Medicaid Expansion and Diagnosis-Targeted Cost Shifting Behavior: The Case of Diabetic Treatment and Insulin Pricing

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Medicaid Expansion and Diagnosis-Targeted Cost Shifting Behavior: The Case of Diabetic Treatment and Insulin Pricing

by

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Abstract

Advocates for state-level Medicaid expansion articulate a broad set of benefits designed to increase healthcare affordability, quality and access for a larger set of low-income residents. But, in some cases, Medicaid expansion may result in cost shifting strategies that target not only privately insured and private-pay consumers, but also individuals that have specific chronic disease diagnoses. Our paper starts with a discussion of the overarching effects of state-level Medicaid expansion on cost, quality and access to health services. This discussion sets the stage for our primary point of interest, the effect of Medicaid expansion on chronic diagnoses, where treatment protocols are characterized by very inelastic demand. Because these diagnoses, in particular, bind patients to systematic, well-defined treatment protocols for the life of the patient, they are uniquely suited to targeted cost-shifting strategies that lay a disproportionate burden of Medicaid expansion costs at the feet of individuals that are already disadvantaged by a chronic diagnosis. Diabetes is a chronic diagnosis at the forefront of the U.S. policy discussion surrounding pharmaceutical industry reform, thus we take a deep dive into insulin pricing as an example of how Medicaid expansion could cause increased cost shifting to occur. A research approach that targets specific diagnosis groups makes it easier to deconstruct the effects of Medicaid expansion on well-identified groups of healthcare system users. This framework provides a mechanism to explore specific “fairness” arguments associated with Medicaid expansion that target the inherent cost-shifting burdens of broadly focused healthcare policies. Our research finds that there is potential for a significant and disproportionate cost-shifting burden that unfairly targets patients with chronic disease diagnoses.
Acknowledgments

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Introduction

Nine years after passage of the Affordable Care Act (ACA), and five years after the Medicaid expansion roll-out, the debate and cost-benefit analysis on U.S. health reform rages on. While many impacts of the ACA remain unmeasured or inconclusive due to mixed research claims and the complexities inherent to healthcare, widespread research interest on the effects of Medicaid expansion have led to some early findings regarding cost, access and quality.

Effects of the ACA were felt across every segment of the healthcare industry, but some market segments were impacted more than others (Antonisse et al. 2019). Many experts have suggested the pharmaceutical industry was less directly impacted by provisions of the ACA than other market sectors. By supporting the ACA financially, the pharmaceutical industry avoided direct price negotiations and other proposed reforms (Conti, R. M., & Rosenthal, M. B., 2016) The pharmaceutical industry contains a convoluted and opaque supply chain that has engendered, in some treatment categories, highly inflationary retail price changes. Prescription drugs are projected to experience the fastest average growth (6.3 percent per year) among the major categories of U.S. health spending over the next decade (Cuckler et al, 2018). Our analysis of total U.S. pharmaceutical expenditures and Medicaid pharmaceutical expenditures show rapid growth in prescription drug expenditures escalated in 2014 at the same time Medicaid expansion started to take root.

Insulin for example has experienced dramatic price increases of over of 300 percent in the last ten years; in just the last few years insulin prices have doubled (Advisory Board Daily Briefing, 2018). Because many diabetics require insulin for survival, consumers of insulin are price
inelastic, and the highly consolidated pharmaceutical supply chain faces few consequences for raising insulin prices. According to the American Diabetes Association, there are only three insulin manufacturers serving the U.S. market: Eli Lilly, Novo Nordisk, and Sanofi-Aventis (Cefalu and Daniel, 2018). As such, the companies retain large amounts of control in setting pharmaceutical prices.

Economic theory would suggest that under the previously mentioned conditions, the ACA could result in increased cost shifting in the pharmaceutical industry; as an increased number of patients receive pharmaceuticals based upon a Medicaid rate, cost shifting could occur so that the price of pharmaceuticals for those with private insurance increases. Limited research has been conducted on how significant the effects of cost shifting are, but our research suggest it could be severe with some drugs and some targeted treatment protocols. Beyond the financial consequences of Medicaid expansion increasing cost shifting on price-inelastic drugs, there is a moral dilemma with this pressing issue. The market exploitation strategy used by the pharmaceutical industry coupled with drug pricing discrepancies of Medicaid (as compared to private insurance) puts patients in a double jeopardy scenario in which they are targeted to pay a disproportionate burden of the cost of price inelastic drugs not only because they don’t meet Medicaid eligibility due to their income, but because they suffer from a disease (which they often play no role in contracting) which requires demand-inelastic drugs.

