Arkansas Health Workforce Strategic Plan:
A Roadmap to Change

April 20, 2012

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Arkansas Health System Improvement
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List of Abbreviations Used

AATYC	Arkansas Association of Two-Year Colleges
ACH	Arkansas Children's Hospital
ACHI	Arkansas Center for Health Improvement
ADE	Arkansas Department of Education
ADH	Arkansas Department of Health
ADHE	Arkansas Department of Higher Education
AFMC	Arkansas Foundation for Medical Care
AHEC	Area Health Education Center
AMS	Arkansas Medical Society
ANP	Advanced Nurse Practitioner
APCD	All-Payer Claims Database
APN	Advanced Practice Nurse
ARE-ON	Arkansas Research and Education and Optical Network
ARNA	Arkansas Nurses Association
ARNEC	Arkansas Rural Nursing Education Consortium
ASU	Arkansas State University
BLS	United States Bureau of Labor Statistics
CDC	Centers for Disease Control and Prevention
CDTM	collaborative drug therapy management
CHCA	Community Health Centers of Arkansas, Inc.
CHW	Community Health Worker
CNS	Clinical Nurse Specialist
CPC	comprehensive primary care
DHS	Arkansas Department of Human Services
DWS	Arkansas Department of Workforce Services
EMR	electronic medical record
FTE	full-time equivalent
GME	graduate medical education
GPCI	geographic practice cost indices
HDI	Health Data Initiative
HIT	health information technology
HPSA	Health Professional Shortage Area
IMG	international medical graduate
LPN	Licensed Practical Nurse
MA	Medical Assistant
MD	Medical Doctor
MHU	mobile health unit
NCPP	National Commission on Prevention Priorities
NHSC	National Health Service Corps
NPCC	National Park Community College
OHIT	Arkansas Office of Health Information Technology
PA	Physician Assistant
PCMH	patient-centered medical home
PMPM	per member per month
RN	Registered Nurse
RVU	relative value unit

SHARE	State Health Alliance for Records Exchange
STEM	science, technology, engineering, and math
TBC	team-based care
UALR	University of Arkansas at Little Rock
UAMS	University of Arkansas for Medical Sciences
UCA	University of Central Arkansas
UNM	University of New Mexico
USMG	United States medical graduate
USPSTF	United States Preventive Services Task Force

Executive Summary

At present, Arkansas, like other states, is faced with shortages and geographic maldistribution of physicians, nurses, and other health care providers.

In the United States, over 58 million people live in areas designated as primary care health professional shortage areas (HPSAs),[1] including over 500,000 Arkansans. HPSAs are areas designated by the Health Resources and Services Administration as having shortages of primary medical care, dental, or mental health providers. Thirty-six entire Arkansas counties are designated as primary care HPSAs, representing almost half of the counties in the state. There are also 20 counties designated as dental HPSAs and 69 of the 75 counties in Arkansas are designated as mental health HPSAs.[1] See Appendix 1 for maps of all Arkansas HPSAs.

Arkansans living in these shortage areas are likely to have difficulty accessing services to address their health care needs. Given the number of shortage areas, many factors are likely to place additional strain on the system in the future, including the following.

- *Aging population:* Arkansas currently has one of the oldest populations in country, and that trend is continuing. Given that health needs of populations increase with age and that providers continue to retire from the workforce as they age, this factor is significant.
- *Limited pipeline:* The ability of the state's educational institutions to educate and train increasing numbers of health providers is limited and is unlikely to change substantially in the near future.
- *Increased disease burden:* Arkansas faces some of the highest rates of hypertension, obesity, and diabetes in the country, placing a significant burden on the health care system. Half of adult Arkansans over the age of 60 have hypertension, of which 40% is uncontrolled.[2] Hypertension is a pathway to heart disease, stroke, and kidney failure. Additionally, populations with other diseases and significant comorbidities create a synergistic impact on demand at the same time that they see reduced quality of life and productivity.
- *More insured citizens:* Pursuant to the Patient Protection and Affordable Care Act, almost all of the 545,000[3] Arkansans who are currently uninsured will be mandated to have health insurance, and the vast majority will become eligible either for Medicaid or for subsidies to purchase health insurance. Despite best efforts, not all Arkansans will become insured. However the estimated 328,000[3] newly insured people will place additional strain on the workforce. People who are insured use the health system more frequently than the uninsured, and initial need may be high due to pent up demand from people who have been uninsured.
- *Health literacy:* Health literacy is a person's ability to gain access to, understand, and use information in ways that promote and maintain good health.[4] Among Arkansas adults, 20% read at or below a 5th-grade level, which impacts their ability to understand written information.[5] Low health literacy and poor health outcomes are strongly related based on factors such as emergency department use, hospitalization, self-reported physical health, and mortality rates.[6]

Each of these issues alone has the potential to place additional burdens on the health workforce. In the aggregate, it is likely they will significantly challenge an already-strained system unless changes are made quickly and decisively to restructure and modernize the staffing and delivery of health care in our state and country.

By accomplishing changes in the health care system, the state's population can, however, attain better health and higher levels of productivity, which will benefit the state in quality of life for its citizens and in economic terms.

Process & Charge

To address the growing challenges that the health workforce will face in the immediate and long-term future, Governor Mike Beebe requested that the Arkansas Center for Health Improvement provide primary staffing to the *Arkansas Health Workforce Initiative*. The *Arkansas Health Workforce Initiative's* core workgroup is co-chaired by Dr. Dan Rahn, Chancellor, University of Arkansas for Medical Sciences, and Dr. Paul Halverson, State Health Director, Arkansas Department of Health. The *Arkansas Health Workforce Initiative* also includes representatives from numerous health and workforce-related entities throughout the state who serve as members of the workgroup and a larger stakeholder forum (see Appendices 2 and 3). The purpose of the *Arkansas Health Workforce Initiative* is to develop and communicate a transformational strategic plan for the Arkansas health workforce.

Goals and Strategies

The *Arkansas Health Workforce Strategic Plan* is intended to be the first step in a larger commitment to ensure that the health workforce in our state will meet the present and future health and health care needs of Arkansans. This plan is to be a roadmap to change that includes specific recommendations to improve navigation and coordination through team-based care, expand the availability and use of technology, increase the supply of and address the maldistribution of available providers, and adjust the payment system to support these changes. Each of the four overall goals is addressed by multiple specific recommendations.

Goals & Recommendations

Goal 1: Support the implementation of and transition to team-based care that is patient-centered, coordinated, evidence-based, and efficient

Recommendations related to transition to new model

1-1. Define team-based care (TBC) across various types of care sites. Identify team members, core competencies, practice roles, training needs, and outcome metrics for care teams, including care coordinators and non-traditional providers in primary care settings, while assuring that patient safety and quality of care are protected in the assignment of clinical roles on the team. Adopt evidence-based guidelines for TBC, including evaluation protocols.

1-2. Deploy population-based management strategies into primary care delivery systems.

1-3. Optimize the use of non-physician providers and staff to advance evidence-based care and preventive patient management.

1-4. Assure access to counseling for behavioral change in primary care settings.

1-5. Develop and support community reinforcement mechanisms such as community health workers, direct care workers, and faith-based initiatives.

1-6. Integrate culturally competent health literacy programs for providers and patients to promote and support patient self-management in all health care settings.

1-7. Incorporate patient participation in delivery system evaluations.

1-8. Utilize pharmacists as part of the care team for collaborative drug therapy management.

1-9. Organize mass health clinics for health assessments, preventive screenings and services, public and private health insurance enrollment, and eligibility for insurance exchange products and subsidies.

Recommendations related to educational changes

1-10. Integrate inter-professional collaboration training into the health education pipeline, including preparation of academic faculty for teaching team-based care and for providing continuing education programs. Educate providers about how team-based care improves outcomes.

1-11. Explore and survey existing care coordination programs, including current training, competencies, practice roles, functions, and availability of care coordinators. Define care coordination, including goals, qualifications, core competencies, practice role(s), training needs, and outcome metrics. Establish education, training, and certification programs, including career ladder training, for care coordinators, and develop and train care coordinators to be incorporated into care teams.

Recommendations related to implementation support

1-12. Establish a Technical Assistance Center to provide support for providers who are setting up, transitioning to, and maintaining team-based care.

1-13. Increase clinical capacity for primary care providers by improving administrative efficiencies, including reducing paperwork and increasing care coordination. Identify nonmonetary incentives for implementing team-based care, *e.g.*, continuing education credit and minimization of prior authorization burdens.

1-14. Employ mobile heath units.

