SCHREYER HONORS COLLEGE

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# NUDGING TO OPTIMALITY: PRESCRIPTIONS FOR TREATING AMERICA'S HEALTH CARE PROBLEM

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## ABSTRACT

In this study, the United States health care system is analyzed to determine why things have been in such a bad state. Health outcomes are not improving as much as expected, and costs have risen from 5.0% of US GDP in 1960 up to 17.9% of US GDP in 2016. Initially, improving price transparency for consumers is considered, but it is determined that this is a necessary, but not sufficient change to the US health care system. From here, the incentives of the players in the health care system are considered, as well as what "nudges" could be made to reach a more optimal outcome, defined as decreasing health care costs, improving patient health outcomes, or increasing access to treatment for the general population. In conclusion, paperwork between doctors and insurers must be reduced, patients and doctors must work together to reduce the vast amount of unnecessary testing that occurs, and patients must be provided with easier to understand information to allow for better insurance plan selection.

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# Chapter 1

## The Current State of American Health Care

### The System

Among many other hot-button issues within the modern political spectrum, health care has been discussed immensely in the past few years. Why? First, consider the cost. Bills for medical care have increased much quicker than the costs of most other goods. Going back to 1948, the average increase in medical care costs has been 5.3% annually, relative to a 3.5% increase in the headline CPI. This faster rate has been relatively consistent throughout time, especially in times of recession, where headline CPI tends to stay flat or fall, while the cost of medical care continues its increase.[1] With this high cost of medical care, one would hope that the quality of care is exceptional in every way imaginable. However, this is not the case. While the US spends almost twice as much per capita on health care as the next highest spending country (Germany), average life expectancy falls far below the expected value based on spending. Even though Great Britain spends around a third of the money on health care per capita as the United States, life expectancy is higher in Great Britain.[2] For a country that is considered as economically powerful as the United States, what is wrong with its health care system, and what can be done to fix it?

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[1] "Healthy Inflation? : Inflation in the Healthcare Industry vs. General CPI| FRED Blog," accessed September 21, 2017, https://fredblog.stlouisfed.org/2017/07/healthy-inflation/.

[2] "Universal Health Coverage and Health Outcomes OECD G7 Health Ministerial 2016," accessed September 21, 2017, https://www.oecd.org/els/health-systems/Universal-Health-Coverage-and-Health-Outcomes-OECD-G7-Health-Ministerial-2016.pdf.

**Delivery Programs and Processes**

To even begin to understand the issues underlying the health care system, the complexities of the delivery programs and processes need to be understood, as there has to be some explanation for its consistently high inflation. At a basic level, health care is delivered through a number of institutions that are public or private and for-profit or not-for-profit. For many people, medical costs are very uncertain on a yearly basis. It is entirely possible for someone to go an entire year without visiting a doctor, incurring no costs. On the other hand, it is also entirely possible to have a serious incident like a broken leg or heart attack that can lead to being in an emergency room with large medical bills. From a financial perspective, this is a risk that a lot of people want to shed in the form of insurance. In fact, the vast majority of people do this through either their employer, public programs, or individual plans.

As of 2016, 49% of people get their insurance through their employer. For those who are in jobs with this benefit, employer-sponsored insurance pools together the risk of all of their employees, paying for a varying amount of the premiums, depending on the individual employer's benefits package. As will be discussed later on, this type of plan has the potential to cause employees to not truly understand the burden of their health care costs, leading to decisions that are not optimal. 7% of people also have private insurance, but in a non-group plan outside of an employer.[3]

For those who are in a situation where employer-sponsored health coverage is not available or ineffective, government-backed options are available. 19% of the population holds[4]

[3] "Health Insurance Coverage of the Total Population," *The Henry J. Kaiser Family Foundation* (blog), September 19, 2017, http://www.kff.org/other/state-indicator/total-population/.

[4] "Health Insurance Coverage of the Total Population."

Medicaid, typically available to low-income people or those with disabilities.[5] 14% of the population holds Medicare[6], the other main governmental program available to those who are age 65 or older or have End Stage Renal Disease.[7] Unbridled capitalism can be prominently featured in the United States, but health care has a somewhat different perspective, with lots of public initiatives. When considering any sort of health care policy, these programs have to be protected to an extent, since it is not ideal for American citizens to be dying because they can't afford to pay $12,000 for a surgery. But, as with anything in the United States health care system accounting for 17.8% of Gross Domestic Product, these programs come at a large cost, funded by the American taxpayer. Medicare had $646.2 billion in spending in 2015, while Medicaid spending was $545.1 billion. One interesting thing to note is the significant difference in costs to cover the elderly vs. the poor. Medicare has around 25% fewer enrollees, but 18% higher total costs. Totaling over a trillion dollars, these 2 programs represent about 30% of the US federal budget, and need to be considered in any health care policy decisions.[8]

There is one group that is left out from the insurance pool: the uninsured, representing 9% of the US population[9]. Since health insurance is an important protection against risk, this is not ideal. The uninsured fall in to the gap where no insurance makes sense for their personal situation, since they must not have a good employer sponsored option, nor are they eligible for Medicare or Medicaid. Uninsured individuals would be most likely to try and avoid any visits to

[5] "Medicaid Home," accessed September 21, 2017, https://www.medicaid.gov/.

[6] "Health Insurance Coverage of the Total Population."

[7] Digital Communications Division (DCD), "Who Is Eligible for Medicare?," Text, HHS.gov, June 7, 2015, https://www.hhs.gov/answers/medicare-and-medicaid/who-is-elibible-for-medicare/index.html.

[8] Centers for Medicare, Medicaid Services 7500 Security Boulevard Baltimore, and Md21244 Usa, "NHE-Fact-Sheet," June 14, 2017, https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html.

[9] "Health Insurance Coverage of the Total Population."

the doctor, as the costs could be out of control. However, whenever the uninsured do need medical care, it is likely to be a situation where the care is provided by a hospital, which is not the most cost-efficient method. Hospitals can be a safety net for those who can't afford it, however, since there is no such thing as a free lunch, these costs will eventually be incurred, whether they are paid for by the uninsured patient or not.

Even though there is still a significant number of uninsured individuals today, the number has greatly decreased, which was a main goal of the Affordable Care Act in 2010. Back in 2001, one out of five working-age adults and one in seven children were uninsured. These percentages stayed relatively constant until the passage of the Affordable Care Act, as shown in Figure 1.[10] The uninsured suffer a significantly worse health status, living shorter lives than insured adults. In fact, the lack of insurance led to approximately 18,000 premature deaths per year.[11] Passed with continuous partisan contention under the Obama administration, the ACA is heavily responsible for this decrease in the uninsured population. The act put forth a system that targeted these people with no good insurance option, by providing subsidies to lower premiums for households between 100% and 400% of the federal poverty level.[12] The most controversial part of the bill, which definitely encourages individuals to obtain insurance, is the individual mandate. The individual mandate fines those who do not have insurance—to the tune of $695 per

