Rural Health Policy & Management Practicum

Strategies to Address the Shortage of Primary-Care Physicians

In

Rural Arizona

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Executive Summary

Access to healthcare services is vital to the health of all Arizonans. An adequate number of physicians, including an appropriate distribution of general practitioners and specialists (in both urban and rural areas) is critical to ensuring that care is available to all who seek healthcare services.

The shortage of physician supply in rural areas has been a national policy challenge for the past several decades. To help address the shortage in Arizona, this report hopes to identify strategies that can be used in formulating policy to address the problem. The following is a list of recommendations based on research findings:

- **Create a state-wide, multi-professional, multi-disciplinary, workforce commission to formulate workforce development, distribution and retention strategies.** Empower the commission by channeling the pool of GME funding allocation through it. The commission is to ensure the optimization of Arizona’s share of federal resources from NHSC, Titles VII, and VIII programs. It can also monitor the cost effectiveness of Arizona’s Loan Repayment Program.

- **Provide adequate and stable GME funding to support Arizona-based residency programs,** while requiring funding accountability through evaluation programs. Tie the level of funding to a reward system giving recognition to medical training programs producing a proportionate supply of urban and rural practitioners.

- **Promote Rural Health Education Partnership programs through AHEC,** similar to the program implemented in West Virginia. The model of Physician Shortage Area Program (PSAP) has proven to be one of the most effective approaches for improving long-term healthcare workforce supply and retention. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

- **Promote a strong primary care practice base in the state.** Champion the implementation of the Medical Home Model and Virtual Care through demonstration projects in community health centers and critical access hospitals. Utilize the Arizona Telemedicine infrastructure and the knowledgebase at the Arizona Rural Health Office for planning. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

- **Support the use of DOs, PAs, and NPs in the context of the Medical Home model in rural areas to maximize the efficiency and effectiveness of the limited health workforce in those areas.** Use PAs and NPs as physician extenders.

- **Improve utilization of 3RNet (The National Rural Recruitment and Retention Network) program for marketing of rural work opportunities.** Revamp the website with online rural videos and workshops to familiarize the workforce with communities with vacancies. Empower Arizona website administrators for active matching of vacancies with job
applicants to give a competitive advantage to Arizona, for recruiting from the national workforce. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

- Use IMGs as a “stop-gap” measure (short-term supply) for non-frontier rural areas. Improve long-term retention through community-based social competency training.

- Subsidize building rural, community-based training sites in collaboration with the SEARCH program to invigorate primary care residency programs, such as the model in New Mexico. This could provide the needed healthcare workforce while helping the economic development of the community. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

- Expand the Community Health Workers programs for frontier regions of Arizona. Use the RHO and AHEC resources for planning and implementation. Federal funding, from ARRA and the health care reform package, may be available for this strategy.
Introduction

Access to healthcare services is vital to the health of all Arizonans. An adequate number of physicians, including an appropriate distribution of general practitioners and specialists (in both urban and rural areas) is critical to ensuring that care is available to all who seek healthcare services. The shortage of physician supply in rural areas has been a national policy challenge for the past several decades.

The recent reports by the Arizona Medical Association and the U.S. Census Bureau Current Population Survey (CPS) indicate that the primary-care physician shortage is especially acute in rural Arizona. According to the American Academy of Family Physicians (AAFP), “family physicians comprise just fewer than 15% of the U.S. outpatient physician workforce, yet they perform 23% of the visits that Americans make to their physicians each year. In rural areas, an even greater proportion, about 42%, of these visits are to family physician offices”.¹ In an interview with Arizona Republic, Chic Older (vice president of the Arizona Medical Association) stated that the ratio of primary-care doctors to population is below the national average in all Arizona counties except Pima, Gila and Coconino counties.¹ The estimated underserved Arizonans living in primary care health professional shortage areas (HPSA), as of September 2008, was 16% (about 1 million people) compared to the U.S. average of 11.8%.²

The purpose of this research paper is to 1) Examine the physician workforce shortage in rural Arizona, with emphasis on general practitioners; 2) Present the possible factors leading to the shortage; 3) Review the alternatives for addressing the shortage; and 4) Make policy recommendations based on the presented alternatives. In understanding the challenges of recruitment and retention of physicians in rural areas, most studies have focused on generalist practitioners. This paper will draw most of its findings from those studies.
Physician Workforce Estimates & Supply Projections

Results from the WWAMI RHRC Studies

The WWAMI Rural Health Research Center (RHRC) is one of the eight centers supported by the Federal Office of Rural Health Policy (FORHP), a component of the Health Resources and Services Administration (HRSA) of the Public Health Service. The major focus of the center is to perform policy-oriented research on issues related to rural health care and rural health professional workforce. The WWAMI RHRC is based in the Department of Family Medicine at the University of Washington, School of Medicine, and has working relationships with other major universities in the five WWAMI states: Washington, Wyoming, Alaska, Montana, and Idaho. The following is a summary of the key findings from the studies conducted by the member universities.

In a 2007 study, Fordyce et al. examined the supply and distribution of clinically active physicians, in 2005, in the United States with emphasis on rural areas. They used the Rural-Urban Commuting Area (RUCA) codes, developed by the university of Washington, to categorize practice locations as urban, large rural, small rural, or isolated small rural. Analyses were performed at the national, Census Division, and state levels. The final sample pool included 559,709 physicians who were 70 or younger in 2005 and were clinically active, nonfederal, and nonresident physicians. Of these, 532,479 were MDs (95.1%) and 27,230 (4.9%) were DOs (doctor of osteopathic). For the purpose of the study, nine U.S. Census Bureau Divisions (see figure below) and three categories of generalists (Family Medicine, General Internal Medicine, and General Pediatrics) were identified. In every census division, the proportion of DOs, relative to the total rural family medicine workforce, was greater than the combined proportion of general internal medicine and pediatrics workforce. Of all generalists, DOs were more likely to practice in rural areas than MDs (20.5% vs. 14.9%). Also, they were more likely to practice in small and isolated small rural areas than were MDs but less likely to practice in persistent poverty areas. The International Medical Graduates (IMGs), on the other hand,
were more likely than U.S. medical school graduates (USMGs) to be generalists (41.2 % vs. 34.4%). They comprised 19.3% of rural generalists and of all rural generalists, IMGs were more likely than USMGs to practice in persistent poverty counties (12.4% vs. 9.1%) and in large (57.5% vs. 56%) and small (29.9% vs. 29.6%) rural areas. However, they were less likely to practice in isolated small rural areas (12.6% vs. 14.4%). In Arizona, the DOs and IMGs comprised 13.1% and 25.3%; respectively, of the generalists practicing in rural areas.

Overall, the study indicated that close to 50% of isolated rural generalists were family practitioners. Rural areas had proportionally less specialists than generalists and the trend worsened with the decreasing size of the rural area.

Physician Supply Data from Arizona Medical Board

“The Arizona Medical Board (AMB) licenses and regulates more than 19,800 physicians, of which approximately 10,000 practice in the state”. The St. Luke Health Initiatives (2008) study, based
on the AMB database, exhibits the following uneven physician distribution across the counties in Arizona. The national average, for the same period, was 1.05 per 1000 population.6

![Active Primary Care Physicians per 1000 population, Arizona Counties, 2008](image)

A study by Rimsza et al. on the Arizona physician workforce (based on 1994-2005 data), estimates that 46% of the Arizona physicians were primary care practitioners in 2005.7 The report does not specify the percentage of the International Medical Graduates included in the study.

**National Physician Supply Trends**

In a retrospective cohort study of employment trends of physicians over their lifetime, Staiger et al. compared AMA’s Physician Masterfile data to that of the U.S. Census Bureau Current Population Survey (CPS), to estimate current physician employment trends (Appendix A: figure 2) and to project physician supply through 2020 (Appendix A: figure 3).8
The results of the study indicate that the number of active physicians (includes both osteopathic and medical physicians who were working ≥20 hours) of all ages approximately doubled during the sample period (1980 through 2007). In an average year, the CPS estimated 67000 (10%) fewer active physicians than did the Masterfile (p<0.001). The difference between the two estimates was fairly stable over time.

The authors’ conclusions indicate that the prime working age for physicians is at ages of 35 to 54 years with an uptrend in female physician supply. The difference in the physician number estimates between CPS and the Masterfile are likely due to reporting lags in transitions to retirement and entry of International Medical Graduates (IMGs) into the profession. Relative to the Masterfile data, CPS-based projections indicate more young physicians in the workforce and fewer older physicians remaining active. Overall, both the CPS-based and the Masterfile-based projections suggest that the number of active physicians will be below HRSA’s baseline requirements in year 2020, therefore a shortage of physicians (19000 per CPS data and 74000 per Masterfile data) is forecasted for that year.