1-15. Establish circuit rider providers in each of the state's public health regions to assist in the provision of primary care services across the state.

1-16. Provide easy, individualized access to community resources for self-management.

1-17. Create a public relations campaign to promote entry into care coordination.

Goal 2: Enhance and increase the use of health information technology

Recommendations related to deployment of health information technology

2-1. Improve access to appropriate levels of health information technology (HIT) technical assistance and ensure team technical capacity and technology literacy for HIT deployment.

2-2. Improve deployment of electronic medical record systems in practice sites.

2-3. Building on existing technology, expand capacity for telemedicine and tele-education through equipment acquisition and greater access to broadband.

2-4. Use the Arkansas Research and Education Optical Network to its fullest potential to facilitate connections to telemedicine and tele-education opportunities as well as to provide a backbone for access to electronic health information.

Recommendations related to provider and consumer engagement

2-5. Optimize consumer access to health information technology (HIT), including access in non-traditional sites such as school wellness centers, libraries, pharmacies, worksite wellness centers, and retail outlets. Maximize HIT utilization to include consumer use for activities such as health self-management, distance monitoring of health conditions, home clinical assessments, online prescription refills, and access to personal health records.

2-6. Establish web-based and tele-education programs that optimize learning opportunities, exposure of K–16 students to health professions, prerequisite classes for those pursuing health professions, career ladder programs for professional advancement, faculty development, clinical training sites, and clinical continuing education programs for clinicians and office support staff.

2-7. Create a county-level, web-based repository of community services that address health needs and provide online resources for provider support and patient self-management.

Recommendations related to utilization

2-8. Improve utilization of existing electronic medical record systems both in and across clinical practice sites.

2-9. Improve interoperability among all care sites, *e.g.*, wellness centers, worksites, clinical sites, pharmacies, schools, and homes.

2-10. Optimize the use of existing health information technology (HIT) and increase the use of new HIT to enhance communication among team members and across care sites.

Goal 3: Increase the supply and improve the equitable distribution of primary care providers

Recommendations related to provider education and training

3-1. Recruit more diverse students into health professions, especially bi- or multilingual students.

3-2. Increase funding to support nursing and physician assistant education with additional faculty, student loan or payback programs, etc.

3-3. Expand the number of graduate medical education residency slots in primary and preventive care, especially those dedicated to rural practice.

3-4. Establish the Arkansas Rural Scholars Program.

3-5. Increase collaboration among two- and four-year colleges to increase access to and quality of education and training for health professions.

3-6. Expand strategies to provide longitudinal clinical experiences in primary care for medical students and enhance incentives and recognition for teaching primary care for all health care professions.

3-7. Strengthen primary care leadership curricula in primary care education, residencies, and preceptorships.

3-8. Enhance outreach to educate guidance counselors and career coaches about opportunities for students to enter health professions.

3-9. Strengthen education in science, technology, engineering, and math (STEM) by strengthening curricula at all levels, offering grants and loans to support STEM development, and offering job training grants to support STEM job training and retraining.

Recommendations related to provider recruitment

3-10. Develop more effective strategies to fill J-1 visa waiver slots and provide enhanced support for integration of international medical graduates into rural communities.

3-11. All state boards responsible for licensing health professionals should implement policies to reduce complexity and decrease licensing time for qualified applicants.

Recommendations related to provider support

3-12. Create *locum tenens* programs to provide practice relief to overburdened providers, notably those in rural and underserved areas.

3-13. Optimize Arkansas's opportunity to secure National Health Service Corps participation.

3-14. Establish processes and strategies for a centralized health care workforce data warehouse, responsible for gathering and reporting information to inform future health workforce supply, distribution, recruitment, and retention.

3-15. Train and retrain unemployed and underemployed workers who already reside in rural and underserved areas.

Goal 4: Adopt new financing, payment, and reimbursement policies and mechanisms

Recommendations related to payment and reimbursement

4-1. Adopt reimbursement mechanisms that incentivize team-based care and appropriately value preventive and primary care.

4-2. Adopt reimbursement mechanisms that support care coordination.

4-3. Study the feasibility of differential reimbursements to incentivize providers to practice in rural or underserved communities.

4-4. Change payment and reimbursement structures to recognize providers' use of health information technology, *e.g.*, reimbursement for non-traditional patient encounters.

4-5. Reduce the geographic disparity in Medicare payments to Arkansas providers.

4-6. Increase Medicare and Medicaid reimbursement rates for primary care.

Recommendations related to financial and educational support

4-7. Increase funding for Rural Practice and Community Match programs to enable an increase in recipients and dollar amounts that reflect cost of education and living. Both programs should allow loan repayment for part-time practice in rural communities.

4-8. Make Community Match and similar awards to other providers state-tax free. Provide low-interest loans to providers for housing, transportation, and construction or renovation of office space.

4-9. Educate primary care providers that behavioral counseling is reimbursable under the Patient Protection and Affordable Care Act.

Introduction

Arkansas's health workforce struggles to meet the demands of a population that is growing, aging, and diversifying and one whose burden of chronic diseases is increasing. Advances in medical technology and the aging of health workforce members themselves combined with both current state and federal health care changes that aim to expand and improve access to health insurance coverage will further amplify the need for a stronger, larger, more coordinated, more robust health workforce that can meet the growing demand for quality services.

Arkansas must prepare its health workforce to meet the demands associated with expected changes in the population, health care finance, and access in the short-term. This will allow the state to achieve the triple aim of improved population health, increased quality and availability of care, and reduced costs in the long term.

This *Arkansas Health Workforce Strategic Plan* provides recommendations to expand the capacity and effectiveness of Arkansas's health workforce, through innovative uses of technology, system navigation, and coordination of care. It provides a roadmap for health and workforce-related entities throughout the state, and identifies specific recommendations and approaches to workforce education, training, development, recruitment, retention, incentives, distribution, coordination, and structure.

The Problem

Numerous studies have shown nationwide shortages and geographic maldistribution of physicians and other health providers.[7] The situation is no different in Arkansas, and in many ways is amplified by the higher disease burden of the state.

In the United States, over 58 million people live in areas designated as primary care health professional shortage areas (HPSAs),[1] including over 500,000 Arkansans. HPSAs are areas designated by the Health Resources and Services Administration as having shortages of primary medical care, dental, or mental health providers. Thirty-six entire Arkansas counties are designated as primary care HPSAs, representing almost half of the counties in the state. There are also 20 counties designated as dental HPSAs and 69 of the 75 counties in Arkansas are designated as mental health HPSAs.[1]

Amplifying the problem of inadequate provider coverage is Arkansas's high prevalence of chronic disease and unhealthy behaviors (*e.g.*, tobacco use, unhealthy diet, and low physical activity levels). Arkansas is ranked as one of the unhealthiest states in the nation, ranking 47th overall in health in 2011.[8]

Across numerous health and diseases categories, the state's health burden exceeds that of almost all other states. By many health measures, where 1st indicates the healthiest ranking, Arkansas places at or near the bottom in the United States: 46th in smoking (22.9%), 39th in obesity (30.9%), 33rd in diabetes (9.6%), 33rd in immunization coverage (89.7%), 43rd in early prenatal care (78.9%), and 43rd in preventable hospitalizations (81.5%). This disease burden is clearly reflected in mortality rankings where 1st indicates the lowest rates of deaths—Arkansas places 45th in cancer deaths, 46th in cardiovascular deaths, 35th in infant mortality, 46th in premature deaths and 47th in occupational fatalities.[8] This disease burden is distributed disproportionately based on geography, education level, economic status and ethnicity.[9,10,11,12,13] (See Appendix 4 for a more detailed discussion of the health status of Arkansas.)

Arkansans living in areas with a shortage of health providers are likely to have greater problems accessing services to address their health care needs than those with an adequate supply of providers. Across the state, but especially in rural areas, Arkansans' health needs are greater than almost every other state in the country. The existing health workforce is unable to meet the health needs of Arkansans by almost every measure.

Current Activities

A number of long standing and more recently initiated activities have attempted to improve the supply of the health workforce in Arkansas. Although these activities are too numerous to list in detail, examples of some actions taken are provided below.

