VistA – not to be confused with Microsoft's Windows Vista computer operating system – available for use in small practices don't exist without paying money. VistA was designed for a hospital systems needs, and it is there that it excels. Paring it down to something more in line with what a primary care physician would need is another matter entirely. Despite it being open source, most physicians have neither the time nor the intellectual capital necessary to distill it down to a more useful form. Couple the difficulty of configuration with the utter lack of focus on billing, VistA isn't a realistic solution for small practices.

But technology certainly *can* be part of the solution if it is implemented correctly. EMRs that check drug formularies based on customized information about the patient's insurance plan can and do exist. (My own physician has demonstrated his EMR system which has this capability built-in.) This eliminates waste: instead of hand-writing a hard-to-read script that the patient takes to the pharmacy which is denied by the patient's insurer without a prior authorization, the physician gets this information immediately and either chooses a different drug, or can submit the PA information immediately.

This is but a tiny efficiency improvement, though it is a capital investment that can often eliminate at least one office worker entirely. However, bigger efficiency gains are to be realized through information portability. Right now, it is virtually impossible to share information between

EMR systems. Instead, hard copies of a patient's information – often with many pages of redundant test results and copies of copies of old records – are faxed en masse to a new provider or hospital when the occasion arises. This is in stark contrast to the concept of email; I don't worry about whether or not the recipient of my electronic correspondence is using Windows, a Macintosh, or the Linux operating system because email is sent using standardized protocols. There is no reason for electronic medical records to be any different. While there are certainly security issues to be worked out, these barriers are not insurmountable.

Even more compelling would be a nationalized system of health care records. Rather than sending a patient's records from A to B, the records would exist in what technology pundits call "The Cloud" – that is, redundantly stored in datacenters distributed around the country. When a radiologist is working with his PACS images, they are immediately stored remotely so when the primary care physician needs the results of the study, s/he does not have to call the radiologist's office to request the films, and hope that his/her request does not fall through the cracks, as they often do. (A physician friend of mine calls this "Rad rage.") This record should consist of a patient's entire medical history, and encompass all tests and lab results that the patient has ever had. It should be linked to a number unique to each citizen, their social security number, and if a person in the US does not have a number, one would be assigned to them. Similarly, other professionals should have access to the bits and pieces that are relevant to them doing their jobs.

For instance, the pharmacist should have access to the lab values of blood tests and the various diagnoses a patient carries. This access should be granular: read-only in some cases, and read/write in others. For instance, a pharmacist should be able to read diagnoses and lab results, but should not be able to edit them. They should be able to read from and write to drug-related sections, such as allergies and adverse reactions and other "softer" patient complaints. Similarly, one wouldn't want a radiologist making edits to the diabetes section of a patient's history, either. These kinds of safeguards would go a long way towards eliminating incorrect information being entered into a patient's permanent record. For instance, a technician taking or updating a patient's history should not be able to edit things like medication allergies directly. An allergy is a very specific immunological reaction. A patient experiencing GI upset because they took Vicodin on an empty stomach should not have hydrocodone and acetaminophen listed as allergies because they clearly are not. In that respect, another licensed professional should take this information and filter it as needed, as appropriate.

A patient should have some read/write access to their medical record as well, but only in a limited fashion. Like the unskilled technician, they should be able to put information into a clearinghouse area that a licensed professional can then read and distil into what is relevant and what is not. Along the same lines, they should not have the ability to read their entire medical record at any time. A physician's notes should be accessible to health care professionals only: pharmacists, other physicians, nurses, and those that are deemed to need it to do their jobs. If a record is requested in its entirety, it should be requested through normal channels similar to today. Unfortunately, many patients don't like the notes that physicians and other professionals write and will be inclined to alter their records to paint themselves in a better light. Unfortunately, I have experienced this phenomenon firsthand. A patient saw "Psych?" written in a margin and promptly demanded to see another physician.

This system of nationalized health records also has the added benefit of saving money and lives when a patient finds him or herself in an emergency situation in an unfamiliar area. Built-in biometrics: retinal scans, fingerprints, dental records if absolutely necessary can aid emergency medical personnel assisting someone having a heart attack. Knowing if a patient has ever been prescribed Viagra or any other phosphodiesterase-5 inhibitors is very helpful if they're experiencing angina.

One could continue to contrive cost-avoiding scenarios, the aggregate result of which would be reduction in the $8.8 billion/~230,000-death monetary and human cost of preventable medical errors every year (HealthGrades.com). It is also very likely that errors that are considered unpreventable today – usually through incorrect or incomplete patient information – would become preventable, resulting in billions more dollars saved, and thousands of lives preserved.

There are other, more futuristic things that could be built off of this platform as well: toys like remote monitoring, remote office visits for patients who are not ambulatory, etc. There's a great deal of patient-centric self-help that could be built as well that I will address in a bit.

Physician misallocation and practice disincentives

Medical malpractice and tort reform are big problems, but they don't tend to be federal problems. Each state has its own tort law and subsequent body of case law that has grown up around it. There are very real benefits to reforming personal injury law, often dramatic, immediate

effects. In Mississippi, once tort reform took effect, other businesses began moving into the state. FedEx opened a $1 billion facility; Toyota chose that state over 12 other contenders for a $1.2 billion, 2,000-worker manufacturing plant. Toyota had said that they would pull out of the state if they tort reforms were overturned by activist judges or altered legislation. That didn't happen, and 60,000 new jobs were created over the course of four years. This in contrast to 30,000 jobs lost the year before the reforms. Medical malpractice lawsuits dropped by almost 90%, and malpractice insurance rates dropped by 30-45%, depending on the county (S. Moore).

Defensive medicine creates disutility both for the patient and for the provider. The provider gets no benefit from ordering a test or diagnostic procedure that is not clinically indicated, and the patient experiences disutility in the form of potential harm, exposure to radiation, etc., that could otherwise be avoided. Defensive medicine arose purely as a response to the threat of malpractice lawsuits, and is extremely costly. As I stated earlier, medical technology is a cost center, not a cost-saver. In 2005, a study by Kessler and McClellan (Weinstein):

> ...analyzed the effects of malpractice liability reforms using data on Medicare beneficiaries who were treated for serious heart disease. They found that liability reforms could reduce defensive medicine practices, leading to a 5 percent to 9 percent reduction in medical expenditures without any effect on mortality or medical complications.
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> If the Kessler and McClellan estimates were applied to total U.S. health care spending in 2005, the defensive medicine costs would total between $100 billion and $178 billion per year. Add to this the cost of defending malpractice cases, paying compensation, and covering additional administrative costs (a total of $29.4 billion). Thus, the average American family pays an additional $1,700 to $2,000 per year in health care costs simply to cover the costs of defensive medicine.

Any reasonable person would conclude that when a physician is paying more in medical malpractice than they take home, there is a problem with the system. Yet this is true, particularly for obstetricians, resulting in OB-GYNs dropping the baby-delivery part of their practice to focus on less-stressful, less-expensive, more lifestyle-friendly gynecology. Couple this with the bizarre practice of raising rates even as malpractice payouts drop, and you've got a recipe for severe physician unhappiness, which happened in 2005 in New Jersey.

The government regularly doles out cost of living (COLA) pay increases to its employees, but they do the opposite for physicians. Only recently, Medicare pay cuts were scheduled to go into effect this past summer. They were halted by a veto-proof 69-30 margin in July. The practice of

squeezing doctors even as their cost of doing business increases is becoming more prevalent. Presumably this is socially acceptable because physicians have historically been seen as well-to-do, upscale types, but this is no longer the case. Going to medical school incurs a great deal of debt, but there's also the opportunity cost associated with med school and residency. Assuming a 4 year cost of ~$250,000, plus another three to six years in residency making less than minimum wage, and you've got a recipe for a huge debt load. It is no wonder that medical students are flocking to higher-paying specialties instead of doing primary care.