Another study by Colwill et al. shows the rise of allopathic and osteopathic family practice (FP) graduates during 1990s (49% for allopathic, 111% for osteopathic). The authors report a 46% increase in the number of women enrolled in family practice residencies during the same period. They predict that the proportion of women in the Family Practice workforce will double to 40% in 2020, and state that “women have been less likely than men to select rural practice”. According to the research, despite the increase in the FP graduates (as successors to general practitioners) in 1990s, rural counties with population below 25,000 show little sign of increasing physician density. A projection of the number of physicians that are expected to be practicing in rural areas, given the 2003 trends in the number of graduates per year, is shown in Appendix A, Exhibit 4. The projection shown accounts for more women entering the family/general practice and the lower probability of women entering rural practice.
In an October 20, 2009 press release, the Association of American Medical Colleges (AAMC) released information showing that the first-year enrollment in the U.S. medical schools increased by 2% compared to 2008—to 18,390 students in 2009.\(^{10}\) The increase was contributed mainly to opening of four new medical schools (Two in Florida, one in Texas, and one in Pennsylvania). In addition, 12 existing medical schools increased their first-year class size by 7% or more. Arizona was not among the states experiencing this growth.\(^{10,11}\)

In a related commentary, Perry Pugno, the Dir of the AAFP Division of Medical Education stated that “Medical school expansion is not going to help the nation’s physician workforce problems if we continue to produce the wrong kinds of doctors who continue to practice in the wrong areas”.\(^{11}\) Pugno was referring to the closure of family medicine residency programs having a direct impact on the critical supply of the physician workforce that provide care in the underserved areas. According to Pugno, 30 family medicine residency programs closed from academic year 2003-04 through 2007-2008, resulting in a decline in the number of family medicine residencies.

**Challenges of Healthcare Workforce Supply & Retention in Rural Areas**

The “Arizona Rural Health Plan 2005-2007”, which has been approved by the Centers for Medicare and Medicaid Services (CMS), states that “the most frequently cited health issues by the rural health leaders are: 1) Rural health care workforce shortages; 2) Health care coverage; 3) Lack of behavioral/mental health services; 4) Diabetes; and 5) Dental/Oral health”.\(^4\)

Several studies including those by the California Healthcare Foundation\(^{12}\) and the National Opinion Research Center (NORC) sponsored study of rural health challenges\(^{13}\) state that while 25% of the U.S. population resides in rural areas, only 10% of the physicians practice in those areas. For Arizona, according to a Kaiser report\(^{14}\), the non-metropolitan population (see link for definition) for 2007-2008 constituted 12% of the state population (between 700,000 to 800,000). This is in line with the 2000 Census Bureau estimate of 12.5%. According to Rimsza’s study, 4% of the total Arizona
physicians were practicing in non-metropolitan areas, while 16% of the primary care physicians were practicing in those areas [using the Bureau of Statistics MSA Definitions for metropolitan and non-metropolitan areas (see Appendix B)]. The estimates indicate that a disproportionate number of Arizona specialists practice in metro areas.7

The rural health care pundits have enumerated the challenges of rural health practice throughout the literature for decades. Using a broad definition of rural as being a non-metropolitan area, the following are the most commonly cited issues:

- Rural areas have a larger portion of seniors (over 65) than the rest of the nation. Per U.S. Department of Agriculture Economic Research Service data (2007), about 15% of rural residents are senior, versus 12% nationally. With older age come poorer health and more physical limitation in performing daily activities. Due to these factors, the demand for care for chronic disease is higher in rural areas.

- Rural communities have a lower per capita number of physicians (see section “physician supply data from Arizona Medical Board”) and the patients are spread out over a wider geographical area. As a result, physicians practicing in rural areas generally work longer hours to meet the needs of their communities.15 According to Colwill et al. “rural FPs average 20% more office visits and six hours more work per week than their counterparts in large metropolitan areas”.9

- The rural populations tend to be poorer (resulting in substandard housing conditions, no telephones, and lack of transportation), lack health insurance (due to low socioeconomic status), rely on Medicare at younger age, have higher infant mortality, encounter a higher prevalence of environmental and occupational hazard, and have higher prevalence of mental health problems due to the socioecologic factors of unemployment (due to geographic location and inability of rural areas to attract employers due to low population density), low education, and discrimination.15,16,17

- Rural physicians make less money than those practicing in metropolitan areas.15 In an effort to examine this issue, a comparison of rural and metropolitan mean salaries for family and general
practitioner in Arizona was made. The comparison revealed that the mean annual salary (Bureau of Labor Statistics, May 2008)\textsuperscript{18} for family and general practitioners in northern Arizona non-metropolitan areas (Apache, Gila, La Paz, and Navajo counties) was $145,710.00 (with a relative standard error of 9.7%), while for the metropolitan areas of Phoenix-Mesa-Scottsdale, the mean was $153,110.00 (with a relative standard error of 5.5%). The salaries were calculated based on a mean hourly rate times 2,080 work hours (40 hours/wk * 52 weeks) or the average of surveyed salaries when hourly rates did not apply. With a rudimentary analysis considering the cost of living differential between a large metropolitan area like Phoenix (104.56) and a small metropolitan area like Yuma (93.24) and 6 hours per week of extra work hours for Yuma physicians, the rate of pay even for a small metropolitan area PCPs seems to be less than those of larger metropolitan areas.

- Rural hospitals are generally small (less than 50 beds) and provide limited scope of services.\textsuperscript{15}
- The rural population social norms are different than those of the providers with non-rural origins. The provider social competency, in the context of the community served, plays a critical role in avoiding ethical conflict and improving both patient satisfaction, with the rural providers, and the providers satisfaction with their rural practice.\textsuperscript{15}
- Professional isolation resulting in lack of prompt access to specialists consultation, physician support teams (shortages of healthcare professionals including nurses, social workers, dentists, home-based providers, and mental health professionals), technology and diagnostic tools.\textsuperscript{3,15}
- Wider scope of responsibility and the need for special internship training compared to urban generalists. Due to the absence of prompt access to specialists such as general surgeons, gynecologists, and orthopedists, most rural generalists perform some or all of those functions.\textsuperscript{15}
- Major perceived barriers to recruitment, in rural areas, include cultural isolation, poor-quality schools, housing and lack of spousal job opportunities.\textsuperscript{19}
Alternatives for Addressing the Physician Shortage in Rural Areas

1) Alternative Health Workforce

An estimated 269,000 primary care physicians currently practice in the United States, of which 38% are family physicians. To gauge the future need for family physicians, a study by the Robert Graham Center for policy studies in Family Medicine and Primary Care estimates that if by year 2015, 30 million patients need care, then 15,585 additional family physicians will be needed. For an estimated 69 million patients that estimate is increased to 51,299.20

In his testimony before the Committee on Finance, in March 2009, Dr. Murdock Mullan, Professor of Medicine and Health Policy at The George Washington University emphasized the need for constructing a strong primary care delivery base by maintaining an appropriate growth in the number of physicians and using NPs and PAs as an important asset for service delivery.21

According to Hooker et al., “The federal government is the largest employer of PAs, followed by state governments. Employment of PAs in government agencies and large managed care organizations is rising, possibly because they are able to see the same number of patients in outpatient settings at approximately half the cost of a physician. Comparable employer information for NPs does not exist”. PAs and NPs are more likely than physicians to live in communities of less than 10,000 population.22

One of the states extending the role of Advanced Practice Nurse (APN) and Physician Assistant (PA) is Illinois. Per Administrative Code 89, the affiliated providers that can assist a Primary Care Provider (PCP) in a medical home, as a setting for a Primary Care Case Management Program (PCCM), are APNs and PAs. A PCP can increase the limit of their panel size (1800) by 900 patients for each Full Time Equivalent APN, PA or Resident in his or her practice. The statutes also state that in areas where there is an insufficient number of PCPs to adequately serve the population eligible to enroll in the PCCM program without exceeding the panel limits established, APNs may be allowed to enroll as PCPs.23
The state of Iowa identifies Community Health Centers (CHCs) as the safety net providers that are furthest along in progress toward a **Patient-Centered Medical Home (PCMH)** model of care. A PCMH is a health delivery model in which the patients establish an ongoing relationship with a physician-directed provider team. The model is based on the theory of coordinated care that is “comprehensive, accessible, continuous”, and is based on evidence-based medical practices. Iowa’s Medical Home System Advisory Council report outlines the need for continued development and support of the current primary care workforce and implementation of a health information technology system to integrate and coordinate care across the community, the state and the national health care system. The Health Care Reform enacted (HF 2539) through the Iowa General Assembly, includes a blueprint for the PCMH system in Iowa. Iowa Code 1999, Chapter 135, identifies physicians, advanced registered nurse practitioners, physician assistants and chiropractors as “primary care providers” that can provide for a patient’s general health needs through collaboration with other health care professionals.

Other states that have launched PCMH demonstration projects, which promotes the use of non-physician health care professionals such as physician assistants, nurse practitioners and chiropractors, include California, Connecticut, Florida, Louisiana, Maine, Maryland, Nebraska, New Jersey, New Mexico, and Ohio.
Physician Assistants as Physician Extenders

The Arizona Regulatory Board of Physician Assistants (ARBoPA) licenses and regulates over 1,000 physician assistants. “Physician Assistants must hold a valid PA license, possess an approved notice of supervision, and have an approved supervising physician available while performing healthcare tasks. Physicians may supervise up to 2 PAs”.6

The Physician Assistants are governed by Arizona Statutes Title 32, Chapter 25 (Summary in Appendix C). Per Article 3, section 32-2531, although the PAs require supervision by a physician, the “supervision does not require the personal presence of the physician at the place where health care tasks are performed”. However, the PAs are not allowed to perform health care tasks in a place which is geographically separated from the supervising physician’s primary place for meeting patients without the authorization of the supervising physician and the board. Exceptions allowed by the board are:

“1. Adequate provision for immediate communication between the supervising physician or supervising physician's agent and the physician assistant exists.

2. The physician assistant's performance of health care tasks is adequately supervised and reviewed.

3. A printed announcement which contains the names of the physician assistant and supervising physician and states that the facility employs a physician assistant who is performing health care tasks under the supervision of a licensed physician is posted in the waiting room of the geographically separated site”.

