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MERCATUS GRADUATE POLICY ESSAY

TELEMEDICINE: INNOVATION, COMPETITION, DEVELOPMENT, AND THE LEGAL SYSTEM

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Abstract
This policy essay examines telemedicine's current risks, its potential growth, and its role in the health care marketplace. Telemedicine is currently rising in popularity as patients use the convenience of the Internet and its ability to expand the supply of doctors available to patients. Telemedicine is being used mainly as an alternative to "walk in" primary care, although some specialist care is possible. Due to the inherent risks that accompany treating patients over this platform, several state policymakers are rushing to make laws to restrain or slow the implementation of this technology. To explore what institutions and remedies must be implemented in order for this valuable technology to grow, this paper examines current and proposed laws for medical practices; laws and regulations that exist in industries battling similar risks and issues; academic papers examining the practice of and market for telemedicine; and recent articles highlighting the breakthroughs in medicine, mobile technology, and medical-practice platforms.

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I. Introduction

In recent years, the United States health care system has been the subject of much debate. There are quickly rising health expenditures, considerable inefficiency in almost all corners of health care, and problems with access to care. Many politicians, citizen groups, and industry stakeholders have laid out overarching goals they would like to see the health system achieve. The main issue lies in how to implement reform and achieve those goals.[i] New medical technologies are continuously being developed and utilized and have already begun to achieve many of the health care goals often put forth by citizen groups, politicians, doctors, and patients. Telemedicine—the "remote diagnosis and treatment of patients by means of telecommunications technology"—is one such innovative development.[ii]

While doctors, patients, and patients' families are seeing growing benefits from telemedicine, there are medical risks inherent in the industry, risks to industry growth, and ambiguous legal treatment among various states. Many policymakers have recognized this; consequently, many are rushing to make laws to restrain and slow the implementation of this technology.

This paper will discuss the general goals of a good health care system, explain how telemedicine can help meet those goals, and highlight how telemedicine is currently being used. It will also outline some of the concerns about telemedicine and consider how they can be solved or mitigated. Finally, it will discuss the possible future of telemedicine; examine the current and proposed laws, regulations, and barriers to competition affecting the industry; and propose options for addressing the risks while allowing certain goals to be met.

II. Goals of US Health Reform

Before making laws, proposing regulations, and intervening in an industry, policymakers must outline the general long-run goals that we hope to achieve. From there we can propose reforms and changes, analyze how each will likely affect these long-run goals, and move forward with those policies that best achieve these goals. Politicians, citizen groups, and bureaucrats have issued public statements outlining many goals for the health care industry, including increasing quality,[iii] decreasing costs,[iv] improving access to care, improving efficiency of care, preventing chronic disease, and improving overall public health.[v] It should be kept in mind though, that these goals are not always consistent with one another, and tradeoffs may be necessary.

III. How Telemedicine Helps Meet Health Reform Goals

Telemedicine allows patients and doctors to interact using phone, email or other forms of telecommunication.[vi] In most cases patients and doctors connect with each other over the Internet using an email or "video chat" service.[vii] This generally requires both parties to have access to an Internet connection, a computer or mobile device capable of transmitting (patient) or receiving (doctor) video, photos, and voice, and a third-party application for connecting the two. However, the industry is rapidly changing due to constant improvements and developments in technology, which continue to allow for more advanced care.

Most doctors who use telemedicine are general practitioners or family physicians, though some doctors practicing dermatology, psychology, remote patient monitoring, and other more specialized forms of care are also using this technology.[viii] Some medical practices use the "store and forward" model.[ix] This model entails gathering and storing patient data, such as an x-ray, blood panel, or MRI, and forwarding it to a medical professional in a different location for

analysis.[x] In turn, the remote professional analyzes the information and responds, giving the requested interpretation or diagnosis. Most of the early adopters of this technology were small practices or solo practitioners. However, many "network providers" have recently begun to add telemedicine to their list of services.[xi]

While a variety of people can benefit from telemedicine, it is especially useful for those in rural or underserved areas, those who do not have the time required to see a medical professional, and low-income patients—many of whom use emergency-room visits for primary care. It is difficult to pinpoint statistics on the consumers of telemedicine, as the field is relatively new, but the current numbers look promising. A study by Towers Watson estimates that the percentage of employers offering telemedicine consultations through their employee health care plan will increase 68 percent by the end of 2015; jumping from 22 percent of employers in 2014 to 37 percent of employers in 2015.[xii] An international consulting firm, IHS, has published a study suggesting that under current circumstances, the number of consumers using telemedicine services will grow to 7 million by 2018, up from 350,000 in 2013.[xiii]

