

HOW HEALTHCARE POLICIES AFFECT
ACCESS AND QUALITY OF CARE

by

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Abstract

The purpose of this thesis is to outline different healthcare systems in the United States, Canada, and Europe in order to understand how the policies of each system affect access to care and quality of care. A give and take relationship often exists between quality and access of medical services, and many healthcare systems struggle or succeed differently in juggling the two priorities. The four policies outlined in this thesis include Social Health Insurance, Statutory Health Insurance, National Healthcare System, and National Health Insurance. This work attempts to summarize each healthcare system and the issues they face related to access and quality, in hopes of comparing the systems to learn from the strengths and weaknesses of each coverage model.

Effects of cost sharing were studied in terms of how patient behavior and health outcomes were influenced in different populations around the world. Medication adherence, availability of services, utilization of services, and hospitalization rates are among the factors studied to help determine how changes in cost sharing alter the way consumers approach with their medical care and how healthcare systems meet the demand of consumers. These findings have application in the United States as policy makers try to determine how to structure our healthcare system so that it is inclusive, standardized, and cost effective.

Introduction

Appropriate cost sharing policies are effective tools to manage at-risk populations and reduce healthcare inequities. Increases in cost sharing generally have negative effects on patient behavior and thus patient outcomes and more vulnerable parts of the population are the most affected by changes in healthcare policies. Cost sharing can be used to balance both financial risk and the risk of overconsumption if appropriately tailored to the consumer.

Nine different countries all identifying with one of the four healthcare systems were chosen to study and evaluate each payment model. In order to gain insights from these systems and understand the relationship between different healthcare structures and access and quality of care, this thesis will include a literature review that provides a thorough background of each healthcare system. Findings from these analyses will be related to the United States, and different perspectives will be included from interviews conducted with U.S. healthcare professionals to provide insight into the effectiveness of different cost sharing models.

Literature Review

This literature review will discuss the Social Health Insurance, National Health System, and National Health Insurance models across several different countries in North America and Europe. A discussion of each nation's policies, access to care, and standards of care will help us compare the effectiveness of each system, and understand the determinants of access and quality of care.

Social Health Insurance

Social Health Insurance (SHI) is a system for financing health services through risk pooling (Doetinchem, et al., 2010). Standard SHI systems in European countries involve law-required contributions from working citizens and their employers that cover different services for those insured. Many SHI systems are further financed through government subsidies. There is great variation among SHI systems, as some governments have offered coverage to people unable to pay their contributions by subsidizing contributions from non-tax revenues or government taxes. The common theme among all SHI systems is the sharing of financial risk, whether it be through mixed forms of insurance or government revenues funding health services (Doetinchem, et al., 2010).

The implementation of SHI systems largely depends on the socio-economic and financial development of the country, as well as the country's employment conditions (WHO, 2003). Larger SHI coverage tends to exist in countries with higher socioeconomic statuses and better rates of employment. With SHI systems generally existing in wealthier countries, there may be good access to care regardless of the policies in place because most people in the country already have the ability to pay their medical costs (WHO, 2003). SHI systems bring extended financial risk protection to more of the population and greater levels of protection for those already covered, such as through using some form of prepayment to replace out-of-pocket spending (Doetinchem, et al., 2010). Countries that have implemented high coverage of SHI, and are close to universal coverage, often face issues related to quality of care, cost containment, and equity (WHO, 2003).

Switzerland

The Swiss healthcare system divides up responsibilities amongst the three levels of government: the federal, cantonal, and communal levels (Mossialos, E., et al., 2016). There are

26 cantons in this decentralized system that oversee critical tasks such as licensing providers, subsidizing organizations, and coordinating hospital services. These cantons operate somewhat independently, as they have their own constitutions and are responsible for support services for at-risk groups and long term care services. Areas such as healthcare system financing, public health initiatives, and standards of safety and quality are regulated and overseen by the federal government (Sturny, 2017).

The SHI system implemented in Switzerland operates through publicly financed health insurance that comes through three different streams of funding (Sturny, 2017). The first is tax financed budgets that directly finance healthcare providers. There are separate tax-financed budgets for the Swiss cantons, municipalities, and Confederation, with the most spending dedicated to the cantonal subsidy budget to fund inpatient acute care in hospitals (Sturny, 2017).

The second stream of funding is universal Mandatory Health Insurance premiums, or MHIs (Sturny, 2017). All residents are required by law to purchase this form of insurance, and those who move to Switzerland are required to purchase MHI within three months of their arrival date. This leaves virtually no uninsured people in the country, as temporary visitors are required to pay upfront. Non-resident visitors must also claim expenses they may hold in their home country, and this SHI system often struggles with missing social health insurance for undocumented immigrants. While a large range of services are covered under SHI, remaining out-of-pocket expenses mostly went towards long term care and dentistry. Insured individuals in a given region are offered MHI by nonprofit insurers, all of whom are overseen by the Federal Office of Public Health (FOPH). The FOPH sets floors for premiums to cover the current cost of care, as well as past and future costs. A risk equalization scheme for each canton is calculated in order to redistribute funds (Sturny, 2017).

MHI benefits are determined by the Federal Department of Home Affairs, and include most specialists services, most general practitioner services, home care, prescribed physiotherapy, and even hospital services, though they are subsidized by each canton (Sturny, 2017). Preventative measures are also included, ranging from early disease detection screenings for at-risk groups and mammograms, to select vaccinations and health exams. Insurers are required to offer a CHF300, or USD 235, annual deductible for adults, no deductible for children younger than 18 years old, fully covered maternal care, and a 10% copayment up to a cap of USD 549 and USD 274, for insured adults and children younger than 18, respectively (Sturny, 2017).

The third source of funding is social insurance contributions (Sturny, 2017). These contributions may come from publicly financed accident insurance, disability insurance, old age insurance, or military insurance. Insurers also offer premiums to set geographical regions, with a limit of three for each canton. Every region has criteria set for variation in premiums that are based on factors such as level of deductible and age group. There is still, however, significant variations in premiums among insurers, as some residents opt for coverage through a fee-for-service plan, and independent practice association, or basic coverage through a health maintenance organization (Sturny, 2017).

Statutory Health Insurance

Statutory Health Insurance is a form of Social Health Insurance, or SHI, but differs in that the size of contributions are based on the ability of the individual to pay. Coverage is compulsory, and health insurance funds have the ability to self-govern and operate as an

independent organization. Statutory Health Insurance also involves the employers in a more active way, giving them some form of input on cost sharing standards and policies (SKI, 2017).

France

The SHI model in France, compared to other countries, relies more heavily on private insurance to support cost sharing and provide enough benefits. The system involves universal and compulsory coverage provided by noncompetitive insurers (Durand-Zaleski, 2017).

Eligibility to receive SHI is granted to residents through employment, or offered as a benefit to those who are retired, are students, or are unemployed people who were previously employed.

Those who are not eligible for SHI are still covered by the state, and these people include residents that have been unemployed for a long time or undocumented people who are currently applying for residence. An EU insurance card covers visitors who are from other countries in the European Union, and anyone not from the EU is only covered in emergent cases (Durand-Zaleski, 2017).

The healthcare system in France focuses heavily on providing support to caregivers and ensuring quality of care through the promotion of evidence-based practice and established guidelines. National plans were created to establish governance and coordinate tools for rare diseases, prevention efforts, healthy aging, and chronic conditions such as cancer and Alzheimer's. Coordination of care and access to care is improved through telemedicine pilot programs, which are funded by regional authorities. Furthermore, an evidence-based benefit package published by the National Health Authority covers 32 different chronic conditions, and both SHI and the Ministry of Health fund provider networks where professionals can share best practice protocols, approaches, and guidelines (Durand-Zaleski, 2017).

Germany

The SHI system implemented in Germany is the oldest system of universal coverage in Europe. This culture is rooted in the common value or expectation that the government is responsible for providing not only medical care, but a wide range of social benefits to citizens, such as disability payments and old age pensions. In this system, insurers offer comprehensive benefit packages called “sickness funds” (Blumel and Busse, 2017). Sickness funds are nonprofit insurance companies that collect premiums from employees and employers, and are meant for people earning less than 35,000 per year. The SHI implementation in Germany is unique in that higher-income families have the option of opting out of the sickness funds to purchase private coverage. Only 10% of the population is covered by private insurance, and 14% of the country voluntarily joins sickness funds despite having an income over 35,000. 74% of the population of subscribers are required to join a sickness fund (Blumel and Busse, 2017).