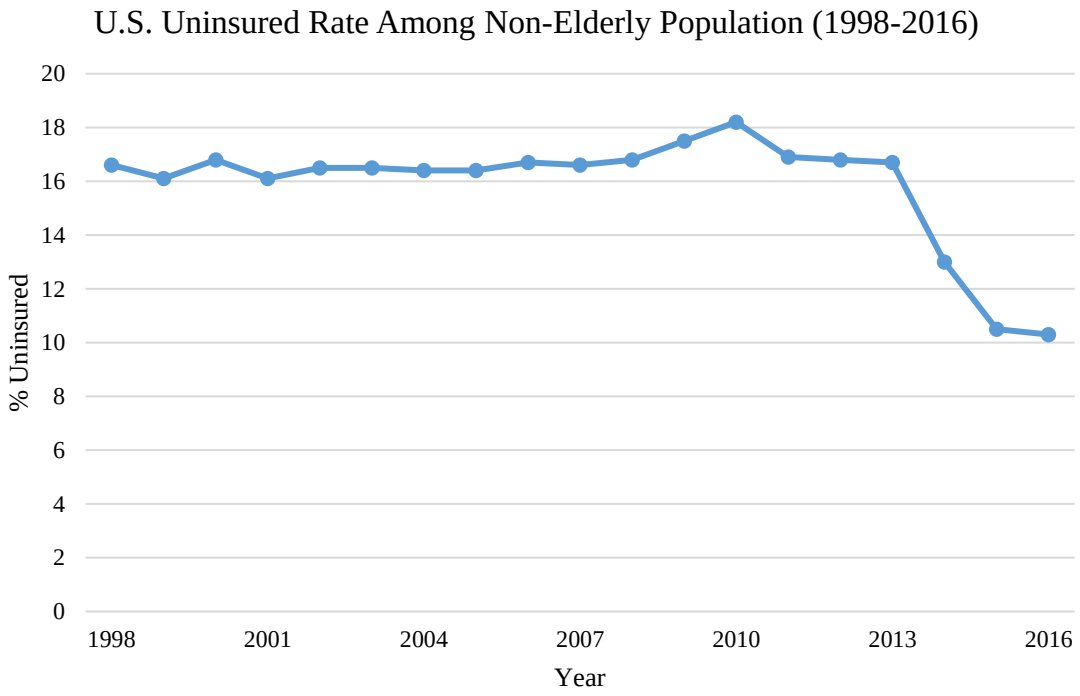
[10] "Key Facts about the Uninsured Population," *The Henry J. Kaiser Family Foundation* (blog), September 19, 2017, https://www.kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population/.

[11] *The Future of the Public's Health in the 21st Century*, 2003, https://doi.org/10.17226/10548.

[12] "Affordable Care Act (ACA) - HealthCare.Gov Glossary," HealthCare.gov, accessed September 22, 2017, https://www.healthcare.gov/glossary/affordable-care-act/.

adult, or 2.5% of income, whichever is higher.[13] While there is no doubt that this policy decreases the number of uninsured as a whole, is this the best way of going about health care policy? There are pros and cons to the Affordable Care Act as a whole, with lots of disagreement occurring among party lines. However, even with the Affordable Care Act in place, more improvements need to be made to ensure the long-term sustainability of the American health care system.

**Figure 1. U.S. Uninsured Rate Among Non-Elderly Population (1998-2016)**



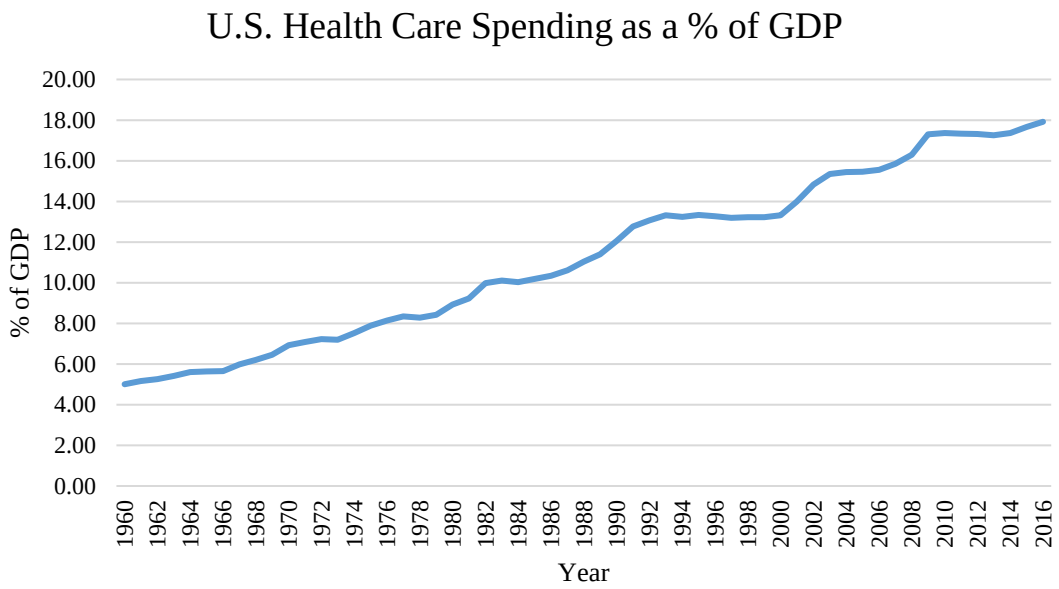

[13] "Individual Mandate Penalty You Pay If You Don't Have Health Insurance Coverage," HealthCare.gov, accessed September 22, 2017, https://www.healthcare.gov/fees/fee-for-not-being-covered/.

**An Imperfect System**

When it comes to health care, there are three main concerns. First, high-quality health care needs to be delivered. This can be defined in a lot of ways, however, as discussed in the previous section, the United States is coming up short in terms of life expectancy. Second, health care needs to be distributed in an efficient manner. If the life expectancy for the richest 80% of the population is significantly higher than the life expectancy of the poorest 20% of the population, the overall numbers may look good, but this is not optimal. Any health care policy must take this into consideration. Finally, health care needs to be distributed at the lowest possible cost. Even if the United States had the world's most premier health system providing outstanding care to all of its citizens, the fact of the matter is that spending 17.8% of GDP on health expenditures is too much (up from 5.0% of GDP in 1960, as shown in Figure 2).[14] In summary, the goal is to strike an optimal balance to deliver the best health care to the most people at the lowest cost.

[14] "NHE Summary Including Share of GDP, CY 1960-2016," Centers for Medicare & Medicaid Services, January 8, 2018, https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html.

**Figure 2. U.S. Health Care Spending as a % of GDP**




There are many things that could be attempted to try and accomplish these three goals. Analyzing all of these potential avenues goes far beyond the scope of this thesis. Some ideas that could be explored include encouraging more people to become doctors by reducing the debt and stress load required for medical school, reforming the patent system for pharmaceutical drugs to control pricing, reducing the large amount of labor required in billing with negotiations between care providers and insurers, encouraging healthy habits, and getting patients to proper specialists quicker, among many others. Some of these solutions may help, but everything circles back to examining the incentives of participants in the health care market. Of these incentives, one main solution that may improve price, quality, and fairness is increasing price transparency.

**Patient Incentives**

As a patient in the US health care system, there is one question that is challenging to answer. How much does my care cost? Numbers exist for overall expenditures, but on an individual level, they are hard to predict. Prices are almost never discussed until after medical care is received, and even then, they can still be skewed. As was discussed earlier, insurance is a primary part of the health care experience of many. Since everyone has widely different deductibles (amount of costs that must be paid out of pocket before the insurance company covers any costs), co-pays (amount of costs that must be paid alongside the insurance company), and networks (will this procedure/facility have its costs covered?), the procedure is very complicated. This is an incredibly confusing system for the average American, and for most people, since their insurance covers a large chunk of the costs, it isn't worth worrying about. From a purely economic perspective, optimal decisions are made knowing price and utility, determining how to maximize utility per dollar. Removing dollars from the equation, health care consumers can only be worried about utility to a certain extent, since the costs are not directly absorbed themselves.

The problem is that this is an indirect cost. Sure, the insurance company covering a $4,000 procedure is at no cost to the consumer now, however, if everyone racks up higher health care bills for the year, the insurance companies will notice, and increase premiums in the future. This cost will hit the individual consumer eventually. This thesis aims to study the idea of adjusting incentives in health care to improve the system as much as possible. To answer this question, optimal policy decisions will be determined based off of the criteria that it must improve or maintain quality, improve or maintain accessibility, while decreasing the costs. One

interesting policy decision to look into is the idea of increased price transparency to allow for more optimal decisions by consumers.