- Increase in supply and availability of health professionals
  - *Increase in MD graduates and residency slots:* The number of annual graduates with a medical degree from the University of Arkansas for Medical Sciences (UAMS) has increased from 131 to 148 since 2006[14] and continues to grow, with more than 160 students in each of the classes of 2013 and 2014[15] and an expected 174 in the next incoming class. Beginning in 2011, Area Health Education Centers received funding for 30 new primary care residency positions, phasing in six positions in each of the next five years.
  - *New education programs:* Four initial programs will increase the graduating health workforce in Arkansas. A new physician assistant program at UAMS will begin in 2013, with the number of students yet to be determined. Arkansas Tech University recently opened a new program for occupational therapy assistants, with 20 students currently enrolled and the first graduating class expected in fall 2013. National Park Community College's federally funded health information technology program, part of the national Community College Consortia, has had more than 80 students since it began in 2010, and has additional funding through 2013.
  - *Expanded education programs:* Harding University has graduated 131[16] people from its physician assistant program since it began in 2005, and is steadily increasing its class size. UAMS has expanded its College of Pharmacy both by increasing class size and by expanding via tele-education to Northwest Arkansas.
  - *CHCA and retail clinic expansion:* Community Health Centers of Arkansas, Inc. has expanded its facilities and the number of patients it can serve, increasing from 88,000 patients to more than 150,000 in the past ten years,[17] and it plans to increase to at least 222,000 by 2015.[18] There are also a growing number of clinics and at Walmart and USA Drug locations throughout the state, offering walk-in clinic hours seven days a week.[19,20,21]
  - *Partners in Nursing Grant:* The Arkansas Community Foundation and UAMS received a Partners in Nursing (PIN) grant in 2011 to increase the number of number of geriatric nurses in long-term care who have at least a baccalaureate degree.
- Patient-centered medical home (PCMH) pilots
  - A number of PCMH pilots have recently been completed or are underway throughout the state. Arkansas Blue Cross and Blue Shield, Mercy Health Systems, Community Health Centers, Arkansas Children's Hospital, UAMS, and Medicaid are some of the organizations that are using a PCMH approach to attempt to reduce costs while improving quality and increasing the capacity of clinical sites.

- Expansion of health care professional scope of practice

  In 2011, the Arkansas legislature passed a number of laws that have expanded scope of practice for some health practitioners to address basic primary care and preventive health needs of Arkansans, including the following.

  - Ability of dental hygienists to provide limited services in public schools, nursing homes, and other facilities under collaborative practice with a dentist
  - Ability of pediatricians, after training, to apply fluoride varnishes to patients without a dentist–patient relationship
  - Expansion of the ability of pharmacists to give flu shots to people at least seven years of age

- Increased use of health information technology

  - *HITArkansas:* A division of the Arkansas Foundation for Medical Care, HITArkansas is the federally funded entity responsible for providing education, guidance, and technical assistance to Arkansas's eligible primary care providers for implementation of electronic medical records (EMRs). Its goal includes signing up 1,280 priority primary care providers and 35 critical access and rural hospitals by the end of 2011, and guiding them to be meaningful users of EMRs by 2013.
  - *State Health Alliance for Records Exchange (SHARE):* Arkansas's Office of Health Information Technology (OHIT) is responsible for establishing SHARE, the statewide interoperable health information exchange. The first phase of the program will be completed in 2013.
  - *Expanded availability of broadband:* The Broadband Technology Opportunities Program and Arkansas Research and Education Optical Network are both greatly and rapidly expanding and increasing the availability of high-speed internet connections throughout the state. Both projects share the goal of using the networks for health-related functions.
  - *Use of telemedicine:* Mercy Health System of Northwest Arkansas is in the process of expanding a virtual monitoring and care center that provides its facilities with real-time connections to a team of specialty physicians through telemedicine technologies, including their Tele-stroke program. At UAMS, the Antenatal and Neonatal Guidelines, Education and Learning System and Stroke Assistance through Virtual Emergency Support programs provide interactive video conferencing that enables physicians to confer with maternal–fetal and stroke specialists in real time.

- Financial incentives and loan payback programs

  - *National Health Service Corps (NHSC):* The NHSC offers loan repayment and scholarships to health professionals serving in primary care, dental, and mental health in underserved areas. There are 117 providers currently serving under the NHSC in Arkansas, with 216 current vacancies.[22] In Arkansas, the funding for NHSC positions is only federal, with no additional state funding.
  - *Community Match Rural Physician Recruitment Program:* The Community Match Rural Physician Recruitment Program matches a medical school graduate in residency or a graduate who has completed residency within the past two years with a rural or underserved community for a four-year full-time commitment. The funding provided is a maximum of $80,000, half of which is provided by the community.
  - *Rural Practice Loan/Scholarship Program:* The Rural Practice Loan/Scholarship Program provides loans—typically in the amount of $12,000 annually—to enrolled medical students or students

accepted for admission, including alternates. The loans are converted to grants for each year of full-time service in a rural or underserved community.

Ongoing Issues

These activities and programs have not been enough to keep up with current health workforce needs, and therefore are not expected to meet the increased demand that will be seen in the near future. Overall, conditions are expected to continue to deteriorate because of a number of factors.

- *Aging population:* Arkansas currently has one of the oldest populations in country, and that trend is continuing. Given that health needs of populations increase with age and that providers continue to retire from the workforce as they age, this factor is important.
- *Limited pipeline:* The ability of the state's educational institutions to educate and train increasing numbers of health providers is limited and is unlikely to substantially change in the near future.
- *Increased disease burden:* Arkansas faces some of the highest rates of hypertension, obesity, and diabetes in the country, placing a significant burden on the health care system. Half of adult Arkansans over the age of 60 have hypertension, of which 40% is uncontrolled.[2] Hypertension is a pathway to heart disease, stroke, and kidney failure. Additionally, populations with other diseases and significant comorbidities create a synergistic impact on demand at the same time that they see reduced quality of life and productivity.
- *More insured citizens:* Pursuant to the Patient Protection and Affordable Care Act, almost all of the 545,000[3] Arkansans who are currently uninsured will be mandated to have health insurance, and the vast majority will become eligible either for Medicaid or for subsidies to purchase health insurance. Despite best efforts, not all Arkansans will become insured. However the estimated 328,000[3] newly insured people will place additional strain on the workforce. People who are insured use the health system more frequently than the uninsured, and initial need may be high due to pent up demand from people who have been uninsured.
- *Health literacy*: Health literacy is a person's ability to gain access to, understand, and use information in ways that promote and maintain good health.[4] Among Arkansas adults, 20% read at or below a 5th-grade level, which impacts their ability to understand written information.[5] Low health literacy and poor health outcomes are strongly related based on factors such as emergency department use, hospitalization, self-reported physical health, and mortality rates.[6]

Each of these issues alone has the potential to place additional burdens on the health workforce. In the aggregate, it is likely they will significantly challenge an already-strained system unless changes are made quickly and decisively to restructure and modernize the staffing and delivery of health care in our state and country.

Current Health Workforce Supply

As of September 2011, the nation's health workforce is continuing to outpace the growth of all other economic sectors, despite an overall unemployment rate of 9.1% for the same month.[23] The BLS predicts that the health care sector will continue to grow through 2018, largely in response to rapid growth in the

aging population.[24] Nationally, ten of the 20 fastest growing occupations are in health or health-related industries, with those professions projected to generate over 3.2 million new jobs by 2018.[25]

Despite this growth, there are both statewide provider shortages and maldistribution across all health professions.

Estimates of Current Supply

Existing data sources, reports, publications and other available information provide differing estimates of the supply of the health workforce in Arkansas. Tables 1 and 2 below show the number of physicians, physician assistants, nurses, pharmacists, and dentists based on different data sources (see Appendix 5 for county-level health workforce supply data).