In order to account for the variety in level of health among the enrollees, the SHI system in Germany incorporates risk-adjustment features that help the focus stay on performance rather than on seeking out healthier enrollees (Blumel and Busse, 2017). Insurers are offered the flexibility, all while joint negotiations are employed between providers and insurers. Insurance in Germany is financed through participants that are required to pay a percentage of their income towards sickness funds (Blumel and Busse, 2017).

Netherlands

In the Netherlands’ adaptation of Statutory Health Insurance, the federal government is in charge of setting healthcare standards (Wammes, et al., 2017).. Quality of care, access to care, and medical costs are monitored at the federal level, and funds both compulsory social insurance

and social health insurance. Social health insurance covers the basic medical benefits while the compulsory social insurance covers long term care. Social support services as well as preventive services are not a part of the basic benefits package, but are still covered because they are funded through general taxes (Wammes, et al., 2017)..

The basic benefits package include general practitioner services, hospitalization, specialists, dental care for those at or below the age of 18, and some mental health care (Wammes, et al., 2017).. An annual deductible is required for all over the age of eighteen, equating to roughly 465 USD. Subsidies exist for low income families, and general practitioner services and children's medical care are exempt from cost sharing (Wammes, et al., 2017).

National Healthcare System

A National Healthcare System or NHS, is where care is mostly funded from general revenue taxes, with little private funding (Schneider and Popic, 2018). NHS differs from SHI in that the government manages the actual infrastructure for the delivery of care, and operates most medical facilities. Healthcare is universal and financed and provided for by the government, and the UK's NHS system stands as the largest single payer healthcare system in the world. Sweden, Norway, and Great Britain, all of which have implemented NHS systems, rank among the top ten countries in Europe with the highest percentage of health treatment equality. However, countries with NHS also score low in perceived efficiency and promotion of population health, in comparison to countries with other systems. The system is known for its high rates of efficiency, affordability, and equity, but has poor reported outcomes (Schneider and Popic, 2018).

Sweden

The NHS system in Sweden involves all three levels of government, the national level, the regional level, and the local level (Glen Gard, 2017). At the national level, the Ministry of Health and Social Affairs oversees healthcare policy and overall population health, and the regional level includes 12 county councils and nine regional bodies. These councils and bodies finance and deliver the health services to each region. At the local level, 290 municipalities are in place to oversee the care of the disabled and elderly. Specific government programs and initiatives are also in place to support behavioral changes and avoid negative health patterns. Certain programs target outpatient services available to vulnerable groups to prevent them from developing diseases early on, and most county councils specifically allocate additional funds to primary care providers. This is in order to prevent providers from not treating patients that have extensive needs, and the funding is determined off of a formula based on overall illness and the socio economic conditions of registered individuals (Glen Gard, 2017).

United Kingdom

The universal coverage system in the UK protects its citizens from out-of-pocket spending, due to little cost sharing and comprehensive benefits (Thorlby, et al, 2017). Funding for NHS comes mainly from general taxation, but also receives income from payroll tax, copayments, and private patients using NHS services {Schoen, et al. 2010}. Regular residents in England are offered NHS care, and nonresidents with a European Health Insurance card can also access care (Thorlby, et al, 2017). Visitors outside the EU and illegal immigrants are only provided free treatment if there is an emergent case or a specific infectious disease. Most private health insurance is provided through employers compared to individual policies, and private insurers often have more efficient and convenient access to care. Most individual policies however don't cover services like mental health, emergency care, general practice, or maternity

services. NHS does cover preventative services such as screenings, vaccination programs, mental care, some eye and dental care, and inpatient and outpatient drugs (Thorlby, et al, 2017).

Out-of-pocket payments for general practice services are limited to services that fall outside of NHS, such as examinations for employment (Thorlby, et al, 2017). Copayments may need to be paid with outpatient prescription drugs, but drugs are covered if prescribed in NHS hospitals. Copayments may also occur with NHS dentistry services, and these charges are determined nation-wide by the Department of Health. Some exceptions to prescription drug copayments occur with children under 16, children ages 16-18 that are enrolled in school full time, people of low income levels, pregnant women or women who have had a child within the past year, or cancer patients (Thorlby, et al, 2017).

National Health Insurance

National Health Insurance is a system for health insurance that covers the entire population for a well-defined medical benefits package (Ridic, et al., 2012). Unlike SHI and NHS, National Health Insurance is where the government finances the healthcare system with money collected from general taxes, but the actual care is through private providers. Known for its egalitarian culture, the NHI system involves universal health insurance coverage financed through general taxes and a single payer system. Under the NHI system, there is more patient flexibility as there are negligible copayments, private production of healthcare services, and unlimited choice of physician. NHI systems make use of private sector providers, but all payment comes from an insurance program run through the government, in which all citizens pay into. Cost control is achieved under NHS through limiting the medical services people can pay for at a given time, which often results in patients waiting to be treated (Ridic, et al., 2012).

Canada

Canada has adopted the NHI system, resulting in a high overall coverage of the population (Ridic, et al., 2012). The government funds the provinces and territories, but the actually administering of health is done by each individual region. Their approach of offering “free” medical services allows for demand, and thus spending, to escalate. Due to this high demand, which is furthered by Americans that cross the border to receive care in Canada, resource allocation is highly strained. The NHI system in Canada does however allow for cost sharing for primary care and other medical services (Ridic, et al., 2012).

One’s access to care in Canada is related back to their respective region, even if they are temporarily outside of their home province (Ridic, et al., 2012). All insured residents are entitled to the same equal care, and they are covered by insurance from their respective home region. Despite universal coverage, there are deficits in the Canadian healthcare system specifically in areas of intensive care and angioplasty. Medical care in these two areas has a common occurrence of long waiting lists, with average at a slightly over 13 weeks. Other areas that often lack appropriate access to medical care include cataract surgery, hip replacements, and cardiovascular surgery. According to one study, Canadian physicians consider the average waiting time 80% longer than what is clinically appropriate (Ridic, et al., 2012)

How Does Cost Sharing Affect Healthcare?

Perspectives on Cost Sharing

The literature provides some critical theoretical perspectives on cost sharing and the way it can affect consumer behavior and consumer health. Cost sharing in the context of healthcare refers to the portion of costs one pays out of pocket for their medical treatment and services,

including deductibles, coinsurance, and copayments (HealthCare.gov, 2018). The amount of medical care demanded increases as cost sharing increases because consumers opt to purchase additional care if they don't have to pay its full cost (Manning and Marquis, 1996). Given that there is a trade-off between risk sharing and the incentives to utilize medical care, cost sharing can be seen as a method of balancing that relationship (Baicker and Goldman, 2011).

The standard demand model, or the notion that lower prices will yield a larger demand, does not necessarily apply in terms of medical care (Einav and Finkelstein, 2018). Some economists would argue that the demand for healthcare is purely inelastic regarding price, a point heavily argued by Malcolm Gladwell. In his *New Yorker* article, “The Moral Hazard Myth,” Gladwell notes how we consume healthcare in a completely different manner than we do other goods. He states how we go to the doctor “grudgingly” and only out of requirement, not desire, so the same price-demand model does not hold accurate (Einav and Finkelstein, 2018).

Another contradiction to this typical economic model is the idea that healthcare utilization will be reduced because more health insurance coverage is promoting the utilization of more medical services and preventive services, leading to higher overall health (Einav and Finkelstein, 2018). This conclusion assumes that receiving healthcare services will directly improve health, and that all types of healthcare services will improve health. The use of health insurance is thought to increase the efficiency and effectiveness of care through the promotion of preventive care or improved treatment and monitoring of chronic illnesses. Essentially, health insurance incentivizes beneficiaries to take a more proactive approach to care, resulting in healthier consumers and a decreased need for medical services in the future (Einav and Finkelstein, 2018).