Costs for telemedicine can vary; in some cases patients receive the services at no extra cost as part of their care with a hospital, doctor, or network.[xiv] In other cases patients with a minor illness can be connected to a physician with whom they may not have had previous interaction for as little as $40 total (without insurance) for 15 minutes (which usually covers the entire visit).[xv] Remote patient monitoring costs can vary based on the physical technology that must be acquired as well as the doctor's fees for the service.[xvi]

There are many real-world examples of telemedicine in action. Parents whose children wake up sick in the middle of the night no longer need to debate whether or not a trip to an urgent care facility is needed. A video chat with a physician from the comfort of home can

diagnose the issue or suggest the parent seek more serious care. A rancher who comes down with an illness while 50 miles away from a physician's office can immediately seek a doctor's advice. In fact, with the latest in monitoring technology, patients who have just undergone cardiac surgery can wear a Bluetooth monitor connected to a smartphone, which constantly sends reports on cardiac performance to the patient's doctor.[xvii] The doctor can be the first to contact them if there is an issue.

In one case that illustrates the benefits of telemedicine, melanoma survivor Brenda Keagy didn't have to wait two months for a dermatologist appointment to ask about a discolored area she discovered on her skin. A quick high-definition picture emailed from her smartphone and a subsequent video consultation let her know that "everything looked good" and there was no need to come in for further analysis and testing.[xviii]

Overall, telemedicine helps achieve some of the major goals set forth by citizens, politicians, bureaucrats, and other stakeholders. In a world where there is limited access to physicians, telemedicine can increase the supply of physicians to all patients regardless of location.[xix]

Telemedicine consultations do not require much overhead; this, combined with some amount of patient price realization (many of these services don't currently accept insurance),[xx] contributes to moderately low-cost care compared to many in-person alternatives. Patients also have to take less time out of their day, which means accessing medical care at a lower opportunity cost.[xxi] As the law of demand states, when the price of a good or service decreases, consumers demand more quantity of that good or service. This means greater utilization of care, greater patient involvement, and greater likelihood of preventing disease. As this technology improves, doctors will be able to more conveniently assist patients as well as diagnose and treat a

wider variety of medical issues through telemedicine. These innovations will lead to higher-quality care, earlier detection of diseases, and better public health.[xxii]

IV. Concerns Regarding Telemedicine (Calls for Intervention)

While these above goals and the progress toward them all sound like highly desirable things, critics of telemedicine have some concerns. The practice of telemedicine is in its infancy, and there are inherent risks that haven't yet been widely mitigated.

The most basic of the risks stems from current technological capacity. At present, most telemedicine consultations between doctors and patients are completed using very basic technologies, which consist of video, audio, text, and high-resolution photographs.[xxiii] In this setting, doctors must rely solely on what they see over the computer and on patient-reported information.[xxiv] For instance, doctors cannot take the patient's temperature, blood pressure, weight and height; they must instead ask the patient for this information. They cannot yet use their office tools to examine the patient's throat, ears, nose, and eyes, let alone feel for swollen lymph nodes, run strep tests, or complete basic blood tests. This can make diagnosing medical problems extremely difficult. Doctors must instead rely on how patients say their throat, ears, and sinuses "feel," the reported duration of the sickness, and the list of symptoms the patient provides.

Some critics, including medical professionals, believe that virtual consultation can be dangerous. As Dr. Humayun Chaudry points out, over a virtual visit, a doctor may miss a patient's minor tremor, one that could indicate possible early-stage Parkinson's disease. Or owing to low lighting in a patient's home, the doctor may miss a discolored lesion on the patient's face.[xxv] Such a misdiagnosis could be very harmful. Therefore, based on the

precautionary principle, some believe we should wait until technology can overcome this issue, or that we should mandate a certain number of in-person visits, or employ some other form of regulation.