Given the intensely competitive admissions process, it stands to reason that an average medical student is capable of working extremely hard. If they were to put four to ten years into a normal job subjected to fewer economic distortions, it stands to reason that medical school is probably a losing proposition in terms of financial compensation. Assuming 100 hour a week work weeks for four to five years for surgical interns and residents, it stands to reason that one could climb the corporate ladder pretty quickly. Coupled with earning money instead of accumulating student debt and interest debt, and you've got medical school looking like a losing proposition. And medical students know this. After all, they're obviously not stupid.

This brings me to misallocation of physicians. Internal medicine, family practice, and pediatrics residencies are three years long, which is the shortest residency duration there is. (Emergency medicine and anesthesiology are also three years apiece, but considerably more competitive.) Many residency programs in the primary care specialties (internal medicine, peds, and family medicine) have seats that go unfilled each year. Contrast this with procedural specialties, and the number of unfilled slots is significantly lower. Cognitive specialties are undervalued by the RBRVS system, probably because it's easier to see the results of a procedure than it is to see the results of an internist thinking intently about a patient's diabetes and secondary comorbidities.

The RUC controls reimbursement rates via the Resource-Based Relative Value Scale (RBRVS) (Moore, Felger and Larimore). Because 85% of private payers and 69% of Medicaid programs tie their reimbursement rates to Medicare rates, the RUC has a disproportional effect on a physician's income. That means if Medicare over- or under-values a procedure or billing code, it has a ripple effect across the entire spectrum of medicine. To get a better idea of what's happening behind the scenes at the RUC, it helps to take a look at the makeup of the 29 members:

> Of the 29 members of the RUC, only five currently represent primary care specialties as defined by the AAFP. The vast majority of the representatives to the RUC are appointed by other surgical, procedural or subspecialties. As a result, the work of representing primary care issues to the RUC has often been difficult.

Bearing in mind that 75% of physician visits are primary care visits, it would make far more sense to have representation that more accurately represents the practice landscape. Or if the specialists are worried about under-representation, the RUC could take a bicameral approach similar to the United States Congress and Senate where one body represents areas based on population and a second body where all players are equal. But this is not how the RUC works.

Beyond even this, the trumpeting of transparency and "free market values" from the right is completely ridiculous because the RUC is nothing but a market distortion. Supply and demand has absolutely no bearing on physician reimbursements because there are artificial price ceilings, and reimbursement does not fluctuate based on demand. Consequently, the only way a primary care physician can make more money is by seeing more patients, which generally leads to lower quality of care, physician extenders notwithstanding. The entire reimbursement system is effectively regulated from the top down; there is no "free market" at work unless you step outside the third party system.

Because specialists are relatively over-represented in the RUC, they wield power disproportional to their impact on the medical landscape. Yes, specialists should be paid more; I don't know of a single physician who disagrees with that assertion. But how much more they should be paid and whether it should be at the expense of their overworked, underrepresented colleagues is the key question. Medicare, because it is an entitlement, and because other third parties tie their reimbursement structures to it is a fixed pie. There is only allocation of the pie. It is virtually zero-sum from every conceivable angle, unless a physician goes into a cash-only "concierge" practice, or adds elective, cash-only, highly-price-elastic procedures to his or her repertoire. In Massachusetts, it's already quite difficult to find a primary care physician (Sack), and the coverage mandates is only exacerbating the problem. Medicaid also needs to get on board, as it is quite common for Medicaid reimbursement to be less than the cost of the visit itself, not even accounting for the opportunity cost of seeing a Medicaid patient (Sack).

There are many possible solutions to this reimbursement problem. Some of them are purely capitalist, like letting the physicians set their own rates and the market will sort it all out. More plausibly, significantly bumping up the primary care reimbursement rates will attract more medical

school graduates into the primary care field. On top of that, allocate them more time for a patient visit. Instead of 15 minutes, make it 23. That small shift in time will keep patients out of more expensive specialist offices, and in less-costly PCP offices. Bumping the reimbursement for primary care will make it plausible for students in medical school to realistically choose primary care; it will slow the movement from primary care to specialties and sub-specialties significantly (after all, being a specialist is harder, and has greater opportunity cost associated with it); it will save money immediately as specialist visits drop off; and we will be able to see more patients without having to increase government health care expenditures at all.

Physician shortage and GDP accounting

There are many students with the grades and test scores to get into medical school. There simply aren't enough slots to accommodate them. Ironically, we need more doctors today than ever before: baby boomers are aging, and the elderly require more medical care. Demand is increasing, and the supply is not increasing to compensate. Reducing the cost of creating new medical schools would go a long way towards alleviating the shortage. Direct government funding for new medical schools would go a long way as well. Ironically, opening new medical schools and increasing the flow of physicians into the economy will likely increase the nation's health care costs, so our society will have to make a value judgment: do we want more doctors, or do we want to save money? Health care, after all, always comes at the expense of something else. This is why health care will never fuel an economic boom, because money spent in the name of health care is more like a sunk cost than investment in physical or human capital, or consumer spending.

In that respect, it would make more sense to consider health care expenditures as intermediate goods when calculating the GDP. Many health care costs are defensive expenditures that count on the positive side of the balance sheet when we calculate the GDP, when really they ought to be accounted for on the negative side. Medicine isn't terribly far off from the broken window analogy, though I would argue that spending money on health capital during a recession is probably better than building useless pyramids. Regardless, money spent on health care is money that cannot be spent today, or saved for future consumption. Mind-bogglingly enough, BusinessWeek of all publications, argued in a September 2006 article entitled "What's Really Propping Up The Economy" that inefficient health care is propping up the labor market while totally missing the fact that being in favor of inefficiency is tantamount to calling the child who

throws a brick through a shop keep's window an economic hero. I would suggest that some of these 1.7 million jobs would have been created in non-health sectors if health care delivery were more efficient. Health spending is crowding out other types of spending(BusinessWeek).

It should also be pointed out that while workers' wages have remained relatively flat, our health care costs have boomed. It seems logical that instead of being given raises, workers are getting "raises" in the form of health care benefits that are increasingly becoming more expensive. Alas, you cannot spend your health insurance premiums on consumer goods.

Waste

In a "perfect" world, the primary care physician coordinates care across the spectrum for their patient. They are in contact with the specialists, and they are continually synthesizing a coherent picture of this person and their morbidities. They are making sure that no medications interact with one another, and in general, they are responsible for the overall well-being of a patient. Also in an ideal world, a primary care physician has the time to spend thinking about a patient's problems, and only refers out to more costly specialists when a problem is beyond their ken.

In reality, primary care medicine rarely operates in this fashion. Specialists prescribe drugs without taking into account what the PCP is doing, or what other specialists are doing. Records are not shared. If a gastroenterologist orders an upper and lower GI series, the PCP may or may not get the results later. These results may not be shared with the heart specialist or the endocrinologist. The only place where everything comes together is the pharmacy. Usually – though not always – patients go to the same pharmacy, where the pharmacist keeps an eye on all of their medications, and reconciles interactions that may occur through ignorance and inefficiency in the medical system. On average, I make 6-12 phone calls per day when it comes to potential drug interactions and therapeutic overlap. In the vast majority of cases, the drugs are prescribed by different doctors operating in different offices. There are limits to what a pharmacist can do, of course, and knowledge limits as well. Pharmacists do not have diagnostic information on a patient at their fingertips; they do not have access to medical records. Most of their intervention is based on obvious interactions and bottom-up assessments of a patient. (They are taking A, B, C, D, and E, so therefore they probably have X and Y conditions with a side order of Z side effects.) The problem with this kind of logic is that you can guess, but you never really *know*. And patients are notoriously bad at remembering their own health information.

On top of this inefficiency is the further disutility experienced by a patient when they are seen exclusively by specialists. Instead of having a strong central advocate in their PCP coordinating everything, many patients see only specialists who have a tendency of looking at a patient piecemeal rather than as a single whole. A urologist looks through the lens of the genitourinary system, and the cardiologist is thinking about the heart. They may see the zebra in their own field that can cause a particular symptom, but be completely ignorant of a more likely cause that a PCP would see in a heartbeat. Sadly, many PCPs are forced to be little more than patient referral mills, especially those who see a large percentage of Medicaid patients; otherwise they cannot stay in business. By increasing the time (and reimbursement rate) for a normal outpatient visit, you can often skip a more expensive specialist visit entirely. Let's face it; your average internist can more than competently handle an average diabetic without needing an endocrinologist and a podiatrist if they're given the time they need to think through the problems.

