An Analysis of the Primary Care Physician Shortage and the Effects of the Affordable Care Act

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Introduction

By the year 2020, it is estimated that the United States will be facing a physician shortage of greater than 90,000 doctors. Of this 90,000, roughly half will be primary care physicians ("Physician Shortages to Increase"). Primary care physicians are generally defined as any doctor who is licensed to practice in the following specialties: family medicine, internal medicine, and pediatrics. They act as one’s first point of contact for any non-emergency medical issue; provide routine care and preventative medicine such as vaccines. Your primary care physician acts as your greatest healthcare advocate, providing referrals to specialists when necessary and ensuring that a patient’s healthcare is properly coordinated. There is solid evidence that healthcare outcomes and healthcare costs are strongly linked to the availability of primary care physicians in the United States, according to the Council on Graduate Medical Education. There are 1.44 fewer deaths per 10,000 people for every single additional primary care physician, cites the Council. This current decline in primary care physicians along with an aging population is a huge problem now more than ever due to the new healthcare reforms that will insure thirty-two million newly eligible people for both Medicare and Medicaid and will in effect increase the need for primary care physicians, according to the Council's research. A shortage of primary care doctors could spell disaster for America’s healthcare system, and it is the patients who will pay the price. In this paper, we will outline which factors are causing and impacting the shortage, what the effects of this shortage are likely to be, and what can and is being done to rectify the situation before it is too late.
PART ONE: CAUSES AND IMPACTS AFFECTING THE SHORTAGE
The Residency Shortage

Perhaps the one factor which has the most effect on the physician shortage is that of residency shortage. In order to become a fully licensed practicing physician in the United States, one must complete a post-graduate educational period called “residency.” This occurs in the years immediately following the completion of medical school, after the doctor-in-training in question has received his or her M.D. or D.O. degree. During a residency, physicians work under the supervision and tutelage of more experienced physicians. On average, residency lasts anywhere from three to six years, dependent on the specialty in question and the program a resident is in. The primary care specialties have residencies on the shorter end of the spectrum, with the average being three years.

Currently, the process in which the vast majority of medical residencies are assigned via a system known as “The Match,” run by the National Resident Matching Program. This system is primarily used by graduating seniors of American colleges of allopathic medicine (institutions that grant M.D. degrees) (“Main Residency Match”). Graduating seniors of US colleges of osteopathic medicine (institutions that grant D.O. degrees) have the option of applying to the National Resident Matching Program and completing an allopathic residency or applying to the American Osteopathic Association Match and completing an osteopathic residency (“Overview of the Match”). For the purposes of this paper, we will be focusing on the allopathic system. The reasons for this are numerous:
first of all, US osteopathic seniors are eligible to apply for allopathic residencies, while the reverse is not true. This results in a large number of osteopathic seniors not participating in the American Osteopathic Association Match, which skews the matching statistics and makes it difficult to analyze how many osteopathic seniors did not gain residency for lack of sufficient programs. For example, in the 2013 match, only 41.2% of US osteopathic seniors matched into an osteopathic residency. However, this statistic is misleading: 47% of US osteopathic seniors did not participate in the osteopathic match, presumably preferring to enter into the allopathic match instead (“2013 Statistical Summary”).

In addition, the National Resident Matching Program has a much larger pool of applicants and programs participating in it. In the 2013 match, there were only 5283 applicants and 2900 positions to be filled in the American Osteopathic Association Match (“Summary of Positions”), while the National Resident Matching Program had 57,960 applicants for 29,171 positions (“Results and Data”). In addition, the American College of Graduate Medical Education, which is the governing body for the National Resident Matching Program, is currently in negotiations with the American Osteopathic Association to merge the two matches. It is estimated that this merged match will go live in 2016, meaning that next year’s graduating class will be the last to apply for residency in the current dual system. The post-graduate education system during the height of the physician shortage will be under the system of the National Resident Matching Program (“Discussions on Unified”). This paper also does not take into account the separate matching process used by the United States Military, as military
graduate medical education requires a military commitment and is not typical of the average physician.

The National Resident Matching Program operates using a highly specialized algorithm. Applicants to the match fill out an application which includes information such as transcripts, class rankings, standardized test scores, letters of recommendation, and other qualifiers and submit it to the program. Once the application is complete applicants apply for the match. Residency programs have access to students’ application information and may invite qualified candidates for interviews. Beginning in January, the National Resident Matching Program opens up the rank order lists. These are lists in which applicants rank their top programs and residency programs rank their top applicants. After the rank order list deadline has passed, the National Resident Matching Program utilizes its algorithm to match applicants and programs in a mutual selection process. The algorithm will attempt to match an applicant to their first-choice program, based upon if the program in question also has that applicant on their rank order list. If a match cannot be made, the algorithm will attempt to match the applicant to their second-choice program, and so on, until either a match can be made or there are no more programs on an applicant’s list. The matches made are “tentative,” meaning that if an applicant matches with a program but an applicant whose application is analyzed after that initial matching ranks higher on the program’s rank order list, the original match will be null and the algorithm will try to re-match the original applicant to another program on their list (“Match Algorithm”). Applicants find out if they received a residency in
March. If they did not, they are eligible to participate in the Supplemental Offer and Acceptance Program, known colloquially as “the scramble,” in which unmatched and partially matched applicants are given access to a listing of unfilled residency positions and can apply to the ones they are qualified for. Program directors of unfilled positions create rank order lists based on the applications they receive, and multiple offers may be given to one applicant (“SOAP”).

Graduate medical education in the United States must take place in a teaching hospital. There are approximately four hundred large teaching hospitals in the United States, all of which offer residency training positions to newly graduated doctors. As one can imagine, the cost of training these residents can be very expensive. Aside from the obvious costs such as salary and benefits for residents, there are many other less apparent costs that teaching hospitals must absorb in order to educate the future doctors of America. This includes things such as the time attending physicians must spend teaching and supervising residents, increased malpractice insurance costs, the administrative expenses of running a residency program, increased length of patient stay, the increase in complexity and severity of cases that academic centers of medicine see, and any other expenses unique to a teaching hospital. The total cost of training a resident is extremely difficult to quantify and varies greatly based on factors such as specialty, geographic location, urban hospitals versus rural hospitals, hospital revenues and malpractice expenses (Pauwels, Oliveira). This variability of cost is even more pronounced in primary care specialties, where primary care
revenues come mostly from teaching clinics. How these clinics are funded varies and there is not a standardized financial model to compare clinics. Looking at raw numbers is not helpful in giving a full picture of what residency costs a hospital, due to the sheer variability amongst programs. However, it is useful to know that on average, the cost of educating a resident exceeds the revenues generated by residency programs. One 2011 study of the costs of family medicine residencies found that, on average, it cost the hospital $27,260 more per resident than revenues generated from the program. This is taking into account all outside funding from sources such as federal funding and private donations, meaning that on average a hospital operates at a deficit of nearly thirty thousand dollars per resident, per year, in order to educate the future family physicians of America (Saultz).