Other critics argue that our society should be moving toward a model that focuses on the "long-term health" of patients and that in order to achieve this, patients should have consistent relationships with primary care physicians who have access to their medical history.[xxvi] Doctors can pick up on trends more easily under this long-term relationship model, which could mean understanding the "big picture" if a patient has recurrent illnesses of a certain type. This can lead to early diagnosis of disease, better long-term health outcomes, and better preventative care.[xxvii] While telemedicine could encourage relationships, some telemedicine platforms connect doctors with patients whom they have never worked with previously. Many critics of telemedicine stress that this violates their goal of long-term doctor-patient relationships.

Finally, the telemedicine platform can easily work across state and international lines. This brings up many questions regarding medical licensure,[xxviii] scope of practice,[xxix,xxx] legal liability,[xxxi] Medicare and Medicaid reimbursement,[xxxii] and other state law discrepancies. Can a doctor licensed in Florida treat a patient in Michigan without a Michigan medical license? Can a nurse practitioner in Virginia, who is allowed to see and treat patients on her own for certain illnesses, consult with patients in another state where nurse practitioners do not have that capability? Can nurses, who must practice under a doctor's observation, interact with patients if that doctor is not physically present but observing over a live audio and video feed? If some type of medical malpractice were to occur while the patient is in one state and the medical professional is in another, which state's laws apply? If Minnesota Medicaid reimburses doctors

at a certain rate for telemedicine consultations, but the doctor is located in California, where a different rate is used, which rate will the doctor be paid?

V. Addressing These Questions and Concerns

While these points are all valid concerns, upon further inspection I find that they can be overcome through the market process, regulatory reform, and outcome-based laws and regulation.

First, there are devices both on the market and currently in development that can be utilized in conjunction with the telemedicine platform to overcome issues with patient-reported data. There are medical devices that can measure a patient's temperature, blood-pressure, blood-sugar, and blood-oxygen levels, and pass that information through the patient's computer or mobile device to the physician.[xxxiii] There are now stethoscopes, otoscopes,[xxxiv] scales, ultrasound systems, eye-exam diagnostic tools, and EKG devices with this capability. There are even mobile devices currently under FDA review that can run disposable diagnostic tests for strep A, Influenza A and B, adenovirus, and RSV using only saliva or a prick of the finger. Some new devices can test urine for preeclampsia, gestational diabetes, kidney failure, and urinary tract infections. There are even ingestible biomedical sensors that monitor medication adherence.[xxxv]

At present these devices can range from a few hundred dollars to a few thousand dollars, but the prices will likely decrease as the industry grows to meet the demand. This is especially true because patients using telemedicine tend to internalize prices. Price cuts can also come from technological advances. There have been similar trends with blood-glucose monitors and testing, drug testing, and HIV/AIDS testing, which all at one point in history cost hundreds of dollars and now retail for 20 to 50 dollars.[xxxvi] We have also consistently seen these types of decreased prices

in similar arenas, such as cell phones and their accessories. In 1996, an extremely basic (only calls, text, vibration, and black and white screen) Motorola StarTAC retailed at about $1000, whereas a much more advanced Samsung EpicTouch (touch screen, GPS, Internet connection, email, calls, text, etc.) retails at $199 almost two decades later.[xxxvii] If innovation is left to continue, major cost-cutting progress in telemedicine could be seen in this next decade. We could have a world where for less than $100 each family can purchase their own basic kit of mobile-compatible tools. Or better yet, a telemedicine company could offer a rental kit accompanying the service, which could be delivered to your house via same-day mail—or via drone (the medical drone concept is currently being used in Africa and tested in Europe).[xxxviii] These tools could then be used to send information to physicians over the telemedicine platform for basic checkups, diagnoses of minor illnesses, and some types of diagnostic tests.

Under this scenario, patient-reported data would no longer be the sole information used to make a diagnosis, but rather would be just a small part of the consultation. Once such tools are available, doctors can draw a more reliable conclusion as to what illness the patient has. In addition, a telemedicine visit might lead to a doctor picking up a symptom that wouldn't have been caught at all if no medical consultation had occurred (because a patient's restricted time, lack of funds, distance from a medical facility, etc., prevented them from making an in-person visit).