Another important viewpoint to consider is that the more generous insurance coverage becomes, the fewer emergency room visits will occur, bringing down costs and increasing the use of cheaper, primary care visits (Einav and Finkelstein, 2018). Under the Emergency Medical Treatment and Active Labor Act (EMTALA), hospitals are required to provide emergency care to all patients, so those who are currently uninsured often resort to receiving medical care only in an ER setting. Advocates of expanding healthcare coverage believe that insuring the uninsured could save money by preventing the frequency of consumers visiting the emergency room (Einav and Finkelstein, 2018).

The standard demand, healthcare utilization reduction, and cost reduction perspectives indicate a clear correlation between insurance coverage and both accessibility of care and health of users (Baicker and Goldman, 2011). However, the question lies in what level of coinsurance will yield the smallest financial burden on consumers while preserving quality of care and promoting the most consumer health. Full insurance models open up the possibility of overconsumption, while consumers bearing the full cost of their services would leave them bearing too much risk (Baicker and Goldman, 2011).

When viewing cost sharing as a method for controlling how medical care is utilized, there are different guidelines for what type of cost sharing is appropriate (Schneider & Popic, 2018). For example, in situations of smaller and more certain risk, the coinsurance should be higher. If the demand for the medical service is more elastic, then overconsumption is likely to occur, and coinsurance should again be higher. Depending on the type of service, coinsurance should vary. In the RAND Health Insurance Experiment (Baicker and Goldman, 2011), which will be discussed further in the paper, results showed that use of dental and mental health services were more sensitive to changes in copayment than inpatient or outpatient care. Most

health insurers thus cover inpatient and outpatient services but often either deny other types of services or have higher cost sharing for them. This struggle to make dental care financially accessible is also relevant among other structures of cost sharing, as out-of-pocket costs under Switzerland's Social Health Insurance system were mostly spent on dentistry and long term care (Schneider & Popic, 2018).

Value-Based Approach to Care

An important perspective related to cost sharing is value-based approaches to medical care (Thomson, et al., 2013). Value-based approaches focus on increasing the efficiency of medical care by getting a higher level of health from the money invested into health coverage. There are two main points under value-based care: a) that a health system shouldn't deter patients from high value care, and b) that the value that lies in different types of care needs to be made clearer to the population (Thomson, et al., 2013).

The first notion states that cost sharing should not be used to discourage patients from care that improves health in a cost-effective way, as seen when patients respond negatively to out-of-pocket expenses for things like medical care (Thomson, et al., 2013). This theme can be seen in how SHI systems are structured, as they target at-risk groups in order to prevent them from not seeking care as a reaction to cost sharing. Germany's SHI system has healthcare coverage where cost sharing is exempt for children under 18 and there are caps of medical costs of 2% of one's income. They even have a lower cap of 1% for individuals who are disabled (Blumel and Busse, 2017). The second notion suggests that it is hard for the average patient to determine what high value vs. low value care is, and that cost sharing will positively affect the patient by making it so that non-cost-effective services are not included in the benefits package (Thomson, et al., 2013).

Medication Adherence

There is a clear association between changes in cost sharing and adherence to medication, as well as overall patient outcomes (Eaddy, et al., 2018). A literature review of 160 articles covering 66 studies, published by the *Pharmacy and Therapeutics Journal*, revealed this relationship, with 85% of the findings showing that a decrease in medication adherence was strongly associated with increasing patient shares of medication cost. This relationship extends to quality of care as the articles also showed that increased adherence was closely associated with improved outcomes (Eaddy, et al., 2018).

In the literature, the medication adherence is most commonly defined in three ways: a) the number of prescriptions filled over a period of time, b) the medication possession ratio, or c) a combination of the two (Eaddy, et al., 2018). A statistically significant relationship between increased patient cost sharing and lower adherence to medication was identified in 56 of the 66 studies. Of the studies that assess the relationship between cost sharing and patient outcomes, 76% indicated that increased patient cost sharing adversely affected patient outcomes. The effect of cost sharing was looked at through a variety of outcomes, including outpatient visits, ED visits, hospitalizations, preventative services, medical costs, and adverse effects (Eaddy, et al., 2018).

Prescription Drug Use

Cost sharing also affects the adherence and discontinuation of prescription drugs, and such consumer reaction is particularly dangerous when combined with chronic illness (Leibowitz, et al., 1985). Health utilization patterns were observed against variation in prescription drug copayments or coinsurance. The results showed that higher levels of cost sharing for prescription drugs yielded the expected results of lower consumption of prescription drugs. Many patients did not however switch to using generic drugs in place of the original

prescription. The study showed that lower levels of cost sharing were associated with low levels of treatment adherence, treatment initiative, and treatment continuation. These treatment disruptions were especially troublesome given that they were occurring among chronically ill patients. According to the study, unintended effects of cost sharing affect more than the consumption of prescription brand-name vs. generic drugs, but also the process and outcomes of therapy (Leibowitz, et al., 1985).

Utilization of Medical Services

The utilization of medical services is affected by the cost sharing structures of different healthcare plans, as shown through statistics about outpatient use and preventative care treatments (Foxman et al., 1987). In a randomized trial observing over 1,000 children, children whose families received a full reimbursement of healthcare expenses spent one-third more per capita than children of families who spent 95% of expenses before reaching a cut-off. As cost sharing increased, they concluded that outpatient use, in terms of number of doctor visits, annual expenditures, probability of seeing a doctor, and number of outpatient treatments received, decreased. Among children insured with different levels of cost sharing, hospital expenditures did not vary significantly, and both treatment for chronic illness and preventative care were affected by cost sharing (Foxman, et al., 1987).

In the trial, the annual per capita expenditure of the cost sharing plan for medical services not including mental health and dental services, was 69% of the free-care plan (Foxman et al., 1987). Participants covered by the free-care plan were 22% more likely to visit a medical office during the year compared to the cost sharing plan. The greatest effect of cost sharing existed in the reduction of outpatient care. Children who were insured under free care were significantly more likely to seek primary care services from a pediatrician, and it should be noted that

pediatrician charges for standard visits included only slight price differences from the charges of other providers, according to the Health Insurance Experiment (Foxman et al., 1987).

The level of medication adherence was also shown to affect hospitalization risk through a study that observed patients with conditions like diabetes, hypertension, CHF, and hypercholesterolemia over a 12-month period (Sokol et al., 2005). Adherence was measured as the percentage of days during the 12 month period in which patients had a supply of one or more medications for their condition. High levels of medication adherence were closely associated with lower disease related medical costs for patients with diabetes and hypercholesterolemia. For all four patient conditions, there was a lower probability of hospitalization of patients who maintained 80-100% medication adherence (Sokol et al., 2005).

Behavior Across Age Groups

The Rand Health Insurance Experiment (Baicker and Goldman, 2011) helped connect the dots as to the relationship between insurance coverage and willingness to seek out care, but there is not much known about how much preventive care Americans receive and what affects those amounts. Looking at insurance claims from the Rand experiment, it was concluded that the use of primary and prevention services was not limited to certain genders or age groups (Baicker and Goldman, 2011). The plans in the experiment covered hospital care, mental health care, dental services, drugs, and ambulatory care, and each plan included a cap on out-of-pocket expenses at \$1,000 per family. Prevention services were classified separately and included sigmoidoscopy, mammography, and pap smears. Results showed that only 4% of adults had a tetanus shot, only 66% of women between 17 and 44 years of age received a pap smear, and only 45% of infants received an immunization for DPT and polio within the appropriate time margins. These margins are identified as receiving three doses of the DPT vaccine by the time the child is 18 months old.

Of the 97 newborns in the sample, 60% received the MMR vaccine as well (Baicker and Goldman, 2011).

Specifically in terms of cost sharing, 49% of children on cost sharing plans received any form of preventive care, while 60% received care on the free plan (Baicker and Goldman, 2011). These findings indicate that free care plans do result in higher usage of primary and prevention services, but that they still remain underused. Even with free care, most of the enrollees in the experiment did not receive the appropriate amount of medical care. More research is needed to determine the non-monetary factors of what drives patients to seek or not seek out certain medical services (Baicker and Goldman, 2011).