Of course, hospitals do not completely fund residency education on their own. Residency funding comes from a variety of sources, including the Department of Veteran’s Affairs, state funding, and private sources. However, the majority of funding for residencies comes from Medicare. (“Health Policy 101”) Annually, approximately 9.5 billion Medicare and 2 billion Medicaid dollars go to funding graduate medical education. Table 1 breaks down what Medicare GME (graduate medical education) covers and the approximate percentage of Medicare funding that goes to that specific category.
Table 1: Categories of Medical Funding

<table>
<thead>
<tr>
<th>Type of Funding</th>
<th>Covers</th>
<th>Approx. Amount of Total Federal Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Graduate Medical Education</td>
<td>Resident salaries and benefits, time attending physicians spend teaching and supervising</td>
<td>31.58%</td>
</tr>
<tr>
<td>Indirect Medical Education</td>
<td>Increased costs a teaching hospital faces compared to a non teaching hospital</td>
<td>57.89%</td>
</tr>
<tr>
<td>Children’s Hospital GME</td>
<td>Specific funding for Children’s Hospitals</td>
<td>2.79%</td>
</tr>
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Medicare funds each category of GME funding differently. Table 2 shows the basic formulas used to fund each category.

Table 2: Formulas for Medical Funding

<table>
<thead>
<tr>
<th>Type of Funding</th>
<th>Allocation Formula</th>
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<tbody>
<tr>
<td>Direct Graduate Medical Education</td>
<td>(Weighted IRP)(PRA)(MPL)</td>
</tr>
<tr>
<td>Indirect Medical Education</td>
<td>IME multiplier[(1+IRB)−1]</td>
</tr>
<tr>
<td>Children’s Hospital GME</td>
<td>Does not follow a funding formula</td>
</tr>
</tbody>
</table>

IRP=Initial Residency Period
PRA=Per Resident Amount
MPL=Medicare Patient Load
IME=Indirect Medical Education
IRB=Intern/Resident to Bed Ratio

Direct graduate medical education is the simplest to calculate. The Initial Residency Period is defined as the minimum number of years of residency training required to be eligible for board certification in that specialty. The
weighted Initial Residency Period is calculated as follows: the number of residents within their Initial Residency period, added to one half of the number of residents outside of their Initial Residency Period, up to a capped amount. Medicare will only fund half of the costs associated with training physicians who are still in residency beyond their Initial Residency Period. The reasons a physician may still be in residency beyond the Initial Residency Period varies, and includes reasons such as electing to stay in residency to further specialize, being in a residency program that is set up in a way where training takes longer than the minimum number of years to be eligible to sit for boards, or electing to complete a residency that will lead to certification in two specialties (for these programs, whichever specialty has the higher Initial Residency Period is used for GME purposes, unless one of the dual specialties is an primary care specialty, in which case one year is added to the highest Initial Residency Period), or entering into a specialty which requires prerequisite training in another specialty. However, the most common reason is because doctors occasionally switch specialties. If a resident switches to another residency, Medicare does not reset their Initial Residency Period. This means that theoretically, if a doctor begins a residency in family medicine, which has an Initial Residency Period of three years, but decides after a year that this is not the right specialty for her and matches into a residency in general surgery, which has an Initial Residency Period of five years, Medicare will only give the full amount of the doctor’s GME to the teaching hospital she is doing her surgical residency at for two years. For
the remaining three years of her residency, that hospital will receive half the Medicare funding for that doctor ("United States").

The Per-Resident Amount is a fixed amount of money given per resident, per year. The base price for this amount was calculated in 1985, using financial data from fiscal year 1984, and is adjusted for inflation each year. This base price was calculated by dividing a hospital’s direct graduate medical education expenses related to Medicare by the number of full time residents on that hospital’s cost report. The Per-Resident Amount can vary greatly from hospital to hospital, as the way direct graduate medical education cost was calculated was not standardized in the early 1980’s, leading to different hospitals calculating their costs using different methodologies. For fiscal year 1984, the calculated Per-Resident Amount ranged from $7,500 to $187,500 per resident ("Medicare Funding").

In addition to the variation in Per-Resident Amounts amongst hospitals due to the variation in the direct cost of graduate medical education in fiscal year 1984, each hospital has two different Per-Resident Amounts based upon specialty. In fiscal years 1994 and 1995, Congress placed a freeze on Medicare direct graduate medical education spending in the form of not updating the Per-Resident Amount for inflation. The exception to this is the primary care specialties, which were updated for inflation in these years. This results in a higher Per-Resident Amount for hospitals with primary care specialties ("Medicare Direct").
The Medicare Patient Load is how Medicare determines its portion of the cost of direct graduate medical education. It is “Medicare’s share of the hospital’s number of inpatient days,” which indicates the percentage of the hospital’s patients who receive Medicare benefits (“Medicare Payments”). The Medicare Patient Load is calculated by dividing the total number of days Medicare patients spend as inpatients by the total number of days all patients spend as inpatients (“Medicare Direct”).