Second, we must consider the need for long-term patient-doctor relationships. Telemedicine can be utilized in both instances. If a patient values, and has the ability to develop a long-term relationship with a doctor, they will seek it out. In some ways, telemedicine makes this an even more realistic undertaking, because patients can more easily access their primary care physician while traveling and even possibly keep their doctor when they move. This type of

care cuts back on patient waiting room time, makes it easier for doctors to transition between patients and appointments, and can allow doctors to schedule more patients each day, regardless of location.

However, we must realize that some patients do not and will not have these types of relationships for various reasons. This is not unique to telemedicine. And if we make regulations limiting or rejecting telemedicine on those grounds, that will lead to unintended consequences—such as patients seeking less medical care than they might otherwise. If patients embrace telemedicine, it can actually move them closer toward early diagnosis of disease, preventative care, and healthy living. For example, patients who do not, or cannot, have long-term relationships with doctors generally use walk-in clinics and emergency rooms for their primary care and minor illnesses. If they were instead able to utilize "one time" telemedicine, while they still may or may not foster a relationship with a doctor, they would be more likely to consistently use one application, network, or company. That application, company, or network must store the patient's information for six years according to federal HIPPA law[xxxix] and must also allow the patient to download and save their records for later use (if using an electronic health record).[xl] This makes it easier to access patient history if the patient were to use the same application again, but receive a different doctor.

Additionally, when patients are able to easily save or download their "one time" record, they will be more likely to provide that downloaded file to their new provider if they decide to switch applications, networks, or companies. Presently it may be onerous for a patient to call, email, or go to a previously used walk-in clinic, ask for a copy of their medical records, and provide those files to their new walk-in clinic. When using a mobile or desktop platform, sharing files with your new doctor is as easy as logging in to the old platform, downloading the files, and

uploading those files to the new doctor. Thus, telemedicine may actually hasten the adoption of electronic medical records.

Furthermore, allowing patients, who may not currently have a long-term relationship with a doctor, access to telemedicine will lead to lower costs in time and money for all parties involved. As explained above, people demand more services at lower prices; which means patients will likely consult doctors more frequently, advancing two of the overall goals: to lower medical costs and to increase patient access to health care.

Finally, in order to address the legal concerns mentioned above and outlined further below, states will have to reform current law and move toward more outcome-based regulation, if regulation is needed in some areas at all. Adam Thierer discusses this point in *Permissionless Innovation*.[xli] If a regulation is written in such a way that it defines a process, it hinders innovative ways of solving the problem the law hopes to address. If a law is necessary at all, it should instead define what the desired outcome should look like and let the market develop new processes to meet that outcome. Instead of centering laws simply on how medicine works today, we need to bear in mind the future of medicine. Telemedicine can develop into a variety of practice forms and transform the market for the medical industry if we allow it.

VI. Factors Preventing the Potential Future of Telemedicine

State-based regulations and laws, such as licensing laws, scope of practice limitations, legal liability, and Medicaid reimbursement are all factors that currently prevent telemedicine from reaching its full potential. Some other factors affecting telemedicine are federal law, including FDA regulation of mobile medical devices, Medicare reimbursement, and regulation of medical schools and educational techniques. In addition, industry insiders (for more information on the

incentives and influence of industry insiders, see Robert Graboyes's "Fortress and Frontier in American Health Care"[xlii]) would like to ensure that any changes to the industry, whether legal, technological, or economic, do not harm their methods, profits, and market share. In fact, as George Stigler points out, many insiders would like to see laws and regulations written to their advantage, which sometimes means erecting barriers to entry or barriers to competition.[xliii]

A. State Licensing

First, consider what may be the largest barrier to telemedicine: state licensing requirements. State licensing requirements act as a barrier to competition in the medical-service industry. In order to practice medicine in a state, one must have a medical license in that state. According to the American Medical Association, obtaining a subsequent medical license in another state can be a challenging process.[xliv] There are required examinations, training, education (initial and sometimes "continuing education" requirements), and fees. In an attempt to promote telemedicine, there are nine states (AL, LA, MT, NV, NM, OH, OR, TN, and TX) whose medical boards issue either telemedicine licenses or certificates for the out-of-state practice of virtual medicine.[xlv] Different states' laws vary in specifics, but generally, the "out-of-state telemedicine license" allows out-of-state doctors to consult with in-state patients under certain circumstances. The "telemedicine license" also is slightly different in each state, but generally allows for the practice of telemedicine by in-state doctors on in-state patients. The remainder of states have adopted a "wait and see" approach, leaving a bit of legal ambiguity. Many states have proposed laws and regulations regarding what actions doctors can and cannot take over telemedicine as well as requirements for reimbursement coverage and private insurance

coverage.[xlvi] In addition, the basic state requirements and licensed activities for medical professionals can vary.