The above-stated regulation is somewhat open to interpretation. It seems that there could be potential for PAs practicing in a generalist practitioner's remote care site, if proof of adequate supervision can be established. Use of telecommunication networks (e.g., telemedicine and video-conferencing) can potentially provide such supervision.

The St. Luke Health Initiatives (2008) study, based on the AMB database, exhibits the following uneven physician assistant distribution across the counties in Arizona. For the year of study, the national average was 2.4 per 10,000 population. The Arizona average was 2.3 per 10,000 population.6
Active Physician Assistants per 10000 population, Arizona Counties, 2008

Source: Figure 23

Nurse Practitioners as Substitute Workforce

According to the Arizona State Board of Nursing, there are 3,389 Nurse Practitioners licensed to practice in Arizona. Unlike the Physician Assistants (that have a clearly delineated scope of practice under Title 32, Chapter 25 of Az State Legislature), the nursing chapter under Title 32, Chapter 15 does not clearly outline the legal roles and responsibilities of Nurse Practitioners.

Per Arizona Health Futures report, "Nurse Practitioners (NPs) are registered nurses with advanced graduate (master’s level) education and clinical training who are licensed to provide a wide range of preventive and acute health care services. Arizona is one of six states in which NPs can diagnose, treat and prescribe autonomously without physician collaboration or supervision". The St. Luke Health Initiatives (2008) study, based on the AMB database, indicates that the Arizona average for NPs per 10,000 population is 4.8. The national average was not available for NPs. A Kaiser study reports the 2009 total number of Arizona NPs to be 3,150.
2) Graduate Medical Education (GME)

“In order to become fully licensed in the U.S., a physician must complete graduate training in an accredited GME program.” About 40% of the total cost for GME is funded through Medicare, mainly to support teaching hospitals where residency training takes place. Additional sources of funding include Medicaid, the Department of Defense (DOD), the Veterans Administration (VA), and private payers. Alternate sources of funding vary by institution and state and are subject to yearly appropriations. Due to the economic downturn in the past few years and the resulting state budget deficits, Centers for Medicare and Medicaid (CMS) is trying to eliminate Medicaid funding of GME.

The number of residents, in medical school residency programs, is directly affected by GME funding. Current laws favor funding GME to non-hospital community-based settings, and primary care training. However, the cap on funded GME positions, which was introduced through the Balanced Budget Act of 1997, limits the number of allopathic and osteopathic medical residents to the numbers that were in place in December of 1996. To supply sufficient MD and DO graduates for the projected shortage of physicians over the next decade, medical schools are increasing enrollment by 5300 U.S. MD and DO graduates per year over the next 10 years. This would require about 21,000 GME positions over that period.

Committing additional public funding to increase the physician workforce has been under debate for decades. The opponents of the strategy argue that the additional funding will cause the high-supply regions to grow further without addressing the mal-distribution. In his testimonial to the United States Senate Committee on Finance (March 2009) about workforce issues in health care reform, Dr. David Goodman, the director of center for health policy and research at the Dartmouth Institute for Health Policy and Clinical Practice in Hanover (New Hampshire) presented a case for shifting focus away from increasing the numbers of clinical personnel, as a solution to regional physician supply disparities. He stated that the variation in physician supply for every specialty, across regions, is not explained by differences in patient illness levels or in population health, but by
where doctors prefer to practice and live. He continued by providing data that showed that for every physician that settles in a low supply region, four settle in a region with already high per capita supply of physicians. (Appendix D, Exhibits 1 to 3). Using this information, he drew the conclusion that lifting the Medicare funding cap on Graduate Medical Education (GME), in order to supply more physicians to the healthcare system, will perpetuate the same pattern of settlement and will not solve the physician regional maldistribution. Dr. Goodman stated that health care systems are very adaptable to different workforce staffing levels. As such, higher supply of physicians could create problems resulting in worse care due to greater unnecessary use of the hospital and greater problems with care coordination due to fragmentation of care over many different physicians. He proposed workforce policies that invest in what doctors and nurses do to improve health outcomes. He advocated strengthening primary care using integrated delivery system models (e.g., Kaiser-Permanente, Mayo Clinic, Cleveland Clinic, etc.) and equitable pay (relative to specialists) to prevent primary care providers from going into subspecialties. With regard to GME funding, Dr. Goodman favored a competitive approach for federal GME funds (similar to the NIH model) as well as shifting GME financing from Medicare, which favors hospital-based training, to one involving all payers.

The proponents for increasing the physician workforce advocate increasing the number of medical school graduates and the number of residency positions. Dr. Allan Goroll, professor of Medicine, from Harvard Medical School, was also among the panel of experts providing a workforce perspective to the Committee on Finance. He emphasized the inadequacy of primary care physician workforce and how it could threaten health system reform. According to Goroll (based on his experience from Massachusetts health insurance initiative), the insufficient capacity for primary care provision to support the individual mandate will burden emergency rooms for non-emergency care and further deteriorate the financial viability of health reform. Doctor Goroll concluded his testimony by stating that for having an effective functioning health care delivery system "Medicare
should consider increasing support of undergraduate and graduate medical education for primary care, but should not mandate numbers or proportions of training positions”.

Dr. Murdock Mullan, another member of the panel of experts presenting, favored the current expansion of medical schools but recommended that “Title VII legislation to be reinvigorated and up-funded to augment primary care training in medical schools”. He stated that the “current number of Medicare funded slots is sufficient to maintain workforce numbers”. He highlighted the need to reform legislation in favor of community-based and ambulatory training. He also expressed a need for “designing a new GME allocation system” that could address the “workforce needs of the country”.21

3) National Health Workforce Commission

Dr. Goodman, a member of the panel of experts presenting to the Committee on Finance on health reform for the workforce, proposed the formation of a commission, with membership from experts in public health, patient-centered care, nurses, consumers, health care systems and payers that would take over the COGME function in creating evidence-based policy. He emphasized the need for having new GME committee bylaws prohibiting members from having affiliations with professional societies and trade associations.31

Dr. Mullan, from the same panel of experts, also advocated the creation of a “National Center for Health Workforce Commission” for managing health care workforce reform.21

Steven Wartman, another member of the panel of experts and the president and CEO of the association of academic health centers, concurred with Dr. Goodman in revamping the health workforce policymaking and planning infrastructure by centralizing the current fragmented system. He argued for a new, collaborative, coordinated, national health workforce planning initiative to bring hundreds of federal, state, and private stakeholders together in order to streamline the decision-making process. As an interim step, he called for the appointment of a “national health
workforce coordinator”, followed by the “creation of a permanent, multi-professional, multi-disciplinary national health workforce planning body to bring together all stakeholders” in order to take a comprehensive, coordinated, and strategic approach to national workforce planning.33

4) Loan Forgiveness Programs

The National Health Services Corps (NHSC) helps Health Professional Shortage Areas (HPSAs) in the United States get the medical, dental, and mental health that they need. An HPSA is a federally designated area with low physician to population ratio (more than 3500 persons per physician or 3000 persons per physician for a “high needs” area) that lacks availability to health care resources in the surrounding area because of distance, overutilization or access barriers. The NHSC is administered through the Health Resources and Services Administration (HRSA) branch of the U.S. Department of Health and Human Services.34 Through its scholarship program, NHSC pays tuition, fees and provides a living stipend to students enrolled in accredited medical (MD or DO), dental, nurse practitioner, certified nurse midwife and physician assistant training. Eligibility is determined based on commitment to serving underserved populations and building successful careers in Shortage Areas. In return, the graduates (receiving the scholarships) provide between two and four years of primary care services in HPSAs (that have been approved by NHSC as service sites). The NHSC Loan Repayment Program pays $50,000 for two years of service, with potential for additional years of support, in HPSAs (that have been approved by NHSC as service sites) to fully trained primary care physicians (MD or DO), family nurse practitioners, certified nurse midwives, physician assistants, dentists, dental hygienists and certain mental health clinicians. Both seasoned and newly trained clinicians may apply for the program.

The Arizona State Loan Repayment Program, administered by Arizona Department of Health Services, offers educational loan repayment programs to primary care providers and dentists who are willing to provide ambulatory care services in urban or rural, public, non-profit practices located
in a federally designated HPSAs for a period of two years. The amounts awarded are based on the type of provider and priority ranking of the service site. The physicians are responsible for locating eligible employment and they can use Arizona Association of Community Health Centers (AACHC) and The National Rural Recruitment and Retention Network (3RNet) as resources.

Dr. Goroll, a member of the panel of experts presenting before the Senate Finance Committee in 2009, viewed loan forgiveness programs as a “useful stop-gap measure for encouraging careers in primary care, but unlikely to be a sufficient or durable measure in the absence of fundamental payment reform that improves the primary care practice environment.”