The way in which indirect medical education is calculated is quite a bit more complicated than how direct graduate medical education is calculated. Indirect medical education includes any costs associated with being a teaching hospital that aren’t included in the direct costs outlined above. Many of these costs are extremely difficult to quantify. For example, how does one put a price on the increased severity and difficulty of treatment of cases teaching hospitals see, due to such cases needing the expertise and specialized services one can only find at academic centers of medicine? Due to how abstract many of the indirect costs are, the calculations for indirect medical education costs rely on statistical estimates (“Medicare Funding”). The indirect medical education payment is actually an adjustment factor. It is an additional payout tacked on to every eligible Medicare case the hospital sees, and is expressed as a percentage of that case’s price. The case price is calculated from a “shadow” claim, which is a claim that is submitted for informational purposes only, and not for payment collection purposes. This is because Medicare does not directly pay hospitals for managed care Medicare beneficiaries (“Medicare Indirect”).
The payout calculations for indirect medical education involves two formulas, as listed in Table 2. The first formula is the percent add on formula,

$$IME\ multiplier[(1+IRB)^{0.405}-1]$$

Where: IME multiplier=Indirect medical education multiplier
IRB=ratio of residents/interns to beds

The IME multiplier is a number set by Congress. It is set in a way to cap the average add-on percentage to each Medicare case. Currently, the IME multiplier is set to 1.35, which ensures that for every 10 percent increase in IRB, the hospital receives a 5.5% add-on. This number has been steadily decreasing since the 1990’s, resulting in lower percentage add-ons for hospitals.

The IRB is the ratio of residents and interns to the number of beds a hospital has. When calculating this ratio, hospitals are only allowed to use their un-weighted number of residents in their Initial Residency Period, up to the Medicare cap, who are working in the hospital’s inpatient and/or outpatient areas (meaning that residents working in physician’s clinics can’t be counted, except in special circumstances). In addition, hospitals cannot include beds in Medicare-exempt departments in their bed count. The exception to this is the departments of neonatal intensive care and intermediate care, which can have their beds counted for the IRB (“Medicare Funding”).

The add-on percentage is the only part of the indirect medical education costs which is affected by the residency shortage issues, so we will not go into much detail on how the final dollar amount per case is calculated as it is beyond
the scope of this paper. Briefly put, once the percentage add on formula is calculated, the total amount given per eligible case will be calculated by multiplying the add-on percentage with factors like how much that case is determined to cost by Medicare using factors such as patient age, ailment, severity, et cetera, along with other Medicare payout factors. This amount is then added on to the Medicare payout as indirect medical education funding ("Medicare Funding").

Children’s Hospital Graduate Medical Education does not utilize a formula to determine funding. Instead, a portion of Medicare’s budget each year is set aside for the purpose of funding Children’s Hospital graduate medical education costs. The reason for this is quite simple: Children’s Hospitals’ only serve children and mothers delivering babies. Medicare recipients must be over the age of 65 to receive Medicare benefits. Therefore, Children’s Hospitals rarely, if ever, treat Medicare patients. Medicare does not provide much of Children’s Hospitals' residency funding, and what they do provide is allocated using the same residency caps as the other two forms of graduate medical education funding ("Children’s Hospital").

Probably the biggest issue with Medicare funding of residency programs is the residency cap. The Balanced Budget Act of 1997 placed this cap, which limits the number of residents Medicare will fund. This cap is calculated based off on the un-weighted number of residents each hospital’s cost report as of December 31st, 1996. As of October 1st, 1997, Medicare provides zero funding for any residents above this 1996 amount. The exception to this rule is rural
hospitals: in 1998 an amendment to the Balanced Budget Act increased the funding for rural hospitals to 130% of the 1996 number in an effort to attract doctors to rural hospitals (H.R. 2015). The per-resident amount is also problematic: as it is based upon the costs of training residents in the mid-1980’s, it does not take into account factors such as new medical technology, increasing patient loads, and other factors that may be different between 1984 and now. In addition, how hospitals calculated their direct graduate medical education costs in 1984 is how they have been receiving funding for the past 30 years. If a hospital changes how they calculate these costs, or calculated them in a way that does not take full advantage of Medicare funding, they are at a disadvantage when it comes to receiving Medicare funding.

Will increasing the residency cap help to alleviate the primary care physician shortage? Are there medical school graduates to fill new any new residency positions that may be created? The answer is overwhelmingly yes. Figure 1 clearly demonstrates that there are not enough residency positions for every applicant who would like to train in one. In the 2013 match, the ratio of residency positions to the number of applicants applying to the match was .77 for the third consecutive year. The American Association of Medical Colleges, which is the governing body of all American schools of allopathic medicine and all teaching hospitals, has called upon medical schools to increase enrollment in response to the physician shortage. Medical schools have risen to the challenge, with enrollment increasing by 7,000 students nationwide (American Association of Medical Colleges).
In the 2013 match, U.S. allopathic senior applicants increased by 5.8 percent from the 2012 match, with the total amount of applicants increasing by 9.6 percent. The 2013 match had the highest number of applicants in history. The number of residencies did increase by a significant amount for the 2013 match. The 9.0 percent increase can almost certainly be attributed to the fact that the National Resident Matching Program enforced a new rule for the 2013 match requiring that any programs participating in the match use the match to fill all of their slots. This resulted in an increase of over one thousand residency positions in the match, as these positions had previously been offered outside of the match. However, the increase in positions led to some interesting trends. For example, the match rate of U.S. allopathic graduates who were not
graduating seniors was the highest it has been since 1999 at 49 percent. The match rate for U.S. osteopathic seniors was 75.4 percent, the highest it has been in thirty years. The number of foreign graduates matching into residencies was also higher than in previous years (“Results and Data”).

It is obvious from the statistics above that there is a shortage of residencies, and increased residency slots have no issues getting filled. However, will increasing the number of overall residencies increase the number of primary care physicians?

Figure 2: PGY-1 Match Rates by Applicant Type, 1982-2013

Source: National Resident Matching Program, Results and Data: 2013 Main Residency Match

U.S. Seniors: Upcoming graduates of U.S. schools of allopathic medicine
U.S. IMGs: U.S. international medical graduates
Non-U.S. IMGs: non-U.S. international medical graduates
Others: anyone who does not fit into the above categories
Figure 2 further breaks down the match rates based on the type of applicant applying. U.S. Seniors of allopathic schools of medicine tend to fare extremely well in the match, with somewhere between 92 and 94 percent of applicants matching into a residency position each year. U.S. seniors of allopathic schools of medicine are also the least likely to enter a primary care specialty. The other three categories of applicants do not fare as well in the match, with approximately 50 percent of foreign graduates and 60 percent of “other” applicants matching into residencies. U.S. IMGs are American citizens who attended foreign medical schools, while non-U.S. IMGs are non-American citizens who attended foreign medical schools. The “others” category includes U.S. seniors of osteopathic schools of medicine, U.S. graduates of allopathic schools of medicine who did not obtain a residency right out of medical school, physicians who did not like their first residency and are now trying to match into another one and Canadian medical school graduates/seniors.