In Texas, for example, guidance on the Texas Medical Board webpage explains that out-of-state telemedicine license holders are exclusively limited "to the interpretation of diagnostic testing and reporting of results to a Texas fully licensed physician practicing in Texas" and "for the follow up of patients where the majority of patient care was rendered in another state."[xlvii] Additionally, the holder of an "out-of-state telemedicine license is subject to the same rules, fees, and renewal requirements of a person holding a full Texas medical license."[xlviii] The application process, according to the website, takes an average of 51 days, but may vary based on the complexity of the application.

In Tennessee, one cannot prescribe medication over a telemedicine platform without performing an "appropriate history and physical examination" along with other specific performance requirements. This "history and physical examination" requirement does not need to be complied with if the physician is prescribing or dispensing drugs "in admission orders for a newly hospitalized patient, the patient of another physician for whom the prescriber is taking calls, the continuation of already prescribed medications on a short-term basis, and for established patients who, based on sound medical practices, the physician feels does not requires a new physical examination before issuing new prescriptions."[xlix] It is a violation for a physician to "prescribe or dispense medication to any individual the physician has never met based solely on answers to a set of questions regardless of whether the prescription is issued directly to the person, electronically over the Internet, or over telephone lines."[l]

There are other variations of these restrictions and requirements in each state's laws. These laws may have been written with the intent to keep patients "safe" from the risks of

diagnosing illness, advising action, or prescribing medication without all of the information usually found by doctors in person. However, these laws do not allow for flexibility and growth in the industry. If we limit the medical professionals' ability to make certain types of diagnoses and to utilize different therapies, we hinder this type of technology from growing. Due to the capital-intensive, time-intensive, and highly variant FDA process, medical device start-ups and new ventures are more likely to pursue projects that will be used in preexisting legal environments. If it is illegal to make diagnoses, prescribe medications, and order therapies over telemedicine consultation, then projects to further develop these mobile devices and diagnostics will not likely be undertaken, because investors generally shy away from (or must be additionally compensated for) projects that have legal risk.

Additionally, even simply mandating that a provider must apply for a license (medical or out-of-state telemedicine) in every individual state in which they would like to practice hinders competition. Mandating that physicians comply with each state's specific requirements, pay fees in each state, and consistently renew their licenses in each state imposes a high cost in time and money for a solo practitioner or small practice. Larger networks are more likely to have administrative staff that can consistently ensure compliance within each state. Therefore, these rules benefit large established and incumbent firms, institutions, and networks by reducing the competition that they face from smaller firms. This is what Salop and Scheffman refer to as "raising rivals' costs."[li] This sort of regulation also adds to overhead costs for all parties, which are eventually borne by the patient. While large practices will naturally have advantages over small practices due to economies of scale (and possibly scope), this disparity occurs naturally in the market; it should not be artificially furthered (or fostered) through the use of laws and

regulations. As shown next, state-by-state compliance can be made easier for solo-practitioners and small firms, thus leveling the playing field substantially.

For instance, consider how competition is hindered in Texas. As discussed above, according to laws governing telemedicine, one must always use a Texas provider for any type of medical diagnosis or treatment other than follow-up from a previous circumstance. This keeps medical providers in Texas insulated from competition with out-of-state providers. Texas citizens who could benefit from the lower consultation prices of a physician in another state are by law not allowed to engage in such a transaction.