**Medicaid Expansion and Its Consequences**

The ACA increased Medicaid coverage to those under 133% of the poverty line, provided discounts on private insurance for those under 400% of the poverty line, and created an exchange
to easily compare health insurance plans. Its primary impact was to provide a pathway to health insurance coverage for an estimated 20 million people who previously were without health insurance (The Henry J. Kaiser Family Foundation, 2018). This increase was primarily due to a 11.25 million person increase in Medicaid enrollment, but there was also increased enrollment in private insurance plans (The Henry J. Kaiser Family Foundation, 2019). Many people who gained Medicaid coverage were previously eligible for Medicaid, but didn’t enroll until the roll-out of the ACA (The Henry J. Kaiser Family Foundation, 2014).

Many studies link increased access to care with Medicaid expansion. It appears that Medicaid expansion results in increased cancer diagnosis rates and greater utilization of drugs, especially for mental health disorders. Research exploring the relationship between expanded coverage and positive health outcomes are mixed however. Some studies show an increase in patient-perceived quality of care, but other research suggests Medicaid provides lower quality of care (Landon et al. 2007). For instance, a 2017 study in JAMA found that “Medicaid managed care enrollees receive lower-quality care than that received by commercial managed care enrollees.” Other studies found no significant differences following Medicaid expansion in areas such as hospital mortality rates (Anderson, Mary E. et al, 2017), but it is still difficult to determine many of the health impacts of Medicaid expansion after just five years.

Another debate surrounding Medicaid is that of low reimbursement rates. Low reimbursement rates not only negatively impact healthcare providers, but lead to reduced healthcare accessibility to certain services among Medicaid patients. A Health Affairs study found that one third of doctors were not accepting new Medicaid patients, and in certain specialities like psychiatry, less
than half of doctors were seeing new Medicaid patients (Decker, Sandra L., 2013). There is still some contention on whether or not Medicaid expansion has made this problem worse, but fewer doctors accepting Medicaid patients as compared to patients from other insurers remains a problem.

Yet another issue facing Medicaid is the overuse of services. Theoretically, because Medicaid enrollees receive healthcare without personal cost-sharing requirements, it would follow that Medicaid patients would utilize care more than those who paid for healthcare through private insurance, perhaps to the point of overuse. There is clear evidence that Medicaid enrollees utilize care more than private enrollees, but there is an active debate over whether or not Medicaid patients over-utilize care (The Henry J. Kaiser Family Foundation. May 30, 2017). The often-cited Oregon Health experiment stymied hopes of Medicaid expansion reducing ER visits by finding that Medicaid expansion in Oregon actually significantly increased ER visits for the given time period (Taubman, Sarah L. et al, 2014). In some cases it appeared that wait times for Medicaid patients improved, but in other cases it got worse. In the case of prescription drugs, Medicaid patients are prescribed certain drugs such as painkillers at a much higher rate than non-Medicaid patients, and as of 2017, almost 12% of adult Medicaid enrollees suffered from substance abuse disorders such as opioid use disorders (Health Affairs, 2019).

Legal objections to the ACA culminated with the Supreme Court ruling that states could choose whether or not to expand Medicaid followed by the Trump administration repealing pulling back support for the program. For the first time in 2017, Medicaid enrollment fell and many states
have begun creating additional requirements for people to qualify for Medicaid such as work quotas in the state of Louisiana (Ramsey, Lydia, 2018).

Some of the most troublesome issues facing expansion, however, may be unintended and less openly visible. In particular, many health policy analysts have been concerned about the lack of transparency and limited restraints placed on the pharmaceutical industry (Collier, Roger, 2016). While insurance companies and hospitals saw major reform, pharmaceutical companies escaped with few demands at all, largely because of backroom deals during ACA negotiations (Conti, R. M., & Rosenthal, M. B., 2016). Furthermore, as we will show in our theoretical model, economic theory and recent data would suggest that the effects of Medicaid expansion could be linked to increasing drug prices. To better understand this phenomenon, it is vital to examine cost shifting and the pharmaceutical industry supply chain.

Cost Shifting and the Pharmaceutical Supply Chain

Cost shifting can occur when a firm has two different clients groups and one has a greater ability to pay. To compensate for lower prices provided to one group, the firm sets higher prices for the group that is more able to pay. There is an ongoing debate as to whether or not cost shifting involving Medicaid occurs in hospitals in this way (the majority of recent evidence suggests not), but there has been less research surrounding this kind of cost shifting in the pharmaceutical industry. Cost shifting requires two conditions (Frakt, Austin, 2017). First, that an industry is highly consolidated, which is certainly the case in the pharmaceutical industry. Second, that companies in an industry have not set prices as high as they potentially could have, which again
is the case with price inelastic drugs in the pharmaceutical industry, as evidenced by dramatic and rapid price increases in drugs like insulin.