5) Medicare Payment System & Programs

In 1997, Congress created the Medicare Rural Hospital Flexibility Program through the Balanced Budget Act. The purpose of the program is to “improve the financial viability and stability of health care in rural areas across the nation”. The Flex program for Arizona is administered from the Rural Health Office (RHO) at the U. of Arizona. The program is also known as the Arizona Critical Access Hospital Program and is chartered to “provide specialized resources and assistance to small rural hospitals (in Arizona) that are seeking or have acquired critical access hospital designation (CAH)”. According to Alison Hughes, the Arizona flex program director, to be designated as a CAH, the rural hospital must have no more than 25 acute care beds, have a patient stay in the hospital of no more than 96 hours, agreements with affiliates for transfer of services, have a 24-hour emergency room, and be more than 35 miles away from the nearest hospital (in mountainous terrain or in areas with only secondary roads available, the mileage criterion is 15 miles). By acquiring a CAH designation, a rural hospital qualifies for Medicare reimbursement on cost basis. The Health Resources Services Administration (HRSA) awards grants to the Flex program through the Office of Rural Health Policy. According to Hughes, the UA Rural Health Office (the designated state office of rural health) not only supports rural hospitals through training,
consulting, and providing better technology, but also helps keep them in service. There are 14 CAHs, also known as rural health clinics, in Arizona.\(^{38}\)

In a study by Chan et al., the Medicare Incentive Payment Program (MIP) for Physicians serving in Health Professional Shortage Areas (HPSA) was examined for its effectiveness in encouraging primary care physicians to work in underserved rural areas. The study concurred with other studies that the HPSA program was not an “effective mechanism for improving Medicare beneficiaries’ ability to obtain health care”. Among other shortcomings, the authors cited the complexity of regulation behind HPSA designation, especially “defining geographic HPSA boundaries”, as an obstacle for determining the eligibility criteria and equitable distribution of the bonus payments.\(^{39}\)

In his testimony before the Senate Finance Committee, on March 2009, Dr. Goroll expressed concern over the “Impact of a dysfunctional physician payment system on primary care practice and workforce” in the context of Medicare’s RBRVS fee-for-service system. He criticized Medicare’s Physician Fee schedule in paying “generously for performance of procedures and inadequately for evaluation and management services, the basic doctoring that is the hallmark and bread and butter of primary care”. Using the fact that all Medicare payment comes out of a single pot, he then reasoned that paying for expensive procedures reduces the funds available for preventive care.\(^{32}\) During the same proceedings, Dr. Mullan supported primary care payment reforms to support the use of the medical home model. He also stated that an investment in health information technology is a needed reform to help “promote a strong primary care practice base in the country”.\(^{21}\)

In a related article in The Arizona Republic, seniors in rural Arizona towns and cities such as Yavapai County’s Prescott and Prescott Valley, are facing challenges in receiving medical care using their Medicare coverage. The reason cited is the refusal of some local physicians in accepting Medicare patients, on the basis of low reimbursemrnts from the agency. The result is an overburdening of already strained urgent-care centers to provide primary care to seniors with no
other alternative due to geographical isolation. Medicare officials did not confirm the claims about patients having trouble finding primary-care doctors in the areas in question but they did deny the possibility of location-specific problems, due to the number of doctors or other medical professional in those locations.\(^1\) The fundamental issue seems to relate to the use of the sustainable growth rate formula, used by Medicare, in determining payments to doctors. According to the formula, the change in payments (for the typical patient) is tied to the growth of the overall economy.

6) **International Medical Graduates (IMG) and Community Health Centers (CHCs)**

The J-1 Visa Waiver program in Arizona is administered by the Arizona Department of Health Services (ADHS). The goal of the program is to improve accessibility to health care for underserved areas. In exchange for serving as a primary care provider (family or general practice, pediatrics, internal medicine, obstetrics/gynecology) for at least 3 years in a Health Professional Shortage Area (HPSA), or a federally designated Medically Underserved Area (MUA), or Medically Underserved Population (MUP) at the approved service site(s), the international medical graduates get exemption from going back to their countries after completing their residency training in the United States. According to the national “shortage” of J-1 Visa Waivers in 2005, Arizona requested 25 additional waivers beyond the annual limit of 30. Arizona was one of the 10 states requesting additional J-1 Visa Waivers to meet the demand for its underserved communities.\(^4\)

A decrease in J-1 visas (post-9/11) and increase in H-1B visas were identified as areas of policy concern for IMGs practicing in the U.S. The trend could have an adverse effect on the supply of IMGs that practice in an underserved area. Unlike the J-1 visa holders, H-1B visa holders are not required to serve in underserved areas in order to stay in the country after the completion of their residency training. On the other hand, the supply of IMGs could increase as a result of projections of shortfall of physicians and the Association of American Medical Colleges (AAMC) recommendation to increase medical school enrollment.\(^3\)
In a commentary on IMGs, Barbara Schuster, highlights the unique challenges of those physicians in terms of professional and social acculturation as well as the level of patient comfort with care takers who are different in terms of race and culture. She contends that in most areas of the United States, “the international medical graduates face an additional hurdle in building the patient-physician relationship because of cultural biases”.41

A study by Rosenblatt on the shortage of medical personnel in community health centers (CHCs), shows that while the U.S. government is expanding the capacity of CHCs, in order to provide care to underserved populations, the number of vacancies for family physicians and registered nurses is increasing in those centers. According to the study, “physician recruitment in CHCs was heavily dependent on health Service Corp scholarships, loan repayment programs, and IMGs with J-1 Visa Waivers”.19 The Arizona Association of Community Health Centers (AACHC) is the Primary Care Association (PCA) for the state of Arizona. It’s a non-profit organization with a mission for advocacy for the healthcare needs of the medically underserved and the uninsured. The Association works on the expansion of Federally Qualified Health Centers (FQHCs) and the SEARCH (Student/Resident Experiences and Rotations in Community Health) program. Funding for the SEARCH program is provided by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA). The purpose of the program is “to provide clinical opportunities for health professions’ student and residents to serve in interdisciplinary primary health care teams in underserved communities”. The ultimate goal is to increase the recruitment and retention of health professionals in Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs).36 The Arizona Association of Community Health Centers has 16 members, with more health centers under construction using federal funding from the American Recovery and Reinvestment Act.42
7) *Title VII and Title VIII*

One of the health professions education programs, funded by the federal government, is under Title VII of the Public Health Service Act. The program provides federal funding for: “1) Training of minorities and disadvantaged professionals; 2) Training in primary care medicine and dentistry; 3) Interdisciplinary community-based linkages to establish training centers in remote areas; 4) Health professions workforce information and analysis; 5) Public health workforce development; and 6) Student loans (funding for schools to make student loans).” Title VIII of the program provides nursing workforce development. The program was reauthorized under the Health Professions Education Partnerships Act of 1998 to improve resource allocation for healthcare workforce training, address mal-distribution of health professions and minimize program duplication.

There are over 40 health professions programs attempting to address workforce issues. Various strategies are used and they include developing clinical training sites (where health professionals learn to serve vulnerable populations), community-oriented primary care curriculums, and federal grants to schools to make loans to health professional students.¹⁴³

In her testimony to the Committee on Health, Education, Labor and Pensions, Ms. Brand, the associate administrator of Health Resources and Services Administration (HRSA), emphasized the need to maximize federal investments by eliminating activities that have not demonstrated successful placement of health professionals in underserved areas and, instead, allow HRSA to focus providing funding for direct patient care. She recommended funding to programs such as the National Health Service Corps (NHSC) that help provide direct care, and to address the most critical health workforce shortages, such as nursing, through workforce development, loan repayment, and scholarship programs. Ms. Brand indicated that studies based on surveys from the grantees, since the end of 2007, have shown that students who receive a portion of their clinical training in non-hospital, primary care settings are more likely to go on to practice in primary care. She discouraged use of Title VII funding for direct student loan funding, where other sources of
federal funding (e.g., department of education funding such as the Pell Grant Program, and William D. Ford Federal Direct Loan program) or private sector funding (e.g., Robert Wood Johnson Foundations Partnership for Training programs for nurse practitioners, certified nurse-midwives and physician assistants) exist. She advocated expansion of state-sponsored loan repayment programs that imitate the success of the NHSC in directing health professionals to HPSAs. These programs create partnerships with local communities, the NHSC, and other agencies with the federal government.

In discussing the future direction of the federal investments in the healthcare workforce, Ms. Brand’s position was to shift the focus from a federal approach to one based on partnerships between the private sector, academic institutions and the communities they serve. She highlighted the need for private sector, state and local solutions tailored to address the specific workforce need of the local communities. In supporting these partnerships, she stated that the federal government should support Title VII’s sister programs—the NHSC, the Nursing Loan Repayment and Scholarship Programs, and the majority of Nursing Workforce Development Programs (the largest source of federal funding for nursing education, which provides loans, scholarships, and programmatic support).43

8) Arizona Health Education Center (AHEC)

The AHEC’s mission is “to improve the recruitment, diversity, distribution, and retention of culturally competent personnel providing health services in Arizona’s rural and medically underserved communities”. It is comprised of five regional centers, with the administering home central office based at the University of Arizona Health Sciences Center.44 The center is funded and regulated by Arizona state legislature. AHEC currently pays for 80% of all rural training in the State.

One of the “Provider Education” resources called out by AHEC’s web site is the Arizona Telemedicine Program, which is also headquartered at the University of Arizona, College of
Medicine. Telemedicine enables the provision of health care to remote sites, where patients may be geographically separated from a physician or other healthcare provider. The program may be of special benefit for providing specialty care in rural Arizona, where the number of practicing specialists is disproportionally low compared to the rural population.

Research shows that graduates from Physician Shortage Area (PSAP) programs of medical schools offering the program have the best odds in both practicing in rural areas after graduation, and retaining practice in those areas. The matriculation criteria include growing up or having lived in a rural area or small town, having a firm commitment to family practice or a similar area, and taking their family medicine clerkship and internship in a small town or rural area.