# Chapter 2

## Analysis of Increased Price Transparency

### Deficiencies of Health Care Pricing

Since there are many potential avenues to take regarding health care policy, it is worth asking if increased price transparency has any chance at improving American health care. Are there wide enough price variations between health care providers that price is important? Is it actually true that patients can't access pricing information in a simple enough way? Even if consumers had easy access to health care pricing, would it impact their decision making?

When it comes to price variation, there is no doubt that there is a lot of it in the current market, and it doesn't necessarily make sense. In a recent study about prostate cancer surgery, researchers attempted to find patterns in pricing across the United States. Overall, the surgery is very expensive, with an average price of $34,720. Prices were found as low as $10,100, and as high as $135,000. However, these differences were not explained by the expected factors: region, population, or hospital ranking.[15] Interestingly enough, the only statistically significant factor found within this study was that academic, or teaching hospitals had a large difference in price ($41,185) compared to nonacademic hospitals ($27,098).

While this study focused on prostate cancer surgery alone, this sentiment holds for many other procedures of varying price. In a study of their own claims, Blue Cross and Blue Shield

[15] Scott C. Pate et al., "Variations in the Open Market Costs for Prostate Cancer Surgery: A Survey of US Hospitals," *Urology* 83, no. 3 (March 1, 2014): 626–31, https://doi.org/10.1016/j.urology.2013.09.066.

looked at the prices for knee and hip replacements across the United States. They found that there were some areas with very high variation relative to the rest of the country, as well as some areas with a very high average cost relative to the rest of the country. For example, in Fort Collins-Loveland, CO, the average cost of a knee replacement was $55,604, compared to just $16,097 in Montgomery, AL. Dallas, TX had an average cost relatively on par with the rest of the country, however, one hospital was priced at $16,772 compared to another hospital at $61,585.[16]

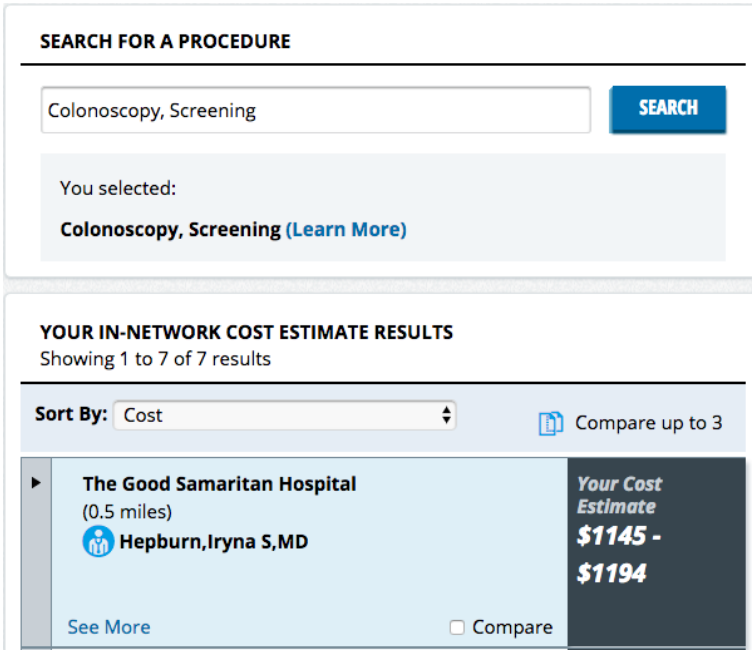
Absent all other information, it is quite obvious that a patient should choose to get their knee replacement at a $16,772 hospital vs. a $61,585 hospital when they are within a feasible distance. Additionally, the argument that this price difference is worth it because of quality is unlikely at best. It is hard to explain why these vast price differences exist and persist.

At this point in the research, it is obvious that the health care market does not work in the same way the market for most consumer goods works. Large price differences exist for otherwise equivalent services that should correct themselves on their own, and would correct themselves on their own in most markets. This fact alone makes it clear that patients are not making decisions with overall price as a main consideration for reasons as of now unknown. Can patients access meaningful price information? The answer seems to be yes, however, the process is often obfuscated. For example, customers of Highmark Blue Shield have access to a "Care Cost Estimator" on their website. With this tool, patients can search for a procedure that they need, and see what local facilities are charging. This can then merge with the customer's personal information (deductible, co-pays, etc.) to determine an out of pocket cost estimate.

[16] "A Study of Cost Variations for Knee and Hip Replacement Surgeries in the U.S. | Blue Cross Blue Shield," accessed November 2, 2017, https://www.bcbs.com/the-health-of-america/reports/study-cost-variations-knee-and-hip-replacement-surgeries-us.

However, one criticism of a system like this is that it may not include extra charges such as a facility charge or anesthesia charge.

**Figure 3. Highmark Blue Shield's Care Cost Estimator**




Going back to the study on prostate cancer surgery details another process of obtaining prices—calling the hospital. For the researchers, the process was difficult. The procedure was to call the main line of a hospital to try and get a cost estimate. They would try this up to three times before giving up. In the end, they successfully were able to get a price from 70% of hospitals for the surgery. However, they only received surgeon and anesthesia fees from 14% of the hospitals (certainly relevant costs), and only 4% were able to provide a hard copy of the estimate which would help in holding the hospital accountable to the estimate.[17] In conclusion, it seems that insurance companies and hospitals are able to claim that they have price transparency, whether it requires a phone call or an online search. However, these costs are likely

[17] Pate et al., "Variations in the Open Market Costs for Prostate Cancer Surgery."

underestimating the true cost that a patient will pay. Therefore, more is left to be desired, and price transparency may be worth pursuing.

**Existing Price Transparency Research**

Now, assume that people have access to simple pricing systems that were actually transparent. Is it necessarily so that people will act on this new information? The answer to this is questionable at best. First of all, people may not feel the need to act on this information, even if they are rational. An easy example would be an individual who met their out-of-pocket maximum for the year. No matter what, their insurance company is paying for the rest of their medical costs. If every provider is at no cost to the consumer, the consumer will make his decision based on every other factor besides price. Additionally, since making decisions about health care is difficult, many people may rely on their doctor to make a decision for them over a price transparency tool. Given that a doctor is a well-respected individual in general, consumers may be unwilling to go against their doctor's advice in order to save money.[18] On top of this, people won't care about price if it is an emergency situation where seconds matter. As a general rule of thumb, people value their own life over any amount of money. In the end, the scope of price transparency is narrowed in the fact that it would only work outside of a met deductible and emergency situation. However, when someone has their own money on the line, price transparency would be more useful, provided that consumers are willing to put in the effort to shop around for prices and have the ability to change providers with relative ease.

[18] Anna D. Sinaiko and Meredith B. Rosenthal, "Increased Price Transparency in Health Care — Challenges and Potential Effects," *New England Journal of Medicine* 364, no. 10 (March 10, 2011): 891–94, https://doi.org/10.1056/NEJMp1100041.