Table 1: Physician Workforce Supply in Arkansas[26]

	Family & General Practice	Internal Medicine	Pediatrician	Geriatrician	OB-GYN	Specialists
Arkansas state licensing board(s)[27]	1,464	881	466	4	292	3,447
American Medical Association Masterfile[28]	857	228	209	50	213	1,906
Arkansas Department of Health[29]	1,427	890	488	Not given	291	Not given
Arkansas Medicaid[30]	925	282	276	16	Not given	Not given
Arkansas Medicare[31]	1,127	471	129	35	244	3,511
Arkansas Employee Benefits Division[32]	1,192	486	369	70	321	4,842

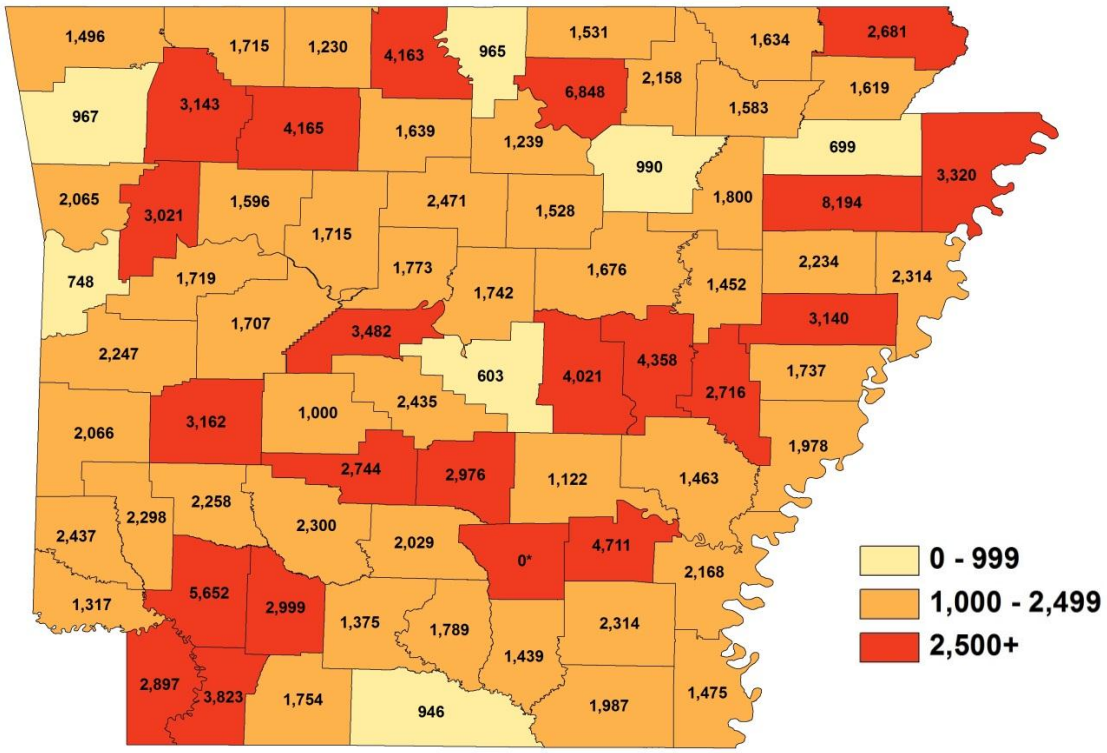
Table 2: Additional Health Workforce Supply in Arkansas

	Physician Assistants	Advanced Practice Nurses (ANP & CNS)	Registered Nurses	Pharmacists	Dentists
Arkansas Department of Health[29]	187	1,164	30,670	3,246	1,181
Arkansas state licensing board(s)[33]	218	1,375	32,671	4,501	1,178

Although the available data cannot provide a complete and perfectly accurate picture of the state's workforce supply, the one constant in all sources is that the distribution of providers throughout the state is disparate. Figure 1 shows the ratio of people by county to each licensed family practice, general practice,

or internal medicine physician in Arkansas. Variability is seen between counties, with population-to-provider ratios ranging from 603:1 in Pulaski County to 8,194:1 in Poinsett County. Cleveland County is the only county showing no licensed providers.

Figure 1: Number of Persons per Licensed Family, General Practice or Internal Medicine Physician in Arkansas (by county) [34] [35]



*Zero providers were indicated in Cleveland County, which has a population of 8,689.

There are numerous data sources for estimating the health workforce supply, but the limited information about providers raises concerns about several variables:

- *Actual location of practice:* Providers' addresses may be a residence, or providers may live in one county but work in another county or even another state. Even if the address is a practice location, the provider may work at multiple practice locations.
- *Time spent practicing:* Providers may be working part time, may be working more than full time, or may be retired but still have an active license. Some providers may be licensed but not providing direct patient care, such as faculty or researchers. This information is not always included in the available data.
- *Specialty:* The specialty of some providers is difficult to determine, either because it is not reported at all or because the way it is reported is not specific.

To better implement the *Initiative's* recommendations for the health workforce, more must be known about the supply of providers, including specialty, full-time or part-time status, practice location, practice hours, and payer mix.

The Arkansas Center for Health Improvement has employed IHS Global Insight to produce more accurate supply and demand estimates for medical doctors, doctors of osteopathic medicine, advanced practice nurses, and physician assistants. The project, "Modeling Adequacy of the Primary Care Provider Supply in Arkansas," will provide an empiric look at the current supply and demand of these professionals. Estimates will be made on the county level, state level, and public health region level (Central, Northeast, Northwest, Southeast, and Southwest), and can be aggregated to include any combination of counties. Future supply and demand will also be modeled, including baseline scenarios and projections given implementation of the Patient Protection and Affordable Care Act.

Additional Supply and Demand Information

A number of organizations and associations conduct research into the supply of various health workforce professions in Arkansas. The following publications are either already available or will be available on the estimated date listed.

- *Employment Outcomes Report* (Arkansas Department of Workforce Services and Arkansas Department of Higher Education, December 2010)—Measures employment status, average salary, and retention in state for graduates of Arkansas public colleges and universities 1 and 5 years after graduation for various classes
- *Health Information Technology Surveys of Providers, Hospitals, Pharmacies, and Laboratories* (Office of Health Information Technology, July 2011)—Measures uptake of health information technology (HIT) in various practice settings, availability and use of HIT, and other personnel
- *2010 Health Workforce Vacancies in Arkansas* (The Center for Rural Health, University of Arkansas for Medical Sciences, November 2011)—Measures the number of currently funded but unfilled vacancies, as well as expected vacancies in five years, for 90 health disciplines in Arkansas by type of health care facility and region in Arkansas.
- *2011 Arkansas State Board of Nursing Annual Report* (Arkansas State Board of Nursing, estimated release 2012)—Measures nursing workforce by county of residence and practice setting
- *2011 Arkansas Health Professions Manpower Assessment* (Arkansas Department of Health, estimated release 2012)—Measures the number of various health professions throughout the state, including primary care physicians, psychiatrists, advanced practice nurses, and dentists
- *Arkansas Dental Association* (estimated release March 2012)—Measures location, availability, and excess capacity of dentists
- *Modeling Adequacy of the Primary Care Provider Supply in Arkansas* (Arkansas Center for Health Improvement and IHS Global, estimated release March 2012)—County-level analysis of future supply and demand of physicians, advanced practice nurses, and physician assistants, including baseline scenarios and projections given the Patient Protection and Affordable Care Act
- *Survey of Primary Care Providers in Arkansas* (Arkansas Center for Health Improvement and Arkansas Foundation for Medical Care, estimated release August 2012)—County-level analysis of supply of primary and specialty care physicians, including practice location(s), full-time equivalency status, practice patterns, retirement plans, patient and payer mix, and additional patient capacity

Anticipated Challenges & Opportunities

In addition to the research and work of the *Arkansas Health Workforce Initiative*, recent studies report that the nation's demand for physician services is growing faster than supply in most medical specialties, including primary care.[36,37] This suggests that the nation will be unable to maintain current health care use and delivery patterns in the future and may rely more heavily on advanced practice nurses and physician assistants. Population growth, especially among the elderly, is contributing to the increase in demand. At the same time, a growing number of physicians are reaching traditional retirement age and many physicians are choosing to sub-specialize rather than practice in primary care. Arkansas increasingly will need to compete with other states to attract, retain, and grow its health workforce.

Whatever the exact shortage and maldistribution of the health workforce in various parts of the state, Arkansas is facing changing trends in both the health consumer population as well as the provider population that are affecting the use and availability of the health workforce.

Arkansas's population is steadily becoming older and sicker, requiring more care for longer periods of time. The population is also migrating from rural to urban areas, making it easier to concentrate health services in geographic areas. Providers are working fewer hours and for fewer years during their professional careers, increasing the need for providers across the board.

All of these factors have created a situation in which the number of providers and their availability is stagnant or decreasing at the same time that the needs of the population are increasing.

Population Trends

Demographic Trends

The demographic trends in Arkansas generally mirror those of the country: it is an increasingly older, more diverse and more urbanized state. Arkansas's 2010 population was more than 2.9 million, an increase of 9.1% over the last ten years.[38] Some segments of the population are growing faster than others.

- Arkansas has the ninth highest percent of elderly residents, with almost 420,000 residents who are 65 years old or older, representing a 12.3% increase since 2000.[39] The older population is likely to continue growing more quickly than the rest of the population. By 2030, the increase in the elderly population is expected to reach 75.5% versus 21.2% for the whole population.[40]
- The population of Arkansas has also become more diverse as the number of non-white Arkansans increases. The majority of counties in the state experienced growth in their minority populations, and statewide the population of minority ethnic groups has grown by 29% compared to only a 3.5% increase in the non-Hispanic white population.[41]
- As with much of the country, the population of Arkansas continues to become more urbanized. Almost all recent population growth has been in rural areas, with the greatest losses in the Delta, the north central, and the western parts of the state.[42]

Health Status & Disease Burden

Adding to the demand for health care services and pressure on the health workforce, Arkansas's already poor health status and disease burden continues to grow.