9) Indians Into Medicine Program (INMED) and Community Health Workers Program (CHW)

The purpose of the INMED program is to “increase the number of American Indian and Alaska Native health professionals serving Indian communities”. The program facilitates students’ entry into health professions by “providing academic support and career counseling to help students be more competitive in their applications to medical and health professional schools”. “The program is collaboration between the University of Arizona and the Inter Tribal Council of Arizona, Inc.”. The funding for the program comes from the Indian Health Service.

The “screening and education provider” model of care that was implemented in Arizona’s Mariposa Community Health Center (MCHC) uses a large group of Community Health Workers (64 in 2004) for outreach programs that inform communities of health care options and encourages them to enroll into available services. The State-supported program “Arizona Health Start” uses Community Health Workers (CHWs) to provide education and screening services to provide perinatal health promotion. In Arizona, most CHWs have a high school diploma and their “demographic characteristics mirrors those of the communities they serve”. Some employers
require that CHWs live in the communities they serve in order to “share the language, culture and the socioeconomic status of the residents”.48

**Winning Strategies Used by Other States**

Based on a National Rural Health Association Report, here are examples of strategies implemented by various states for rural workforce development.49

1) **In Alaska- Community Health Aide/Community Health Practitioner Program**

   Community Health Aides are selected by their communities to receive training. The training, in training centers, includes four sessions; each lasts three to four weeks. Between sessions, the CHAs work in their clinics completing a skills list and practicum. The Community Health Practitioner (CHP) designation is achieved by CHA’s completing the training, the clinical skills preceptorship and a qualifying examination. CHAPs work in rural Alaska villages to provide care in collaboration with visiting health providers such as nurses, physicians, and dentists.

2) **Montana- SEARCH program**

   The program has enabled medical and dental providers to go to health centers in Montana for training rotations. Exposure to the state has helped attract future providers.

3) **New Mexico- NHSC program & Rural Health Practitioner Tax Credit**

   With the NHSC loan repayment program, the state has been successful in bringing in dentists, with a temporary license, to fill vacancies in rural community-based primary care centers.

   The rural health practitioner tax credit program was enacted in 2007, by the New Mexico legislature to give eligible dentists up to $5000 in state income tax credit for their practice in rural New Mexico. Dental hygienists are eligible for up to $3000 in state income tax credit.
4) **New Mexico- HMS frontier-based, community-driven training site (Model in Appendix E)**

Hidalgo Medical Services (HMS) was established to provide sustainable frontier health services through community development and by establishing HMS as a training site for health professionals. HMS was founded with the assistance of the University of New Mexico (UNM) Health Sciences Center Rural Outreach program and funding from the New Mexico Department of Health, Office of Rural Health and Primary Care. The frontier health center has developed resident rotations program with UNM (pediatric residents, family medicine residents, dental residents, Psychiatry students, PA students); A.T. Still University, Mesa, Arizona, (dental students), and Howard University; Washington, D.C.(dental students). The funding for HMS includes a $100,000 state appropriation to reimburse for UNM Peds/FP/Dental resident time; HMS operations; UNM psychiatry and A.T. Still dental student programs (resident and student salaries and stipends). The initial funding of $1.7M was through state legislature and federal grant appropriation to construct a medical/dental training facility. County and City resources complete financing of the project.

5) **South Carolina- SCRIPT program sponsored by AHEC**

The South Carolina Rural Interdisciplinary Program of Training is sponsored by South Carolina Area Health Education Consortium (AHEC). The purpose of the program is to immerse students in rural health care by providing experiences in rural health care settings. The program acquaints students with rural lifestyle by providing training in rural clinical practice. The students earn an $850 stipend plus a limited amount of travel money and housing to collaborate in a community-focused health promotion activity. They network with rural health professionals and earn up to 5 semester credit hours for 16 days of clinical practice while living in a rural community, as well as attending a 4-day Rural Health Workshop.

6) **West Virginia- Rural Health Education Partnerships/AHEC**

To increase the retention of West Virginia trained health professionals in rural underserved areas of the state, a partnership was formed between the local rural community
leaders, business, health care providers and state agencies. The result has been a 200% increase of rural physicians in 9 years, elimination of 8 full county HPSAs from 1995 to 2005, and increased retention of providers who trained in the program. The Health Sciences Technology Academy recruits minority and disadvantaged students into health careers. The academy has a partnership with Health Careers Opportunity Program, the Wes Virginia Rural Health Education Partnerships/Area Health Education Centers.

**Federal Sources of Funding**

With the introduction of the American Recovery and Reinvestment Act (ARRA) and the passage of the health care reform package (Reconciliation Act of 2010 and H.R. 3590) and its initiatives to address health disparities in rural America, there is an abundant source of federal funding available nationwide. Appendix F shows a sample of the types of funding available through HRSA, Department of Labor, and Department of Agriculture as well as ARRA funding. The specified areas for funding are:

- Rural Community Development
- Rural Workforce Development
- Demonstration projects for formation of consortiums to formulate strategies to address the shortage of family physicians and primary care professionals in rural settings
- Distance learning through telemedicine in rural settings
- Education Assistance programs for individuals with disadvantaged background to enter health professions
- Broadband infrastructure deployment in rural areas
- Electronic Health Records (EHR) implementation
Below are some samples of funding that was made available nationwide (excerpts from Appendix F). Arizona’s proactiveness in applying and securing its share of the funding could not be verified, except as stated.

- **Title III, VII, VIII funding under ARRA, through HRSA**
  - Funding for equipment to enhance training for health professionals in preventive medicine residency programs. 200 grants of $50,000 each, for a one-year project and budget period. Each application for up to $300,000 in direct-costs.
  - Eligible entities include schools of allopathic and osteopathic medicine, dentistry, and public health.

- **Telemedicine loans and grants, through HRSA**
  - Funding to provide access to education, training, and healthcare resources for people in rural areas. $30 million for 2010 grants with $500,000 for an application, in FY 2010.
  - Eligible entities include Indian tribes or tribal organizations, a state or local unit of government, legal entities (including private for-profit or not-for-profit organizations).

- **Health careers opportunity program (HCOP), through HRSA**
  - Funding to assist individuals from disadvantaged backgrounds to enter education in a health profession. Estimated $3 million available for 3 awards.
  - Eligible applicants include schools of allopathic, osteopathic and veterinary medicine, public health, dentistry, etc.

- **Rural economic development loan and grant program, through Department of Agriculture**
  - Funding to prompt rural economic development and job creation projects. Assistance provided to rural areas could include technical assistance for feasibility studies; advanced communications services; and computer networks for medical,
educational, and job training services. Estimated $740,000 for loans and $300,000 for grants.

- Eligibility to be determined by the Department of Agriculture, under the Rural Electrification Act.

- Rural Health Workforce development program, through HRSA
  - Funding to support the development of rural health networks to assist in recruitment and retention of primary allied health care providers in rural communities. Estimated $4 million for 20 awards of $200,000 each.
  - Eligible applicants include public or private non-profit entities located in a rural area or a rural census tract of an urban county. All services must be provided in a rural county or census tract.

According to the Phoenix Business Journal, Arizona Health Centers received $16 Million from ARRA, in July 2009. The funding will be used to repair and renovate the health centers, establish new clinics, and purchase health information technology systems for remote centers in Arizona.50

In a news release, in June 2009, the Department of Health and Human Services announced the availability of nearly $200 million, from ARRA, to support the loan repayments for primary care medical, dental, and mental health clinicians who want to work at NHSC sites.51

The Patient Protection and Affordable Care Act (H.R. 3590) has instituted many provisions, specifically affecting primary care and primary care practitioners and primary care educators. The following is a synopsis of some of those provisions:52

**Title VII Primary Care Training and Enhancement**

- Reauthorized Title VII, Section 747 (primary care medicine training).
- Focused on Patient-Centered Medical Homes.
- Authorized $125 million in FY 2010 and additional sums, as necessary, for FY 2011-2014.
Title VII Physician Training Grants

- Established a grant program to help medical schools recruit students that are most likely to practice medicine in underserved rural communities.
- Focused on rural training experience to increase the number of medical graduates who practice in those communities.
- Authorized $4 million for each of the fiscal years 2010-2013.

GME Modifications

- Modified DGME and IME funding to include costs for non-hospital training.
- Removed the 90% rule.
- Allows redistribution of residency positions when a hospital closes.
- Specified provisions for GME slot redistribution, if not used, giving priority to primary care and general surgery for new slots.
- Allows hospitals, in rural areas, with less than 250 beds to retain their unfilled residency positions.

Medicare Incentive Payments

- Allows 10% primary care bonus payments for primary care practitioners (physicians, NPs, PAs, etc.) who will be providing primary care services on or after January 1, 2011 and before January 1, 2016.

Recommendations

Predicting the physician supply has been challenging due to many factors including the uncertainty about physician retirement patterns, entry into the profession by the U.S. medical graduates and the pattern of female physicians entering the workforce. The prediction has been further complicated by the environmental factors such as changes in population demographics, the economic trends impacting
reimbursement rates by both CMS and third party payers, changing federal and state regulations, and political conflicts affecting IMG flow patterns in and out of the United States. For rural areas, the physician supply projection efforts have been further exacerbated by the sociocultural factors, disparities in economic and health status of the rural populations and governmental incentive programs.

Throughout the rural health research literature, barriers to recruitment have been identified as social, cultural and professional isolation; poor quality of schools and housing; lack of hospital infrastructure and technology; lack of spousal job opportunities; longer hours of work with lower pay; and lack of immediate access to specialty consultation.