Where Medicaid reimburses significantly lower than private insurers, it is possible that players in the pharmaceutical supply chain could cost shift by maintaining higher prices for private insurers. Thus Medicaid expansion, which added another ten million people to Medicaid, would justify even greater cost shifting and even higher drug prices for those covered by private insurers.

Since Medicaid expansion, pharmaceutical spending and especially pharmaceutical spending by Medicaid has seen a noticeable increase (as shown in Figure 1). These increases have been attributed in part to the release of new drugs (Olson, Peter, Sheiner, Louise, 2017), but Medicaid expansion likely played a large role. Recent research in the JMCP found that “1 year after ACA implementation, expansion states used 17.0% more prescriptions and spent 36.1% more in reimbursement than the quarter preceding expansion” (Mahendraratnam, Nirosha et al, 2014). Furthermore, pharmaceutical spending as a percentage of total healthcare spending took a sharp increase after Medicaid expansion, and overall pharmaceutical spending is projected to continue growing (The Pew Charitable Trusts, 2018).
Figure 1: United States Pharmaceutical Spending (In Millions)

Not all of this spending goes to pharmaceutical manufacturers, however; drug pricing is often largely unrelated to the actual costs of producing a drug. Pharmacy benefit managers (PBM), wholesale distributors, pharmacies and even insurance companies all take a piece of pharmaceutical spending and Figure 2, replicated from a 2017 report from PhRMA, depicts the supply chain for a $408 vial of insulin (PhRMA, 2017).

What’s interesting about this scenario is that the patient, who pays monthly premiums to his or her health plan, hasn’t met the deductible yet and pays for the vial of insulin out of pocket. And yet the health plan ends up with $239 of the $408 the patient spends on insulin-- 59% of the already arbitrarily high price for insulin.
According to the Pharmaceutical Care Management Association (PCMA), Pharmacy Benefit Managers (PBMs) reduce prescription drug costs and improve convenience and safety for consumers, employers, unions, and government programs (Iron Core, 2018). PBMs were established with the intent to negotiate lower prices for pharmacies, but there is growing controversy over their value in the pharmaceutical supply chain as of late. The PBM market has grown rapidly over the past decade, and PBMs are often criticized for profiteering and reducing the options physicians have in prescribing medication. Though the PBM model should work in
theory, it has led to increased prescription expenditures. Thus, the use of PBM s discredits the idea of cost-control mechanisms as successful as initially portrayed (Carrier, Michael, 2018). While eighty-five percent of the PBM market is controlled by three firms, the PBM market is highly monopolized, and growing evidence suggests that the benefits from “discounts” negotiated by PBMs with pharmacies go less and less to the patient and more and more to the PBM-pharmacy conglomerate themselves (Health Affairs, 2018). With the recent CVS acquisition by Aetna, a health plan now owns a PBM and chain of pharmacies as well. If this kind of vertical integration were to occur around insulin, then one conglomerate company would receive $305 of the $408 paid by the patient. Idealistically, this vertically integrated conglomerate could cut out the profits of the middlemen in the supply chain it now controls, like PBMs, but what would incentivize the conglomerate to do so?

Borzilleri recently expressed the following insightful view to Health Leader on the issue:

*This type of closed-loop network will limit patient options to everything from who will be treating them, where they will be treated, and how much they will be forced to pay for services and their prescriptions…Based on the millions of patient lives that both CVS-Caremark and Aetna manage, patients will be herded into their own locations to be treated by their own doctors/providers and the independent physician or practice will be significantly impacted. So in essence, both the patients and doctors who treat them will lose.*

*(Freeman, Gregory A., 2018)*
Further Barriers to Transparency

One of the primary goals of large health insurers like Aetna is to reduce the costs of healthcare spending as much as possible for the patients they serve. However, there is federal mandate that at least eighty percent of the amount insurance companies receive through premiums must be spent on providing healthcare to patients. The twenty percent remaining is left to provide for the administrative costs of the insurance company (HealthCare.gov, 2019). As shown in Figure 2, insurance companies can circumvent this regulation through rebates (some go as far as to call them kickbacks) such as the $239 payed to the health plan receives each time a patient buys vial of insulin. This $239 rebate per vial is not from a premium payment so eighty percent of the rebate is not required to be spent on actual healthcare costs; the insurance company can receive it as pure profit.