Preventative Services

The effects of cost sharing affect not only the use of discretionary services, but also the use of preventative services like mammography (Thomson, et al., 2013). Some countries use incentives such as lower copayments to encourage use of both preventive services and preferred providers. This approach has been implemented in the U.S. as well, and while it can increase the use of important and effective medical services, it can also result in higher administrative costs and can feed into existing health inequalities between different groups (Thomson, et al., 2013). One study reviewed the coverage for mammography among women within Medicare managed care plans across three years. Biennial breast-cancer screening rates for mammography in full-coverage plans were compared to screening rates for cost sharing plans. Cost sharing plans were defined in the study as a plan requiring copayments above \$10 or coinsurance of more than 10% for screening (Trivedi, et al., 2008).

Plans with full coverage yielded biennial screening rates 8.3 percentage points higher than cost-sharing plans (Rakowski and Ayanian, 2008). This effect of cost sharing was especially

prevalent among communities of lower educational or income levels. The study suggests that while cost sharing affects the utilization of medical care, it also affects the utilization of preventive services among women who should, according to accepted clinical guidelines, be using those services. Even relatively small copayments dramatically affected the use of mammography rates among Medicare recipients, suggesting that elderly patients should be excluded from cost sharing when it comes to preventative services (Rakowski and Ayanian, 2008). This could potentially be due to the fact that many elderly patients live on fixed income.

The direct and indirect effects of cost sharing on preventative services was also observed through a study based on services used in two types of managed care, HMOs and PPOs (Solanki, G., et al., 2000). Two forms of cost sharing were investigated, copayments and deductibles, across four types of clinical preventive services. These include cervical cancer screening, preventive counseling, and mammography screening. In the study, direct effects were defined in terms of changes in cost sharing directly affecting the probability an individual will seek a specific service. Indirect effects refers to changes in cost sharing levels affecting the probability an individual will schedule an office visit and thus receive the certain preventive service recommended for their primary care (Solanki, G., et al., 2000).

Cost sharing in both copayment and coinsurance plans resulted in indirect effects of decreased preventive counseling, between 1 and 7 percent (Solanki, G., et al., 2000). Preventive counseling was directly negatively affected between 5 and 9% in both HMOs and PPOs, pap smears decreased 6% in both HMOs and PPOs, and mammography decreased 6% in just PPOs. Given that the direct negative effects of cost sharing were higher than the indirect effects for services like pap smears and mammography, the study suggests that cost sharing should be

eliminated for preventative services in order to keep their utilization at appropriate and necessary levels (Solanki, G., et al., 2000).

Cost sharing in the context of preventative services has been shown to affect utilization, but also negatively target vulnerable groups such as patients with disabilities and chronic illness (Qingyue, et al., 2015). In Medicare managed-care plans, significantly lower mammography rates occurred among women who should be using the service according to clinical guidelines, as a result of relatively small copayments (Qingyue, 2011). In 2003, the Oregon Health Plan, which falls under Medicaid, added a copayment of \$50 to emergency department visits and led to a drop in ED visit among their beneficiaries from 38 to 32 percent. The percentage of beneficiaries under this plan fell from 41% to 31% for psychiatric visits, suggesting that low income people suffering from behavioral health issues were especially put at a disadvantage by the increase in cost sharing (Qingyue, et al., 2015).

There are many countries that have been able to use cost sharing in a positive way, and have encouraged the use of a wide range of preventative services. In the Netherlands, for example, insurers have had the ability since 2009 to waive mandatory deductibles if enrollees attend preventive programs. These programs are focused on conditions such as diabetes, depression, cardiovascular disease, chronic pulmonary disease, and obesity. Germany offers cash and other types of rewards for enrollees that attend exercise classes, receive annual pap smears, receive immunizations, and meet blood pressure, blood sugar, cholesterol, and body mass index targets. The ceiling on out-of-pocket spending in Germany in terms of counseling and the starting of treatment for bowel, cervical, or breast cancer, was cut in half, and is now only 1% of household spending. Flexible Statutory Health Insurance Systems such as the ones in Germany

and the Netherlands allow countries to use cost-sharing to encourage healthier behaviors among their residents by giving them incentives (Blumel and Busse, 2017).

Health Outcomes

There is little research conducted on how different models of cost sharing directly affect health status in a population, but one study used their own measure of health to determine how health outcomes were influenced by different coverage plans. One study involved two Medicare risk-based programs, Social HMO and Medicare Plus (Johnson, R., et al., 1997). In order to measure the health status of specifically an elderly population, two health status instruments were utilized: the Chronic Disease Score and the Diagnostic Cost Groups (Johnson, R., et al., 1997).

The Chronic Disease Score, or CDS, is used to weight diseases, and is a good measure of individuals who get treated in ambulatory settings and are on maintenance medication (Johnson, R., et al., 1997). The Diagnostic Cost Groups, or DCG, instrument, “capture a small but very sick portion of the population.” The unit of health status was set as the “per capita basis and defined as the mean change in health status per capita between analysis periods for each population.” Large values in this measure indicate a large decrease in health status. In 1987-1988, the Social HMO group had a higher decline in per capita health than the Medicare Plus group. While there were no significant changes in the measure between 1988-1989, there was a dramatic drop between 1989-1990, with the Medicare group now having a higher decline in per capita health than the Social HMO group (Johnson, R., et al., 1997).

Switzerland, known for their consumer-focused approach to healthcare, has made certain preventive services and maternity care fully covered and exempt from all cost sharing under Mandatory Health Insurance (Mossialos, E., et al., 2016). The number of infant mortality per

1000 live births was reported as 4.6, while it was 5.8 in the U.K. The United States had an infant mortality rate of 5.9. Maternal mortality was also only 3.8 per 100,000 births, while it is reported as 5.8 in the U.K. (Herzlinger and Parsa-Parsi, 2004) and 5.9 in the United States (CDC, 2018).

Hospitalization

A secondary effect of increased cost sharing could be an increased in outcomes related to hospitalization. One study measured the implementation of a 25% coinsurance charge up to an income based cap among welfare recipients and older residents in Quebec. Patients who reduced their consumption of an essential medication or drug later faced adverse events. These events include long term care needs, their first acute hospitalization, and even death (Gibson, et al., 2005).

One study published by the American Economic Review studied the “offset effect” of cost sharing, which states that more cost sharing both leads patients to postpone seeking necessary medical services and yield more hospitalizations. The study looked at different healthcare policies involving staggered copayments put in place by the California Public Employees Retirement System Board over a three year time period. The share of members with hospitals days under PPOs increased from 1.567 million per month under pre-policy, to 1.698-2.06 million for the years studied post policy. Under HMOs the pre policy yielded 1,195,000, and post policy yielded 1,310,000-1,743,000. Over the three years of post-policy observed, the rate of hospitalizations steadily climbed each year for both PPOs and HMOs (Chandra, et al. 2010).

The study also observed a pattern of patients cutting back with their intake of prescription drugs, specifically among those with chronic illness. Results showed that 40% of the decrease in use of prescription drugs occurred among drugs used in the treatment of chronic illness,

suggesting that the neglect of disease-specific drugs directly relates to increased hospitalization for chronically ill patients. The study uses these findings to support the concept that the sickest population of patients with chronic illnesses are very affected in terms of hospitalization by higher copayments for prescription drugs, and that those copayments thus do not offer much financial gain (Chandra, et al., 2010). Similar trends were observed in Quebec with the implementation of a 25% coinsurance rate for drugs, as chronically ill patients faced increased risk of hospitalization stemming from lower adherence to medication. The coinsurance increase was followed by an increase in copayment, putting patients with chronic illnesses like diabetes and heart failure at even more risk (Qingyue, et al., 2015).

Adverse Events

There have been associations drawn between cost sharing, specifically for prescription drugs, and adverse events such as emergency department visits. Given that the cost of medications is constantly rising, there have been debates about drug policy reform and how elderly and poor populations will be affected. A random sample was conducted in Quebec in 1996 of roughly 94,000 elderly participants and 55,000 patients receiving welfare medication, 32 months before and 17 months after the implementation of a policy involving coinsurance and deductible cost sharing. The study looked at the average amount of essential and nonessential drug used monthly, and how many adverse events occurred before vs after the policy was introduced. These events include not only ED visits, but also nursing home admission, hospitalization, and mortality (Tamblyn, 2001).