For decades, to address these barriers and improve the supply and retention of healthcare workforce in rural and frontier areas, the federal, state and local governments have formulated and implemented various strategies. While no one solution has been able to solve this chronic policy challenge, some strategies have proven to be more successful than others. The following is a list of recommended strategies that have proven to be effective in either short-term or long-term planning for addressing the challenge of supply and retention of rural workforce, with particular emphasis on the primary care physician workforce.

- Create a state-wide, multi-professional, multi-disciplinary, workforce commission to formulate workforce development, distribution and retention strategies. Empower the commission by channeling the pool of GME funding allocation through it. The commission is to ensure the optimization of Arizona’s share of federal resources from NHSC, Titles VII, and VIII programs. It can also monitor the cost effectiveness of Arizona’s Loan Repayment Program.

- Provide adequate and stable GME funding to support Arizona-based residency programs, while requiring funding accountability through evaluation programs. Tie the level of funding to a reward system giving recognition to medical training programs producing a proportionate supply of urban and rural practitioner.

- Promote Rural Health Education Partnership programs through AHEC, similar to the program implemented in West Virginia. The model of Physician Shortage Area Program (PSAP) has proven to be one of the most effective approaches for improving long-term healthcare workforce supply and retention. Federal funding, from ARRA and the health care reform package, may be available for this strategy.
• Promote a strong primary care practice base in the state. Champion the implementation of the Medical Home Model and Virtual Care through demonstration projects in community health centers and critical access hospitals. Utilize the Arizona Telemedicine infrastructure and the knowledgebase at the Arizona Rural Health Office for planning. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

• Support the use of DOs, PAs, and NPs in the context of the Medical Home model in rural areas to maximize the efficiency and effectiveness of the limited health workforce in those areas. Use PAs and NPs as physician extenders.

• Improve utilization of 3RNet (The National Rural Recruitment and Retention Network) program for marketing of rural work opportunities. Revamp the website with online rural videos and workshops to familiarize the workforce with communities with vacancies. Empower Arizona website administrators for active matching of vacancies with job applicants to give a competitive advantage to Arizona, for recruiting from the national workforce. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

• Use IMGs as a “stop-gap” measure (short-term supply) for non-frontier rural areas. Improve long-term retention through community-based social competency training.

• Subsidize building rural, community-based training sites in collaboration with the SEARCH program to invigorate primary care residency programs, such as the model in New Mexico. This could provide the needed healthcare workforce while helping the economic development of the community. Federal funding, from ARRA and the health care reform package, may be available for this strategy.

• Expand the Community Health Workers programs for frontier regions of Arizona. Use the RHO and AHEC resources for planning and implementation. Federal funding, from ARRA and the health care reform package, may be available for this strategy.
Appendix A

National Physician Supply Trends
Figure 2. Expected Number of Active Physicians for Each 10-Year Birth Cohort, Born 1905-1914 Through 1974-1983, at Ages 45 to 54 Years by Data Source and Sex

CPS indicates US Census Bureau Current Population Survey; Masterfile, American Medical Association Physician Masterfile. Estimates are based on the model as described in the “Statistical Analysis” section of the text. Each line plots estimates based on data from a different sample (men, women, and pooled) and data source (Masterfile and CPS). Standard errors on the Masterfile data estimates for each birth cohort are 2% to 5%; on the CPS data, 7% to 12%, except for female cohorts (22%-38%). Estimates for more recent cohorts are inferred from employment at ages 25 to 34 years (when CPS estimates had greater employment than the Masterfile), resulting in higher estimates of cohort size for CPS vs Masterfile post-1970.

Figure 3. Percentage of Active Physicians in Various Age Groups Based on 2020 Projections Derived From the CPS and Masterfile Data

CPS indicates US Census Bureau Current Population Survey; Masterfile, American Medical Association Physician Masterfile.
A projection of the number of physicians that are expected to be practicing in rural areas, given the 2003 trends in the number of graduates per year.
Appendix B


AND

Physician Distribution in Arizona Counties
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Appendix C

Summary of Scope of Practice for Physician Assistants in Arizona
Summary of Scope of Practice for Physician Assistants in Arizona

PAs are considered Physician extenders, subject to Arizona statutes title 32, chapter 25. Per Article 3, section 32-2531, upon receiving board approval of a notice of supervision, a supervising physician may delegate health care tasks (subject to the regulatory limitations) to a PA. “Supervision does not require the personal presence of the physician at the place where health care tasks are performed. The board by order may require the personal presence of a physician when designated health care tasks are performed”. “A physician assistant shall meet in person with the supervising physician at least once each week to discuss patient management. If the supervising physician is unavailable due to vacation, illness or continuing education programs, a physician assistant may meet with the supervising physician’s agent. If the supervising physician is unavailable for any other reason, the fulfillment of this responsibility by the supervising physician’s agent is subject to board approval”.

In addition to clerical and patient education tasks, the PAs may perform physical examinations, formulate diagnostic impression, develop treatment plans, monitor the effectiveness of therapeutic interventions, assist in surgery, prescribe schedule IV & V controlled substances and prescription-only medications, perform minor surgery (per section 32-2501 “‘Minor surgery’ means those invasive procedures that may be delegated to a physician assistant by a supervising physician, that are consistent with the training and experience of the physician assistant, that are normally taught in courses of training approved by the board and that have been approved by the board as falling within a scope of practice of a physician assistant. Minor surgery does not include a surgical abortion”), and perform other nonsurgical health care tasks. The PA shall not perform health care tasks in a place which is geographically separated from the supervising physician’s primary place for meeting patients without the authorization of the supervising physician and the board. The board may make exceptions if:
“1. Adequate provision for immediate communication between the supervising physician or supervising physician’s agent and the physician assistant exists.

2. The physician assistant's performance of health care tasks is adequately supervised and reviewed.

3. A printed announcement which contains the names of the physician assistant and supervising physician and states that the facility employs a physician assistant who is performing health care tasks under the supervision of a licensed physician is posted in the waiting room of the geographically separated site”.

Appendix D

Dartmouth Study on Primary Care Physician Distribution
Exhibit 1. The primary care physician workforce per 100,000 population, age-sex adjusted, by Dartmouth Atlas Hospital Referral Regions, 2006. Shown is the marked variation in primary care physician supply. This variation is not explained by differences in urban-rural, socio-economic, or health status, but by physician preferences in where they want to live and work. (Source: Dartmouth Atlas of Health Care Working Group; AMA Masterfile data.)
Exhibit 2. The specialist physician workforce per 100,000 population, age-sex adjusted, by Dartmouth Atlas Hospital Referral Regions, 2006. Shown is the marked variation in specialist physician supply. This variation is not explained by differences in urban-rural, socio-economic, or health status, but by physician preferences in where they want to live and work. (Source: Dartmouth Atlas of Health Care Working Group; AMA Masterfile data.)
Exhibit 3. The relationship between the per capita supply of primary care and specialist physicians, 2006. This figure shows that there is little substitution at a regional level of primary care physicians for specialist physicians. Physicians have strong preferences for practicing in the same area. (Source: Dartmouth Atlas of Health Care Working Group; AMA Masterfile data.)
Appendix E