In the past ten years, Arkansas has seen huge increases in the incidence of obesity and diabetes as well as increased rates of violent crime and occupational fatalities.[43,44] Among American children aged 6–19 years, oral caries is the number one chronic disease.[45] Although rates of smoking, preventable hospitalizations, and infant mortality have decreased, they still represent a large health burden.[43]

Chronic diseases require more treatment and care, and the consistent increasing trend will translate to an increasing burden on the state's health workforce and overall health care system.

Socioeconomic Indicators

The total population of more than 2.9 million residents in Arkansas ranks near the bottom among states in terms of socioeconomic status. The state's median household income ranks 48th and the per capita income ranks 46th among states. According to Arkansas Advocates for Children and Families, Arkansas has a child poverty rate that is 5th highest among states and Washington, D.C. Arkansas's child poverty rate was 27.2% in 2010, up from 23.8% in 2006 just prior to what is widely regarded as a recession. While the state's overall poverty level remained flat between 2009 and 2010 at 18.8%, widespread use of support services among Arkansans, including Supplemental Nutrition Assistance Program (formerly known as Food Stamps), evidences a continuing need for help as the economy slowly recovers.[46]

Education has a crucial role in good health, yet Arkansas ranks 49th nationwide in the number of persons 25 years and older with a bachelor's or higher degree. Arkansas also pays our public school teachers less than 30 other states. One other indicator linked to poor health is the violent crime rate, for which Arkansas is 12th highest in the country.[43]

Provider Trends

Practice Locations and Patterns

Hospitals nationwide are hiring physicians in an attempt to retain financial security and provide patient care. A 2011 study showed that "more than half of practicing U.S. physicians are now employed by hospitals or integrated delivery systems...."[47] Accenture's analysis of the study predicted the trend to increase by 5% annually by 2013.[48] Examples of this kind of activity in Arkansas are the recent acquisitions of Health Clinic Arkansas by St. Vincent Health System,[49] the partnering of Arkansas Cardiology and Baptist Health to form Baptist Health Heart Institute,[50] and the NEA Clinic of Jonesboro merging with Baptist Memorial Medical Group of Memphis to become NEA Baptist Clinic.[51]

The Accenture study suggested that the physician employment trend will endure, driven by ongoing external forces. For physicians, while hospital employment may offer advantages such as relief from administrative responsibilities and greater access to leading-edge health information technology tools, facilities, and equipment, it also has disadvantages such as loss of autonomy and lack of ownership.[48]

Meanwhile, for hospitals worried about physician shortages, employing doctors can help lock in expertise and boost patient volumes and revenues in high-growth service lines, including cardiovascular care, orthopedics, cancer care, and radiology.

In a 2010 Cejka Search and American Medical Group Association survey, of the 49% of employers who attempt to keep physicians from retiring, 90.6% induce them with flexible hours, 62.5% with no call and 65.6% with reduced call.[52] On the other hand, these strategies may have drawbacks such as determining frequency of call for part-timers, cross-coverage and handling of care, and paying full malpractice premiums for part-time physicians.

Although Arkansas has yet to complete much state-level research at this time, the Arkansas Center for Health Improvement is working with the Arkansas Foundation for Medical Care to survey primary care physicians in Arkansas, their practice locations, practice patterns, capacity, and retirement plans. A full survey report is expected later in 2012.

Physician Work and Retirement

Part-time practice by physicians is on the rise, according to the Cejka Search/American Medical Group Association Management Retention Survey. Among those practicing part-time, the majority are men approaching retirement and women in early to mid-career. The trend to practice part-time, however, is not gender-specific. The survey found that 13% of male and 36% of female doctors practiced part-time in 2010, compared with 7% and 29%, respectively, in 2005.[52]

Nationwide, over 26% of physicians are 60 years of age or older, according to the Center for Workforce Studies of the Association of American Medical Colleges.[53] About a third of the much larger nursing workforce is 50 years of age or older, and about 55% expressed an intention to retire in the next ten years. Changes in payment models and requirements for technology use are expected to hasten retirement.[54]

Workload estimates indicate that, because of these practice patterns, policy leaders analyzing workforce issues will need to add 1.3 full-time equivalents (FTEs) to replace one FTE of the previous generation of physicians.[55]

Population Health Improvement

Over the coming years, Arkansas's primary care workforce will likely be incorporating patient-centered medical home (PCMH) concepts into their practices. Given this direction, an ideal would be that all people are enrolled in a medical home. Most people are in good health, but they should have periodic health assessments with counseling, health screenings, and referrals to appropriate providers if and when a problem is diagnosed.

With the transition to PCHMs comes a unique opportunity to more fully integrate community and population-based health strategies into practice patterns. This approach acknowledges that making communities healthier and stronger will have a positive impact on the health of the individuals who live in those communities. Creating healthier and stronger communities can be a shared goal for the health care team.

States can deploy various strategies to develop community- or population-based approaches to achieve this goal. The Population Health Improvement Model[56] provides a pathway for creating services and programs that consider the unique community characteristics. The key components of the model include the following:[56]

- Population identification strategies and processes

- Comprehensive needs assessments that assess physical, psychological, economic, and environmental needs
- Proactive health promotion programs
- Patient-centric health management goals and education
- Self-management interventions
- Routine reporting and feedback loops
- Evaluation of clinical, humanistic, and economic outcomes

Lessons Learned from Other States

While all of these anticipated changes will almost certainly increase demand for health care in Arkansas and create additional challenges for the health workforce, opportunities to learn from past expansion efforts can be taken from both Oregon and Massachusetts. Both states have enacted changes to their health systems in the last five years, and have published enlightening data and results about their efforts.

Oregon's Medicaid Expansion

In 2008, Oregon expanded Medicaid coverage via lottery to a limited number of low-income adults.[57] A study by the National Bureau of Economic Research[58] showed that Medicaid coverage generally increases the health care use. More specifically, Medicaid coverage raised the probability of using outpatient care by 35%, of using prescription drugs by 15%, and of hospital admissions by 30%.

The increase in health care use was associated with more consistent primary care: those with Medicaid coverage were 70% more likely to report having a regular place of care and 55% were more likely to report having a usual doctor. Importantly, Medicaid coverage also increased the use of preventive care such as mammograms by 60% and cholesterol monitoring by 20%.

Massachusetts' Insurance Coverage Expansion

Massachusetts' state-level reform was enacted in 2006, instituting system-wide health care changes such as expanded Medicaid and other publicly subsidized insurance coverage as well as a law that requires almost all adults to have health insurance. Although not completely consistent with the requirements of the Patient Protection and Affordable Care Act, Massachusetts' experience and results have provided much insight into the outcomes that can be expected from expanding insurance coverage rapidly, especially to populations who were previously uninsured.

Before reform, Massachusetts had one of the highest insured rates in the country, and now has the highest, with 98.1%[59] of its residents carrying health insurance. But there have been effects on patients' access to providers. Wait times for general internist visits went from 32 to 52 days in the year after reform, and wait times for family physician visits went from 34 to 44 in the 2 years after reform. From 2006 to 2011, the percentage of general internist offices accepting new patients had dropped by 23%, and the percentage of family physician offices accepting new patients dropped by 33% from 2007 to 2011.[60]

It is clear that the effect of expanding insurance coverage is increased utilization, and it must be taken seriously as Arkansas plans for the future of the health workforce. If people in even the most well-

prepared of states face access and availability problems after insurance expansion, it is very likely that Arkansas will face even more difficult challenges.

Arkansas-Specific Strengths & Opportunities

While Arkansas faces many of the same health workforce challenges as other states, there are a number of strengths and opportunities that the state currently enjoys that others may not.