When it comes to the effectiveness of price transparency, the viewpoints are mixed. For example, in a study published by Harvard researchers, the price transparency tool Castlight was offered to members of the California Public Employees Retirement System. The members of this organization had a $1,000 family deductible, $20 copayments for office visits, and 20% coinsurance for other procedures. Data was analyzed over a fifteen-month period, where only 12.3 percent of people even conducted a single price search, and only 2.4 percent of people searched at least 3 times. This price searching was not connected to a lower price paid for office visits, but it was connected to a 14 percent lower price paid for imaging services. However, among all people in the CalPERS system who received imaging services, only one percent of them had used this price transparency tool. The fact that the system led to a lower imaging services price for price searchers is encouraging, however, the overall impact of Castlight was nonexistent.[19]

In a study published in *Modern Healthcare*, Maria Castellucci tries to make sense of why some current price transparency experiments like the one described in the previous CalPERS study may fail. First of all, the idea of quality measurements in health care is difficult. There is no agreement among experts as to what the most important metrics are. Therefore, in many patients' eyes, price may be a signal to quality. While studies show that there isn't a meaningful relationship between price and quality in health care, the average consumer does not feel this way, and may decide to go with higher cost care in the end. Additionally, lots of medical care information for consumers may be overridden with technical terms that don't mean much to a

[19] Sunita Desai et al., "Offering A Price Transparency Tool Did Not Reduce Overall Spending Among California Public Employees And Retirees," *Health Affairs* 36, no. 8 (August 1, 2017): 1401–7, https://doi.org/10.1377/hlthaff.2016.1636.

customer. All of these things should be kept in mind when trying to design an optimal price transparency tool, if it exists.[20]

In another study, many different aspects of price transparency are analyzed including how price transparency could be implemented, who could implement it, the legal ramifications, and the potential price savings. The recommendation is to break things apart by geographic region because of their vast differences, require an evaluation by the Department of Insurance for all insurance premium increases of 5% or more, as well as pushing forward consumer-education initiatives. The employer should also play a large role in any push for price transparency, as they have lots of power as purchasers. With employers demanding information from care providers and insurance companies, the ideas of price transparency would be pushed further.[21]

In a Congressional Budget Office study, price transparency is considered. One interesting aspect is the behavioral economics and decision making of individuals. Studies show that people do not consider sales taxes on items purchased in stores, and sales decrease when after-tax, rather than pre-tax prices are posted. Additionally, it has been shown that automated highway tolls have increased the prices paid by 20 to 40 percent. The point is, consumers do not make decisions with the perfect information that traditional economic models would suppose they do. This also applies to health care since consumers do not bear the full cost of their care. With this system in place, it will be difficult for consumers to take an active role in price decisions. When it comes to

[20] Maria Castellucci, "In the Push for Transparency Price and Quality Come to a Head," *Modern Healthcare* 47, no. 36 (September 4, 2017): 0018–0018.

[21] Jaime King, "Can Increased Price Transparency Reduce Healthcare Spending?," n.d.

price transparency, the CBO believes that it may or may not reduce prices, however, it would likely decrease the wide range of prices as was previously discussed.[22]

It is clear that the research is not optimistic for price transparency in the immediate term. However, this is to be expected, as lack of price transparency is apparent during the process of delivering health care. Further research would determine whether or not it is possible to create meaningful cost savings by increasing price transparency. Given how much money the United States spends on health care, even a one percent decrease in costs is worth pursuing. Drawing on the ideas of the previous research, as well as looking into what some lesser-known organizations may be doing to combat the incentive problem, incentive solutions may become apparent. To further push down this path, it would be helpful to understand what a typical American company is dealing with when it comes to health care.

**Case Study: Health Care for An Average American Company**

I visited a local company to talk to their health benefits administrator to try and understand the problems they may be facing, and how it may relate to price transparency. The company is owned by its employees (meaning the employees have a vested interest in meeting profit expectations) and is self-insured. The company has a few hundred employees, making it a mid-sized American company. The company offers two health plans to its employees with subsidized premiums: a PPO (Preferred Provider Organization) plan with a $250 deductible and

[22] Peter Orszag, "Increasing the Value of Federal Spending on Health Care," July 16, 2008, https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/95xx/doc9563/07-16-healthreform.pdf.

a $2,000 max out-of-pocket cost per person, and a HDHP (High-Deductible Health Plan) with a $5,000 max out-of-pocket cost in conjunction with an HSA (Health Savings Account).

For the past few years, the company has struggled to meet the profit goals it sets forth—which can be explained by underestimating the employee health care costs. Out of 700 people covered by the company's health plans, the high costs can be explained by a few individuals. Fifteen members were responsible for 51% of total payments, including one member representing 20% of the total payments. Extreme scenarios can come up when it comes to an individual's health, such as the birth of a premature baby. What is the proper solution in this scenario? As has been established, the value of a life will always exceed the value of a dollar, but the financial burden on everyone is undeniable. Price transparency may be able to help in a situation like this, but as has been established, higher priced care has the perception of higher quality, and in an extreme situation, people are unlikely to make the lower-priced decision. Can this be changed?

An eye-opening issue with the company was coverage of pharmaceuticals. Given that drugs can be created for rare diseases with a narrow market, a high price must be paid to justify the research and development that goes into the production. In addition, new drugs are released all of the time that claim to improve a patient's condition for five times the price, even if the research may show a very small difference. However, to an individual not considering price, it is easy to fall prey to a "new and improved" drug.

An interesting example of this came in 2001, when AstraZeneca's patent on Prilosec, a heartburn medicine, was about to expire. For AstraZeneca, this would likely be the end of milking the cash cow that was Prilosec, as it would now face competition from cheaper generics. However, with $500 million spent on marketing, and a slightly changed formula, Nexium, "The

Purple Pill," was primed to be the next big thing for AstraZeneca. This campaign successfully turned 40% of their Prilosec patients into Nexium users.[23] Patients could have continued to get Prilosec over the counter, but were instead convinced to take a new pill that may or may not have improved their health. With this, the consumers are spending money on a patented drug, rather than a generic drug. This story can be told for many drugs on the market, and can certainly affect a self-insured company significantly.

On a macro level, employees have the motivation to maximize the profits of the company to increase the size of their bonuses. However, as showed when considering prescriptions, facing the perceived necessity of an expensive drug, it is rational to allow the company to cover the cost, even at the expense of the company profits. What is a good way to shift the incentives, pushing employees to find lower-priced options? A potential solution exists with an outside company called Vitals and their Smart Shopper program. With this program, employees are given access to price transparency systems. For making more cost-efficient decisions, a check is written to them. One way this can work is if an employee is using a prescription drug that costs the company $2,000 per month but only $100 per month out of pocket to the employee. The Smart Shopper program would encourage the employee to switch to a different drug that would still be able to treat the disease, but at a price of $200 per month for example. Vitals could turn around and write a check to the employee for $250 per month.

This scenario can be beneficial for everyone. The employee gets an extra $250 per month for taking a different medication. Vitals makes money charging for the service. The company saves $1,550 per month, minus Vitals' cut. Given that the majority of health care costs are driven

[23] Jon Hess and Shannon Litalien, "Battle for the Market: Branded Drug Companies' Secret Weapons Generic Drug Makers Must Know," March 28, 2005.

by a small amount of people, this type of a program could have a positive impact and the model is worth looking into for the remainder of this research.

One criticism of price transparency that must be considered is that with individuals taking on more of the burden, they may forgo important care. An interesting anecdote from talking to this company has to do with the aspect of the Affordable Care Act that requires the full coverage of preventative care. One of these preventative procedures is a colonoscopy for individuals after they turn 50. Individuals will generally choose to get a colonoscopy when it is fully covered. However, if a polyp is found by the doctor during the procedure, it may be removed at a cost of $1,200. This polyp removal is no longer considered preventative, and must be paid by the consumer. For the individuals on the HDHP, this charge can be unexpected, and is preventing a number of employees from deciding to get a colonoscopy. Colonoscopies are important in the early detection of colon cancer, and the costs and benefits of changing incentives must be carefully balanced.

In talking with the health benefits administrator of this company, it is clear that there is a lot of stress and frustration surrounding health care in the United States today due to the high cost and confusion for the average consumer. For every theoretical solution that can be surmised, the impacts on an average American working for an average American company must be considered.

With all of this in mind, price transparency on its own is not enough to make the best impact on the American health care system. Price transparency can be provided, and consumers can be given the financial incentives (out of pocket costs) to shop around. In spite of this, people may not make what an economist would consider the optimal decision. Because of this, the rest of the thesis will focus on what could be done to “nudge” individuals into the right decisions,

while examining a wider range of incentive structures that could be improved than just price transparency.