Hidalgo Medical Services Model
Hidalgo Medical Services Model
Appendix F

Federal Sources of Funding
<table>
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<tr>
<th>Funding Purpose</th>
<th>Deadline</th>
<th>Eligibility</th>
<th>Description</th>
<th>Link</th>
<th>Amount of Funding</th>
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<tr>
<td>ARRA - Equipment to Enhance Training for Health Professionals - Preventive Medicine Residency Program</td>
<td>May 10, 2010</td>
<td>Eligible applicants are accredited schools of medicine, osteopathic medicine, dentistry and public health. To be considered eligible, an applicant must demonstrate that it has or will have available full-time faculty members trained in preventive medicine and support from other faculty members trained in public health and other relevant specialties and disciplines.</td>
<td>This funding opportunity is one of many for the Equipment to Enhance Training for Health Professionals (EETHP) program, hereby known as EETHP Equipment Initiative. Twenty-one health professional training programs comprise this initiative. As defined by this program, a Health Professional Training Program is a program authorized under Titles III, VII and VIII of the Public Health Service (PHS) Act which focuses all or in part on the training of health professionals. HRSA is announcing the availability of funds to support multiple programs in the purchase of health professions training equipment. While the overall goals of the EETHP Equipment Initiative are the same for each program, applicants must satisfy the statutory requirements of the health professions training program under which they are applying for equipment. Accordingly, a different funding announcement is being offered for each of the 21 eligible programs that comprise the Initiative. This funding opportunity is for entities eligible for the EETHP-PMRP grant program only. The equipment requested under this announcement should support activities and the goals of the Preventive Medicine Residency Program. To be eligible for the EETHP-PMRP funding opportunity, an applicant does not need to be a current Preventive Medicine Residency Program (PMRP) grantee, but must be eligible to apply for the PMRP grant program.</td>
<td><a href="https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=5F0221C7-2F69-4945-90C0-6C1320AADCCC&amp;ViewMode=EU&amp;GoBack=&amp;PrintMode=&amp;OnlineAvailabilityFlag=True&amp;pageNumber=1">https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=5F0221C7-2F69-4945-90C0-6C1320AADCCC&amp;ViewMode=EU&amp;GoBack=&amp;PrintMode=&amp;OnlineAvailabilityFlag=True&amp;pageNumber=1</a></td>
<td>Across the entire initiative, approximately $50,000,000 is available to make about two-hundred (200) grant awards for a one-year project and budget period. Each applicant may request up to $300,000 in direct costs. Applications which exceed the $300,000 maximum will be considered non-responsive and will not be considered for funding under the announcement.</td>
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<tr>
<td>Community-Based Job Training Grants</td>
<td>April 29, 2010</td>
<td>In order to be eligible for consideration under this solicitation, the applicant must be either: (1) An individual Community or Technical College, such as a public community college, a nonprofit community college, a Tribally controlled college, or a Tribally controlled university; (2) a Community College District; (3) a State Community College System; (4) a One-Stop Career Center in partnership with its Local Workforce Investment Board, that specifies one or more Community-Based Job Training Grants will be awarded through a competitive process to support workforce training for high-growth/high-demand industries through the national system of community, technical, and Tribal colleges. Successful education/training programs funded through this SGA will prepare participants for employment in high growth and emerging industries, and will: (1) Target skills and competencies in demand by the industries</td>
<td><a href="http://edocket.access.gpo.gov/2010/2010-5609.htm">http://edocket.access.gpo.gov/2010/2010-5609.htm</a></td>
<td>Approximately $125 million in grant funds. ETA intends to fund approximately 40 to 60 grants generally ranging from $1 million to $3 million.</td>
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| **Distance Learning and Telemedicine Program Loans and Grants** | May 18, 2010 | 1. Only entities legally organized as one of the following are eligible for DLT financial assistance:  
 a. An incorporated organization or partnership,  
 b. An Indian tribe or tribal organization, as defined in 25 USC 450b (b) and (c),  
 c. A State or local unit of government,  
 d. A consortium, as defined in 7 CFR 1703.102, or  
 e. Other legal entity, including a private corporation organized on a for-profit or not-for-profit basis.  
 2. Individuals are not eligible for DLT program financial assistance directly.  
 3. Electric and telecommunications borrowers under the Rural Electrification Act of 1936 (7 U.S.C. 950aaa et seq.) are | described in section I.B of this SGA; (2) provide education/training for jobs currently available or job openings that are anticipated during the life of the grant; (3) educate individuals about opportunities for career advancement and wage growth within the targeted industry and/or occupation, and provide comprehensive coaching to help individuals take advantage of those opportunities; and (4) result in an employer- or industry-recognized credential (which can include an educational certificate or degree, an occupational license, an industry-sponsored certificate or certification, as well as a Registered Apprenticeship certificate or degree). Applicants must propose projects that target incumbent workers, dislocated workers, and/or unemployed workers. Further, applicants may serve individuals at different education levels and stages within their career. ETA also encourages applicants to provide supportive services and leverage Workforce Investment Act (WIA) core and/or intensive services to help participants overcome barriers to employment, as appropriate. |
|                 |                | community or technical colleges where education/training activities will occur; or (5) an applicant proposing to serve an educationally underserved community without access to community or technical colleges that meet the requirements in section III.A.5. See section III. A for additional information related to eligible applicants. See Program website for details. |                                                                                                                                                                                                                                                                                                                                                                                                     |

The maximum amount of a grant to be made available to an application in FY 2010 is $500,000, and the minimum amount of a grant is $50,000. The anticipated amount available to fund grant awards in FY 2010 is $30,255,000. The USDA is making available $62.9 million in distance learning and telemedicine loans, $75 million in loan and grant combinations, and $15 million in grants.
### Funding Announcements from Rural Assistance Center (RAC)

**Geographic Coverage:** Nationwide

**Available at:** [http://www.raonline.org/info_guides/workforce/#funding](http://www.raonline.org/info_guides/workforce/#funding)

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| Health Careers Opportunity Program (HCOP) | June 1, 2010 | Eligible applicants include schools of medicine, osteopathic medicine, public health, dentistry, veterinary medicine, optometry, pharmacy, allied health, chiropractic, podiatric medicine, public or non-profit private schools that offer graduate programs in behavioral and mental health, programs for the training of physician assistants, and other public or private nonprofit health or educational entities, including faith-based organizations and community-based organizations. | The goal of the Health Careers Opportunity Program (HCOP) is to assist individuals from disadvantaged backgrounds to undertake education to enter a health profession. The HCOP program works to build diversity in the health fields by providing students from disadvantaged backgrounds an opportunity to develop the skills needed to successfully compete, enter and graduate from health professions schools. The legislative purposes, from which HCOP funds may be awarded are: 1) identifying, recruiting and selecting individuals from disadvantaged backgrounds for education and training in a health profession; 2) facilitating the entry of such individuals into such a school; 3) providing counseling, mentoring, or other services designed to assist such individuals to complete successfully their education at such a school; 4) providing, for a period prior to the entry of such individuals into the regular course of education at such a school, preliminary education and health research training designed to assist them to complete | [https://grants.hrsa.gov/webExternal/FundingOppDetails.asp?FundingCycleId=79A96BF3-93A1-4595-8897-0413D6C0DF4D&ViewMode=EU&PrintMode=0&OnlineAvailabilityFlag=&pageNumber=&version=&NC=&Popup=](https://grants.hrsa.gov/webExternal/FundingOppDetails.asp?FundingCycleId=79A96BF3-93A1-4595-8897-0413D6C0DF4D&ViewMode=EU&PrintMode=0&OnlineAvailabilityFlag=&pageNumber=&version=&NC=&Popup=) | Expected Number of Awards: 3
Estimated Total Program Funding: $3,000,000

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As in years past, the FY 2010 grant Application Guide has been updated based on Program experience. Details of changes from the FY 2009 Application Guide are highlighted throughout this Notice and are described in full in the FY 2010 Application Guide. All applicants must carefully review and exactly follow the FY 2010 Application Guide and sample materials when compiling a DLT grant application.
Funding Announcements from Rural Assistance Center (RAC)
Geographic Coverage: Nationwide
Available at: [http://www.raconline.org/info_guides/workforce/#funding](http://www.raconline.org/info_guides/workforce/#funding)

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<tr>
<td>Rural Economic Development Loan and Grant Program</td>
<td>The deadline for receipt of applications in the USDA Rural Development State Office is: First Quarter, September 30, 2009; Second Quarter, December 31, 2009; Third Quarter, March 31, 2010;</td>
<td>Loans and grants may be made to any entity that is identified by USDA Rural Development as an eligible borrower under the Rural Electrification Act. Applications will only be accepted for projects that promote rural economic development and job creation.</td>
<td>The primary objective of the program is to promote rural economic development and job creation projects. Assistance provided to rural areas, as defined, under this program may include business startup costs, business expansion, business incubators, technical assistance feasibility studies, advanced telecommunications services and computer networks for medical, educational, and job training services and community facilities projects for economic development.</td>
<td><a href="http://edocket.access.gpo.gov/2009/E9-24612.htm">http://edocket.access.gpo.gov/2009/E9-24612.htm</a></td>
<td>Maximum Anticipated Award: Loans--$740,000; Grant--$300,000.</td>
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### Funding Announcements from Rural Assistance Center (RAC)
**Geographic Coverage:** Nationwide  
**Available at:** [http://www.raconline.org/info_guides/workforce/#funding](http://www.raconline.org/info_guides/workforce/#funding)

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| Rural Health Workforce Development Program | April 30, 2010  
The applicant organization must be a public or private non-profit entity located in a rural area. The network is composed of at least three separate, existing organizations. Organizations that are jointly owned are not considered separate entities. The Network organizational relationship is formal. Formal in this case means explicit and/or legal. Each member of the network must sign a Memorandum of Agreement or other formal collaborative agreement. The applicant organization must be located in a rural area or in a rural census tract of an urban county, and all services must be provided in a rural county or census tract. The applicant organization exists exclusively to provide services to migrant and seasonal farm workers in rural areas and is supported under Section 330G of the Public Health Service Act. These organizations are eligible regardless of the urban or rural location of the administrative headquarters or the applicant is a Tribal government whose grant-funded activities will be conducted within their Federally-recognized Tribal area. The authorizing legislation for this Grant Program provides a funding preference for some applicants. Applicants receiving a preference will be placed in a more competitive position among the applications that can be funded. A funding preference will be given to qualified applicants that can demonstrate any of the following three criteria:  
1) Those applicants where the service area is located in an officially designated health | The purpose of the Rural Health Workforce Development Program is to support the development of rural health networks that focus on activities relating to the recruitment and retention of primary and allied health care providers in rural communities. This Program will provide support to established and sustainable rural health networks that can develop innovative community-based educational and clinical health training programs to encourage the recruitment and retention of emerging health professionals (students and residents) in rural communities to train and eventually practice. Networks develop from ongoing collaborative relationships between health care organizations and accredited health care workforce training organizations (institutions). These networks can emphasize using community-based training opportunities to interest students and/or residents in rural health practice. Networks funded by this program can focus on a variety of different training program models and activities including the development of a training program, providing support to students/residents for housing and transportation and the payment of a preceptor. This can, in turn, help reduce recruitment costs, creating a potential revenue stream for continuing the network after Federal funding. Achieving the above will fundamentally lead to strengthening the rural health care delivery system. The program's goals are as follows.  
Providing students and residents training opportunities and experiences within culturally competent, community focused rural settings, which will build and reinforce ties within these rural communities; Improving the viability of the network partners by enhancing | [https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=2E9E60E9-25CD-42C4-84C4-84F4059AE63&ViewMode=EU&GoBack=&PrintMode=&OnlineAvailabilityFlag=True&pageNumber=1](https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=2E9E60E9-25CD-42C4-84C4-84F4059AE63&ViewMode=EU&GoBack=&PrintMode=&OnlineAvailabilityFlag=True&pageNumber=1) | Estimated Amount of this Competition: $4,000,000.00  
Estimated Number of Awards: 20  
Estimated Average size of Awards: $200,000 |
Funding Announcements from Rural Assistance Center (RAC)
Geographic Coverage: Nationwide
Available at: http://www.raconline.org/info_guides/workforce/#funding