The three categories other than U.S. allopathic seniors, or “independent applicants,” disproportionally tend towards primary care specialties. In the 2013 match, 63.9 percent of matched applicants in Pediatrics-Primary, 51.3 percent of matched applicants in Family Medicine, and 49.5 percent of matched applicants in Internal Medicine were independent applicants (“Results and Data”). Considering these trends towards the primary care specialties, coupled with the fact that a large proportion of independent applicants do not match into a residency program, it is highly likely that any new primary care residency slots will be easily filled by independent applicants.
Increasing Case Loads

The primary care workload is expected to increase by 29 percent between 2005 and 2025 regardless of the Affordable Care Act, according to the American Medical Association’s 2008 report. This will continue at a rate of 10,000 per day through 2029, not including newly eligible beneficiaries of the Affordable Care Act. As our population gets older and reaches sixty-five years in age, becoming Medicare eligible, the demand for primary care physicians and services will increase. Population growth and general aging and will affect both generalist physicians and primary care physicians. There is an expected thirteen percent increase in workload for care of children by primary care physicians. Yet even amongst the increase in caseloads, we expect generalists for adult care to increase by seven percent. If the number of medical students going into primary care continues to decline, this will go to a two percent increase (AMA). According to the AAMC, as of 2009, thousands of additional primary care physicians are required to handle a certain percentage increase in people becoming insured. Figure 3 delineates the amounts per percentage insured. In 2010, there were 304,687 primary care physicians, 31 percent of all physicians, practicing in the United States. The HRSA estimated that this is approximately 7,000 too few primary care physicians. A recent study suggests that the Affordable Care Act’s insurance expansions would increase primary care shortages by an estimated 8,000 primary care physicians by year 2025. This
would call for an additional 43,000 primary care physicians needed to care for the larger and older population in the United States. (Heisler).

Figure 3: Additional Primary Care Physicians Required

<table>
<thead>
<tr>
<th>Number of Additional Primary Care Physicians Required</th>
<th>Today</th>
<th>40% PCP/P ratio (1)</th>
<th>35% UI Covered (2)</th>
<th>100% UI Covered (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number covered by health insurance</td>
<td>259,000,000</td>
<td>259,000,000</td>
<td>275,100,000</td>
<td>305,000,000</td>
</tr>
<tr>
<td># PCPs</td>
<td>272,000</td>
<td>336,000</td>
<td>356,000</td>
<td>394,000</td>
</tr>
<tr>
<td>Additional PCPs required</td>
<td>63,000</td>
<td>84,000</td>
<td>122,000</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
(1) Number of PCPs required to reach ratio of PCPs to all physicians of 40%, 46 million uninsured not covered
(2) Number of PCPs required to cover 35% of those currently uninsured, assuming same PCP per capita ratio as scenario (1)
(3) Number of PCPs required to cover 100% of those currently uninsured, assuming same PCP per capita ratio as scenario (1)

Source: AAMC 2009 State Physician Workforce Databook [7], FocalPoint 2010 [59].

Decrease in Medical Students becoming Primary Care Physicians

There has been a significant decrease in the amount of medical students choosing to go into primary care upon attrition (Abrams). The expansion of subspecialty training options, loss of primary care training positions, especially in family medicine, and alternate career options, such as general internal medicine graduates choosing to work as hospitalists, have effectively reduced primary care production by one-third over the last decade (Council on Graduate Medical Education).

Retirement of Current Primary Care Physicians

Many of the primary care physicians are members of the baby boomer generation and are now leaving their practices (Lassiter). Baby boomers are the
generation of babies born in the Post World War II years of 1946 and 1964, according to the US Census Bureau. The overall primary care workforce is aging at a rapid rate and many will retire within the next decade. This evidence is critical as close to one-quarter of primary care physicians, about 55,000, are near retirement age, which is 56 years or older (Donaldson). Figure 4, below, charts the general ages of primary care physicians as of 2007, according to the AMA Masterfile Data.

Figure 4: Age Distribution of Patient Care Primary Care Physicians

As can be inferred from Figure 4, the majority of primary care physicians are due to retire by the following decade. In addition, the number of physicians in their twenties and thirties is significantly less than older physicians. In a statement to the AARP, Steven Berk, M.D. and dean of the Texas Tech University School of Medicine, said:
"The doctor shortage is worse than most people think. The population is getting older, so there's a greater need for primary care physicians. At the same time, physicians are getting older, too, and they're retiring earlier."

According to the Physicians Foundation, the aging demographic of doctors is no small part of the problem. A survey found that nearly half the nation's 830,000 physicians are over age 50, and they are seeing fewer patients than they did four years ago.
PART TWO: EFFECTS OF THE SHORTAGE
Difficulty of Finding a Doctor

Naturally, the most immediate impact on patients of a shortage of primary care physicians will be difficulty seeing a doctor. The extent of this problem will vary by geographic area, with rural areas and inner cities likely to face the biggest challenges with the shortage. As stated earlier, primary care physicians are already experiencing an increase in workload, and this will only increase as more and more newly insured patients under the ACA seek the treatment of primary care physicians. This rapid rise in demand for medical treatment relative to the number of doctors has led to a consequence that may be surprising: doctors are becoming much more particular about which patients they will treat. A study in Health Affairs found that in 2011 only 69 percent of physicians took on any new Medicaid patients. This is largely because of the very low government repayment rates, which are often as low as 40% of what private insurance would pay (Jacobson, Jazowski). This means that the patients who are suffering the most from the primary care physician shortage are those without their own insurance. It is likely that this problem will get worse under the ACA as more patients seek government coverage, unless repayment rates improve to a level where doctors are more willing to accept these patients. Currently, the improvement of the repayment structure would require the passing of additional legislation, as the ACA does little to make physician repayment for Medicaid patients more attractive than it has been in in recent years.
Decline in Overall Health

A significant effect on patients of a shortage of primary care physicians can be an overall decline in health among the population. If they have trouble finding a doctor, patients will be more inclined to delay or eliminate preventative or routine medical care. The absence of a primary care physician at a patient’s disposal can decrease effectiveness and efficiency of the medical care industry as a whole, as patients attempt to satisfy their needs by going from specialist to specialist without a primary care doctor to advise them on the treatment that would best suit them. Many of these patients end up turning to walk-in clinics or waiting until they require emergency care. Dr. Ted Epperly, director of the American Academy of Family Physicians, says “Having a primary-care physician, or “medical home,” is crucial to maintaining good health. That’s why the doctor shortage, which applies largely to general and family physicians, is problematic.” (Jacobson, Jazowski).