# Chapter 3

## The Incentive Problem and Solution

The rest of this paper will take inspiration from *Nudge: Improving Decisions About Health, Wealth, and Happiness*[24] by recent Nobel Prize winner Richard Thaler. In this line of thinking, the best way to make policy decisions is to understand the motivations of the individual, and how they may make their decisions. Then, using the oxymoronic term of "paternal libertarianism," small "nudges" are made to the decisions of people in the direction of the socially optimal manner. It is crucial to note that people may or may not think in a rational way 100% of the time, and that other factors can be involved. One of the most prominent examples of paternal libertarianism is the idea of creating an "opt-out" system for organ donation, rather than an "opt-in" system. Even though this should theoretically make no impact on the decision of becoming an organ donor, more people will be an organ donor if they are automatically signed up and must opt out, rather than not be automatically signed up and opt in. Other examples of nudges include automatically signing up individuals to save money in their 401(k)s, allowing individuals addicted to gambling to place themselves on a list that does not allow them to collect gambling winnings or enter a casino, or making tax returns automatically filled out, provided individuals are taking the standard deduction and have no unreported income.

In this section, the key stakeholders in the health care industry will be analyzed based on their current incentive structures as they relate to financial decision making. This will give an

[24] Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness*, 2008.

idea as to how the scales can be tilted in an attempt to make improvements. Given the vast complexity of the health care system, any proposed solution will not be a catch-all solution, however, it is worth making any improvements possible due to the massive scale. Some improvements in terms of cost and efficiency may actually be simple, but will the social and political will to accomplish these goals be there? The health care system can be thought of as one large web of interactions, with the following players needing a "nudge" to act efficiently.

**The Doctors/Care Providers**

From the surface, doctors are held to one main standard to define the way they behave in their jobs: the Hippocratic Oath. This oath, taken upon graduation from medical school, binds a new physician to the standards of treating the ill to the best of their abilities, preserving the privacy of their patients, and passing down their knowledge to the next generation. In reality, a physician must concern himself with more than just the act of treating patients. Given the large debt loads being taken on by medical students, the high wages of doctors, as well as the high costs for patients, the financial side of medicine is difficult to ignore. Is it fair to assume that the well-being of patients is the entire focus of all doctors?

Out of all of the stakeholders in this chapter: the insurers, government, and consumers, it is fair to argue that the doctors have the greatest power. Why is this? Research has shown that physicians make many health care decisions on behalf of their patients. This creates a market in which the suppliers are heavily in control, leaving little power to the consumers.[25] Can care

[25] Jeffrey Clemens and Joshua D. Gottlieb, "Do Physicians' Financial Incentives Affect Medical Treatment and Patient Health?," *The American Economic Review* 104, no. 4 (April 2014): 1320–49, https://doi.org/10.1257/aer.104.4.1320.

providers be trusted to not take advantage of their position of power, changing their approach from that of the Hippocratic Oath to one of a profit maximizer? The answer, unfortunately against most people's hopes and intuitions, is that to a certain extent, physicians are profit maximizers who can prioritize dollars over patient well-being. Some evidence pointing to this comes in the study of doctor's supply curves, where it is found that financial incentives greatly impact the amount of care given to a patient. A 2% increase in reimbursement rates led to a 3% increase in care, as is seen in normal supply curves.[26] This increase in care has nothing to do with different situations on a patient-by-patient basis.

Another point to consider for doctors is how they get paid. In a study focusing on ten of the largest care providers, many of the physicians were largely salaried, however, there were certain productivity metrics tied to pay. Productivity metrics vary from place to place, and certainly shape the incentives of physicians in both positive and negative ways. In some sense, these incentives can encourage doctors to provide higher quality care, with incentives tied to patient outcomes. However, on the flip side of this, an incentive based on patient outcomes could motivate a physician to avoid treating high-risk patients entirely.[27] For these larger organizations, the incentives greatly vary, making it difficult to make any broad conclusions. However, one sector of doctors to keep an eye on are those who own their own practice. As of the most recent data, 47.1 percent of physicians own their own practice.[28] For these doctors, financial incentives are everything. Regardless of field, people do not open up businesses without the intent to make

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[26] Clemens and Gottlieb.

[27] Dhruv Khullar et al., "How 10 Leading Health Systems Pay Their Doctors," *Healthcare* 3, no. 2 (June 1, 2015): 60–62, https://doi.org/10.1016/j.hjdsi.2014.11.004.

[28] "For First Time, Physician Practice Owners Are Not the Majority," AMA Wire, May 31, 2017, https://wire.ama-assn.org/practice-management/first-time-physician-practice-owners-are-not-majority.

a profit. This incentive structure motivated a Government Accountability Office study in 2012, where it was found that, especially for Medicare patients, lots of physicians were investing in machinery for magnetic resonance imaging (MRI) and computed tomography (CT), and then referring their patients to use this equipment at a five times higher rate compared to the time before they had these machines and had to refer their patients to other sources. This was estimated to cost Medicare an additional $109 million in the year 2010.[29]

As of now, the power lies in the hands of the physicians, as they hold the information that the consumers do not. As a plan for price transparency to create a better health care system is considered, this information asymmetry must be corrected as best as possible. Even though doctors often have the best interests of their patients in mind, the research is clear that financial incentives are important.

**The Insurers**

Within life, there are a lot of risks that can cause great harm to individuals. From a financial perspective, pooling together these risks among a large group of people can be beneficial. As one of the most prominent features of the health care industry, the insurers represent a large chunk of the pie. Within the insurers, there are two distinct groups: the government and private enterprises. As discussed earlier, the government with Medicare and Medicaid cover around 33% of the US population, while the private enterprises often organized

[29] "Higher Use of Advanced Imaging Services by Providers Who Self-Refer Costing Medicare Millions," September 2012, https://www.gao.gov/assets/650/648989.pdf.

through employers covers around 57% of the US population. The incentive structure for each of these insurers will be examined separately, as they have key differences.

When it comes to government programs, Medicare and Medicaid are deeply ingrained in society. Started in 1965 when it was signed into law by Lyndon B. Johnson, Medicare and Medicaid represent over a trillion dollars in spending, benefitting over a hundred million Americans. Politicians may want to be careful when criticizing these programs, as 77% of Americans claim Medicare is very important, while 63% of people claim that Medicaid is very important. Additionally, a majority of Americans believe that these programs are working well for most seniors and low-income people. 92% of people believe the United States should increase or maintain Medicare spending, while 87% of people believe the United States should increase or maintain Medicaid spending.[30] Given the intense partisan bickering of today, it is rare for any political issue to have so much support. From a political standpoint, politicians have strong incentives to continue support of these government insurance programs.

From an operations perspective, Medicare and Medicaid have the incentive to minimize the cost for the American taxpayer, while maximizing the coverage for the beneficiaries. One way that Medicare and Medicaid attempts to fulfill this mission is to set maximum reimbursement rates for services. These rates are posted in .zip files on cms.gov, and are based on the service performed, as well as a classification of the area as urban, rural, or low density. While these rates may not totally match up with the private market, they still act as a way to minimize costs.

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[30] Mira Norton, Bianca DiJulio, and Mollyann Brodie, "Medicare And Medicaid At 50," *The Henry J. Kaiser Family Foundation* (blog), July 17, 2015, https://www.kff.org/medicaid/poll-finding/medicare-and-medicaid-at-50/.