- Financial strength
  - A state budget that historically is not only balanced, but that demonstrates an excess of revenue over expenses
  - Dedicated funding from tobacco settlement monies to health programs, the University of Arkansas for Medical Sciences' (UAMS) Fay W. Boozman College of Public Health, and the Arkansas Minority Health Commission
- Stakeholder involvement
  - Cohesive, imaginative *Arkansas Health Workforce Initiative* workforce group
  - Widespread buy-in to the strategic planning process and future workforce needs
  - Providers and stakeholders who understand, are supportive of, and are actively working to eliminate barriers to productive public health policy
  - Executive and key leadership support
- Educational pipeline
  - Two new physician assistant programs (Harding University, UAMS)
  - Increasing primary care residency slots (30 additional slots over next five years)
  - The UAMS Center for Dental Education in conjunction with Arkansas Children's Hospital is developing a graduate practice dental residency (GPR) program
  - Strong, collegial higher education community
- Regulatory environment
  - Scope of practice legislation and limitations are comparable to national averages
  - Recent legislation has supported using mid-level and other qualified providers for primary and preventive services (*e.g.*, dental sealants, flu shots)
- Data and analytic capacity
  - Potential to use data from Medicaid, Medicare, Employee Benefits Division, Arkansas Blue Cross and Blue Shield, and other private payers (QualChoice, Delta Dental of Arkansas)
  - Access to existing and in-progress surveys and data resources
- Risk reduction capacity and population interventions
  - Strong relationships forged through Arkansas Coalition for Obesity Prevention and Coordinated School Health initiative will help support education/school-based workforce

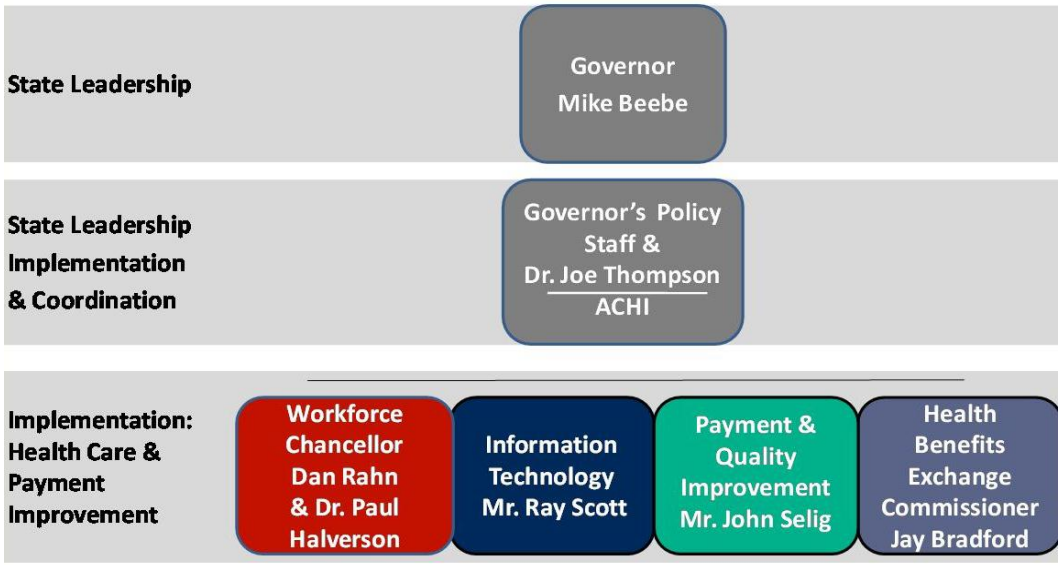
- Halted increase in Arkansas childhood obesity rate
- Population-level interventions at Arkansas Department of Health (*e.g.*, Stamp Out Smoking, tobacco cessation initiatives, immunization initiatives)

The Arkansas Health Workforce Initiative

To address the growing challenges that the health workforce will face in the immediate and long-term future, Governor Mike Beebe asked the Arkansas Center for Health Improvement to provide primary staffing to the *Arkansas Health Workforce Initiative*. The *Arkansas Health Workforce Initiative's* core workgroup is co-chaired by Dr. Dan Rahn, Chancellor, University of Arkansas for Medical Sciences, and Dr. Paul Halverson, State Health Director, Arkansas Department of Health. The *Arkansas Health Workforce Initiative* also includes representatives from numerous health and workforce-related entities throughout the state who serve as members of the workgroup and a larger stakeholder forum (see Appendices 2 and 3). The purpose of the *Arkansas Health Workforce Initiative* is to respond to the Governor's request to advance a transformational strategic plan for the Arkansas health workforce by April 20, 2012.

The *Arkansas Health Workforce Initiative* workgroup met monthly from March 2011 through January 2012. The following key results came from the meetings of the workgroup and were reported out for comment and suggestions at regular stakeholder meetings.

Figure 2: Arkansas Health System Improvement Agency Organizational Structure



1. Vision and Mission

The vision and mission of the *Arkansas Health Workforce Initiative* were created and approved.

- **Vision**: An Arkansas health system with an optimal health workforce caring for the needs of Arkansans
- **Mission**: Ensure that Arkansas has the appropriate workforce to meet its health needs, including accessibility, efficiency, and quality of care

2. Key Assumptions

The following key assumptions were agreed upon and worked under to guide the scope and direction of the *Arkansas Health Workforce Initiative's* work.

- The supply, capacity, and distribution of primary care clinicians in Arkansas is not sufficient to meet the health care needs of Arkansans and is not likely to change in the short term.
- There are serious gaps in health care quality and safety, racial and ethnic disparities, and geographic barriers that negatively impact care in rural and underserved communities and populations.
- Increasing health information technology capability and changing models of health care provider payment and service delivery will require new and enhanced workforce competencies, skills, training, and practice patterns.
- Approximately 251,000[61] Arkansans will become eligible for Medicaid and approximately 323,000[62] Arkansans will qualify for subsidies to pay health insurance premiums in 2014.
- Even absent the changes brought about by implementation of Patient Protection and Affordable Care Act, the demand for health care services will be driven by a rapidly increasing population of elder Arkansans and a general population that experiences differentially high rates of chronic disease.

3. Framework and Considerations

Considerations were adopted and served as a guide and an organizing framework for developing Arkansas-specific, targeted recommendations to facilitate short- and long-term health workforce solutions. The considerations are adopted from the definition of a patient centered medical home from the Agency for Healthcare Research and Quality (see Appendix 6) as well as the Vision for 21st Century Health Care Delivery in Arkansas (see Figure 3).

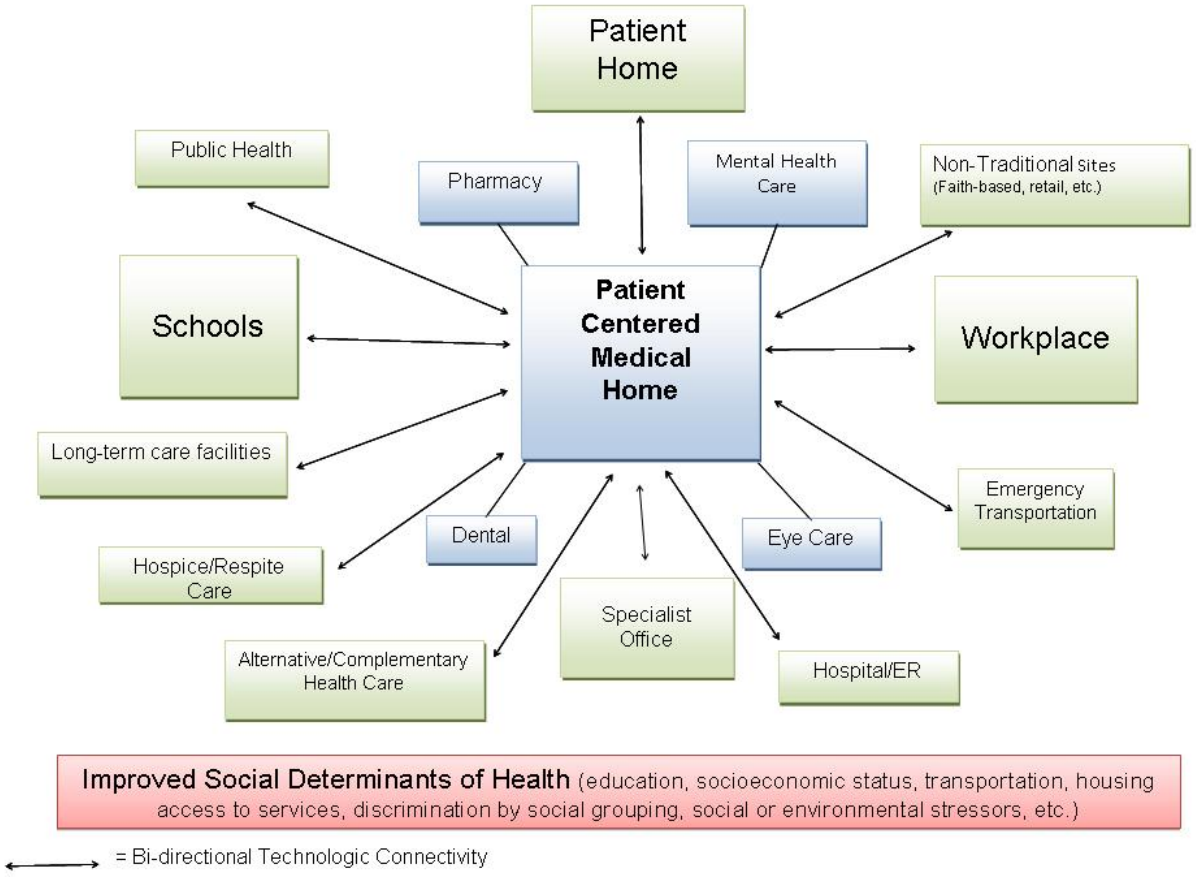
The term "patient centered medical home" is sometimes used interchangeably with "health home" and/or "medical home," and other times refers to a more expansive version of the medical home model, the "medical neighborhood," which delivers additional types of services, such as dental care, behavioral health services, and/or linkages to social services, and/or serves a broader patient population. Despite terminology variation, at its core, the proposed system focuses on what the patient needs, not what the system needs. It is built around a patient-centered medical home model that provides every person in Arkansas with 24/7 access to evidence-based preventive care, acute care, and chronic disease management.