Massachusetts Reforms Compared to the ACA

The ACA will certainly increase demand for physicians as more citizens are provided with health insurance. Those previously uninsured had little incentive to pay out-of-pocket for routine physicals, check-ups, and preventative care when there would likely be no immediate impact on their health. With insurance, however, it is almost certain that more of these individuals will look to take advantage of these types of services. Estimates predict that the medical industry, already suffering from a shortage of physicians (see Figure 5), will need
to find capacity for an additional 30 million patients. Consequences of the increased demand for primary care are the aforementioned issues with physician access and notable increases in medical costs. This was seen on a smaller scale in Massachusetts in 2006 when that state enacted policies to expand the number of residents covered by medical insurance.

**Figure 5: Physician Supply and Demand**

![Chart 2. 2006-2025 Baseline Physician Supply and Demand Projections](source)

*Source: Medical Product Outsourcing*

Governor Mitt Romney’s 2006 plan to bring nearly-universal health care coverage to the state of Massachusetts was successful in significantly increasing the number of insured individuals, but the state still struggles with rising health care costs today. Within the first year of the new healthcare plan, the number of uninsured in Massachusetts fell by significant margins (“...Six Years Later”). This is demonstrated in Figure 6, below.
Under the new plan, Massachusetts saw a sharp increase in the number of patients seeking primary care. The state has attempted to handle this by increasing medical school enrollment for students with primary care as their focus and by providing loan repayment options. These provisions had been mostly sufficient in the earlier years of the policy to ensure access to primary care through the rising demand, but there has been an increase in workload for the primary care physicians in the state. By 2009, 1 in 5 adults reported experiencing difficulty finding a doctor, typically because the doctor was no longer taking on new patients or would not accept the patient’s insurance. In 2008, the number of family doctors who were not accepting any new patients had increased by 10% (“…Six Years Later”).

The 2006 Massachusetts healthcare reforms successfully increased the number of insured residents and allowed these individuals to have access to medical care, but the plan has resulted in major problems with cost. Massachusetts residents pay 15% more per capita for health insurance than the
national average, giving the state the highest premiums in the country. Proposals for containment of these high medical costs are currently being considered in the state legislature (“…Six Years Later”)

The Massachusetts plan became a model for the Patient Protection and Affordable Care Act, President Obama’s plan to reform health care on a national scale. While there are many similarities between the ACA and the Massachusetts reform, there are some key differences as well, including more stringent payment requirements. Subsidies under the ACA will be less generous than in the Massachusetts system. Under the Massachusetts law, persons earning up to 150% of the federal poverty level do not have to make payments for their premiums. Under the ACA, however, an individual’s expected payment toward the premium will be between 2% and 9.5% based on total household income. For example, someone who is currently making about $16,000 has access to medical insurance through Commonwealth Care (the Massachusetts reform act) without paying a premium, but in 2014 the ACA will require that same person to pay a premium of $530/year, which is equivalent to about 3.4% that person’s income. (“…Six Years Later”)

Financial Implications for Patients

The health care reform policies enacted in Massachusetts led to increases in medical costs, and the same trend is predicted to occur on a nationwide scale under the ACA. Table 7, below, highlights projections for the increase in premiums families will have to pay. The main cause for the rise in insurance
premiums under the ACA is not the increase in demand for care, as one might expect, but rather the prohibition of insurance companies excluding patients with high risk or pre-existing conditions. The insurance companies are also not allowed to charge higher rates for individuals with these higher risk cases. Simply stated, if insurance companies know that they will have to pay out more claims, and are not allowed to charge different rates based on each case, then they have no choice but to raise the premiums across their spectrum of customers in order to stay in business.

The increase in insurance costs combined with the increased demand for care and shortage of physicians will produce the net result of more people paying higher average premiums for healthcare that they have more trouble accessing. This imbalance is what leads many to believe that, unless we find a way to make the supply of medical care match the increased demand, the ACA could simply a
stepping stone toward universal government-sponsored healthcare in the United States.

An unknown factor that will impact the ACA’s effect on the primary care physician shortage is the number of people that will remain uninsured even after the penalty is in effect. The bill stipulates that those without insurance will pay a penalty of $95 per adult or 1% of family income above the protected base level of $10,000, whichever is greater. For many young Americans who do not think they will have major health expenses, it will simply be more economical to pay the penalty. For example, someone earning $60,000 per year would not receive any subsidies and would pay the full premium for any insurance purchased, which would likely be between $2,000 and $3,200 per year (“I’m Paying”). Their penalty of 1% of income less the protected $10,000 would be only $500. Thus, for individuals who do not regularly see a doctor, it is often a more financially sound decision to avoid purchasing health insurance. Adding to this problem is the prohibition of insurance exclusion for pre-existing conditions. This creates a situation where citizens without significant regular healthcare expenditures can simply wait until they are diagnosed with a serious problem and then purchase insurance without fear of being rejected. Due to this demographic that may or may not purchase health insurance, the overall severity of the physician shortage in the coming years may not be known until better estimates of participation in the ACA’s provisions for mandatory health insurance coverage become available.
PART THREE: WHAT CAN BE DONE
There are potential solutions for the impending primary care shortage. The most direct course of action would naturally be to increase the number of primary care physicians. Steps are being taken toward this goal, as medical schools have been making efforts to increase their enrollment for the past few years. Congress also plays an important part, and is currently working on legislation to raise the number of residency positions available to medical school graduates, and the Affordable Care Act has many provisions pertaining to the primary care shortage. While these actions are worthwhile and will help with time, there is growing concern that more dramatic changes in the primary care industry might be necessary in order to deal with the shortage of physicians. Much of the discussion involves increasing the number of patients that can be seen by a doctor, rather than increasing the number of doctors. Reaching a solution this way can be very complex and could require fundamental changes to the system of delivering primary care.