On the private side, it is safe to assume that health insurance companies have a primary goal for their shareholders to maximize profits by increasing revenues (through collecting higher premiums) or decreasing costs (through paying out lower claims, or reducing administrative costs, etc.). The top ten companies represent around half of the direct premiums written in the United States per year, with UnitedHealth Group Inc. (NYSE: UNH) leading the way controlling 11.4% of this market.[31] A reasonable picture of where these premiums go is provided by America's Health Insurance Plans, where it is revealed that a typical health insurance company may see 22.1% of revenues going to prescription drugs, 22.0% going to physician services, 19.8% going to outpatient services, 15.8% going to inpatient services, 17.8% going to operating costs, and 2.7% going to net margin.[32] Given this picture, it is unfair to say that the main reason for skyrocketing health care costs is excessive profits, however, it is clear that operating expenses could use a significant cut. In the end, health insurance companies are not a party that is disappointed in the rising health care costs, as they can charge higher premiums to offset these increases. This competing idea must be considered with the incentive structure of the next group, the consumers.

**The Consumers**

When it comes to the consumers, the structure of decision making can be very complicated. However, the consumers can be identified as having the main goal of maximizing

[31] "Market Share of Leading U.S. Health Insurers by Premiums 2015 | Statistic," Statista, accessed January 23, 2018, https://www.statista.com/statistics/216518/leading-us-health-insurance-groups-in-the-us/.

[32] "Where Does Your Premium Dollar Go?," *AHIP* (blog), March 2, 2017, https://www.ahip.org/health-care-dollar/.

their individual health and overall well-being while minimizing out-of-pocket expenses. The best way to do this will vary by the individual, depending on the type of insurance plan (or lack thereof). To simplify the matter, consider three main groups of consumers: the uninsured, consumers on low deductible plans, and consumers on high deductible plans.

As was discussed earlier in the paper, the number of uninsured individuals has significantly decreased over the last few decades. However, this group still exists. The majority of this group is low-income, with household incomes coming in below $50,000, with a quarter of the group having household incomes below $25,000.[33] For this group, out-of-pocket expenses is likely to be the primary concern. Knowing that trips to the doctor can be expensive while uninsured, an individual with an income below $25,000 would want to avoid the doctor at all costs. In the end, this could end up incurring higher costs due to ignored medical issues becoming serious, however, it is difficult to not have a short-term outlook in this financial situation.

By definition, a consumer on a lower deductible plan like a PPO or HMO (which includes Medicare and Medicaid) does not have to put in much effort to work on the minimization of out-of-pocket expenses, especially in the case where premiums are paid all or mostly by their employer. This group represents a large part of the population of consumers, however, the share is decreasing as high deductible health plans become more popular. By having very little incentive from a cost perspective, consumers have no reason to question the treatment they are receiving as a form of abundant caution. This group would easily comply in the earlier GAO study that showed that doctors who owned their own MRI machines ordered

[33] Jessica Smith and Carla Medalia, "Health Insurance Coverage in the United States: 2013," September 2014, http://www.nber.org/cps/hi/2014redesign/p60-250.pdf.

five times more tests relative to doctors who did not. However, this idea can lead to a major problem, as higher amounts of care leads to higher costs passed onto the insurance companies. To defray the costs, premiums paid must be higher. Whether it is paid for by the employer or the consumer, the consumer will likely feel the effect with either a lower future salary, or direct costs paid.

Defined as a plan with a deductible of at least $1,300 for self-coverage, and $2,600 for family coverage, high-deductible health plans (HDHP) have increased in popularity over the past few years. All else equal, consumers would prefer low-deductible vs. high-deductible plans, however, these plans should come with lower premiums, as well as lower payments required from the insurance companies. Regardless of income, individuals with HDHP will focus on the out-of-pocket expenses, trying to minimize them, until they reach their deductible. Consumers will be more likely to question the care they are receiving, as well as carefully choosing when or when not to receive medical care. For individuals with this plan provided by their employer, they are much more likely to face difficulty with paying medical bills relative to individuals on low-deductible plans.[34] In the end, it looks as if consumers that are uninsured or are on HDHP are likely to receive a lower amount of care than is optimal, while individuals on low-deductible plans are likely to receive a higher amount of care than is optimal. When considering medical costs, this is an important fact to consider.

[34] Robin Cohen and Emily Zammitti, "High-Deductible Health Plans and Financial Barriers to Medical Care: Early Release of Estimates From the National Health Interview Survey, 2016," June 2017, https://www.cdc.gov/nchs/data/nhis/earlyrelease/ERHDHP_Access_0617.pdf.

# Chapter 4

## Analyzing Impacts of Health Care Information Asymmetries

While the previous chapter analyzed the incentives of the individual groups involved in health care, it is important to note that these decisions being made don't exist in a vacuum. Between the doctors, insurers, and consumers, a complex game plays out constantly. It is within this game where the issues playing out today become apparent. While the process of finding answers within the health care system will often lead to more questions, the aspects of the subgames within the overall health care "game" will be analyzed.

The idea of a "game" refers to analyzing interactions in a normal game theory perspective, wherein each individual participating in the interaction has a goal of maximizing their individual utility. Each participant has a baseline understanding of what will happen to them depending on what decisions the other participant makes, though this information is far from perfect in practice. Utility can mean a lot of different things to an individual whether it is money, prestige, a sense of pride, or anything positive. These subgames, following a similar structure to the previous chapter, will include the doctor-insurer, doctor-patient, and insurer-patient games to cover all interactions. These individual games will be considered to understand where there may be information asymmetries, while trying to suggest nudges (where feasible) to make these scenarios more efficient.

### The Doctor-Insurer Game

For doctors, the relationship with insurance companies is a love-hate one. While many patients are able to come to the doctor's office, keeping them in business, due to their insurance

plan, the complexities of health insurance can cause a doctor to use a large amount of labor through themselves, their nurses, and their administrators. While this is a difficult amount to quantify, an ambitious study in 2009 estimated that this amount of labor represented around $23 to $31 billion per year.[35] This range represents around nine hours per week of physician labor, 19 hours per week of RN/MA/LPN labor, and 35.9 hours per week of clerical staff labor. Given that this study is almost ten years old in a high-inflation industry before the Affordable Care Act, it is likely that current figures are significantly larger.

When it comes to the doctors and insurers, the primary game occurs where doctors must decide whether or not they want to accept insurance plans at their practice, while insurers must decide what requirements to place on the care providers. Overall, 88.7% of office-based specialist physicians make the decision to participate in health insurance networks,[36] while insurers may place requirements such as time limits on patients, restrictions on what procedures are allowed on which patients, as well as the burden of paperwork mentioned in the previous paragraph. What are the reasons that the doctors and insurers make the decisions that they do, and are they coming together in a socially optimal way?

[35] Lawrence P. Casalino et al., "What Does It Cost Physician Practices To Interact With Health Insurance Plans?," *Health Affairs*, May 14, 2009.

[36] Janet R. Cummings, "Declining Psychiatrist Participation in Health Insurance Networks: Where Do We Go from Here?," *JAMA* 313, no. 2 (January 13, 2015): 190–91, https://doi.org/10.1001/jama.2014.12472.