The introduction of the cost sharing policy negatively and significantly affected not only the use of drugs, but consequently the rate of adverse events as well, especially among vulnerable parts of the population. The use of essential drugs decreased in elderly populations by

about 9%, and in welfare recipients by about 14%. The rate of adverse events occurring, in direct association with the reduction in drug use, went up from 5.8 to 12.6% in elderly persons, and from 14.7 to 27.6% for welfare participants. ED visits associated with reduction in drug use went up by 14.2 per 10,000 people and 54.2 per 10,000 people in elderly and welfare participants, respectively. The reduction in less essential drugs was observed as 15.4% less in elderly participants and 22.39% in welfare recipients, but was not tied to an increase in ED visits or adverse events (Tamblyn, 2001).

Increases in prescription drug cost sharing in Canada also yielded a higher rate of adverse events, but the effect was again most observed among disadvantaged parts of the population. In 1996, a 25% coinsurance rate decreased the use of essential drugs by 9.12% among elderly patients and 14.42% in welfare patients. The rate of serious adverse events associated with reduced utilization of essential drugs was affected, as the control cohort had 5.8 per 10,000 person/months and the cohort after the policy was implemented had 12.6. The standard cohort thus had an increase of 6.8 people, but among welfare recipients there was an increase of 12.9 patients (Qingyue, et al., 2015).

Service Availability

Beyond affecting patient behaviors and patient outcomes, certain levels of cost sharing can also affect the availability of different services. A study conducted in the Netherlands looked at data between 2010-2012 to identify how mental health was being utilized in different cost sharing situations. To decrease increasing costs in mental healthcare, the Dutch national government significantly increased the out-of-pocket expenses for adult mental health services on the first day of 2012. The costs were increased by up to 200 euros annually for outpatient mental health services and 150 euros/month for inpatient services. The study looked at over 2.7

million treatment records over the two year period, and the data was collected from 110 mental healthcare organizations in the Netherlands.

Results from this study indicated that there was an abrupt change in utilization of mental health services upon the increase of out-of-pocket prices (Herzlinger and Parsa-Parsi, 2004). There was a 13.4% decrease per day in the number of open mental health care records after the start of 2012. This decrease pertains directly to both mild and severe disorders, and both high income and low income communities. Involuntary commitment rates also significantly increased after this increase in cost sharing, as “daily record openings increased for involuntary commitment by 96.8% and for acute mental health care by 25.1%.” These findings were not held stagnant for how care was utilized among youth after the policy change, as the use of standard care only increased slightly and the use of acute/involuntary care only decreased slightly. This can be attributed to the fact that the increase in out-of-pocket payments applied to adults regardless of specific income levels, but did not apply to those below 17 years of age (Herzlinger and Parsa-Parsi, 2004).

In alignment with the results from drug cost sharing studies, this study also suggests that cost sharing can exacerbate healthcare inequalities (Herzlinger and Parsa-Parsi, 2004). By negatively affecting low-income patients and severely ill patients the most, these specific parts of the community are the most discouraged from seeking care (Ravesteijn, et al., 2017). In Switzerland, services provided with zero cost sharing, such as maternal care, had direct results on the ability for consumers to access care. In a study conducted on women ages 25 and older, the accessibility of care was measured across four categories of income class. The percentages for each category were relatively constant, with the lowest class (representing an income of 0-1851 USD) had a mammography usage rate of 36.4% and the highest class (income over 3458)

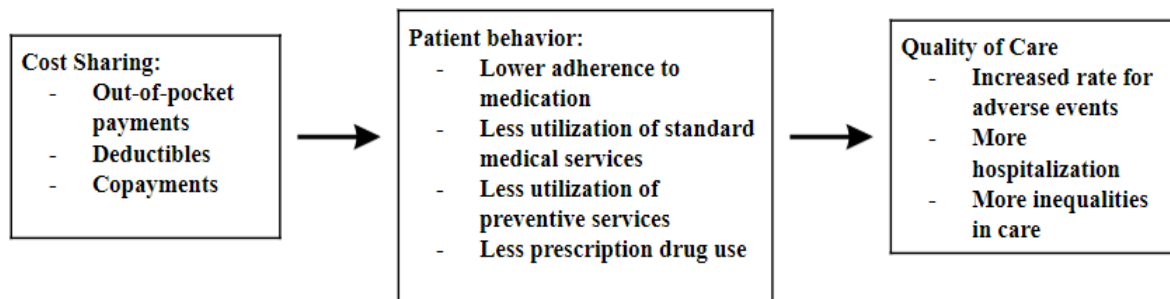
had a usage rate of 38%. The highest usage rate was seen in the second highest class, representing an income level between 2,466 and 3,457 USD, of 39.5% of patients in this category using mammography services, and this can be related to the fact that this category makes up the highest percentage (30.6%) of the female population in Switzerland (Herzlinger and Parsa-Parsi, 2004).

While the reform in cost sharing in the Netherlands was estimated to have saved over 13 million euros, the additional costs incurred from acute mental health care and dramatic increases in involuntary commitment was estimated to exceed savings by over 25 million euros (Ravesteijn, et al., 2017). Though the original reform in out-of-pocket expenses was set to not apply to involuntary commitment or acute mental healthcare, there were significant secondary effects on both areas. The policy in place essentially enabled the progression of mental health conditions by establishing higher out-of-pocket payments and making mental health services less accessible (Ravesteijn, et al., 2017).

The notion that cost sharing structures has the largest effect on specialty services is also prevalent in other countries such as France. Under their Statutory Health Insurance model, France established a plan in 2000 to target the non-elderly poor group, which represented the poorest 10% of the country's population (Qingyue, et al., 2015). This plan established free complementary health insurance in which physicians, as well as specialty providers such as opticians and dentists, had to treat all patient beneficiaries. Relatively small but positive effects of the plan were observed with regards to the probability of utilizing any healthcare, representing 3.2 percentage points, but the most significant increase of over 15 percentage points occurred in the probability of utilizing specialist care. According to the assessment by Grignon, the effect of fully eliminating cost-sharing and transitioning to a free plan had smaller, almost significant

effects in other areas of utilization such as prescription drug use, but the most dramatic change was in how patients accessed specialty providers (Qingyue, et al., 2015).

This pattern is also visible in countries with not only Statutory Health Insurance like France, but also in countries with more socialized approaches to medicine, such as the U.K with the National Health Service model (Schoen, 2010). The dangers that lie in providing a large range of services to the public with little to no cost sharing, is the detrimental effects this structure can have on the availability of specific services. For example, residents in the U.K. reported that 70% of the people in the study received care either the day they needed it, or the following day. While this seems like great access to care, 19% waited two months or longer to see a specialist. Thus, it can be drawn that sometimes high coverage of care involves sacrificing access to certain services such as specialty services (Schoen, 2010).



Health Coverage Model	Country	Cost sharing structure	Patient behavior	Availability of services	Health outcomes
Social Health Insurance	Switzerland	Deductibles for mandatory basic health insurance, 10% copay for cost exceeding deductibles, some preventative/ specified services free	Decreased primary physician appointments for patients with deductibles that fell above minimum level	Maternity Care provided with zero cost sharing, no copayments for children/ young adults in school (<25 years old)	3.8 per 100,000 rate of Maternal mortality, in comparison to 26 in the U.S., infant mortality rate 4.6/1000 live births, while it is 5.9 in U.S.
Statutory Health Insurance	Netherlands	increased the out-of-pocket expenses for adult mental health services, up to 200 euros annually for outpatient mental health services and 150 euros/month for inpatient services	Immediate decrease in number of open mental health care records	n/a	Increase in involuntary commitments and use of acute care
	Germany	Fixed deductible of 20 euros/ visit	23.5% less GP and 42% less specialist consultations	No change in number of providers	n/a
	France	Free complimentary health insurance plan, no out-of-pocket payments	15% increase in use of specialty services, little significant increase in other services	Physicians, opticians, and dentists required to accept all patients under plan	n/a
National Health Service	Sweden	Universal coverage, little out of pocket spending, 97%	High utilization of prescription	Large prevalence of primary care visits	n/a

		of out of pocket spending used for drugs	drugs among elderly (78%)	related to multiple drug use	
	UK	Universal coverage system, little out of pocket spending	70% saw doctor last time they needed care within 0-2 days	Long wait times for specialty care, 19% waited 2 months or more to see specialist	Low five year cancer survival rate
National Health Insurance	Canada	Mandatory cost sharing for drug insurance program in Quebec and British Columbia	Reduced Consumption of essential drugs	Increase in out-of-pocket payments for rheumatoid arthritis patients in BC	Increase in adverse events such as long term care needs, acute hospitalization, and death

Discussion

The way the structure of healthcare systems affects the utilization of certain medical services can be seen in communities within the United States, especially through a population health lens. The frequency with which preventative services are sought or taken advantage of often correlates with the socioeconomic status of the specific patient and the level of healthcare coverage they receive. Insurance companies are notorious for only covering services that are seen as more urgent or more important, leaving gaps in coverage that cause patients to go without certain types of care. For those completely uninsured, they may go years without seeking needed medical treatment because of the financial stress of paying out-of-pocket.