With more time, and access to a nationwide, comprehensive system of health care records, a primary care physician can keep an eye out for problems before they happen, and can leave notes for other providers in realtime. There would be no need to fax notes back and forth to other physicians' offices. When a patient's file is loaded, the notes from providers are displayed immediately in an eye-catching fashion where they can be reconciled in some way, and then archived. With t his comprehensive system of records, there would be no lost radiology films, no duplicated tests, and much higher efficiency.

Administrative overhead accounts for some $125 billion on health care waste. A better, comprehensive technology structure would go a long way towards trimming the bloat. By increasing this productive technology, the number of bodies you need to accomplish the same work will decrease, pushing the isoquant closer to the origin.

Futile, end-of-life care costs many tens of thousands of dollars, often to keep someone alive who is unconscious or incapable of making the medical decisions themselves. Currently, this futile care can run upwards of $20,000 a week just for a bed in an ICU. Adding in nursing, equipment, and medication costs can run up to $10,000 a day. I will quote a physician writer, who is pretty fantastic at cutting to the chase (Bear):

> Second, while there are gray areas in determining when care is futile, I know real futile care when I see it. The patients I often describe, the ones who are older than dirt, not nearly as responsive, and collections of every major pathology you can

> imagine but who yet manage to cling to some strict constructionist version of life are distressingly common, so common that I probably see and admit at least one or two of them a week to the ICU. (This is not even considering the patients that are post-arrest or on the losing side of a major cerebral vascular accident and who are, in fact, dead except for the polite fiction of ongoing organ perfusion.) Suppose that each of these breathing cadavers is admitted to the ICU and stays for a week before either subverting our best efforts and dying or pulling through and being sent back to their pre-death warehouse until the next time. Suppose also that I work fifty weeks a year and see a hundred of these patients in that time. A week in the ICU probably costs close to twenty thousand dollars, maybe more, maybe less, but probably around that if we add the cost of their passage through the Emergency Department.
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> Folks, that means that about two million dollars of futile, almost entirely wasted medical spending passes through my humble resident hands every year. There are about 5000 Emergency Medicine residents working at any given time in the United States and through our combined hands, assuming that they all see the same patient mix, must thus pass around 10 billion dollars. And that's only hospitals with residency programs and not even counting direct admissions to the ICU. Assuming that a year of comprehensive medical insurance (not that I'm into that sort of thing, you understand) costs $12,000-or-so a year for a typical family; that's about 80,000 families worth of medical insurance. Consider also that only one-fifth of the major hospitals in the United States have residency programs of any kind but most still have the usual ICU facilities and it is not hard to see that the bill for futile, end-of-life care siphons off enough money to pay for all of the medical care for about half a million families (again, not that I think we should do this kind of thing). And that's just direct hospital costs. We probably spend twice as much in non-critical and non-emergent care in the last long, slow, tango with the reaper.

Futile care is also common in the case of young children, but this makes it no less futile (Kolata). A cost-saving measure would immediately get rid of the moral hazard problem, and it's pretty simply. In cut-and-dried futile care problems, like the instances referenced above, make the patient or their family responsible for paying for these heroic measures. If the person dies, bill their estate for the costs of their care. As the owner of a home health care agency, we do this, because we can't afford *not* to. While it is more comfortable to distribute these egregious abuses of the system over the entire population, doing so is unfair to the majority of society because marginal private benefit is far, far greater than the marginal social benefit of the money being spent in this way. By making the private party internalize these costs, price would equal the marginal social benefit and everybody wins.

The last sentence there is just as important as the body: people are going to emergency departments for non-emergent care, and this happens for a variety of reasons: inability to get same-day sick appointments, inability to find a primary care doctor, and EMTALA. (Behind every

symptom is at least one potentially life-threatening diagnosis, which is why EDs almost never turn people away.) An uncomplicated, outpatient sick visit costs about $80 on average. In 1993, the average cost of an emergency department visit was $383. In 2008 dollars, that's about $600 – a 7.5x price increase – in reality it's probably higher because technology improvements have driven up the cost of medical care. Emergency Departments, by design are for emergencies, not normal sick visits. Their efficiency will only be improved if they have a separate walk-in clinic – by definition outside the scope of EMTALA – where they can treat these non-emergent people at lower costs and faster rates.

A last note… free care means more care. As price approaches zero, the care demanded increases to what is effectively infinity. An experiment at an emergency room in 2006 (alas I cannot find the study) showed that offering people in the waiting room $15 to leave before being seen resulted in a dramatic drop in ED traffic. I believe the number was around 50%. Using this as a crude model, it's obviously cheaper to offer people money to leave the ED than it is to see them in the ED. That speaks effectively to the problem of emergency department abuse and overuse.

In 2006, there were 119.2 million ED visits in the US. If the average cost is $600/person, and 50% of those are non-emergent, then that's $35.76 billion being wasted. By contrast, if you offered $15 to every person in the ED to leave, you would only waste $894 million. That creates another problem, however: people might come to the ED just to get money so they can leave. So a more realistic proposition is having on-site clinics to deal with the non-emergent cases. Instead of spending $35.76 billion in the ER, most of which is eaten by the hospital, you can spend $80/person and only spend $4.77 billion, which you can actually bill for outside the scope of EMTALA.

Upstream vs downstream expenditures

Money that would have greater marginal utility upstream is instead being spent downstream, because measuring the downstream effects are easier than measuring upstream effects. We spent an estimated $91.3 billion in diabetes care in 2002 (American Diabetes Association). How much money could be saved not just in diabetes but on health care in general if we combated the upstream problem of obesity instead of throwing money at its downstream consequences? Drastic expenditures on things like adverse cardiovascular events? In 1995, the economic cost of obesity was estimated at $99.2 billion. In 1997, an estimated 19.4% of the US population was obese (Centers for Disease Control). In 2007, that number jumped to 26.6% (Centers for Disease Control).

Converting 1995 dollars to 2007 dollars, using the consumer price bundle method, and assuming that real per capita obesity costs did not increase over time gives us this chart:

Year	Population	% obese	# obese people	Cost per capita	Total cost
1997	267,000,000	0.194	51,798,000	$2,991	$154,927,818,000
2007	301,000,000	0.266	80,066,000	$2,991	$239,477,406,000

1997 population information from the Census Bureau
2007 population information from the CIA

Obesity is probably the main public health concern in the United States these days. Communicable diseases have largely been eliminated through public health efforts, leaving lifestyle diseases as the main cause of morbidity in this country. If we cut our obesity rates in half, we could eliminate quite a lot of spending further down the line. Unfortunately, this requires a long-term strategy, not short-term reactionary movements. Strategy is something our government has lacked for the last eight years.

Tying it all together

$8.8 billion in preventable medical errors. $125 billion in administrative waste. $120 billion in obesity care. $30 billion in obviously futile, end of life care for the elderly. $31 billion wasted in the ED on non-emergent cases. $170 billion wasted on defensive medicine and medical malpractice cases. Reducing all of these things by half could cut costs by $242 billion a year. (And I suspect the obesity savings is a lowball figure, because of the strict limitations on measurement for that study, but it's still huge even when playing with low-end figures.)

The harder to measure aspects of medical care come strongly into play as well. What's the productivity loss of duplicate tests? The loss in wasted time trying to get accurate medical information to make a timely decision? How much could we save on long-term labor costs by investing in effective, comprehensive, cost-saving information technology rather than doing it piecemeal? Why wait for a monopoly to emerge when we can simply create it? Health care IT lends itself to a natural monopoly, and rather than wait for the free market to create one, it would be more cost effective to simply create one. Creating industry standards would allow the monopolization of the backend and the commoditization of the frontend of the system: third party software systems will be able to plug into the cloud architecture creating interface choice for those practices and

hospitals that want it. This is not unlike the way we use email stored permanently on a mail server and then access it using the standard IMAP or POP3 protocols with Microsoft's Outlook or Apple's Mail.app or even a web browser.