**Figure 4. Doctor-Insurer Plan Acceptance Game**

| | | **Doctor** | |
|---|---|---|---|
| | | Accept Insurance Plan | Don't Accept Insurance Plan |
| **Insurer** | Place Strict Requirements on Doctor | Potential positives: Each side will work to hold the other side accountable, potentially leading to less unnecessary tests/procedures taking place. By accepting insurance, the doctor will be able to treat more patients.<br><br>Potential negatives: In order to hold the doctor to strict standards, lots of paperwork will need to be done so that the doctor can defend what he/she is doing. This can waste a lot of time and money, reducing the amount of time the doctor can spend on treating patients. | Potential positives: Without accepting the insurance plan, different administrative costs will be avoided, and the doctor may be able to charge his patients less than he would if he accepted insurance.<br><br>Potential negatives: By not accepting insurance, patients may not be able to afford the costs of the doctor. The patient may be used to paying 20% of the bill in the form of coinsurance versus 100% of the bill. Because of this, patients may find themselves in worse health outcomes. |
| | Don't Place Strict Requirements on Doctor | Potential positives: By accepting the insurance plan, the doctor will be able to bring in a wider variety of patients. In addition, by choosing to place less strict requirements on the doctor, less paperwork and administrative labor will be needed, thus increasing efficiency and reducing overall costs.<br><br>Potential negatives: By not having strict requirements, the doctor may be able to get away with more things such as ordering unnecessary tests. This could lead to large expenditures for the insurance company, leading to an increase in premiums for the patient and his employer in the next period. | Same scenario as the cell above, as the insurer has no decision to make after the doctor decides not to accept the insurance plan. |

Because large care providers are likely to have the staff to support an operation accepting insurance, it is more interesting to focus on the decision making of an individual physician with a desire to open her own private practice. Should she choose to work with insurance companies, or should she only take cash payments from her patients? One consideration would be whether or not it is worth the initial expenditure and work to hire a new staff and negotiate with health insurance companies. With all of the stress in opening a new business, this may be a struggle for some. Another thing to consider is the cost of the services that will be provided. If the average patient will just need a simple office visit and a bill closer to $150, it might be possible for them to go without insurance. However, if the primary services provided will be surgeries that are thousands of dollars, it is unlikely for a patient to want to go through with the procedure without some sort of insurance. These factors come together well in the field of psychiatry, where only 55.3% of offices accept any form of health insurance.[37]

[37] Cummings.

For the insurers, they have a goal of minimizing their expenditures relative to the premiums they collect. A way that this can be done is by placing restrictions on the amount of time a doctor can spend with a patient, with the goal of reducing the costs per patient. In addition, they can pressure doctors to use certain medications over others to protect their own financial incentives. Even if a patient is shown to need a certain medication and the doctor knows it, they may not be able to prescribe it due to restrictions. In the end, doctors may feel that they are not able to provide the best care to their patients because of insurance companies.

In the end, insurance is deeply ingrained in the US health care system, and it is going to be difficult for doctors to forgo accepting insurance entirely. The main way to help alleviate the problems arising from the insurer-patient game boils down to paperwork. Neither side trusts the other to put themselves in a good position, so this is all hidden behind paperwork that reduces the satisfaction of both parties. A deep dive into the system of paperwork would be worthwhile to determine what could be cut out, but it is impossible to make the distinction of what specifically could be cut out within this thesis – further research is necessary. However, it could be a valuable nudge for the government to incentivize cutting down on paperwork by providing different ways to reduce this mistrust between the two parties, such as protecting doctors against medical malpractice lawsuits or providing incentives for automating systems to reduce the labor involved in paperwork. While universal health care is a controversial topic (yet again, another complicated issue outside of the scope of this thesis), a group ambitiously claims that switching to this system would eliminate $375 billion in billing and health insurance related paperwork

annually.[38] It could theoretically be assumed that this is the ceiling for the cost savings in the United States by diving further into these issues. This number is certainly worth chasing.

**The Doctor-Patient Game**

Consider a scenario where a patient schedules a doctor appointment. When they get to the doctor, they complain to the doctor of experiencing lower back pain for the past month. As the doctor further examines the patient, they confirm that the patient has not been experiencing any of the traditional red flags that could indicate a serious underlying issue: neurologic deficits, fever, history of osteoporosis, cancer, steroid use, or recent trauma. The patient is experiencing pain that they would really like to get rid of, and the doctor at this point in the process is not entirely sure what the underlying issue is. For the fifth-most common reason a patient visits a doctor in the United States, what should happen next?

Enter the interesting game that occurs between the doctor and patient. For simplicity, this can be called the "test ordering game." In this interaction, the following decisions need to be made: the doctor needs to recommend whether or not to order an MRI, and the patient must respond to this decision by either accepting the doctor's decision, or rejecting the doctor's decision. The optimal decision in this scenario is for the doctor to not recommend an MRI, and the patient to accept his decision, or for the doctor to recommend an MRI, but for the patient to reject his decision, since each of these decision trees result in no MRI being ordered. Why is this the case? Based off of the symptoms and physical examination provided, the patient likely has

[38] Aliya Jiwani et al., "Billing and Insurance-Related Administrative Costs in United States' Health Care: Synthesis of Micro-Costing Evidence," *BMC Health Services Research* 14, no. 1 (December 2014), https://doi.org/10.1186/s12913-014-0556-7.

pain that will recover on its own within eight weeks due to a disc herniation. Confirming a herniated disc through magnetic resonance imaging is challenging, as studies have shown that even individuals that have no pain will often show abnormalities in the lower back through imaging.[39] Even though this is clearly the optimal solution, to not order an MRI, saving unnecessary costs, the game will not always play out this way.

**Figure 5. Doctor-Patient Test Ordering Game**

| | | **Doctor** | |
|---|---|---|---|
| | | Recommend MRI | Don't recommend MRI |
| **Patient** | Accept decision | Potential positives: MRI was done in a medically necessary situation, leading to the discovery of a previously unknown condition. This would allow for more effective treatment for the patient.<br><br>Potential negatives: MRI was not done in a medically necessary situation. The patient is ignorant of this fact, and will have to pay for the testing. Additional costs are incurred that were not needed in the United States medical system. | Potential positives: MRI was not medically necessary, however some may have thought it was. Patient went along with doctor's decision and is able to understand that excessive testing is not needed. The more this occurs, the lower costs will be overall.<br><br>Potential negatives: If the patient and doctor are being far too conservative, this could lead to medical problems being undiscovered. However, this scenario is more unlikely in the average circumstance. |
| | Reject decision | Potential positives: Doctor was being too cautious and ordered an MRI in a situation where it was not medically necessary. The patient was astute enough to understand this may not be the best thing to do.<br><br>Potential negatives: Patient does not have the medical knowledge that the doctor has, and may not be able to recognize whether or not an MRI is medically necessary. This could potentially erode the trust between a doctor and patient | Potential positives: There are not likely to be many positives to this scenario. The doctor does not believe testing to be medically necessary. This scenario is only positive if the patient is correct and the doctor is incorrect about the potential medical issues with the patient.<br><br>Potential negatives: It is very likely that this is a situation where an MRI is not medically necessary, thus leading to unnecessary costs incurred on the US health care system. |

In one non-optimal cell of the game, which is more likely to occur, consider the doctor in this scenario who knows that in this case it is not necessary to order an MRI. Thus, the doctor recommends to not go through with the imaging. However, the patient decides to reject the doctor's opinion. Why would a patient do this? To the patient, this back pain is very real, and the desire is to end it as soon as possible. The patient wants to know exactly what is wrong with them today, so they can take action on finding a solution. The belief is that an MRI is a very

[39] "Imaging for Low Back Pain," accessed February 11, 2018, https://www.aafp.org/patient-care/clinical-recommendations/all/cw-back-pain.html.

powerful test that can find any issues, and they want this test. The patient likely is on a low-deductible health plan, and thus is not concerned with the added cost. $1,200-$4,000 has been added to the national health care expenditures in this scenario for no good reason.

The other scenario, which may or may not be malicious (but is likely not in most instances) occurs when the doctor recommends to the patient to get an MRI, and the patient agrees to this decision. Why would the doctor make this decision that is the wrong one? First, a doctor may want to exercise extreme caution to try and treat the patient. Besides the exposure to radiation, the worst-case scenario in ordering an MRI is that the doctor cannot find anything wrong. The doctor may uncover something in the MRI that is unexpected, and may be able to help out the patient. As a more malicious reason, go back to the GAO study that showed that doctors who own their own MRI machines order five times more tests than those who do not. The doctor could see this as an opportunity where they can, albeit loosely, medically defend the decision to order an MRI, while profiting off of the use of the machine they made a large investment in. For the patient, they are unlikely to know that this is a scenario where an MRI isn't needed, and they are unlikely to try and question the individual who has much more experience in the medical field than they do. Thus, the non-optimal outcome is achieved.