Services that Fall Through the Cracks

Models with high levels of cost sharing enlarge healthcare inequalities by making services accessible to people depending on their income level, location, and job security. Given the way in which healthcare is structured in the United States, people of lower socioeconomic status struggle to access specific services such as chronic illness management, dental services, mental health services, and eye care.

In Boone, North Carolina, the high volume of residents who are homeless, food insecure, unemployed, or living below the poverty line, leave the community with a large number of people uninsured and completely reliant on safety net providers (Bottomley, 2018). One of the primary safety net providers in the area is the Community Care Clinic, a completely free clinic that accepts only patients who are uninsured. Of the patients they treat, 45% are between 46 and 64 years old, and 40% are between 27 and 45 years old. Roughly 49% of these patients are unemployed, and 71% fall below the national poverty level (Bottomley, 2018).

The services of the Community Care Clinic are mostly centered on the management of chronic illness. The most common diagnoses they address include diabetes, hypertension, COPD, and chronic pain. The services they offer range from evaluating A1C levels for diabetes patients and evaluating heart health and blood pressure for hypertension, to urine and blood exams for diabetes patients. In an interview with the Executive Director of the Community Care Clinic, Lisa Bottomley (Bottomley, 2018), she shared that patients will forgo medical services because they are uninsured for extended periods of time and that when they eventually learn of the clinic and come in for treatment, their condition has most often progressed significantly. That leaves the clinic with the task of evaluating the patient's health, managing the condition through creating a care plan, and establishing follow-up appointments if needed (Bottomley, 2018).

Safety net providers are tasked with giving the needed medical services for uninsured residents, and many of these services are consistent with the services that insured residents also struggle to have covered. For example, in addition to patients with chronic illnesses, the clinic receives a large volume of mental health patients, with the majority being seen for substance abuse, depression, anxiety, and trauma. A large reason for why mental health services are one of the first that patients stop seeking when under financial stress is the cost of care, which could also be the reason many insurers are likely to exclude it from coverage plans. The same logic applies to specialty services, in that it can be difficult for organizations like the Community Care Clinic to afford to pay a typical specialist salary. This can be seen in how the clinic is structured, with one full time provider, two mental health therapists, and two medical assistants to support providers. The clinic's ability to provide specialty services is fully reliant on the medical professionals who volunteer their time, such as an orthopedic doctor and neurologist who come in every week or every other week (Bottomley, 2018).

Another example of specialty services that are inaccessible to large portions of the community include dental and vision services. The Community Care Clinic is unable to offer these services at their own location, but they have partnered with dental offices and eye doctors in Boone to refer patients to. They do however have a limited number of referrals they can provide due to budgetary restrictions (Bottomley, 2018).

Because of these restrictions, the Community Care Clinic gives diabetic patients priority to see the eye doctor, because by the time many diabetic patients are seen, their condition has advanced to the point of affecting their vision. This relates back to the notion of patients not seeking medical care because they cannot afford it, and this being an even bigger detriment to their health than their inability to pay (Bottomley, 2018).

With dental care being viewed as a medical service that is less important or less urgent, oral health is largely at risk. This holds true for both insured and uninsured people. Hannah Parkhurst (Parkhurst, 2018), who works at the Health Department in Boone, revealed the overwhelming demand for dental services the department is constantly facing. She shared anecdotes about hearing the dental director at the department report being booked months into the future. The Health Department serves both uninsured patients and patients with some coverage, yet they face the same issues in providing enough specialty care to the public (Parkhurst, 2018).

Issues with providing specialty care services to uninsured people, or people of lower socioeconomic status, is also very prevalent in urban settings. The Men's Shelter of Charlotte, located in Charlotte, North Carolina, provides emergency shelter, income, housing, employment, and medical services to men in the community. In an interview with the Director of Shelter Services, Stephanie Shatto (Shatto, 2018), Ms. Shatto revealed that the services they struggle to help men access the most are eye care and dental care. This is especially an issue for those who do not have an income, which makes up about 60% of the people they see (Shatto, 2018).

In order to combat the issue of specialty services being inaccessible to the community, many safety net providers in the U.S. have to make use of partnerships with outside organizations. The Men's Shelter of Charlotte has to partner with external providers, such as Caring, where they can connect patients to various specialists. Eye care is again a large issue in that the shelter struggles to get patients the prescription glasses they need when they cannot pay for them. The shelter partners with Lions Eye Club, but they have an extremely long waiting list. Because of a grant from the county, a nurse is able to provide primary care services at the shelter for patients with conditions such as diabetes. For Caring, the shelter has to pay a copayment of

\$30 per referred patient to guarantee them services for the next year, which leaves little funding for other types of care (Shatto, 2018).

As shown through the current research, cost sharing structures also make it difficult for patients to access the medication they need. Ms. Shatto shared frustrating scenarios in which patients do not follow up with their treatment and medication because of the cost and accessibility of the medication, especially in terms of mental health. The Shelter has a partnership with Anuvia as well, which helps people pay for psychotropic and behavioral health medication (Shatto, 2018).

The way in which healthcare coverage is structured leaves shelters like the Men's Shelter of Charlotte without a way to provide more than primary care and reliant on partnerships to fill these gaps, and leaves many patients backed into a corner in terms of accessing services. At the Men's Shelter, patients qualify for services if they are uninsured, covered by Medicare/Medicaid, make below a certain income, or have homeless verification (Shatto, 2018).

The coverage model in the U.S. thus leaves the people who do not fit into these categories in a bind. Ms. Shatto mentioned that many patients would like to seek care at the shelter, but are not qualified because they have an income. While they are not unemployed, they often can't afford to pay for services out of pocket because they need the money to cover rent and food for the month. Of the people with an income who still qualify for free services, some do not come in because they cannot afford to take a day off of work and give up that part of their paycheck. The age distribution of patients at the shelter is concentrated among young people ages 18-24 and older people ages 50-65. Many of the younger patients are coming out of foster care, or just kicked out of their home and living on their own for the first time; many of the older patients are there because they are waiting on disability benefits to kick in. Essentially, the cost

sharing structures that exist leave holes that even safety net providers cannot fully account for (Shatto, 2018).

Social Determinants

These issues in providing needed services to the public is only exacerbated by the context of the community. A community like Boone, located in a highly impoverished and rural setting, especially struggles in this area. In a conversation with Appalachian professor and public health researcher, Dr. Hege (Hege, 2018), he describes Boone as a “double disparity” in which there is both a lack of resources and a lack of capacity. There are several non-monetary reasons that patients may go without needed medical services, such as lack of geographic access to services, distrust of the medical community, or lack of health literacy (Hege, 2018). When asked about the reasons people in the community don’t seek the care they need, Ms. Bottomley related such patient behavior to cost as well as culture (Bottomley, 2018).