American's don't want to be obese, but our culture makes it easier to be fat than to be fit. You don't find fast-food establishments specializing in health entrees. Eating healthfully takes more work than eating unhealthfully. There's also a dearth of quality information on the foods one eats. How nifty would it be to take the comprehensive health database that I wrote about, tie it to a Facebook-like interface where people can get together in virtual support networks for quitting smoking, losing weight, improving their diets, and learning to cook? Granular controls to allow users to share their data with one another in ways they choose so they can cheer each other on. Charting weight loss and caloric intake over time, charting food consumption trends the way Quicken and Microsoft Money track types of financial expenditures. Applications for your mobile phone so you can take a picture and it's analyzed immediately based on your GPS location which identifies the restaurant, and caloric information is sent remotely to your account in realtime. Email reminders that you've been slipping. Controls for allowing your friends to see your progress or your slips so they can support you when you need it most. All of these things are powerful tools – it is difficult to make life-changing decisions in a vacuum without moral support, which is why every addiction program has a social support component built in. Increasingly, the Internet is being accepted as an adjunct to a flesh-and-blood social support system, particularly among generations X and Y. We need to start leveraging it intelligently.

Count health care expenditures against the GDP, because they're largely defensive costs and add nothing to the economic bottom line. Health care expenditures *need* to stop growing as a percentage of the GDP, because health care is a closed system. If we spend all of our money paying for health care, we will have no money for anything else, and our economy will slowly, but surely, grind to a halt. This may lead to some uncomfortable, normative decisions with regards to the use of newer medical technologies for non-affluent patients.

Invest in primary care, because it's a long-run cost-saver. Specialists are cost centers. Spending $80-90 on a primary care visit for the same outcome as a $280 specialist visit makes no sense at all. Force consumers to bear more of the burden at point of sale. Health care is price elastic, but by shifting costs from the consumer to the insurer, who then forward shifts it across all

consumers in the form of higher premiums hides the true cost of that CT scan or that chest X-ray or that non-emergent visit to the ED.

Medicare Part D has done a good job in forcing consumers to be aware of what the costs of normal medical care are. While prescription drugs only account for 10% of health care expenditures, they are recurring on monthly or every three month cycles, and consumers are keenly aware of what they cost when they go to the pharmacy to pay for them. By making consumers pay a percentage of their direct medical care, it will enable them to make more cost-effective decisions. (Physicians aren't trained to take cost into account when caring for patients.) To do this effectively, there needs to be more price transparency, which is sorely lacking.

Universal health care is a nice goal, but universal coverage is not the same as universal access to quality health care. When designing a universal coverage program, out of pocket costs to the consumer cannot be zero. If they are, they will consume more medical care. We already do not have enough primary care doctors in this country to handle a sudden, massive influx of newly insured patients. Similarly, we do not graduate enough doctors in this country to handle the kind of influx such coverage would bring. We need to think intelligently about practical solutions to these problems before we enact any kind of broad-sweeping legislation, and have a plan for handling the new demand that any kind of universal coverage would bring. I have not thought about this particular problem, but I have no doubt that it includes opening more medical schools here, and increasing the rate at which we import foreign medical graduates. (Though if we were to take a global perspective, the marginal utility of a physician is greater in a growing, highly-populated nation like India than it is here in the United States.)

I have also totally ignored mental health here in the United States. We need more mental health workers – not just psychiatrists, but qualified psychologists as well. It's often tempting to simply write a prescription for an SSRI or other neuroleptic, but this is often the least cost effective measure in the long run. Some kind of cognitive behavioral therapy can go a long way towards promoting a healthy lifestyle. Getting out of bad relationships, making positive changes in one's life can lead to increased worker productivity, higher earnings, and better physical health. I regularly see overweight patients on two to three diabetes meds, a side order of insulin as needed, and one to two psych meds. If they lost the weight, it's likely that they wouldn't need the psych meds or the diabetes meds, and they will consume far less medical care. In that respect, a mental health coach in the form

of a psychologist will go a long way towards long-term, healthy personal change. Unfortunately this aspect of medical care is often overlooked, again, because such interventions have impacts that are hard to measure.

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Part II: Why very little I've written thus far matters

Everything that I talked about in Part I is significant, whether that is the lack of information technology for billing and records purposes to practice disincentives and physician misallocation and tort reform to physician shortages to waste to public health spending. Unfortunately none of it really matters in the long run. Not in the Keynesian "We are all dead" sense, but in the sense that none of it has any effect on long-run spending trends. There are some bright spots, but none of it addresses the core, broken bits of what makes health care costs so absurdly inflationary. Health care does exactly the opposite of what classical microeconomics predicts, and a lot of smart people are working hard on figuring it out what the cost drivers are, but right now it seems to be a combination of a few things that create a dangerous positive feedback loop: perverse reimbursement incentives, overutilization, and technological innovation wrapped into one nasty package.

"Free market" solutions would normally work, and in a simpler, less technologically-advanced society *would* work, but they break down on the big ticket health care expenditures, and are useful only at the margins. The free market depends on choice as much as anything else, and patients don't have a choice when faced with receiving chemotherapy or dying, or having a heart attack and dying or having a heart attack and surviving. This is choice only in an academic sense; for practical purposes, this isn't choice at all. Demand is inelastic.

The free market problem, mandates, and demand inelasticity

Conservatives have been trumpeting free markets for the last six months or so, arguing that giving people a broad spectrum of choice in health insurance options – so long as it's not provided by Uncle Sam – is a good thing. Insurance market competition is the pill which will cure health care spending increases.

This argument is spurious. Markets are indeed wonderful things; they are responsible for most of human progress in the last 2,000 or so years (at least), and they've very probably led to the decrease in warfare worldwide as mutually-beneficial trade has slowly replaced stealing at spear- or gunpoint in most areas. In this respect, globalization has been a good thing. Specialization and

division of labor has wrought some astonishing things, particularly in the last 200 years or so, as the rate of change of technology has gone from ~3% per generation to ~3% per year, according to Brad DeLong. This is amazing; it should be celebrated.

Along with the technological progress has come progress in life expectancy and quality of life. New technologies are introduced; competitors copy the invention, introducing some tweaks or differences to avoid patent and trademark entanglements; commoditization slowly sets in; product differentiation approaches zero, and the price drops rapidly to something approaching marginal cost. The perfect example of this is the DVD player. Introduced in Japan in only 1996, it cost $970. Nowadays you can buy a DVD player on Amazon for $30(!).

Going from $970 to $30 in 13 years is impressive, but not unexpected. Consumers liked the audio and video quality better than VHS, the discs were smaller, didn't have to be rewound, and were arguably more robust than the magnetic tapes they replaced. DVDs as a medium pretty much sold themselves.

There's an analog in the medical world, called LASIK. First performed in the USSR in the 1970s, it was introduced to the US in 1987. Since that time, approximately 2 million procedures have been performed. Nowadays, the cost is quite low, approximately $1000/eye, using current best methods. (Older types of blade LASIK often cost less, and arguably result in poor night vision.) Some individuals in regions where there are quite a few LASIK providers report costs as low as $400-500 per eye. I am unable to find any vetted, historical price data, but I do know that back in the late 1990s, when I looked into having it done, it was running between $2,000-4,000 *per eye*, without adjusting for inflation. I've solicited anecdotes from a variety of people, and their estimates have been in similar ranges. Basic microeconomics suggests that as competition increases, price will fall to marginal cost, and in more heavily saturated LASIK markets, this seems to be happening.

But LASIK is an anomaly in health care field. Its pricing is transparent; providers compete with one another on the basis of price, or on other softer factors… like price. Behavioral economics suggests that individuals who pay more for a bottle of water think it tastes better than a cheaper bottle, even if the water is from the same source. fMRI results objectively confirm that they are happier than those who chose the "inferior" product. I have no doubt that some savvy ophthalmologists use this trick, too, even though the product they're peddling is literally identical.