This wasteful scenario occurs constantly, as a panel of medical experts went back and analyzed cases where an MRI was ordered, and found that only 44.3% of requests were "appropriate" in that it was adding value to the process for the patient. Some examples of where it was inappropriate to order an MRI in some instances were acute lower back pain, chronic lower back pain, and suspected aneurysms.[40]

[40] Derek J. Emery et al., "Overuse of Magnetic Resonance Imaging," *JAMA Internal Medicine* 173, no. 9 (May 13, 2013): 823, https://doi.org/10.1001/jamainternmed.2013.3804.

Two things need to change in order to help improve this scenario, which can happen for a lot more conditions, and a lot more tests than just lower back pain leading to MRIs. First, patients need to be educated to understand that more testing is not always equivalent to better treatment. The solution to everything does not need to be ordering tests. While knowing this, it is important for the patient to communicate with their doctor and be willing to question the recommended tests from the doctor, to understand why the test is being ordered, what it is looking for, and whether or not there is a better method. For the doctors, they should be more willing to work with the patient to explain why a test may not be necessary, while providing empathy regarding the patient's condition. The patient and the doctor should both be knowledgeable to try and provide a check on one another. Further research can be done on financial incentives for doctors that purchase MRI machines and charge for their use to determine whether the government should put into play taxes or subsidies that could curb the overuse of testing. A potential nudge could come through Medicare/Medicaid, where the government would dig deeper into the overuse of MRIs that is costing the taxpayer billions of dollars. Doctors that can use less testing while maintaining the health outcomes of their patients should be rewarded.

**The Insurer-Patient Game**

For insurers and patients, the game occurs every year when it is time for plan renewals. Prices have gone up significantly – no surprise in this industry. An array of options is put forth with varying deductibles, coinsurances, networks, etc. As a complex financial decision with a lot of factors, consumers will make their choice depending on factors that likely don't have to do

with rational financial decision making. In a recent study to try and understand consumer motivations, a menu of health insurance options was put together for consumers to decide what would be the best for them. The researchers intentionally included plans that were financially dominated, meaning that no rational individual would choose them, such as two plans that only differed in deductible and premium. The first plan had a $500 deductible and $638 higher annual premiums compared to a plan that had a $1,000 deductible.[41] To an average consumer, it might not be obvious why it is irrational to take the first plan, but the reason is that the consumer is paying $638 for the chance to receive an extra $500 in benefits. That is always a losing proposition. Framing the plan as an extra $53 a month in premiums rather than $638 a year may nudge consumers in the wrong direction.

In the insurer-patient game, the insurer has the ability to set forth the plans that it believes will maximize its profits, while the consumer is making decisions based off of reasons that vary. Given that the insurer will be represented by an army of knowledgeable actuaries who have an understanding of financial rationality, it is possible for consumers to be taken advantage of. Whether insurers want to push individuals to high-deductible or low-deductible plans, the insurer should be able to price the plans at the most reasonable level. Thus, the current push for high-deductible plans is coming more from the employers, a group that is seen as exogenous to this model, as it will lower their responsibility for premiums paid. It is clear that consumers will not always act in the most rational way to select their health insurance plans, so it is important from a policy perspective to nudge the consumers in a socially optimal way.

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[41] Saurabh Bhargava, George Loewenstein, and Justin Sydnor, "DO INDIVIDUALS MAKE SENSIBLE HEALTH INSURANCE DECISIONS? EVIDENCE FROM A MENU WITH DOMINATED OPTIONS," May 2015, http://www.nber.org/papers/w21160.pdf.

Something that could be done would be to provide helpful, yet succinct information when health insurance plans are decided on so that the consumer selects the optimal plan for their given risk level. Talking about deductibles and coinsurance to a consumer may not mean as much in a mathematical way, however, when deciding between a $1,000 and $2,000 deductible plan, it would be good for the consumer to know that they are paying an additional $500 in premiums that will pay off for them if they use at least $1,500 in medical expenses this year. The consumer can then estimate what their chance is to hit $1,500 in medical expenses to determine if this $500 expenditure is worth it. Additionally, consumers could be encouraged to use tools where they would type in their expected amount of medical expenditures in the worst and best case scenarios, which would then select the plan that would be best. Plan selection is definitely a place that could use some improvement in the insurer-patient game.

# Chapter 5

## Looking Forward

Even after considering all of these points, there is still lots of work to be done. Incentives that have been discussed can be tweaked, but the puzzle of the American health care system will not be totally solved. With some of the improvements for cost and efficiency being simple, it is still possible for nothing to be done due to the lack of political and social will to push forward. In terms of politics, it is challenging with the current extreme partisanship for any meaningful legislation to be accomplished. In addition, the American health care system is a morass, with new problems popping up after every potential solution is proposed. The complex interactions in between each party are hard to untangle, though this thesis was hopefully able to begin to solve a few of them. Overall, the main goals are to increase price transparency, reduce the amount of paperwork required between care providers, more carefully consider the diagnostic tests patients undergo, and provide consumers with easier to understand insurance plans to make better decisions based on expected annual expenditures.

In more positive developments, private industry may be leading the charge in making the necessary improvements to the health care system. Fed up with the current state of health care, Amazon, JP Morgan, and Berkshire Hathaway announced a joint venture in January 2018 to form their own independent health care company to serve their employees.[42] This joint venture

[42] Nick Wingfield, Katie Thomas, and Reed Abelson, "Amazon, Berkshire Hathaway and JPMorgan Team Up to Try to Disrupt Health Care," *The New York Times*, January 30, 2018, sec. Technology, https://www.nytimes.com/2018/01/30/technology/amazon-berkshire-hathaway-jpmorgan-health-care.html.

will be able to take advantage of adjusting the incentives put forth in this thesis, as the three companies will have all of the incentive to minimize the cost of care for their employees, since employers often take on a large chunk of health care costs. As of the writing of this thesis, this new health care company has not begun operations, however, it will be something to watch for. An ideal future may see this joint venture significantly reduce expenditures, allowing other companies, such as the typical American company in the previous chapter's case study to follow suit. A lot of this thesis looked at employers as exogenous to the model, as they often have no choice but to watch the costs roll in, but employers taking charge may turn out to be a good thing in the lethargic political landscape.

On top of the employers, it would be positive for consumers to acclimate themselves with the ideas of this thesis, as consumers have more power than they think when it comes to their own health expenditures. Consumers should question whether it is necessary to receive the tests recommended to them, attempt to price shop with price transparency tools provided to them, and lead a healthier lifestyle to hopefully avoid going to the doctor in the first place.

At the current rate, the growth of health care costs is unsustainable, and it would be ideal for something to be done sooner rather than later. When politicians decide on a bi-partisan matter to make improvements to the health care system, it would be wise to use the nudges of the paternal libertarian system to approach optimality. It will take a lot of effort to make something happen, and would have to be the main focus of Congress for a period of time.

The solutions previously outlined are necessary, but not sufficient to reach a point where personal health, and how it will be paid for, does not become a main worry of Americans. From a medical standpoint, research needs to continue to find more effective treatments to alleviate the pain, cost, and time required for long-term treatments like chemotherapy and dialysis. From an

economics standpoint, these incentives and more need to be studied to determine what specific actions can be taken. What can be done to further motivate consumers to use price transparency tools? How can care providers and insurers run more cost-efficient businesses? Is the system of having employers pay for their employee's medical care outdated? Everyone needs to be willing to go along with new ideas, even if it requires more personal effort, as there may be a point in the near future where 20% of United States GDP is spent on health care. The next decade will be crucial, and the decisions made regarding health care will go far in determining the overall strength of the economy.

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