Texas also insulates its providers from competition with one another over telemedicine. According to the Texas Medical Board website, patients may not be seen over a telemedicine platform at a nonmedical facility unless they have been physically examined before by the provider.[lii] The only exception to this is if the patient has been referred to the new consulting provider from a previous provider who saw the patient in person.[liii] In fact, there are even time and condition restrictions for providers who have physically examined patients before and are using telemedicine consultation for diagnosing and treating new illnesses and diseases.[liv] This again is an example of "raising rivals' costs." It is less likely that small firms will have colleagues in multiple states who could conduct in-person examinations on their behalf; and establishing such a network would come at a high cost. Meanwhile, larger networks and hospital groups are much more likely to already be able to comply with these regulations. This protects large, established insiders and hinders new, outside innovators; as Matthew Mitchell points out, this comes with large economic consequences.[lv]

While some argue that this mandated referral method promotes long-term patient-doctor relationships, I have shown in the previous section that it has unintended consequences. By

restricting the supply of physicians and promoting patient "lock in," these laws can lead to higher prices and higher switching costs. This discourages patients from seeking the best possible care, the most cost-effective care, and the most convenient care they can find. In fact, it may discourage patients from seeking care at all in some situations where they feel the price of consultation is too high.

B. Scope of Practice Limitations

Second, we need to consider how state-created scope of practice limitations interact with the future of telemedicine. Many states have scope of practice limitations for various types of medical professionals. These laws limit and regulate medical doctors, nurse practitioners, nurses, specialists, medical technicians, and others by defining and limiting the types of procedures, treatments, diagnoses, prescriptions, and settings permitted for them. While the eradication of many types of scope of practice limitations might be warranted, were they to stay in place, they ought to take the practice of telemedicine into consideration. It would be better for these laws to be outcome-based.

For example, if a nurse must practice under the observation of a doctor, can a doctor "observe" this nurse's action over video from a different location? Ideally, as long as the circumstances of the virtual consultation do not significantly change the potential outcome of the patient's consultation from that which would occur were the doctor physically present, "virtual observation" should be allowed. If virtual observation is allowed, must this nurse be observed by a doctor in the same state, or will a doctor in a different state suffice? As the medical education of a doctor in the United States is generally the same throughout the country, we must assume that doctors generally have the same "nurse observation skills" regardless of their location or

state of license. Allowing interstate virtual observation would let a doctor in one location quickly treat patients in a variety of other locations with the help of nurses. This would cut costs, increase the availability of many services, and improve public health.

Current law can severely complicate the practice of medicine across state lines. Ideally, in order to foster overall competition, a nurse practitioner who is allowed to treat patients virtually in her state would be allowed to treat patients virtually in another state as long as those treated were informed of the difference in residence, regardless of the patient's state's scope of practice limitations for nurse practitioners. Were a patient to be traveling, experience illness in Virginia, and choose to virtually contact a Virginia-based nurse practitioner, that patient would be at no more risk in this situation than were he to be contacting her virtually from another state (all else held constant). Additionally, if this is truly an issue, and patients feel that the medical abilities or scope of practice of a medical professional in another state are inferior to one in their own state, there is no reason they couldn't choose to virtually seek out a local professional instead. This would simply allow patients the option to seek the allowed virtual medical care from any provider who is operating under the proper conditions in their own state. This also expands the potential patient pool for medical providers and promotes competition, which drives down costs and increases quality.

C. Legal Liability

Another barrier to large-scale competitive telemedicine has to do with legal liability. While legal liability for the in-state practice of telemedicine can be more easily solved through amended state law-making, the issue becomes more difficult when patients and doctors reside in different states. There is an abundance of differences between states regarding medical malpractice and

legal liability stemming from legislation and case law. For example, Florida has set caps on medical malpractice damages,[lvi] while Connecticut and Minnesota do not specify limits or caps.[lvii] Each state differs as to what constitutes malpractice, what damages may be awarded, and how final award amounts are determined. To further the availability of telemedicine, allow for competition between telemedicine providers, and help patients realize cost savings, these wide discrepancies need to be addressed. Similar state law discrepancies have been overcome by interstate compacts, which I will address later.

D. Medicaid and Private Insurance Reimbursement

Medicaid reimbursement also varies from state to state. Some states will reimburse for medical services rendered via telemedicine, while others will not. For example, as of November of 2013 only 10 states had some form of reimbursement for remote patient monitoring services.[lviii] Some states have adopted policies for telemedicine services that only reimburse if the service was provided to patients in rural, underserved areas.[lix] This is a prime example of a "cross-subsidizing" regulation, as explained by Richard Posner; in this case, it is a subsidy for those who live in rural areas through state-made regulation.[lx] While providers will decide what types of payment they will accept and at what rates, it would be best if all Medicaid patients had the ability to be seen over a telemedicine platform regardless of their location, for all the reasons highlighted previously. As of 2015, New York and 21 other states have mandated that telemedicine visits be reimbursed by private insurance at the same rate as an in-person visit.[lxi] This does not allow telemedicine to be efficiently priced as its own type of consultation, which ultimately means denying patients a chance at receiving some of the cost-cutting savings that telemedicine offers. Instead, all savings are transferred to the producer when engaging with a

patient using health insurance as a form of payment. Overall, this hinders us from reaching our goal of cutting medical costs. When patients directly realize price through either cash payments, Health Savings Account payments, or third-party payers (like insurance companies or corporate health plans) negotiating their own payment rates and coverage, there is a greater degree of price realization and thus more efficiency occurs.