In addition to difficulty seeing a doctor and potentially inflated medical costs, effects of the shortage for patients could include a change in the way primary care is delivered. Among the changes being considered are increased roles for non-physician practitioners, accountable care policies, and community medical centers and medical homes.
Increasing the Number of Residency Slots

According to the American Association of Medical Colleges, increasing the cap on residents who can receive Medicare funding is critical. There are currently several bills in legislation which would address the residency shortage and ease some of the physician shortage. The Residency Physician Shortage Reduction Act of 2013 proposes to add 15,000 new residency positions between the years 2015 and 2019 at a rate of 3,000 positions per year. Of these new slots, at least fifty percent must go to residencies in specialties that are designated as “shortage specialties” by a report delivered to Congress by the National Health Care Workforce Commission. The primary care specialties are virtually guaranteed to be designated as shortage specialties in this report. Any new residencies will be funded using the same methods (direct graduate medical education and indirect medical education) as current residencies (S. 577).

Currently, The Residency Physician Shortage Reduction Act of 2013 has been referred to the Committee on Finance in each respective house of Congress. The Act is a reintroduction of the identical Residency Physician Shortage Reduction Act of 2011, which died in the Committee on Finance.

The Training Tomorrow’s Doctors Today Act (H.R. 1201) also proposes increasing residency slots by 15,000. Like the Residency Physician Shortage Reduction Act, half of the new slots will be for shortage specialties, although these specialties will be determined by the Government Accountability Office rather than the National Health Care Workforce Commission. The Act will also make some administrative changes to how funding is distributed, such as
resolving issues with how the Initial Residency Period does not reset if a doctor switches specialties. It also calls for a set of performance standards to be put in place in teaching hospitals, along with a transparency report on how graduate medical education funding is distributed, how much Medicare pays to each hospital, factors that could cause higher direct and indirect costs, et cetera. Compliant hospitals with the performance standards and transparency will be eligible for an indirect medical education bonus (the calculation of which is not yet available), while non-compliant hospitals may face an indirect medical education penalty reduction (H.R. 1201).

Scope of Practice for Non-Physician Practitioners

At the forefront of the debate is the question of whether or not to expand the scope of practice for non-physician practitioners or NPPs. NPPs include nurse practitioners and physicians’ assistants. Easing the restrictions on these practitioners could help alleviate the primary care shortage. The number of nurse practitioners is increasing at a rate of 9.44% per capita, compared to 1.7% for physicians. This is largely due to the lack of a residency requirement and attractive compensation (middle 50% income of $79,000 - $106,000). Nurse practitioners all hold advanced medical degrees and are certainly qualified to provide most primary care services. They could greatly ease the workload of physicians if they were permitted to do so. It has long been argued in rural areas without any physicians that treatment from NPPs is preferable to no treatment at all, but there have been multiple instances of NPPs being denied permission to
practice with autonomy due to scope of practice laws. Nurse practitioners are the most closely examined group in the scope of practice debate. Currently, 18 states and Washington D.C. allow nurse practitioners to operate completely on their own. Figure 8 delineates these states (in blue).

Figure 8: States that Allow Nurse Practitioners Autonomy

Source: The 2012 Pearson Report

Changing Structure of the Primary Care Industry

Another solution, which also involves expanding the role of non-physician practitioners, would attempt to make the delivery of primary care more efficient through the establishment of community centers with a leveled structure. This set-up would allow NPPs to handle the majority of primary care patients while maintaining a small number of physicians to handle more difficult cases when needed. This system would optimize the use of both sets of professionals: The
physicians could focus their time on patients that truly need their expertise, while
the NPPs would be permitted to provide the primary care services for which they
are qualified. For the patients, this would mean an easier time getting access to
primary care, due to the increased number of professionals that are able to
provide it. Patients would also be ensured that they will receive the care of a
physician if their case required it. A strong proponent of this medical team model
for primary care has been the Harvard School of Medicine. The institution is
already training primary care physicians toward this structured system rather
than the traditional model in which all patients are seen by a doctor.

Of course, one of the most important questions to address when
considering these types of reforms is whether or not the primary care provided by
non-physician practitioners would be of acceptable quality when compared to the
care provided by physicians. Preliminary studies by the University of Bristol
suggest that levels of patient satisfaction are approximately equal between care
provided by nurse practitioners and physicians. Quality of care and health status
of the patients in the study were also comparable between patients in the two
groups.

Studies conducted by RAND, Corp. estimate that adoption of these
community NPP-run primary care centers could reduce the primary care
physician shortage by as much as 50% by 2025. The movement toward this type
of primary care services is based on the relatively stronger increases in the
numbers of nurse practitioners and physicians’ assistants relative to primary care
physicians. The researchers noticed that while the study predicts a rise in the
number of primary care physicians, more rapid growth is expected for the numbers of PA’s and NP’s. For example, in 2010, the ratio of primary care physicians to nurse practitioners was about 4:1. It is currently predicted that by 2025 the ratio will be about 2 primary care physicians per NP. Perhaps the most intriguing aspect of the change in primary care delivery would be the initiation of accountable care programs. These programs would expand the duties of nurse practitioners and physicians assistants to include reaching out to patients and making sure that they are following the guidelines of their treatment, which could be taking medication, performing exercises, dietary restrictions, etc. The goal of these programs is to improve results for patients and control costs by avoiding repeat visits from patients who simply are not following their treatment. To make this system possible, states will have to change their policies that restrict the duties of NPPs. The ACA provides support for accountable care organizations with provisions that the organizations share in any Medicare savings they achieve through their increased efficiency of operations and care delivery.

According to David Auerbach, the lead author of the RAND study, "Growing use of new models of care that depend more on non-physicians as primary care providers could do much to reduce the nation's looming physician shortage, but achieving this goal may require changes in policy, such as laws to expand the scope of practice for nurse practitioners and physician assistants, and changes in acceptance, on the part of providers and patients, of new models of care." (Japsen)
The Affordable Care Act supports this change in structure in the primary care industry. The act allocates additional funding toward the training of professionals at several levels, including doctors, nurse practitioners, physicians’ assistants, and nurses. The community health center approach is already making an impact in many areas, and is expected to increase in popularity once the ACA is fully in effect. Currently, about 20 million patients per year are served by these health centers nationally. With the expected impact of the ACA, it is forecasted that the capacity of these centers will double by 2015. The way that this team approach will be most effective is through its efficiency with scheduling and providing treatment by a variety of medical professionals. Ideally, the impact of this added efficiency could mean notable increases in the number of patients able to be served by one provider, a metric called the patient panel. The national average is currently about 2,300 patients per provider (Clese). Under the proposed team based primary care delivery approach, studies by the Colombia University Business School and the University of Pennsylvania’s Wharton School have estimated that an increase in patient panels to an average of 3,400 as a result of the system’s efficiencies could be enough to offset the primary care physician shortage.