It would seem that such rampant profiteering and exploitation of the patient would be widely publicized and addressed, but likely because of the lack of pharmaceutical pricing transparency, that is not the case. Instead, other segments of the healthcare industry like PBMs and pharmaceutical manufacturers are under increasing scrutiny, while health plans remain largely unscathed. Occasionally health plans are criticized for rapidly increasing premiums, but often times health plans aren’t perceived to be responsible for these premium increases. There has been little critical discussion of health plans’ role in the rebate issue until very recently with efforts like HHS secretary Alex Azas who in February 2019 proposed such rebates be made illegal (Antos, Joseph R., and James C. Capretta, 2019). While this plan still focuses more on PBMs and other sectors of the pharmaceutical industry, eliminating such rebates across the board would go a long way toward resolving the issue of health plan rebates as well.
As seen in Figure 2, there is a complex variety of exchanges going on between various players in the pharmaceutical supply chain, which can create the appearance that these exchanges were transactions rather than rebates or kickbacks. Furthermore, the exchanges between players in the pharmaceutical supply chain is completely different for each drug, and pricing negotiations between these players take place almost entirely behind closed doors (Dieguez, Gabriela, et al, 2018). This makes it incredibly difficult to understand which players in the supply chain exploit patients the most and likely allows for every member of the supply chain to collectively maintain high profits and maximize patient healthcare spending.

Medicaid suffers from many of the same problems as private insurers in lacking transparency. Similar to hospital reimbursement, Medicaid is always guaranteed the lowest prices in receiving pharmaceuticals. When private insurers negotiate drug prices with manufacturers, generally through PBMs, Medicaid receives the lowest price negotiated by any given private insurance company for any given drug. This provides for a relatively significant discount as compared to the majority of other private insurers, often in the vicinity of fifteen to thirty percent (Baghdadi, Ramsey, 2017). On top of this discount, however, state Medicaid programs further negotiate down drug prices through organizations almost identical to PBMs. On such example is the Sovereign State Drug Consortium (SSDC) which operates in thirteen western states. While organizations like the SDCC can provide greater discounts for Medicaid, there is total ambiguity surrounding just how significant these discounts are. The SDCC requires that states don’t disclose any information regarding the prices they receive for drugs (Sovereign States Drug Consortium, 2019).
Like a PBM, the SDCC also provides a state with preferred drug lists that correspond with the discounts provided by various drug manufacturers. This preferred drug list is then passed on to physicians who prescribe to Medicaid patients. Medicaid will only cover drugs on the preferred drug list which in essence forces physicians to prescribe medication based upon the discount negotiated by groups like the SDCC rather than those they believe are best for the patient. With this examination of the complexity, ambiguity, and opacity surrounding pharmaceutical pricing, we return to the case of insulin.

**Underpinnings for a Theoretical Model**

Over the past ten years, insulin prices have risen a dramatic 300 percent (Advisory Board Daily Briefing, 2018). This development has been covered frequently in the U.S. media, especially due to the widespread impact insulin prices have on the 23.2 million patients suffering from diabetes in the U.S. While 1.5 million of these patients have type 1 diabetes (American Diabetes Association, 2018) which requires daily insulin injections for survival, another 6.5 million people with type 2 diabetes use insulin as well, often by necessity given the severity of their type 2 diabetes (Centers for Disease Control and Prevention, 2019). Thus insulin is a drug not only in high demand, but with highly inelastic demand.

Relatively little about insulin has changed over the past one-hundred years, so it seems ridiculous that manufacturers would raise prices so dramatically over just the last few years. Indeed, insulin’s inelastic demand and the oligopoly of pharmaceutical firms manufacturing insulin allow prices to steadily increase (as shown in Figure 3) without being undercut by competition or seeing a significant reduction in the number of patients using insulin. However, while Figure 2
examined the various players in the insulin supply chain, and how much of the price of insulin they receive, it can’t tell us which player has been responsible for the dramatic price hikes in insulin over the past 10 years.

It’s very possible that all the players in the insulin supply chain are collectively responsible for gradually exploiting insulin users, and have even communicated with one another to do so. A 2017 lawsuit in Massachusetts filed against the manufacturers of insulin has made this claim (Johnson, Carolyn Y, 2019). Figure 2 clearly shows, however, that insurance companies are particularly exploitive in the insulin supply chain. Furthermore, it’s insurance companies that are vertically integrating the pharmaceutical supply chain. A February 2019 article in Healthcare Finance described the situation:

*Health plans have become increasingly intertwined with their PBMs to better compete, realize cost savings and to produce efficiencies... The largest, UnitedHealthcare, is connected to OptumRx through parent company UnitedHealth Group; Cigna closed on its $67 billion purchase of Express Scripts in December; CVS Health and Aetna also merged late last year in a $69 billion deal; and Anthem is ready for an early launch of of its in-house pharmacy benefit manager, IngenioRx.*

(*Morse, Susan, 2019*)

As mentioned earlier, OptumRX, Express Scripts and CVS Caremark represent 85 percent of the PBM market. Thus all the players in the pharmaceutical industry are connected, but it appears that insurance companies may very well be a key player in the escalating insulin debacle.
Regardless of who is to blame, however, understanding the complexity and opaqueness of the pharmaceutical supply chain is vital to understanding how cost shifting can occur. We now examine how cost shifting occurs in greater detail.