While the vision for a patient-centered, high-performance health system in Arkansas may take some years to achieve completely, health care in Arkansas will be improved incrementally through system-wide initiatives currently underway to:

- prepare the health workforce,
- improve the payment system,
- implement and promote the use of health information technology, and
- assure fairness and accessibility of insurance coverage for all Arkansans.

Figure 3 depicts a structure for a Vision for 21st Century Health Care Delivery in Arkansas, such that care and services received at any site would be patient centered and integrated.

Figure 3: Vision for 21st Century Health Care Delivery in Arkansas



The recommendations of the *Arkansas Health Workforce Initiative* support approaches that provide the following components:

- Patient-centered care
- Comprehensive care
- Coordinated care
- Timely access to quality care
- A systems-based approach to quality and safety

4. Focus Areas

Two focus areas emerged as a pathway for action to address both the current and future workforce needs.

- *Prepare the workforce for new care delivery models:* Solving the health workforce capacity problems in Arkansas will require fundamental changes in how care is provided and how the already strained health workforce will function. Delivery system transformation has the potential to give Arkansas the opportunity to improve provider satisfaction and retention at the same time that the state is working to improve patient outcomes and reduce costs. The long-term success of reform efforts

will depend on how well the state engages and empowers the health workforce to embrace new models of care delivery.

- *Improve the capacity and distribution of the primary care workforce:* Arkansas will experience an increase in the demand for care in 2014 and beyond. The state is challenged by significant geographic maldistribution of its health workforce, largely because of its rural characteristics and primary care provider shortage. Many health professions require years of training, and expanding education and training—though it will ensure adequacy in the long term—will not solve the state's immediate needs. Consequently, Arkansas must look to expand the capacity of the existing primary care workforce and ensure the availability of and access to services provided to Arkansans.

Goals & Recommendations

The current gaps in the supply and demand of the state's health workforce are being and will continue to be exacerbated by population changes, increasing disease burden, provider and practice trends, and increasing numbers of insured.

The goals and recommendations of the *Arkansas Health Workforce Initiative* are meant to address the widening gaps in the supply and demand of the health workforce, and to alleviate the gaps expected in the future. They were created through a process of determining the current and future needs of the population as well as the current and projected supply of the health workforce. Ultimately, every recommendation supports the *Arkansas Health Workforce Initiative's* vision of an Arkansas health system with an optimal health care workforce caring for the needs of Arkansans.

The four broad goals of the *Arkansas Health Workforce Initiative* are to:

1. Support the implementation of and transition to team-based care that is patient-centered, coordinated, evidence-based, and efficient
2. Enhance and increase the use of health information technology
3. Increase the supply and improve the equitable distribution of primary care providers
4. Adopt new financing, payment, and reimbursement policies and mechanisms

These goals support the improvements that must occur to meet current and future demand for primary care in Arkansas. Each of those goals can be addressed through multiple priority and long-term recommendations that are presented below.

Goal 1

Support the implementation of and transition to team-based care that is patient-centered, coordinated, evidence-based, and efficient

Citing evidence of the positive relationship between primary care and good health, health improvement discussions have focused on the primary care practice as the hub of continuous, coordinated, comprehensive health care delivery system with patients at the center, leading to what is being described as a new health care delivery model.[63]

This new method of delivering care includes sites dubbed as patient-centered medical homes, medical homes, health homes, and medical neighborhoods. Regardless of name, these are all more than physical locations; they are manners of delivering care that recognize and embrace team-based, coordinated care for all patients to meet their specific needs.

Although the new delivery models that embrace team-based care are not yet in widespread practice in Arkansas, there has been recent movement toward utilizing these activities to improve patient care, reduce costs, and relieve providers overburdened by excess demand. Recommendations to develop the appropriate health workforce acknowledge that the workforce will deliver care in a system with team-based primary care as its foundation, and encourage the adoption of this type of care delivery.

Recommendations related to transition to new model

Recommendation 1-1

Define team-based care (TBC) across various types of care sites. Identify team members, core competencies, practice roles, training needs, and outcome metrics for care teams, including care coordinators and non-traditional providers in primary care settings, while assuring that patient safety and quality of care are protected in the assignment of clinical roles on the team. Adopt evidence-based guidelines for TBC, including evaluation protocols.

TBC is essential to the success of creating a patient-centered medical home (PCMH), which is a key recommendation for system change in the *Arkansas Health Workforce Strategic Plan*. As the existing workforce strives to reach current and expanding demand for care, the team-based approach will be essential in achieving high-quality, comprehensive patient care.

Because TBC has not been emphasized in the U.S. health care system, there is not yet general agreement on what constitutes optimal care. Thus, before practices embark on the implementation of TBC or the PCMH, stakeholders should attempt to reach agreement on what standards should be included within each TBC practice. These standards should include a definition of team-based care, core competencies of team members, practice roles, training needs, evidence-based guidelines, evaluation protocols, and outcome measures for teams. Reimbursement should reward practices to the degree that they meet these standards. Non-physician providers, including nurses and physician assistants, should be used when feasible and should be able to practice to the full extent of their education, and training and subject to the limitations of their license. Legal and malpractice protections should be developed and enacted for providers following evidence-based practices.

Standards for implementing team-based care through a PCMH model have been advanced by the National Commission for Quality Assurance, The Joint Commission, and the Patient-Centered Primary Care Collaborative. Practices in the state that are piloting or implementing PCMHs should form a coalition to establish statewide standards for team-based care based on these models.

Implementation Partners: practices implementing TBC and/or PCMH, state health professional boards, state health professional associations, providers, practice sites, Arkansas Association of Two-Year Colleges (AATYC)

Recommendation 1-2

Deploy population-based management strategies into primary care delivery systems.

One of the four key principles developed by the American Academy of Pediatrics, the American Academy of Family Physicians, The American College of Physicians, and the American Osteopathic Association for the PCMH is that care is coordinated and/or integrated across all elements of the complex health care system and the patient's community (*e.g.*, family, public, private and community-based services). Coordination with the patient's community must be facilitated by registries, health information exchanges, and other means to ensure that patients receive appropriate care when and where they need it in a culturally and linguistically appropriate manner.[64]

The National Committee for Quality Assurance certifies PCMHs based on standards including patient tracking and registry functions for population-based management as well as performance reporting and improvement.[65] The standards further emphasize providing evidence-based preventive services.

Primary care practices should be incentivized to deploy the following strategies:

- Establish disease-specific patient registries
- Provide optimal use of clinical preventive services, including screening and behavioral counseling
- Establish ongoing performance monitoring and improvement processes

These strategies will enable practices to achieve the goals of health promotion and education, integrate prevention with sick care, address populations as well as individual health concerns, create community involvement, use appropriate technology, and more fully engage in the health promotion and disease prevention opportunities that are emerging as health insurance reform is being implemented.

Implementation Partners: practices implementing TBC and/or PCMH, providers, practice sites, providers, payers

Recommendation 1-3

Optimize the use of non-physician providers and staff to advance evidence-based care and preventive patient management.

Current efforts to transform health care in Arkansas call for innovations within the delivery system. A new strategy is required to meet the challenges of current and future demand for health care, as well as the needs and expectations of patients, families, and providers. As shortfalls in the supply of primary care providers grow, policy reforms and new, more collaborative models of training and care are needed to harness the potential of the entire health workforce. A key strategy will be the deployment of non-physician providers such as advanced practice nurses (APNs), physician assistants (PAs), medical assistants (MAs), dental hygienists, as well as non-clinical staff.