The primary opponents to expanding the authority of nurse practitioners as a method to quell the physician shortage are the doctors themselves. The problem that they see is not an encroachment on their business (doctors acknowledge that there is more need than the current number of physicians can provide). Rather, the issue is concern over the quality of care. Doctors maintain
that no one with less than full physician status should be granted authority treat patients with autonomy. Most believe, however, that the problem could at least be slightly lessened in a system where nurse practitioners are granted the ability to provide the basic primary care services for which they are qualified. The prevailing opinion is that community health centers with both physicians and NPPs will become increasingly prevalent in the delivery of primary care (Vestal).

**Foreign Doctors**

Another action that could help alleviate the primary care physician shortage would be to increase the ability of foreign doctors to practice in the United States. In the fall of 2012, President Obama signed a bill to extend a doctor’s visa waiver program in which foreign medical school graduates are permitted to practice in the United States. The law currently caps the number of these foreign doctors at 30 per state. The shortage is beginning to be felt so strongly, however, that many parties, even the American Medical Association, is pushing the president to increase this allotment to 50 per state. Another proponent of expanding the ability of foreign doctors to practice in the United States is Nyapati Raghu Rao, chairman of psychiatry at Nassau University Medical Center in New York.

He said in an interview with the New York Times:

“[foreign doctors practicing in the U.S.] doesn’t cost the taxpayers a penny because these doctors come fully trained. It is doubtful that the U.S. can respond to the massive shortages without the participation of international medical
graduates. But we’re basically ignoring them in this discussion and I don’t know why that is.” (“Foreign Doctors”)

The present laws make it very challenging for foreign physicians to be able to practice in the United States. The physicians first are required to verify their graduation and performance records from their medical school, pass English proficiency tests, and pass U.S. Licensing exams. Also, the doctors must establish permanent residence in the United States or apply for a work visa. Finally, the requirement that poses the most daunting challenge for foreign doctors wishing to practice in the U.S. is completing a U.S. residency, of which there are already not enough slots for American doctors. In total, the process for a doctor to successfully gain authorization to practice in the United States can take as many as 10 years (“Foreign Doctors”).

**Technology**

Another aspect to be considered is the growing use of technology in the primary care industry and how this can affect the number of physicians needed. Electronic medical records make it possible for many providers to have access to all medical records for a given patient. This will make primary care more efficient by eliminating the need for duplication of testing and allowing multiple doctors to effectively serve the same patient. Ultimately, any tool that allows doctors to save time on paperwork and administrative duties and devote more time to patient care will contribute toward fixing the shortage (MacManus).
Patients also appreciate use of electronic medical records because they benefit from the increased efficiency as well. Electronic recording of patient information cuts down on paperwork during visits to the doctor and eliminates the need for repeat testing by making any required medical information available to any doctor the patient is seeing. Many EMR systems also facilitate electronic communication between patients and doctors (MacManus).

Other technological developments in the industry are having a more direct impact on the ways patients are receiving care. There has been increasing use of tools like video and phone visits, as well as growing popularity of online clinic sites. Virtuwell is a prime example of an online clinic site that has been embraced by patients. Started by HealthPartners in Minneapolis, Minnesota, Virtuwell is open to patients around the clock and is programmed to effectively diagnose 40 medical conditions. Users are prompted to answer questions about their family health history and current symptoms and are given a diagnosis and treatment suggestions within minutes. The site can also have a prescription submitted to a
pharmacy of the patient’s choosing, if needed. Users and health care providers have been satisfied with the site. Naturally, using services like Virtuwell rather than going to a physical doctor’s office is also an effective way to reduce medical costs. These sites also give patients an option other than seeing their doctor when they have simple medical questions, which can help free more of the physicians' time to treat more challenging or urgent cases. Monitoring patients at home electronically is another growing use of technology in the medical field (Erikson).

**Affordable Care Act Provisions**

The changes that come from the provisions of the Affordable Care Act are aimed to stabilize and expand the existing primary care workforce, according to Melinda Abrams et. al. These incentives will come in two forms. The first will be the Affordable Care Act provision on Medicare, which will provide a bonus to primary care physicians who deal with clients funded through Medicare, per Abrams' findings. The other provision deals with Medicaid and will provide a reimbursement to providers who care for Medicaid beneficiaries. Below, the provisions in the Affordable Care Act pertaining to Medicare and Medicaid with the goal of alleviating the primary care shortage are summarized.

**Medicare Payment to Providers**

Beginning in 2011 and continuing for five consecutive years until 2016, as per Provision § 5501, primary care physicians will receive a ten percent bonus for
primary care service billing codes for office visits, nursing facility visits, and home visits, according to Keith J. Mueller’s analysis. These will be payable to physicians, nurse practitioners, clinical nurse specialists, and physician assistants who do at least sixty percent of their services in those billing codes. Services included in the codes are office visits codes 99201-99215, nursing home visits codes 99304-99340, and home visits codes 99341-99350 (Mueller). According to Figure 3, this will result in an increase of 3.5 billion dollars paid to primary care physicians within the five-year period. Also according to Figure 3, this could increase the typical revenue for a primary care provider to between 12,000 and 16,000 per year for the following five years (Abrams).

**Medicaid Payment to Providers**

As defined by Obamacarefacts.com, Medicaid is defined as “a joint federal and state funded program that provides health care for over sixty million low income Americans, mostly children, pregnant women, people with disabilities and elderly people who need help or live in nursing homes”.

Qualifications on who can receive Medicaid differs from state to state as the guidelines are set by the federal government and states and choose to expand them upon their own digression (ObamacareFacts.org). Basic qualifications are to meet the financial eligibility set forth. Under the Affordable Care Act, Medicaid will be expanded in states that agree to do so to cover any individual earning up to 138 percent of the federal poverty level, according to Senger. In Senger’s complete analysis she concluded that the federal poverty
level as of year 2013 was set at $15,856. According to the Congressional Budget Office, by 2015 they expect to add twelve million individuals to Medicaid.