By measuring the number of Medicaid insulin users and other insulin users overtime, coupled with the previously provided breakdown of the insulin supply chain, we can estimate the potential effects of Medicaid expansion on insulin prices due to cost shifting in a profit neutral scenario.

Of the 23.2 million people in the USA with diabetes in 2015, 30.4 percent were using insulin (Centers for Disease Control and Prevention, 2019), equating to 7.5 million people. Meanwhile Medicaid jumped to 70 million enrollees in 2015 (Statista, 2019), and as of late 2012, approximately 9 percent of Medicaid patients had diabetes (The Henry J. Kaiser Family Foundation, 2012). This totals out to 6.3 million Medicaid enrollees with diabetes and 16.9 million other diabetes patients covered by private insurance or paying out of pocket. With the new requirements under the ACA, which imposes a fine for not having an insurance provider, we assume the number of patients paying out of pocket is relatively small and don’t include it in our calculation. If 30.4% of diabetes patients use insulin, then there were approximately 2 million Medicaid insulin users and 5.5 million other insulin users in 2015. This is an 11 percent increase from the 1.8 million Medicaid insulin users just two years earlier in 2013. Meanwhile, the number of non-Medicaid insulin users went down from 5.6 million to 5.4 million, a 3.6% decrease.
As we will discuss later on, precise data on insulin use is difficult to find and our calculations make a few assumptions. First, that the percentage of Medicaid patients with diabetes stayed relatively constant between 2013 and 2015, during the time of Medicaid expansion. Second, that the percentage of insulin users across Medicaid diabetes patients and other diabetes patients was the same. While it would be ideal to have more precise data to account for these assumptions, exact precision in these assumptions is not necessary to explain the generalized concept of our theoretical model.

As shown in Figure 2, we will assume that insulin post ACA has a list price of $408. Working backwards using Figure 2 we can estimate the Medicaid price for insulin. Medicaid relies on the process of PBMs negotiating with private insures, and the uses the lowest price negotiated by insurers- resulting in cost reductions of up to 30 percent as mentioned earlier (we’re now at $314). Medicaid would also not require the $239 rebate to health plans (we’re now at $75). While Medicaid does not directly employ PBMs to further negotiate prices down, state Medicaid programs do use organizations like the SSDC to further lower prices as mentioned in the previous section. In this section we also discussed in the complete lack of transparency regarding these prices, so we will not assume that the fees paid to PBMs are any different than those paid to intermediaries like the SSDC. So for our theoretical model we are assuming a Medicaid price of $75.

**A Theoretical Model**

Now we can use the estimated number of insulin users before Medicaid expansion- in a profit neutral scenario- to estimate the increase in insulin price due to cost shifting. As of 2013 we
estimated 1.8 million Medicaid insulin users and 5.6 million non-Medicaid insulin users. For the sake of mathematical convenience, we won’t discuss other factors affecting insulin prices outside of cost shifting due to the ACA and hold the 2013 Medicaid price for insulin at $75. Assuming profit neutrality, we can estimate the price of insulin for non-Medicaid insulin users had Medicaid expansion not occurred. Table 1 provides the previously mentioned inputs for calculating the 2013 price of insulin for non-Medicaid insulin users.

Table 1: Insulin Population and Prices

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<tbody>
<tr>
<td>Population</td>
<td>1,808,352</td>
<td>2,034,900</td>
<td>226,548</td>
<td>5,641,776</td>
<td>5,446,103</td>
<td>-195,673</td>
</tr>
<tr>
<td>Price</td>
<td>$75</td>
<td>$75</td>
<td>$0</td>
<td>nonMedPrice</td>
<td>$408</td>
<td>$38.8</td>
</tr>
</tbody>
</table>

To find the 2013 price of insulin for non-Medicaid users, we constructed the following formula:

\[(\text{medPop13})(\text{medPrice13}) + (\text{nonMedPrice13})(\text{nonMedPop13} + \text{difMedPop} - \text{difNonMedPop}) = (\text{medPop15})(\text{medPrice15}) + (\text{nonMedPrice15})(\text{nonMedPop15})\]

Applying the values given in Table 1 we have:

\[(1,808,352)(75) + (\text{nonMedPrice13})(226,548 + 5,641,776 - [-195,673]) = (75)(2,034,900) + (408)(5,446,103)\]
Solving for nonMedPrice13 we find the 2013 insulin price for non-Medicaid users to be $369.2.