So LASIK exists in the free market, and its price has come down significantly over the years. There aren't any other medical procedures that I can come up with that are similar. Yes, there are many other elective, cosmetic procedures that exist in the free market. The market for breast implants, butt implants/reduction, nose jobs, lip jobs, Adam's apple shaving, hair removal, etc. None of these have the combination of a high barrier of entry for the provider coupled with the scale of demand that LASIK enjoys to be especially useful. I don't know anyone who's ever had their Adam's apple shaved, but I do know a handful of people who have had LASIK done.

In 1972, Kenneth Arrow wrote the seminal paper "Uncertainty and the welfare economics of medical care (Arrow)," which basically launched the entire health economics subfield, noting that individuals don't know when and where they will need care, that few people can afford the high costs associated with big ticket procedures, and that consumer choice is (necessarily) non-existent.

Health care lends itself to an intuitive understanding of the bounded rationality problem probably better than any other example I've seen. By nature, it's complicated and dangerous, that's why we go to the doctor. On the other hand, under our fee-for-service model, providers are incentivized to provide *more* care, not necessarily *better* care. I have no doubt that most physicians would take issue with this characterization out of professional pride, but I know first-hand that many good doctors are inclined to order more tests and procedures simply because they're reimbursed. The consumer experiences disutility in terms of time wasted (opportunity cost), and in some cases, deleterious effects on their health in the case of some marginally useful procedure, usually from imaging studies. Most of the additional testing one is likely to experience is harmless: hearing tests and EKGs in healthy adults during a normal physical exam are absolutely harmless. In an urgent care setting, it is less obvious to a consumer what's necessary and what isn't; there's an information symmetry problem, and they're often not in a position to question a test's effectiveness in their case, which may get them labeled a "difficult" patient. In any event, they have no compelling reason to do so, either, as they're not usually footing the bill; their insurance is.

Relying on an insurance company to cry foul on unnecessary testing isn't particularly useful, either, for two main reasons. Firstly, they're paying after the fact, and even if they weren't, denying a test while in search of a diagnosis is grounds for a lawsuit, and secondly, they're in business to make money, and every claim they pay is a loss on their books. Insurance companies add *absolutely no value* to the health care delivery chain. Any value they add is entirely accidental. Taking care of a patient is a loss for them, and it is an insurance company's fiduciary duty to "maximize shareholder value."

Alas, the social benefit associated with this kind of accounting is negative. The company is put in the ridiculous position of doing the right thing versus doing the right thing, where both "right things" are not in one of the two groups' best interest. A profit-maximizing firm is likely to come down on the side of the shareholder, not on the side of the patient so long as the competition is doing the same thing.

That brings us to another problem: patients themselves are barely customers in the normal sense of the word. Most individuals get their insurance through their employer, which means that they are the customer only in the sense that they pay for their insurance through lower salaries, and the level of choice they have is limited to what the employer offers.

Health insurance companies make poor proxies for lowering health care expenditures due to the inelasticity of health insurance demand. This is only exacerbated by the proposed mandates; by making it essentially illegal to be without health insurance, demand will only become more inelastic, which means that health insurance companies can simply pass the higher costs on to the companies, which indirectly pass it off to the employee in the form of depressed wages *ad nauseam*. This brings us back to rationing health care based on one's ability to pay, which is exactly where we're at today. Government subsidies help those in lower income brackets, but they don't reform *health care delivery* in any meaningful way; they just buy more of what we have now: inefficiency and waste.

A public option isn't a bad idea. The US government already runs the largest insurer in the world in the form of Medicare, and by and large, most seniors are quite happy with their health coverage. It's perhaps the only form of health insurance in this country that actually *is* insurance. You can't lose it, it's paid for through taxes, it's not tied to employment, and it's effectively guaranteed by the government. As James Kwak notes, employment-based health insurance means that one's health is only insured insofar as one's job is insured (Kwak). Jokes about government inefficiency aside, Medicare is the most efficient of the health insurers in the United States. In fact, its overhead is so low that even if it did not investigate any of the Medicare fraud cases that have come to light recently, it would still be more efficient than the private sector. Conservatives have argued that a public option could kill the private insurance industry (Trautwein), with the presupposition that this is a Bad Thing. But as private insurance industry adds no value to the health care delivery chain, this assumption rings false. The only service it provides is paying for medical services, a role easily filled by government. In this particular case, we *want* crowding out. Medicare's administrative overhead is running at about 5.2% (Merrill Matthews), compared with the private

sector's 16.4%. (The private sector has quite a large variance, however, in that large group policies have an average overhead of 12.5%, whereas individual policies run around 30%.) (Merrill Matthews) This is significant, but it should be noted that not all forms of administrative overhead should be attacked – a 1% increase in administrative overhead that reduces fraudulent payouts is a good thing. A better metric than administrative costs is cost increases over time. According to National Health Expenditure data, Medicare costs per beneficiary have increase at an annual rate of 8.8%, whereas private insurance premiums have risen at a rate of 9.9% (National Health Expenditures Data). If the private sector matched Medicare's costs over time, insurance premiums would be roughly one-third lower than they are today.

So insurance competition isn't a bad thing, but it's not going to solve the problems inherent in the delivery of health care itself. Insurance is a poor proxy for pushing efficiency because the demand for insurance is relatively inelastic, made even more so by individual mandates. But mandates are the only way we can solve the adverse selection problem. So we're left with a conundrum, but at least these mandates won't be unfunded like EMTALA (American Academy of Emergency Medicine). Where we're headed with reform looks to be similar to where Massachusetts is headed: universal coverage mandates with subsidies, complete with massive budget overruns a year or two down the road as health care inflation continues unabated. The political will to cover all Americans exists now, but not the political will necessary to make the structural changes necessary for a sustainable system. Reform in two stages effectively purchases the political will necessary for sustainability down the line. Massive deficits are unpopular, and once a reform bill is passed, it will never be rolled back, because that is also politically unpopular. So a few years from now, we'll be stuck at a different point in the reform process: cost containment. And that's where the real ugliness will begin. Covering everyone will be easy compared to figuring out the why and how of cost increases in the health sector, but it will be necessary, otherwise health care spending will begin to crowd out other spending, and that is a crowding out effect that is most certainly bad.

So why can't free markets make health care more efficient? Because their effectiveness is limited to the margins. Most people, insured and uninsured, can afford basic care: yearly physicals, prescription drugs, etc. In 2002, per capita spending on health care in the United States was $5,267 – 53% more than any other country in the world (Anderson, Hussey and Frogner). $5300 can buy a lot of medical services if these were wages in a worker's pocket. It's likely that primary care specialties would have lower fees if patients paid for services directly, not to mention lower

administrative costs. Internists, family practice docs, pediatricians, and probably some of the internal medicine subspecialties (cardiology, gastroenterology) would have lower costs if consumers paid with their own money. Instead of a fee schedule set by a third party, pricing would necessarily be transparent, and consumers would choose who they saw, insofar as they are able to with limited information.

Under this system, consumers would ration their own care, opting to pay more when they need to see a provider right away, or queuing up for non-urgent matters. The problem is that this doesn't scale very well, particularly when you factor in bounded rationality and the variance in individual future discount rates. As humans, we tend to overstate the risks associated with an unlikely event (being struck by lightning), and understate the risks associated with common events (having a heart attack). Consequently, we allocate our resources in ways that don't make a whole lot of sense to an actuary. Leaving consumers in the driver's seat with no guidelines clearly isn't the answer, because they will make poor decisions, and I would be that co-ops and other semi-formal methods of risk pooling would occur naturally because health events are notorious unpredictable.

Would health care spending change? On a fundamental level, I expect that it would. It would probably go down, as people seek out healthier lifestyles, thanks to the mitigation of the moral hazard problem. On the other hand, I suspect you'd see a spike in the number of deaths associated with events that are quite often survivable today. Heart attacks, accidents, head trauma, etc., because people didn't adequately prepare for the unexpected. No matter how we ration health spending, some individuals are going to get more from the system than they put in, and that has a tendency to go against the American ideal of "rugged individualism." This is foolish, however, because this already happens with private sector medical coverage: the healthy subsidize the sick – it's only a problem when it's the government doing it.