Ms. Parkhurst at the Health Department shared the threat to oral health in the Boone community within the context of both access to care and health literacy. When asked about what the department is doing in terms of addressing the issue of oral health, she spoke about the educational outreach with women’s care and how important it is to bridge gaps in health education. Oral care is at risk during pregnancy for various reasons, and there are even studies that the oral health of an expectant mother can predict the oral health of her baby. Given that many women in the region are not educated about contraceptives, and are not looking to get pregnant or looking for any changes in their body, can go months without realizing they are pregnant. When they do find out they are pregnant, many do not know the link between pregnancy and dental health, and do not seek those services (Parkhurst, 2018).

The issue of health literacy is especially pertinent among women who unexpectedly become pregnant because many are food insecure, smoke, or have other behaviors that could negatively affect the health of themselves and their child. Ms. Parkhurst spoke about the dangers of health literacy not only in terms of pregnant women behaving in a certain way because they do not realize their pregnant, but also because they do not realize the services even available to them. Many in the Boone area believe that the only place to receive prenatal care is the hospital or women's care offices, when it is also a service provided for free by the health department, depending on what coverage you already receive (Parkhurst, 2018).

Health literacy also play a role in terms of patients understanding how to take control of their care. In Boone, the presence of communicable diseases that could be prevented with vaccines occurs from time to time, and alludes to the idea that community members are not getting the prevention treatments they should have been getting years ago. An example of this is vaccines, as diseases such as hepatitis and whooping cough have been identified in Boone in recent history (Hegge, 2018).

Another social determinant of care is geographic location (Shatto, 2018). Given that the Boone region is so spread out, many residents do not have access to the transportation to places that offer certain services, so they go without them. This issue of transportation is also prevalent in urban settings as well. In an interview with Stephanie Shatto (Shatto, 2018), the Director of Shelter Services at the Men's Shelter of Charlotte, NC, she spoke about the tendency for uninsured people to seek care at emergency rooms because it is on the bus route and more accessible to them (Shatto, 2018).

Culture is a strong social determinant of health as well. The stigmas around receiving care for mental health threaten the dignity and pride that many residents in Boone strongly hold.

From a larger perspective, mental health is also viewed as either not as urgent a condition to treat, or as a condition to treat once it has evolved into a diagnosis. Dr. Hege shared his views on the issue stating that mental health needs to be considered preventive care, a perspective that is unique for the States, but not for other countries.

Denmark has been able to change their approach to mental health care by treating it like a preventive service, but also establishing local mental health services in order to make care more accessible. The Danish Health and Medicines Authority National Strategy for Psychiatry highlights the missions behind these changes in policy, which include making mental illness less stigmatized, making emergency mental healthcare more available, and sufficient services to meet patient need. A municipality reform took place in Denmark in 2007, essentially swapping institutional psychology for localized care that would be the responsibility of each individual municipality. These responsibilities were not only to make sure enough services were available to address the demand, but that the services had a diverse range and that the services were well coordinated across sectors.

There is also a great distrust between community members in rural parts of the U.S. and providers that keeps them from reaching out when initially getting sick. A strained relationship is created between provider and patients when frustrations develop of either end. Ms. Parkhurst elaborated on how providers in Boone feel frustrated when patients do not follow care plans or take medication appropriately, and patients feel as though providers are talking down to them, and thus don't ask questions or for clarification. The lack of cultural competency on the providers end as well as the mindset of patients, both create a disconnect that feeds into patient behavior.

Culture of Healthcare

The idea that culture has a strong hold over the accessibility and quality of care extends past a community scale to a national scale. In comparison to other countries in the world, the United States has an individualistic mindset when it comes to providing and receiving medical services, leaving us with a sick care system, rather than a healthcare system.

The effects of our culture on the health of the public can be observed through looking at social policy. In the interview with Dr. Hege, he spoke on the differences between other healthcare systems and the system in the United States, saying that other systems have a greater focus on community. There is a willingness to pay more taxes in order to provide a standardized level of care for all, as well as a specific focus on primary prevention that lack in the U.S. These efforts towards socialized medicine and improving health levels community-wide is rooted through the focus on public health and equality (Hege, 2018).

While the United States utilizes safety net providers in order to help make up for the imbalance in how care is distributed to different parts of the population, other systems in the world utilize social policies to avoid the imbalance altogether. Communities within the U.S. struggle in rural settings because the low population density creates a smaller demand for care, so services are not frequently offered and patients do not frequently seek preventive services before becoming sick. This could also be a cause of lower educational attainment.

The combination of these factors has changed the role of public health agencies. Public health departments were initially meant to focus on wellness, prevention, and primary care, but instead are sources for secondary and tertiary care. For example, in Boone, the double disparity of lack of resources and lack of capacity forces the health department to provide medical services directly as a federally qualified health center.

The individualistic culture surrounding healthcare in the U.S. also makes it difficult to standardize care. It can be difficult to incentivize doctors to work in rural communities because of the low demand and different quality of life, especially when many of the organizations in rural areas are unable to offer competitive salaries. This culture has shifted in some ways, as some states have used social policy to change their approach to providing care. The most obvious change is the decision to expand Medicaid coverage, but there are also other initiatives taken to improve quality of life and better care for lower income people.

Many of the social policies implemented on a state level have effects on health, but are not necessarily health related. In these situations, decision makers have considered social determinants of health such as housing, food insecurity, and job availability, and their implications. Focus on childcare and child development services, better housing policies, more parks and outdoor spaces to encourage healthy and active lifestyle, and access to healthy foods through farmers markets, are just some of the ways in which states like Washington and California have used social policy to address public health issues (Hege, 2017). By changing the culture around healthcare and viewing it from a public health lens rather than a business lens, communities across the country can make their approach to bettering population health more comprehensive and inclusive for people of diverse backgrounds.

Looking Forward

When considering how to use cost sharing to address healthcare inequity yet avoid over-utilization, it is crucial that policy makers consider the sub-groups of the population and how they will individually react to changes in coverage. Factors such as health level, income level, and level of financial risk associated with the policy need to be considered for not simply the

whole population, but the individual demographics that make up that population. This is especially important when considering larger countries or countries with diverse populations.

For example, Quebec changed the cost sharing structures of their drug plan and welfare recipients were more affected by the change than the general elderly population. The plan established a coinsurance rate of 25% with a \$200 cap per year (Qingyue, et al., 2015). Significant differences occurred between how welfare recipients and elderly people reacted to the change across different types of services. The utilization of prescription drug use reduced 15.94% for welfare recipients, and 9.14% for elderly people, visits to the emergency department spiked 54.2 and 14.2 people per 10,000 for welfare and elderly people, respectively. British Columbia also implemented a mandatory drug insurance program to target the elderly population. The British Columbia policy, while structured with additional copayments and deductibles not a part of the Quebec policy, also affected individual sub-populations differently. Small changes were observed in the amount of prescriptions filled and doctors' appointments that occurred between the general population and poor population of elderly patients with rheumatoid arthritis. There were, however, large changes in the level of financial risk faced by the elderly, as elderly patients with rheumatoid arthritis experienced out of pocket payments that increased from C\$119.5 to C\$229.8 (Qingyue, et al., 2015).

With a well-developed understanding of how specific parts of the population will respond to changes in healthcare policy, policy makers should create policies that involve less cost sharing for patients that are at-risk for disease and of low income, and higher cost sharing levels for patients who are low-risk for disease and of higher income. This structuring of coverage plans would help promote better health as at-risk patients are more encouraged to be proactive

with their health and take advantage of preventative and outpatient services, comply with health plans, adhere to medication, and adopt healthier behaviors.

The overutilization of services can also be avoided as patients who are low-risk for disease will not have the need to utilize medical services, nor the desire to when faced with a copayment, deductible, or coinsurance rate (Qingyue, et al., 2015). If they are in need of the service, their income level allows them to seek care without facing high financial risk. As mentioned in previous studies, cost sharing is likely to affect patients of all income levels, but significant decreases in utilization of care is most often noticed among poorer parts of the population. Among other parts of the population, cost sharing does not affect patient behavior to the same degree, especially in terms of general practitioner services and prescription drug use (Qingyue, et al., 2015).