Applying our previously noted prices for insulin and population using insulin we can construct a theoretical graph in Figure 4. The 5.6 million non-Medicaid insulin users in 2013 face a price of $369.2 per vial of insulin while the 1.8 million Medicaid insulin users face a price of $75. The 5.4 million non-Medicaid insulin users in 2015 face a price of $408 per vial of insulin while the 2 million Medicaid insulin users still face a price of $75. We assume demand curves for both Medicaid and non-Medicaid users are perfectly inelastic because of the nature of insulin (use of medication is essential for those with type 1 diabetes, and essential or extremely important for many type 2 diabetes patients). The insulin supply curve for Medicaid patients is perfectly elastic because the price is set by government regardless of the number of Medicaid enrollees. Meanwhile the supply curve for non-Medicaid insulin users is relatively normal.

Figure 4

Pre-Medicaid Expansion

<table>
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<th>P</th>
<th>369</th>
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<tr>
<td>S75</td>
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1.8M  5.6M

Post-Medicaid Expansion

<table>
<thead>
<tr>
<th>P</th>
<th>408</th>
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<tbody>
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<td>S75</td>
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2M    5.4M
In the theoretical model shown in Figure 4, the 11% increase in the price of insulin from 2013 to 2015 is purely due to cost shifting under a profit neutral scenario. The gain of two hundred thousand Medicaid insulin users and loss of two hundred thousand non-Medicaid insulin users is indicative of the effects of Medicaid expansion. While the overall number of insulin users went up by almost thirty-one thousand patients from 2013 to 2015, an increased number of patients received insulin at the Medicaid price and a decreased number of patients received insulin at the non-Medicaid price. Thus to maintain proportional profitability, the price for non-Medicaid insulin users in 2015 had to increase from $369 to $408- cost shifting from non-Medicaid insulin users to cover the increased number of Medicaid patients. Had the increase in Medicaid insulin users between 2013 and 2015 not occurred, cost shifting would not have taken place and the price of insulin for non-Medicaid users would have remained at $369 per vial of insulin in 2015.

The Implications of Cost Shifting

The implication of a $39 increase in the cost per vial of insulin is significant. In comparison with the broader supply chain as shown in Figure 2, this price increase is more than the $25 received by pharmacies and just less than the $55 received by PBMs. The amount of insulin an individual needs varies widely depending on the individual’s weight, the severity of the individual’s diabetes, and the type of insulin used. Generally, diabetics who use insulin use between two and four vials a month (American Diabetes Association, 2015). So if an individual used three vials of insulin a month so a price hike of $39 per vial means $117 month in increased medical costs, adding up $1,404 a year. The impact of a $1,404 yearly cost increase can be devastating to privately insured insulin users who just missed the 135 percent of poverty line cutoff established by the ACA. For example, 150 percent of the poverty line for a for a single individual under age
65 is $18,729 (UC Davis Center for Poverty Research, 2017). If insulin were $369 a vial, the
cost per year of using three insulin vials a month would be $13,284. Paying out of pocket would
clearly be near impossible, but assuming the individual has a generic silver category health plan,
the individual would pay a deductible of close to $3,000 and a 20 percent copay (Health Pocket,
2016). This adds up to $5,657 a year- 30 percent of the individual’s income. With the increase in
insulin prices due to cost shifting, which we estimated to cost $1,404 a year, the individual would
pay $5,938 a year for insulin- 32 percent of their income.

On a larger scale an 11% increase in the price of insulin is even more significant. With 5,446,103
non-Medicaid users of insulin in the U.S. (find average amount of insulin used for not just type 1
patients) the increase in annual medical spending totals approximately $1.06 billion. And this
doesn’t include the indirect increase in costs generated by an increased number of medical
bankruptcies or increased number of ER visits created by patients who aren’t adequately
addressing their diabetes due to cost restrictions.

Returning to our analysis of Medicaid expansion in terms of cost, access and quality, increased
cost shifting could potentially have negative impacts on all three factors for privately insured
diabetics. We’ve already discussed the negative cost consequences of cost shifting, but
increasing costs for Medicaid patients also implies negative quality and access consequences . If
a diabetes patient was previously able to afford a more expensive form of insulin, they could
shift towards using less expensive forms of insulin, but that may result in worse quality of care
for their diabetes. If a patient is already using cheaper forms of insulin, the patient is forced to
address the increased price of insulin (due to cost shifting) another way. As healthcare
expenditures increase, numerous studies report issues such as increased debt and skimping on groceries and medication (Amadeo, Kimberly, 2019). Skimping on medications and food can lead to additional health consequences down the road and as debt increases, people are less likely to receive care (Families USA, 2009). Thus both access and quality of care are negatively impacted by cost shifting.