Competition

As one moves further into a specialized area of medicine, one quickly runs into supply constraints. If you need brain surgery, your options are limited; neurosurgeons won't be competing with one another on price. Their anesthesiologists may, but in the big scheme of things, anesthesia is a small piece of the total cost associated with a horrible event like a brain tumor. Demand becomes completely inelastic at this point; if you don't have the resources, you die, and if you do, you'll pay

anything to stay alive. Atul Gawande, a surgeon at Mass General, author, and professor at Harvard School of Public Health, recently had an article in the New Yorker entitled "The Cost Conundrum", where he sat down with a group of physicians in Texas, and discussed the rising costs of health care, among many other things. (Gawande)

> The third class of health-cost proposals, I explained, would push people to use medical savings accounts and hold high-deductible insurance policies: "They'd have more of their own money on the line, and that'd drive them to bargain with you and other surgeons, right?"
>
> He gave me a quizzical look. We tried to imagine the scenario. A cardiologist tells an elderly woman that she needs bypass surgery and has Dr. Dyke see her. They discuss the blockages in her heart, the operation, the risks. And now they're supposed to haggle over the price as if he were selling a rug in a souk? "I'll do three vessels for thirty thousand, but if you take four I'll throw in an extra night in the I.C.U."—that sort of thing? Dyke shook his head. "Who comes up with this stuff?" he asked. "Any plan that relies on the sheep to negotiate with the wolves is doomed to failure."

Unfortunately it's these specialties where the real health care costs lie. Specialties that use a lot of medical technology are the primary drivers of cost increases, even when the technology is of marginal benefit. There are some arguments that the use of medical technology is consumer-driven, but this argument has a few flaws, and largely come back to the problem of information asymmetry: patients have no idea what tests they need when they present with abdominal pains, chronic migraines, or lower back pain. They just know they aren't well and need help. It is the physicians which drive the use of expensive procedures.

Supply drives demand

Health care is a strange beast when it comes to the forces of supply and demand. Generally speaking, demand for goods and services determine growth in markets. Rarely is a market for something created out of thin air; markets are created incrementally or in response to a latent need for a particular good or service. The Sony WalkMan, for example, was totally new and revolutionary, but humans have been bringing their music with them since they lived in caves, and the WalkMan was simply the latest iteration of something that had been present for millennia. Even Johannes Gutenberg's printing press was merely a (far distant) iteration of drawing on cave walls. In many ways, the Internet is the same thing.

Demand begets supply, and demand-side reforms enjoy a lot of popular support. Unfortunately, they don't work very well. Health care, because of its information asymmetry leading to the principle agent problem, creates a bizarre market where supply begets demand. Where textbook microeconomics suggests that more supply leads to lower prices, all other things being equal, we find that this doesn't hold true in health care. In Massachusetts, we have more physicians per capita than any other state. We also have the highest health care spending per capita than any other state. The probable reason we have the highest per capita health care costs of any state in the country is precisely *because* we have more physicians per capita. Professor Gawande at length (Gawande, The Cost Conundrum (pg 2)):

> One night, I went to dinner with six McAllen doctors. All were what you would call bread-and-butter physicians: busy, full-time, private-practice doctors who work from seven in the morning to seven at night and sometimes later, their waiting rooms teeming and their desks stacked with medical charts to review.
>
> Some were dubious when I told them that McAllen was the country's most expensive place for health care. I gave them the spending data from Medicare. In 1992, in the McAllen market, the average cost per Medicare enrollee was $4,891, almost exactly the national average. But since then, year after year, McAllen's health costs have grown faster than any other market in the country, ultimately soaring by more than ten thousand dollars per person. […]
>
> "Come on," the general surgeon finally said. "We all know these arguments are bullshit. There is overutilization here, pure and simple." Doctors, he said, were racking up charges with extra tests, services, and procedures.
>
> The surgeon came to McAllen in the mid-nineties, and since then, he said, "the way to practice medicine has changed completely. Before, it was about how to do a good job. Now it is about 'How much will you benefit?' " [...]
>
> The surgeon gave me an example. General surgeons are often asked to see patients with pain from gallstones. If there aren't any complications—and there usually aren't – the pain goes away on its own or with pain medication. With instruction on eating a lower-fat diet, most patients experience no further difficulties. But some have recurrent episodes, and need surgery to remove their gallbladder.
>
> Seeing a patient who has had uncomplicated, first-time gallstone pain requires some judgment. A surgeon has to provide reassurance (people are often scared and want to go straight to surgery), some education about gallstone disease and diet, perhaps a prescription for pain; in a few weeks, the surgeon might follow up. But increasingly, I was told, McAllen surgeons simply operate. The patient wasn't going to moderate her diet, they tell themselves. The pain was just going to come back. And by operating they happen to make an extra seven hundred dollars.
>
> I gave the doctors around the table a scenario. A forty-year-old woman comes in with chest pain after a fight with her husband. An EKG is normal. The chest pain goes away. She has no family history of heart disease. What did McAllen doctors do fifteen years ago?

> Send her home, they said. Maybe get a stress test to confirm that there's no issue, but even that might be overkill.
>
> And today? Today, the cardiologist said, she would get a stress test, an echocardiogram, a mobile Holter monitor, and maybe even a cardiac catheterization.
>
> "Oh, she's definitely getting a cath," the internist said, laughing grimly.

Fee for service

Fee for service is the culprit. By providing incentives to provide *more* care, instead of *better* care, we end up with a great deal of waste, and physicians behaving like businesspeople instead of physicians. How do you incentivize better instead of more? There are a few ways, ranging from the radical to the mundane. It seems likely that the more mundane measures will win the day, because rarely is anything done in a single broad, sweeping reform. The most radical of all is a simple government takeover of the entire health care system. In the long run, this would probably end up looking a lot like the Veterans Administration hospital system, with similar per capita expenditures. It is difficult to get a handle on the exact numbers, but a pamphlet created in 2006 indicates that the VA's cost per patient has remained flat since 1996 (Department of Veterans Affairs), thanks in large part to its innovative VistA EMR system. The VA's marginal cost per patient has dropped constantly since 1999. From 1999 to 2003, the number of individuals receiving care through the VA has increased by 70%, yet the VA's budget has only increased by 41% (Longman), while their measures of quality and satisfaction have continued to go up.