Cost sharing should also vary according to the service depending on how sensitive the service is to changes in copayment. As mentioned previously, the RAND experiment revealed that specialty services such as mental health and dental care were more likely to be affected by a change in cost sharing than inpatient or outpatient care (Baicker and Goldman, 2011). This could, however, be because insurance companies typically already cover inpatient and outpatient services more than specialty services, and because dental/mental health care is viewed as non-emergent and less important. Given that preventative services and specialty services are able to control future costs by preventing the progression of medical condition, and thus expensive services like hospitalization, involuntary commitment, etc., cost sharing should be structured so that these services are encouraged. Countries that currently have policies structured towards promoting preventive services include Statutory Health Insurance countries such as Germany and the Netherlands.

As there are several other non-monetary factors that affect patient behavior and utilization of services, changes in cost-sharing policies should be strategically coupled with social policies that will help target the same, at-risk parts of the population to create a more holistic approach to health. These social policies could involve education in schools about healthy behaviors, implementation of farmers markets in specific food insecure parts of the community to promote access to healthy meals, creating parks to encourage an active lifestyle, etc. Social policy could also target the struggles faced by lower income parts of the population, such as transportation. Public transportation routes could be altered so that patients could access not only hospitals but also facilities that provide outpatient services, specialty providers, health departments, and safety net providers.

In the author's view, the ideal utopia society for how health coverage is structured involves equal sharing of effort to receive care across all socio-economic groups. The effort to obtain needed medical care can be defined differently depending on individual circumstances. For instance, for low-income individuals, the struggle to receive care should lie in non-monetary factors of access, such as finding transportation, improving health literacy, finding a way to maintain treatment plans, etc. For high-income people, the effort to access care would lie in paying more in coinsurance, deductibles, copayments, or premiums. Essentially, cost sharing in this utopia would not affect patient behavior as it relates to how individuals seek care and continue treatment, the quality of care they receive, and their overall level of health.

Future Research and Limitations

In order to accurately understand how a policy will affect different parts of the population, more research needs to be conducted on changes in level of financial risk faced by patients of different health levels, ages, income levels, etc. that will occur if certain services or

drugs are made more or less accessible. As previously mentioned, some changes in cost sharing policy did not yield significant change in patient behavior, but did yield significant change in financial burden faced by certain demographics. Research is needed to better understand the effects of cost sharing on a smaller and more targeted level.

While the United States is very unique in its size, population density, diversity, and politics, and thus difficult to compare to other countries, it is important that policy makers look to the successes and struggles of other healthcare systems around the world in order to make appropriate decisions regarding our own coverage model. If the U.S. is not looking to other nations to learn from their structures, and are instead only looking within our own country for guidance, then we will remain stagnant in our struggle to make care equitable, affordable, and efficient. The political nature of our healthcare system has created a divide in our nation between people who are and are not keen to the idea of expanding coverage, and this has led to a major debate about care. Many other countries are keen on the idea of expanding their coverage to be more inclusive of other residents, and this can be related back to a strong sense of nationalism. Individuals like the idea that all of the residents in their country have access to care. In the U.S., however, our sense of individualism and work ethic is ingrained in our culture (Spence, 1985). Instead of healthcare being seen as a human right, many view it as something to individually work to achieve. Because of this success oriented mindset, that can be traced back all the way to Protestant heritage (Spence, 1985), many American individuals are less concerned with how coverage is structured to support social groups they do not identify with.

As shown in the studies mentioned, not all medical services and drugs have the same level of elasticity. Further research is needed in order to determine how changes in cost sharing for specific services, including preventative and specialty services, as well as for specific drugs,

will affect patient behavior. Biases with this work include the belief that all people across social groups have a right to, and an equal chance at, receiving care, which is not a view shared by all. This work was written with that perspective in mind.

Policy makers need to develop an accurate understanding of what types of care are being currently utilized the most, which services are in most demand, and which services should be utilized more by certain types of patients according to clinical guidelines. There should be a focus on understanding how to meet the needs of the community, while encouraging the use of preventative services and management of chronic illness to keep illnesses from progressing and thus contain future costs, and promote a proactive approach to care to improve health.

Conclusion

The relationship between cost sharing and access and quality was analyzed according to effects on patient behavior; the utilization of general, preventative, and specialty services; the financial accessibility of different services and the health outcomes of the population. Increases in cost sharing generally negatively influences these different areas of care, but effects certain parts of the population more than others depending on factors such as income level, health status, geographic location, culture, and socio-economic standing. Cost sharing has the ability to exacerbate inequities in healthcare if structured in a way that targets vulnerable groups, but also holds the potential to provide more inclusive and standardized care, encourage healthier lifestyle, and balance risk of overconsumption.

There are many different perspectives held about the elasticity of care and how much influence coverage plans really have on whether or not the general population will seek care, but research indicates that the conversation and optimal policies should have an individualized focus.

Policy makers need to consider what specific services, medications, and healthcare behaviors patient are willing to forgo when faced with financial pressure, and how they can structure cost sharing so that patients seek care in the most appropriate yet cost-effective way.

Effects of cost sharing on patient behavior included poorer medication adherence, smaller consumption of prescription drugs, and less utilization of medical services especially with prevention services, specialty services, and chronic illness treatment. This work suggests that changes in patient behavior have secondary effects on the health of the population, as increased cost sharing is linked to higher rates of hospitalization, emergency department visits, and even mortality rates.

In order to use cost sharing to eliminate such disparities in healthcare, there needs to be an analysis of what services are in highest demand and what drugs patients are most reliant on, in order to predict what reactions will results from specific changes in coverage for specific medications and services. There also needs to be a population analysis that identifies what groups are at the highest risk for disease as well as well as at the poorest level of accessing services, whether it be based on their income, location, etc. Given that cost sharing changes have the most negative and significant effects on patients that are at-risk for disease and of lower income, and will thus forgo treatment and services because of their inability to pay, the cost sharing plan should have lower rates for these groups. In addition to addressing inequities in care, this structure is also justified under the notion that these at-risk groups will have the need to access these services more than other social groups.

In the author's view, the policies and cost structures in this work could lead to a better balance in effort to obtain care across different social boundaries. While the concept is controversial, higher cost sharing for higher income parts of the population that are at lower risk

for disease will help to offset costs and prevent overconsumption of services. If population analyses and structuring of cost sharing is done accurately and appropriately, the groups subject to higher cost sharing will possess a lower need to access the specific medication and services since they have higher health levels. If they do need to seek these services, research has shown that cost sharing increases have slightly negative but non-significant parts on these more privileged parts of the population, and that they will likely access these services regardless. One issue to recognize with higher cost sharing for higher income groups is how insurance providers may abuse this model and vastly overcharge high income individuals knowing that they will be forced to pay in order to receive care. This manipulation of the system suggests that higher federal level government structures and policies are needed to oversee how coverage is provided and prevent such inequities.

Another consideration that policy makers should look into is how they will ensure that all of the community's medical needs are being met. Beyond just population analyses of health conditions, there needs to be a shift in how healthcare quality is monitored and ensured by government structures. Studies have shown that certain geographic groups within a country, such as the different provinces in Canada, have had varying reactions to changes in cost sharing policies. This is often because of factors such as age distribution, income level, and reliance on the service or drug with higher cost sharing. Countries that have more localized forms of care have allowed smaller levels of leadership, such as municipalities, cantons, and community health boards, to take individual responsibility of meeting the demand of a smaller region and ensuring quality of services. This allows for a more focused approach to providing care for different parts of the population that have different income distributions, health conditions, geographic location, and thus different medical needs.

Lastly, the structuring of cost sharing with a focus on vulnerable parts of the population should be coupled with social policies that target those same groups. By having multiple approaches to improving health in a specified area, higher levels of health are encouraged in a more holistic way. Changes in utilization of services due to increased affordability and accessibility will promote a healthier population, but implementing social structures that encourage patients to adopt health behaviors can help make these changes in their health more sustainable over time. The implementation of social policies, which could include more no-smoking areas, better health education, increased job opportunities, better housing policies, etc., allows decision makers to recognize the effects of non-monetary factors on one's health, and address these factors in a specified manner.

When the approach to cost sharing and improving population health shift and focus on how vulnerable groups are impacted, how cost sharing can be structured to manage risk, and how a preventive and comprehensive approach to care can have long term impacts on the community, then policy makers can start to address gaps in coverage and inequalities in our current systems.

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