VII. Policymakers Should Allow the Future of Telemedicine to Flourish

I have so far covered the new methods and innovations of the industry today, but we can imagine how telemedicine might become the norm over the years. Israel Kirzner has explained that competition and entrepreneurial innovation is "open ended" and has no clear end in sight.[lxii] There could be specialists in Oregon virtually treating or checking up on patients in Georgia over video chat with the help of a physically present nurse.[lxiii] Several doctors could collaborate with one another with the help of a medical professional wearing Google Glass during a patient consultation or surgery. (This is already happening experimentally).[lxiv] Specialists, medical technicians, doctors, and nurses in different time zones could work together to interpret data, pictures, x-rays, and more during the "after hours" period of another time zone. This could lead to cost cutting and expanded medical options for patients. Surgeries have already been performed with doctors and patients being separated by hundreds of miles.[lxv] There could be mobile medical kits flown by drone to patients in rural areas for one-time use and return.

Medical students could "shadow" physicians by virtually joining in consultations. Sessions could be recorded and saved in historical archives, used for educational purposes, or sent to insurers as proof of legitimate consultation. A doctor could make on-demand, same-day house calls in person after being called via a phone application.[lxvi] We could have doctors,

nurses, specialists, technicians, and teachers all receiving feedback using a rating system amongst each other and patients. We could even have these parties competing across the country on quality and price.

All these scenarios fall under the heading of "telemedicine" and would help decrease costs, increase quality of care, and give patients more control over their health. Were regulators to heavily restrict the industry or neglect to consider the possibility of these scenarios' becoming the norm when writing laws, people would be hindered from obtaining the kind of health care they personally value.

VIII. Recommendations

In order to get telemedicine to a safe, effective, and competitive point, there must be several reforms that address the issues mentioned above. Once these are made, society will see more competitive and effective telemedicine, but more importantly, will begin to reach the main goals first outlined in this paper.

The most effective tool for addressing licensure, scope of practice, and legal liability differences between states en masse would be a reciprocity agreement or compact, similar to the driver's license compact. The ideal compact would allow a medical license (or at least a telemedicine license) and its given scope of practice limitations in one state to have reciprocity with all other states. It could also address how legal issues, such as malpractice and reimbursement of services, would be handled in multistate scenarios. This could mean establishing whose residency (doctor, patient, or company/network headquarters) determines the state that claims are made in under an interstate compact. There is a substantial legal framework in other industries surrounding which laws apply when the consumer and manufacturer or

distributor of goods are in different states; this approach could be applied to health care as well. While it is in the best interest of the states to come to an agreement themselves, this might be able to be completed at the federal level under the Interstate Commerce Clause.

Second, when designing telemedicine and medical regulation, laws, and guidance, policymakers should allow for all parties to have an equal chance at competing in the market from a legal standpoint. As highlighted above, several states have telemedicine laws that protect incumbents, hurt small firms, increase overall costs, and do not benefit patients or reduce medical risk; these types of laws should be removed and avoided.

Third, policymakers should allow markets to determine the appropriate prices for telemedicine reimbursement of services. While this may not be able to occur in situations where the government is the primary payer, interfering in the private market for payment of services does not allow the most efficient pricing model to be realized. Letting the market determine price allows both the producer and the consumer to realize the potential cost savings that are inherent in most telemedicine consultations.

Finally, where regulation and legislation is warranted, policymakers should regulate outcomes, not processes, and keep the broader picture of the future in mind. Laws that mandate a certain process be followed hinder innovation, and they privilege established firms that already have implemented the mandated process. When regulations seek general outcomes, rather than creating and regulating specific processes, innovation is allowed to flourish.

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