Due to the low reimbursement rate for the Medicaid program, Medicaid beneficiaries have been threatened to not receive healthcare service. Medicaid is the principal public insurance provider for low-income Americans, according to Obamacarefact.com. In 2004 through 2005, as per Provision § 1202, eighty-five percent of primary care physicians reported participating in Medicaid. Yet, one in five of those physicians report to currently not taking on any new Medicaid patients. This is at a rate that is six times higher than for Medicare patients and five times higher than privately held insurance patients (Abrams).

As part of the Affordable Care Act in Provision § 1202, Medicaid payment rates for primary care physicians will be raised to the level of Medicare payment rates for equivalent primary care services in 2013 and 2014. This change is intended to encourage physicians who already accept Medicaid insurance to continue accepting it, as well as persuade those who do not to begin accepting Medicaid (Abrams).

**Medical Homes**

In addition to the Medicare and Medicaid provisions on payment to providers, there is also a provision that will provide grants and contracts to support medical homes and create Community Health Teams, according to the American Academy of Family Physicians. As delineated in Provision § 3502, the Community Health Teams will support medical homes by increasing access to
coordinated care, providing Community-based collaborative care networks for low-income populations, and by providing a Primary Care Extension Center program, which will provide technical assistance to primary care providers, according to the Academy.

**Provision § 2703: Health Homes**

Provision § 2703 addresses health homes for chronically ill Medicaid beneficiaries. In summary, the provision states that states have the option to enroll Medicaid beneficiaries with chronic conditions into a health home, which will be composed of a team of health professionals that will provide a comprehensive set of medical services, which will include care coordination. This will greatly impact Medicaid beneficiaries, up to ten million, with at least one chronic health problem whereby allowing them to receive care at a health home. According to Columbia University’s analysis of Medical Expenditure Panel Survey in 2009 data for the Commonwealth Fund, chronic conditions include diabetes, high blood pressure, asthma, heart attack, diagnosis of coronary artery disease, diagnosis of angina, diagnosis of other heart disease, diagnosis of stroke, joint pain the in the past 12 months, or diagnosis of arthritis. Also, by 2014, an estimated eight million newly eligible Medicaid beneficiaries with at least one chronic health condition could have a health home (Abrams)

**Provision § 3021: Center for Medicare and Medicaid Innovation**
Provision § 3021 establishes a Center for Medicare and Medicaid Innovation. The Center will provide a fast and efficient way to test pilot projects that will aim to test alternatives to fee-for-service similar to the patient medical homes according to the American Academy of Family Physicians. This Center will research, develop, test, and expand innovative payment and delivery system models to improve the quality and reduce the cost of care in Medicaid and Medicare programs. Also, medical homes are one of the priority models to be tested by this new Center. This Center could improve the quality, care, and coordination of the beneficiaries receiving help from these medical homes (Abrams).

**Provision § 3502: Community Health Teams**

In Provision § 3502, the Affordable Care Act addresses health teams that will support patient centered medical homes. In summary, the provision provides grants and contracts to support the medical teams to support the medical homes by increasing access to comprehensive, community-based, coordinated care. In affect, this will provide patients with increased help to manage their conditions (Abrams).

**Provision § 10333: Community Based Collaborative Care Networks**

According to Provision § 10333, grants will be given to develop networks of providers to provide coordinated care to low-income patients and populations. This will provide low-income patients with a coordinated, comprehensive, and
integrated care. The network of providers will also offer assistance with enrollment, access, finding medical homes, case management, transportation, as well as off-hours coverage (Abrams).

Provision § 5405: Primary Care Extension Program

Provision § 5405 addresses the primary care extension program, which will provide that “state hubs” will work closely with community based health connectors to “educate and provide technical assistance to primary care providers (Abrams). Section 5405 may also facilitate care coordination by authorizing a new grant program to educate and support primary care providers about care coordination, chronic disease management, and preventive medicine (Heisler).

Provision § 3510: Patient Navigator Program

Provision § 3510 deals with the patient navigator program where programs will be implemented to help improve services within communities where there is disparate health access. This will help patients overcome barriers to health access by providing assistance with coordinating health services and provider referral as well as disseminating information about clinical trials (Abrams).

Provision § 5207: National Health Service Corps Funding
Provision § 5207 appropriates $1.5 billion dollars between the years 2010-2015 to the National Health Service Corps. The National Health Service Corps resources are used to recruit primary care providers to serve underserved areas of the community by eliminating and reducing student loans and debt. Specifically, $142 million dollars of funding was appropriated in fiscal year 2010. In years 2011-2015, $156 million dollars is authorized for spending (Abrams).

Provision § 5201: Federally Funded Student Loan Funds

Provision § 5201 limits the service requirement for primary care to residency and other services to a maximum of ten years. In addition, “the provision decreases the penalty for noncompliance from 18 percent interest accrual per year to 2 percent interest accrual per year greater than the rate the student would have paid if he or she had been compliant” (Abrams).

Provision § 5203: Health Care Workforce Loan Repayment

Provision § 5203 appropriated $50 million in each fiscal year 2010-2013 and $30 million in fiscal year 2014 for pediatric medical or surgical specialists. The provision also makes a loan repayment program to pediatric subspecialists or providers of child or adolescent mental or behavioral health care services (Abrams).

Provision § 5301: Primary Care Training and Enhancement Programs
Provision § 5301 funds programs that will provide resources “to develop and support primary care training programs, provide financial assistance to trainees and faculty, enhance faculty development in primary care and physician assistant programs, and establish and improve academic units in primary care.” “The provision authorizes up to $750,000 each year for fiscal year 2010-2014 to integrate academic units of medical training and to promote interdisciplinary recruitment and training.” The provision also authorizes up to $125 million for fiscal year 2010 and funds necessary for fiscal year 2011-2014 for all other grant and contract programs, which includes physician assistant training programs (Abrams).

**Conclusion**

Due to problems in the primary care industry, the United States has been pushed deeper and deeper into a shortage of primary care physicians in recent years. The passing of the President Obama’s Patient Protection and Affordable Care Act will have a significant impact on the shortage and its potential solutions. The present situation sees Americans poised to pay increasing premiums to have access to medical care when seeing a doctor is becoming a more and more difficult ordeal. However, with a balanced plan to alleviate the shortage through revising the structure of the primary care industry, increased efficiency through technology, and higher numbers of practicing professionals with foreign doctors and nurse practitioners, successfully avoiding the consequences of a severe primary care physician shortage in the coming years is more than achievable.
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