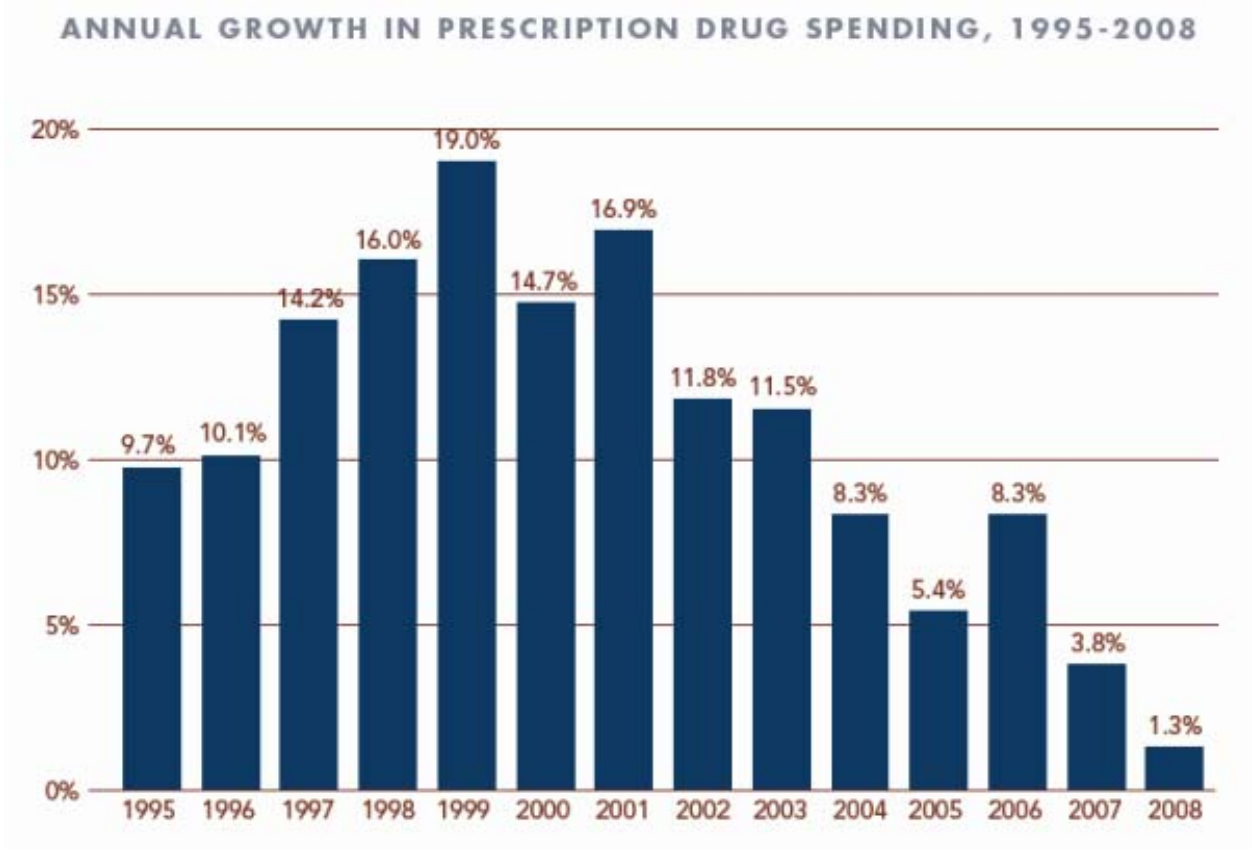
This is unlikely to happen; there's too much money in the private sector for it to pass so long as preserving free market principles trumps all other concerns. To be quite blunt, it would also hurt quite a few physicians financially if the entire system were scrapped, especially young doctors with medical debt often reaching $200,000. Salaries are likely to come down, which is never popular. But the other side of that coin is a simpler way of health care delivery: fewer ancillary office staff, simplified billing, less paperwork (probably). Medical debt can be addressed in other ways, such as through tuition forgiveness or repayment.

A more likely means of "bending the cost curve" is by rewarding quality instead of quantity, but this is tremendously difficult to measure. Some ideas include rewarding specific behaviors shown to decrease morbidity or mortality (e.g. giving an aspirin within two minutes of a patient presenting with an MI), but without some kind of universal health records system, it becomes very easy to

fudge reports after the fact: paper is endlessly modifiable; a secure records system is less so, but the data still has to be entered somehow. How to implement FFS based on quality rather than quantity remains a mystery. I have searched everywhere for a compelling proposal that seems workable, and I've come up with nothing that seems workable in the real world. Unfortunately many liberal economists and political scientists seem content to ignore this problem, dismissing it with a hand wave. I don't believe this helps the quality of the reform dialogue.

Prescription drugs

There is a bright spot in health care spending, and it is prescription drug spending. While still increasing, it's increasing at a lower rate than at any other time since 1963. This is good news for the public, and bad news for Big Pharma, which in recent years has dedicated increasingly large portions of its budget to direct-to-consumer advertising than R&D. Of the top 200 drugs by sales in 2006 (Verispan, VONA), 44 have lost patent protection, representing $33.6 billion of industry revenue. (By way of an apples-to-oranges comparison, the combined market capitalization of all the major generic drugmakers is $22 billion.) There have not been nearly enough new drug approvals to fill the gap, and the new drugs that have been approved have largely been niche drugs with limited mass-market appeal. This is partly due to the lower-hanging fruit having been plucked, and the fact that many of the drugs losing patent protection were "me-too" drugs in the first place, rather than truly innovative therapies. Of the 44 drugs that have lost patent protection since 2006, a full 22 of them could be considered "me-too" drugs. PhRMA has a nice chart of this effect (PhRMA):



With the passage of the 2006 Medicare Part D benefit, senior citizens as a demographic were given access to prescription medications on a universal scale not seen in this country for any other

group. It is estimated that the Part D benefit reduced user cost among the elderly by 18.4%, and increased the use of their prescription drugs by 12.8% (Sun and Lichtenberg). Broadly speaking, with the exception of a few niches like Alzheimer's, senior citizens tend to take medications for cardiovascular health, and the majority of these prescriptions are available in generic form. Most pro-drug-access arguments center on prevention; prevention is thought to be cheaper than cure. The obvious question to be asked, then, is if medical care and prescription drugs are substitutes, does spending on drugs (less costly) save money on medical interventions later (more costly)? Now that the drug benefit has been in effect for three years, data exist that suggest that it might. The first study indicates that for elderly patients with no drug coverage, the Part D program is a net win for taxpayers, as this group spent more on drugs, and less on medical interventions (physician visits, hospitalizations), whereas the second group which had drug coverage before the Part D benefit increased their drug savings a little bit, and also increased their spending on other medical services (Zhang, Donohue and Lave).

The second study indicates more strongly that Part D is a cost-saver. A prescription drug spending increase of $170 (22%) reduces Part A spending by $350 (13%). In more straightforward terms, *a $1 increase in drug spending results in a $2.06 reduction in normal Medicare spending* (Shang and Goldman). Obviously this doesn't scale infinitely, but the results are promising. In individuals with chronic conditions, having reliable drug coverage will decrease utilization of medical resources which saves money. This is one of the low-hanging fruit that could easily be plucked for the rest of the population at large.

Not all is rosy the land of pharmaceuticals. With the low-hanging R&D fruit largely plucked, the cost of developing a new drug is rising, while the payoffs associated with these R&D spends are falling. As a result, many large pharmaceutical companies are looking to move from the more traditional "small molecule" drug development – your traditional medicines – into the biologics. These biologics are compounds that are created by living organisms, and used for therapeutic purposes. The most common biologics are vaccines and diabetic insulins. These are a risky business in that most compounds are shot down by the FDA, and never reach market. As a result, Big Pharma tends to let smaller companies take the risk, and then buy a company which has a promising compound or two in its pipeline at a later stage. This is well and good; biologic drug spending has increased dramatically in recent years, and is probably the only reason drug spending is still

increasing. In 2007, spending on biologics reached almost $79 billion, more than 3 times what the industry lost due to patent expiration from 2006 to 2009 (LaMerie Business Intelligence).

What is worrisome is that there is no generic drug approval pathway for biologic compounds. While it is possible from a legal point of view for a generic biologic to exist, there is no regulatory pathway for a biologic drug to make the jump from a single-source, patent-protected drug to a multi-source, commoditized drug. The Center for Drug Evaluation and Research (CDER) which deals with Abbreviated New Drug Applications (ANDAs) for small molecule drugs, does not have the authority approve an ANDA for biologics, because they are handled by the CBER (Center for Drug Evaluation and Research). It would take an act of Congress to make this happen, and there are two on the table, one by Rep Waxman from California, and Rep Eshoo, also of California. The main differences between the two are the length of time of market exclusivity (Trapp):

	Waxman	**Eshoo**
Exclusivity for original biologic	At least 5 years, up to 9 years	At least 12 years, up to 14.5 years
Exclusivity for first approved generic biologic	At least 6 months	2 years

The dirty "R" word

Rationing is a bad word in health care. We don't want someone telling us what health care services we can and cannot consume. The rationing word is trotted out as an argument against socialized medicine. Unfortunately health care is a scarce resource, and like all scarce resources, must be allocated in some way. We allocate automobiles, houses, jewelry, food, and most everything else by ability to pay. But there are some exceptions: public services. Some public services are non-rival – national defense, for example – and some are, like police and fire protection. There are those that believe that health care shouldn't be a public service, and I used to be one of them, but not any longer. Before the government took over the job of fighting fires, there were private fire companies. So far as I can see, this has worked out pretty well. In my mind, it is not so far a stretch to extend the same basic idea to health care: not needing to worry about health care leads to a better, probably healthier, more productive society.