Another implication of cost shifting is the ethical dilemma of shifting pharmaceutical cost burden from the poor (those covered by Medicaid) to those above the poverty line with chronic disease. In many cases diabetes is diagnosed with little or no connection to the patient’s lifestyle (National Institute of Diabetes and Digestive and Kidney Diseases, 2016), and yet cost shifting makes diabetics a target for bearing the high prices of the insulin industry and compensating for the low reimbursement rates of Medicaid. This disproportionate cost burden is only faced by diabetics with private insurance, however, because Medicaid patients face the same healthcare costs regardless of whether or not they suffer from chronic disease. Thus non-Medicaid diabetes patients face a “double-jeopardy” scenario in which they are obliged pay disproportionately for healthcare, first because they are above the poverty line, and second because they have a chronic disease that requires a price-inelastic drug for survival.

Indeed, Medicaid expansion has been reported to increase overall use of diabetes medication (Wood, Matt, 2016), and increase diagnosis rates of diabetes, which in turn could have positive health consequences (Kaiser Health News, 2019). Although diabetes medication is highly price inelastic, it is not perfectly price inelastic since some insulin users with type 2 diabetes are able to survive with limited insulin and other diabetic medications. However, this means that just as
diabetics who received coverage under Medicaid expansion shifted towards using more diabetes medication as their healthcare costs declined, privately insured insulin users could shift towards using less diabetes as the healthcare costs increased. As shown in Table 1, the number of insulin users who gained coverage after Medicaid expansion was approximately two-hundred thousand, but meanwhile almost 5.5 million people felt a sharp increase in insulin prices as a result.

Conclusion

The effects of Medicaid expansion from a cost, access and quality of care standpoint will continue to be point of debate for many years to come. Optimistically, many of the unintended consequences of expansion and the factors contributing to these consequences— which we have only began to describe— will be further studied providing more concrete evidence surrounding the Medicaid expansion debate. Although increasing attention is being directed at the issues surrounding transparency and market exploitation in the pharmaceutical industry, the outlook for substantial change is less than optimistic. As our analysis shows, Medicaid expansion may contribute to the negative outcomes produced by these issues within the pharmaceutical industry.

Our theoretical model estimates the effects of Medicaid expansion on drug prices for price-inelastic drugs due to cost shifting. By examining the shift from privately insured insulin-using diabetes patients to Medicaid insured insulin-using diabetes patients along side the drug cost discrepancies between private insurance and Medicaid, we estimated an insulin price increase of eleven percent due to Medicaid expansion and the resulting cost-shifting.
Increased transparency within the pharmaceutical industry is vital to further understanding and eventually creating policy solutions to resolve the unintended consequences of Medicaid expansion in the pharmaceutical domain and the nuances of the pharmaceutical industry’s rapidly increasing prices. As it currently stands, drug prices— at least for price inelastic drugs—are far from representative of drugs’ actual cost and the burden of this cost is spread disproportionately among patients. Along with the pharmaceutical industry’s lack of transparency, Medicaid furthers this cost burden inequality and allows for the “double jeopardy” scenario where patients must pay more for drugs not only because they have a non-poverty-level income, but because they have a disease whose drug market exhibits price-inelastic demand.
References


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Author Biography

Hayden Hubbard is a Logan, Utah native and completed his undergraduate degree in Economics at Utah State University (USU) in just two years. During that time his proudest accomplishment was founding a non-profit with more than 60 USU student volunteers helping over 200 at-risk middle school students participate in service and receive mentorship to improve their mental health. He also started the USU Neuroscience Club which attracted close to 200 members and successfully created a neuroscience major for USU. In the Business School he enjoyed working as a Business Council Member, serving as President of the Huntsman Consulting Group and completing research as an Undergraduate Research Fellow with The Center for Growth and Opportunity (CGO). His research with CGO focuses on healthcare and environmental sustainability and has been presented at The APEE Conference in Nassau, Bahamas, The MVEA Conference in Memphis, Tennessee, and Utah Research on Capital Hill. His awards at Utah State include Presidential Scholar, Undergraduate Research Fellow, Huntsman Scholar, Beuhler Scholar and Honors Student. Following graduation at USU he will be attending The Johns Hopkins School of Advanced International Studies in Bologna, Italy to complete an M.A. in International Affairs, with an International Development Concentration. Outside of academics he enjoys competing in soccer and piano, as well as skiing, climbing and mountain biking.
Reflection