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<tr>
<td>professional shortage areas (HPSA) or 2) is a medically underserved community (MUC) or serves medically underserved populations (MUPs) or 3) Those applicants whose projects focus on primary care, and/or wellness &amp; prevention strategies.</td>
<td></td>
<td>recruitment and retention of needed health care professionals within their rural communities; Identifying innovative approaches for using a network model to train health care professionals in rural community-based clinical settings; Providing an opportunity for students/residents to become involved in community activities so that they become engaged in the community; and/or Establishing viable rural health networks within the community that can serve as an ongoing vehicle for addressing workforce challenges. Workforce and rural recruitment and retention are a critical component of the 2010 President's Rural Initiative. As part of the Initiative, the Office of Rural Health Policy (ORHP) created the Rural Health Workforce Development Program. The Workforce Development Program supports HRSA's goals of improving access and quality of health care, improving health outcomes, and improving public health and health care systems. The Program also supports HHS goals to improve the quality, affordability, and accessibility of health care and to promote the economic and social well-being of individuals, families, and communities.</td>
<td></td>
<td><a href="https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=99116E51-21F5-4F2E-9A7D-5D7D57960A16&amp;ViewMode=EU&amp;GoBack=&amp;PrintMode=&amp;OnlineAvailabilityFlag=True&amp;pageNumber=1">https://grants.hrsa.gov/webexternal/FundingOppDetails.asp?FundingCycleId=99116E51-21F5-4F2E-9A7D-5D7D57960A16&amp;ViewMode=EU&amp;GoBack=&amp;PrintMode=&amp;OnlineAvailabilityFlag=True&amp;pageNumber=1</a></td>
<td>This program will provide funding during Federal fiscal years 2010-2012. Up to $450,000 is expected to be available for the first year of funding and a maximum of $300,000 for the subsequent two years to fund one awardee.</td>
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</table>

Rural Training Track Technical Assistance Demonstration Program (RTT-TA) | April 30, 2010 | Applications may be submitted by any public or private nonprofit entities, including faith-based and community-based organizations, State Governments and their agencies such as universities, colleges, research institutions, hospitals, State and local governments or their bona fide agents along with federally recognized Indian Tribal governments, Indian Tribes, and Indian Tribal organizations. | The Health Resources and Services Administration’s Federal Office of Rural Health Policy (ORHP) is announcing a new funding opportunity, the Rural Training Track Technical Assistance (RTT-TA) Demonstration Program, to form a consortium of organizations to better understand the challenges that Rural Training Track (RTT) residency program sites have when recruiting family physicians to train and practice in rural settings. This consortium will work to identify and analyze the key policy issues affecting these rural training sites and, once these challenges and barriers are identified, successful strategies will be developed and disseminated to other training sites. | | |

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### Funding Announcements from Rural Assistance Center (RAC)
**Geographic Coverage:** Nationwide

Available at: [http://www.raconline.org/info_guides/workforce/#funding](http://www.raconline.org/info_guides/workforce/#funding)

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<td>ORHP, to provide technical assistance to increase the number of family medicine physicians that choose to practice in rural areas. ORHP seeks to use this Cooperative Agreement as a pilot program to determine if targeted policy and technical assistance for the nation’s RTTs can affect their viability and fill rate and ultimately their ability to produce the maximum number of rural physicians. The intent of this pilot is to create a strong national network of RTTs in the hope that this effort could be self sustaining after an initial Federal investment ends.</td>
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### Funding From American Recovery & Reinvestment Act
ARRA Matrix, Available at: [http://www.csrha.org/ARRAmatrix_test.html](http://www.csrha.org/ARRAmatrix_test.html)

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<thead>
<tr>
<th>Title</th>
<th>Agency</th>
<th>Funds</th>
<th>Description</th>
<th>Website</th>
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<tbody>
<tr>
<td><strong>National Health Service Corps</strong></td>
<td>National Health Service Corps, Health Resources and Services Administration</td>
<td>$200 million available</td>
<td>To address shortages of primary healthcare providers in specific health professional shortage areas. These competitive grants, scholarships, and loan repayment programs will be used for training primary healthcare providers including doctors, dentists, and nurses as well as helping to pay medical school expenses for students who agree to practice in underserved communities through the National Health Service Corps.</td>
<td><a href="http://nhsc.hrsa.gov/loanrepayment/">http://nhsc.hrsa.gov/loanrepayment/</a></td>
</tr>
<tr>
<td><strong>Health Care Workforce</strong></td>
<td>Bureau of Health Professions, Health Resources and Services Administration</td>
<td>$200 million was included for programs under Title VII and Title VIII of the Public Health Service Act.</td>
<td>To provide for training of health professions. These competitive grants, scholarships, and loan repayment programs will be used for all the disciplines trained through the primary care medicine and dentistry program, the public health and preventive medicine program, and the scholarship and loan repayment programs for nurses and health professions.</td>
<td><a href="http://www.hrsa.gov/help/healthprofessions.htm">http://www.hrsa.gov/help/healthprofessions.htm</a> <a href="http://www.hrsa.gov/grants/default.htm">http://www.hrsa.gov/grants/default.htm</a> <a href="http://bhpr.hrsa.gov/dsa/lfrp/">http://bhpr.hrsa.gov/dsa/lfrp/</a></td>
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<tr>
<td><strong>Rural Broadband Infrastructure Deployment</strong></td>
<td>U.S. Department of Agriculture (USDA)</td>
<td>2.5 billion</td>
<td>Grants will be administered by the Department of Agriculture Rural Utilities Service (RUS), through its distance learning and telemedicine broadband programs.</td>
<td><a href="http://www.usda.gov/rus/telecom/dlt/dlt.htm">http://www.usda.gov/rus/telecom/dlt/dlt.htm</a></td>
</tr>
<tr>
<td><strong>Health Information Technology Grants</strong></td>
<td>Office of the National Coordinator of Health Information</td>
<td>$2 billion was included for discretionary grants to promote the adoption and use of interoperable health</td>
<td>To promote the use and exchange of electronic health information in a manner consistent with the Office of the National Coordinator of Health Information Technology’s strategic plan. To award planning and</td>
<td><a href="http://healthit.hhs.gov/portal/server.pt">http://healthit.hhs.gov/portal/server.pt</a></td>
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## Funding From American Recovery & Reinvestment Act

ARRA Matrix, Available at: [http://www.csrha.org/ARRAmatrix_test.html](http://www.csrha.org/ARRAmatrix_test.html)

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<tr>
<td>Technology, Agency for Healthcare Research and Quality, CDC, and Indian Health Service/States or State-Designated Entities U.S. Department of Health and Human Services</td>
<td>Information technology (HIT)</td>
<td>Implementation grants to states or qualified state-designated entities to facilitate and expand electronic health information exchange. To award grants to states or Indian tribes to establish loan programs for health care providers to purchase certified electronic health record technology, train personnel in the use of such technology, and improve the secure electronic exchange of health information. To provide financial assistance to universities to establish or expand medical informatics programs.</td>
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<tr>
<td>Health Information Technology Improvements</td>
<td>Centers for Medicare and Medicaid Services (CMS), Department of Health and Human Services (HHS)</td>
<td>$17 billion was included to improve investments and incentives through Medicare and Medicaid to ensure widespread adoption and use of interoperable health information technology (HIT).</td>
<td>Provides incentives for the early adoption and use of interoperable HIT to Medicare and Medicaid providers and penalties in future years for providers not demonstrating meaningful use of Electronic Health Records. Provides eligible professionals who show meaningful use of an Electronic Health Record (EHR) in 2011 or 2012 with incentive payments of $18,000 in the first year. Payment adjustments for eligible professionals not demonstrating meaningful use of an EHR would begin in 2015. Provides eligible hospitals (including Critical Access Hospitals) with incentive payments starting in Fiscal Year 2011 and payments adjustments for hospitals not demonstrating meaningful use of an EHR in Fiscal Year 2015.</td>
<td>1-800-MEDICARE</td>
</tr>
</tbody>
</table>
References:


4 Arizona Rural Health Plan 2005-2007. Eng HJ, et al. The Southwest Border Rural Health Research Center (SBRHRC), Rural Health Office (RHO), University of Arizona Mel and Enid Zuckerman College of Public Health with support from the Arizona Rural Hospital Flexibility Program and the Arizona State Office of Rural Health (SORH)


23 HFS 89 Illinois Administrative Code, Chapter I, section 140.990, subchapter d, subpart I: Primary Care Case Management Program. Available at: http://www.hfs.illinois.gov/assets/140.pdf .


36 3RNet. Medical and Healthcare Jobs Across the Nation. National Rural Health Association Career Center. Available at: http://www.3rnet.org/


44 Arizona AHEC. Available at: http://azahec.org/index.cfm?p=aboutus.
45 Arizona Telemedicine Program. The University of Arizona. Available at: http://telemedicine.arizona.edu/