That's not to suggest that overconsumption is not a problem. In some demographics, it is. However this demographic is likely to go to the ED for the common cold, because of EMTALA, and because they can't afford a family physician. No one likes waiting for four to eight hours to be seen in the ED, so if these people had normal access to health care, it stands to reason that they'd probably rather be seen in a normal office setting. Calling 911 to get an ambulance ride to the ED to skip ahead of the folks in the waiting room is not sustainable health policy, but if the only reason it's done is to skip the wait, then a normal ambulatory setting is more preferable for everyone. Cab money is pocket change compared to an ambulance.

As I mentioned earlier, we already ration health care based on ability to pay, and we outsource this rationing to private insurance companies who may pay or deny a claim seemingly at whim. These companies are in business to make money, not promote health. They are answerable to shareholders, not the people they serve. This is in direct contrast to government-provided health care, where the electorate can vote officials out of office for doing a bad job. As a result of this covert rationing, we effectively lock some 15 million citizens out of catastrophic health care access.

In my mind, rationing based on best available evidence, triaged by urgency is a better model for a healthier society than rationing based on the ability and willingness of one's employer to buy insurance for its employees. There will be lines for some things, and there won't be lines for others. It certainly is a trade-off.

Final thoughts

So how would I personally change health care in this country? Well it might be instructive to know that 18 months ago, I was very conservative in my views on health care. I was against any sort of government meddling, I was against the Medicare Part D drug benefit, and I would have opted out of paying into Medicare and Social Security if I had had the ability to do so. I believed that the free market could do everything better; I was almost Ayn Rand-esque in my thinking, though I never liked her writing. At the very least, I believe most things can be made better if they incorporate markets in some way. Over time I've come to reject the idea that the free market is an end in and of itself, and have begun to see it as more a means to some end. It's an engine; a means of getting from A to B, not the final product. Just as a rocket will go out of control without a guidance system, so too can completely unregulated markets be they in high finance or health care.

Personal experience tempered those conservative feelings, as has scrutinizing the data. No longer do I view those that need help as social degenerates, having found myself down and out in the last year, getting food stamps and Medicaid. These types of events have the tendency to cause some serious introspection and reflection on one's closely-held beliefs, and I find that I'm emerging from the other side believing that the function of government is to provide for its citizens rather than to enforce property rights and maximize liberty. If I were European, I'd be a social democrat. This is the moral basis from which I have constructed this paper. (Though I was firmly convinced when I began writing it that it was purely data-driven.)

Health care costs, at their current trajectory, are headed for 30% of GDP in the next decade. This is rather obviously unsustainable. Most conservatives, that I have seen, tend to make moral rather than economic arguments about keeping the government out of health care, with the presupposition that the government being involved or taking over the health care system would be a net loss for society, with arguments focusing around rationing: do you want the government making decisions about your health care? This is spurious because we already let insurance companies do the same thing, but because insurance companies are the private sector, it's somehow a-ok.

I believe the data says otherwise. The most socialized health care system in the country, the Veterans Administration, has the highest satisfaction ratings and the lowest per capita costs in the nation while achieving measurable outcomes that exceed the best hospitals in the private sector. That includes MGH, Johns Hopkins, and even the Mayo Clinic. I suspect much of their success is by having salaried physicians which eliminates many of the principle agent problems.

There are some hurdles to be jumped. Obesity is trending worse, and the data suggests that obesity is due almost entirely to increased food intake since the 1970s. The unexpected follow-on from the Green Revolution seems to be the obesity epidemic. While exercise is considered an important part of a weight-loss regiment, it plays second fiddle to diet for purely mathematical reasons. If a 190lb male burns 350 calories in 30 minutes of running, it's trivial to consume that many calories without even thinking about it later in the day. (350 calories is about 3 cans of soda.)

Lots of interesting work is being done on the effect of incentives to make healthy decisions. I've read countless papers on it, and most of the effective incentives involve cognitive tricks, coupled with a daily carrot. This is okay, but this is working at a pretty low level, applied very inconsistently. Behavioral modification doesn't tend to scale very well, and has considerable administrative overhead. I would rather see food production and subsidization itself improved. The

cost per calory for junk food is far below (4 cents) the cost per calory of healthy food (45 cents) (Sheehan). This doesn't count the hidden costs of junk food (obesity and secondary morbidities), but this bumps up against the limits of human rationality when making a decision. The discrepancy is getting worse, as the price of fruits and vegetables is climbing faster than inflation, while calory-dense foods have dropped over the same time span, without adjusting for inflation. This may help explain why poor people tend to be more obese (Monsivais and Drewnowski).

How this problem can be fixed is a bit outside my area of expertise. "Soda" taxes are an interesting idea. It's the same concept as the Pigouvian gas tax applied to junk food. Restructuring agricultural subsidies may provide another avenue, though I would imagine with many unintended consequences that are very hard to foresee. The other issue with going after Ag subsidies is that a farm is not a factory. One simply can't dial production up and down and produce more or less with relatively little delay. I think the United States is probably right to err on the side of too much food production by keeping demand artificially high all the time. We've largely eliminated famine in the first world, and I don't believe that tackling the obesity problem warrants risking famine if demand unexpectedly outstrips supply.

If I were an enlightened despot

If I were an enlightened despot running the United States, I would nationalize the health care system entirely. Top to bottom. Physicians could choose to work outside the system if they wanted, and hospitals could exist outside the system, as they do in other nations. Everyone would have basic coverage and access to health care, and could buy private insurance if they wanted. Public insurance would cover costs at public hospitals, and would pay what a public hospital would be reimbursed to a private hospital should a patient decide to go there instead, but no more. In this respect, it would force public hospitals to compete with private hospitals in terms of quality, and would function similar to the principles behind the school voucher programs that have been proposed recently. If patients want to spend money above and beyond this, to get amenities (wireless Internet access during a hospital stay, for example), they could do so. Restricting all choice would be undesirable.

Drug coverage would exist universally with an adaptable formulary. A physician could request a higher-priced drug, but would have to make a clinical argument as to why it was necessary,

and the same would hold true in terms of medical procedures. The evidence would trump all else, where and when it exists. A heavily-funded comparative effectiveness research department would be running head-to-head trials of drugs and procedures done in a longitudinal fashion to see which worked best in the short, medium, and long run. Any research funded with public money would be available freely through PubMed, with no ridiculous pay walls between the public (and physicians) and the best available information. Academic publishers would have to adapt or die.

The number of specialists would be tightly controlled, like Singapore, because of the supply-drives-demand problem. No more than 40% of medical graduates can be specialists. All physicians in the public system would be paid an hourly salary, and their working conditions would be structured to maximize time spent doing patient care, while minimizing administrative tasks inasmuch as this is realistic. Medical school loans would be repaid as long as physicians worked in the public system. I believe that physicians generally want to focus as much as they can on patient care, and as little time doing administrative tasks. In this way, while they might gross a lower take-home salary than many currently enjoy, they will like working more than they do under the current free-for-all, fee-for-service system. This is a big maybe, but being an enlightened despot, I don't have to worry about physician lobbying groups.

I would create a health IT monopoly like the one I described in part 1, and start looking at ways to solve the obesity problem at a high level. End obviously-futile, government-subsidized, end-of-life care, and think about removing health care expenses from GDP figures. Establish urgent care clinics at every high-volume emergency department, with social workers to help individuals having difficulty finding a family physician do so. This kind of administrative overhead is a long-run, cost-saver. Universal tort reform would help keep the conservatives happy, and save money. Note that these costs will not go to zero, but they would represent substantial savings as a one-time discount. Establishing health courts might help; extending the information asymmetry problem to medical malpractice means that a "jury of one's peers" doesn't work well when evaluating whether a physician is at fault for prescribing a certain course of action or failing to make an accurate diagnosis.

Would this work? I think it would. At least for a while until the unintended consequences of such a radical redesign of a health care system surface. I have a feeling it will constantly be a whack-a-mole type battle, but it's clear that what we're doing now doesn't work and is unsustainable. This is bad for conservatives and liberals alike.

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