Healthcare sparked my interest well before I came to college; I’d hear my mom, a pediatrician, arguing with insurance companies on the phone or I’d shadow my dad, a dermatologist, and watch him take care of patients from a fascinating array of backgrounds. It wasn’t until I became a researcher at the Center for Growth and Opportunity, however, that I began to truly understand how the broader healthcare system worked. I was fortunate enough to be paired up with a mentor, Chris Fawson, who had long-time experience researching healthcare and was willing to engage my interest. He provided invaluable guidance as I spent over a year researching the immensely complex U.S. healthcare system, and tried figure out where I could make a contribution. We were able to narrow down our search by identifying two underlying causes of the U.S. healthcare dilemma; one was a lack of transparency and two was a lack of real value attached to healthcare prices (how healthcare is priced has nothing to do with how much it actually costs). The recent events surrounding the Affordable Care Act and Medicaid expansion in Utah provided us a with a perfect context to frame our argument. Meanwhile the recent huge price inflations in insulin gave us a population to focus on. While our paper itself talks about the cost-shifting that occurs due to Medicaid expansion within the insulin dependent population, it points to the underlying causes of the U.S, healthcare problem which we previously discovered: a lack of transparency and a lack of real value attached to healthcare prices.

Although I find researching the United State healthcare system fascinating (albeit frustrating), I ultimately want to work with the healthcare systems in developing countries. The U.S. system does not function nearly as well as it should given the prosperity and stability of the country, but there are many healthcare systems throughout the world that are far worse. Still, if one can understand the basics of the convoluted U.S. system, one can start to understand any
other system, so this project was extremely useful for my future goals. It also introduced me to many of the real-life applications of the theoretical concepts that are often talked about in economics (which is my major). These concepts included payment mechanisms, incentive models, moral hazard, public choice and others.

I learned about many of these concepts initially in my ECN 2010 class in which Dr. Fawson was my professor. It was tremendously rewarding to see the concepts we learned in class become real through the applications in our research together. After taking me on as a mentee, Dr. Fawson got me involved in a variety of learning experiences, such as his leadership book group, Bethler Scholars, to help me become a more well-rounded scholar. Eventually he connected me with my summer internship following graduation in Norway and wrote me a kind letter of recommendation that I attribute to my getting in to The Johns Hopkins School of Advanced International Studies where I will do a master program starting in fall 2019.

Before our healthcare project, I had did research with Dr. Fawson on environmental sustainability strategy which is currently published as a working paper with The Center for Growth and Opportunity and in the process of being published in an academic journal. While this was a fantastic first research experience, healthcare has been a much more challenging topic and has added so much to my research experience. Healthcare is such an entangled topic, with every research question relating to experts from such a diverse variety of fields, that finding a gap in the literature that we could address with our research was tremendously difficult. Furthermore, many of the experts working in the healthcare space are physicians, administrators and policymakers with far more experience than me. Nonetheless, by tapping into the knowledge base of healthcare administrator friends and physicians like my parents, I was able to navigate
these obstacles. This process has helped me feel much more confident and prepared to address new research topics in the future.

I dropped pre-med and became an economics major primarily because of the opportunity to learn about and make a difference in so many different fields. Economics applies to almost any topic- from environmental sustainability to healthcare. My capstone project helped me realize that problems within fields that might seem unrelated, often have common underlying issues that can be explained by economics. For instance, current policies in both healthcare and sustainability have unintended consequences that cause a great number of people to be worse off. Economics is all about recognizing unintended consequences in policy and then quantifying how much better or worse off various policies make people. My research did exactly that in a healthcare setting. We looked at one of the unintended consequences of medicaid expansion and quantified how much worse off it made people; in doing so, we pointed to larger-scale economic problems found in the healthcare system.

While economics does have common principles across a wide array of subjects, researching any topic, even from an economics standpoint, requires subject specific knowledge as well. For my research on medicaid expansion and the effects on insulin users, I had to learn a great deal about how diabetes worked. I often found myself on the phone with my mother asking about the nuances in diabetes treatment for different people and types of diabetes. I also had to dabble in political science in understanding how the government manages healthcare and in trying to brainstorm solutions that match the broader United States political system. I even had to do some research in the realm of humanities in trying to understand the ethics of various healthcare systems. How people believe healthcare should be delivered is heavily dependent on
differing values, and our research suggests that our current system could be unethical in how it unfairly values some people more than others in distributing healthcare costs and benefits.

Most of this research was conducted in an office and is delivered through my paper, but there were important ways of engaging with the community along the way. These experiences were some of my favorite during the capstone experience. They included attending state healthcare conferences and meeting with legislators; presenting at conferences Tennessee and the Bahamas, and meeting with many experts throughout the state and the nation. Working with the community not only made our research better through all the input we received, it gave us outlets to make a real impact with our research. While I have found great values in the learning experiences provided by working with Dr. Fawson and conducting research, I value helping people with my research more than anything. As we prepare to publish this paper in an academic journal, I will continue to seek for ways to make a broader impact with our research. Hopefully it can play some small part in reducing the unfairness in the healthcare system for diabetics and mitigating the broader transparency and pricing problems in the U.S. healthcare system.