The provision in Arkansas law that defines the scope of practice for APNs states that such practice is the "performance for compensation of nursing skills by a registered nurse who, as demonstrated by national certification, has advanced knowledge and practice skills in the delivery of nursing services."[66] Therefore, the scope of practice is determined—at least in theory—by a national certifying body and its requirements for demonstration of skills and techniques learned. According to the law, APNs may practice advanced practice nursing independently—that is, without supervision or collaboration with a physician. For an APN to gain prescriptive authority, however, a collaborative agreement with an Arkansas-licensed

physician who has a practice comparable in scope, specialty, or expertise to that of the APN is required. The collaborative agreement is a written document that must be filed with the parties' respective boards and has 14 different requirements.

According to Arkansas law, a PA is a graduate from an accredited program that has passed a national exam. A PA's duties are derived from a supervising physician, and the PA is an "agent" of the supervising physician.[67] In short, a PA is a dependent medical practitioner whose duties and responsibilities, including prescribing, ordering, and administering drugs and medical devices, are delegated by a supervising physician. The law does not require that the PA to be in the presence of the supervising physician when the services are provided, but the PA must be able to readily communicate with the physician. A PA may not tend to medical issues related to the eye.

During the 2009 Legislative Session, the Arkansas Medical Practices Act was amended to establish a statutory basis for physician delegation of certain tasks to MAs, such as the administration of drugs not requiring substantial specialized judgment and skill with certain oversight requirements and consideration given to the patient's acuity and requirements for training and competency.[68]

Additionally, the oral health community was successful in advancing legislation during the 2011 Legislative Session to expand the scope of practice for dental hygienists, authorizing dental hygienists to perform dental hygiene procedures for people in public settings without the supervision of a dentist.[69]

These are only two examples of the legal mechanisms by which various providers have been enabled to offer certain primary care services. However, there are also non-clinical staff members who may be able to assist in the provision of some basic services. Non-clinical staff may be able to help gather information from patients or send appointment and medication reminders. To provide the most efficient deployment of the health workforce, all types of providers must work together, using a combination of licensed clinicians and non-licensed staff that is educated, trained, and enabled to provide various types and levels of primary care and care support. The Arkansas Center for Health Improvement is currently partnering with the Arkansas Foundation for Medical Care to conduct research and a provider survey to further inform these issues, with a report expected later this year.

Implementation Partners: state health professional boards, state health professional associations, practices implementing TBC and/or PCMH, providers, practice sites, payers

Recommendation 1-4

Assure access to counseling for behavioral change in primary care settings.

Many health problems and chronic diseases are related to individual health behaviors that have developed over a lifetime. By counseling patients to change behaviors that increase risks for chronic disease, the burden of illness can be reduced. Currently, there are an insufficient number of providers to address the recommended behavioral counseling, and those who are available are generally in settings other than primary care.

To increase the available workforce for primary behavioral counseling, the state should offer training to current health care workers who have not been previously trained in this area. For example, advanced practice nurses, physician assistants, registered nurses, social workers, and dietitians may be offered training and certification in these services. Additionally, the state should develop new programs to train

and certify a new type of health care worker who would specialize in behavioral counseling in the primary care setting.

Implementation Partners: Arkansas Dietetic Association, UAMS College of Public Health, practices implementing TBC and/or PCMH, institutions of higher education offering health professional programs, providers, practice sites

Recommendation 1-5

Develop and support community reinforcement mechanisms such as community health workers, direct care workers, and faith-based initiatives.

Multiple mechanisms are being advanced that emphasize community-based preventive and wellness care and the use of community-based health teams and patient-centered medical homes. Evidence is emerging that shows that including community health workers, direct care workers, and faith-based initiatives in these efforts improves health care access and outcomes, strengthens health care teams, and enhances quality of life for people along the life continuum.[70,71]

A community health worker (CHW) is a frontline public health worker who is a trusted member of and/or has a very close understanding of the community served.[72] This trusting relationship allows the CHW to serve as a liaison between health and social services and the community. The CHW facilitates access to services and improves the quality and cultural competency of service delivery. A CHW also builds individual and community capacity by increasing health knowledge and self-sufficiency through outreach, community education, informal counseling, social support, and advocacy.[73]

In Arkansas, some CHWs have already been able to address a variety of health-related issues. Through a contract with the Arkansas Department of Human Services, the Delta-based Tri-County Rural Health Network tested the use of CHWs–known as Community Connectors— to identify Medicaid-eligible individuals who needed long-term care, to educate them about services, and to refer them to services and providers. The Community Connectors were recruited from the communities in which they serve. Contacting residents through a variety of settings, including community events, public forums, referrals followed up by telephone, and in-person visits, the Connectors provided community members with information about existing long-term care programs and referred to public, private, or government agencies.

Findings from a recent University of Arkansas for Medical Sciences (UAMS) study highlight the potential financial importance of providing this type of support. There was an average of a 23.8% decrease in spending for each patient participant.[74] "The study's key finding shows that the state's Medicaid system had a net savings of more than $2.6 million over three years when Medicaid-eligible elderly and disabled adults with unmet long-term care needs in a three-county area were sought out and connected to home and community-based long-term care services."[74] As a result, the program has been expanded into 15 other counties in the southeast Delta region.

By 2020, projections show annual government spending on long-term care peaking at $140 billion with state Medicaid programs covering as much as 63 percent of those costs.

Past research examining the effects of targeting those in need of long-term care services has not shown cost savings, most likely because of how that population was identified. More effective methods of identifying those individuals at risk of nursing home entry and linking them with appropriate home and community-based services would achieve a better match between long-term care needs and service delivery. That's where a reduction in long-term care spending could be realized.[75]

Another example of the work of CHWs in Arkansas is a program carried out by the Arkansas Department of Health (ADH). ADH employs CHWs under the supervision of public health nurses in three counties in southeast Arkansas. They concentrate on visiting mothers who have recently delivered babies, promoting good practices in the home to reduce the risk of Sudden Infant Death Syndrome, encouraging well-baby visits to a health provider, and helping mothers plan for birth spacing. These CHWs also work in their communities to promote awareness of hypertension and diabetes, and help clients navigate the health care system.

Arkansas should convene an advisory group to assess capacity to expand the Community Connector Initiative and other programs from their current activities to a statewide program. The group should consider issues such as training/certification of CHWs, reimbursement of CHW services, over-institutionalization of CHWs that disconnects them from the community, and prompt expansion of use of CHWs in the Arkansas health and long-term care delivery system where strong evidence exists to show their effectiveness.

In addition, direct care workers are a vital part of a coordinated health care team. Much of long-term care in the country is and will continue to be provided in the home environment,[76] and strengthening and improving the design of well-coordinated long-term health care is imperative to maximizing the use of direct care workers and improving the education and support to families.[77] National estimates indicate that by 2018 nearly three million direct care workers will be in the workforce with anticipated job openings approaching 1.5 million. Demand for home health aides in the state of Arkansas is expected to grow by 29%, nursing aides, orderlies and attendants by 20%, and personal and home care aides by 27%.[78]

In both private and public healthcare programs, direct care workers provide the bulk of hands-on elder care in the home, yet few resources are directed at improving their recruitment, education or training.[79,80] Current standards for the training of direct care workers in Arkansas are not sufficient to meet the needs of a 21st century health care system.[79] Advancing more modern, formalized educational opportunities for direct care workers will provide them with the skills to recognize and report warning signs of complications from chronic conditions, monitor compliance with medication regimens, assist with hospice care and tele-health programs, serve as advocates for older adults, and build effective partnerships with family caregivers.[71,81]

Strengthening the direct care workforce in Arkansas will require the following:

- Establish training guidelines and core competencies for all levels of direct care workers
- Explore reimbursement methodologies and other incentives for the recruitment and retention of direct care workers in Arkansas
- Explore the use of blended learning networks and other technologies that enable older people, their families, and care providers to exchange knowledge, learn together, and support each other in local care networks

Implementation Partners: Tri-County Rural Health Network, UAMS Arkansas Aging Initiative, UAMS Schmieding Center for Senior Health and Education, ADH, UAMS College of Public Health, DHS Medicaid, educators, DWS Arkansas Workforce Investment Board, AATYC, ADH

Recommendation 1-6

Integrate culturally competent health literacy programs for providers and patients to promote and support patient self-management in all health care settings.

Cultural competency and health literacy are vital to reducing health disparities and improving access to high-quality health care. Cultural competency and health literacy enable systems, agencies, and professionals to function effectively to understand the needs of groups accessing health information and health care.[82]

Culture involves a number of components, including personal identification, language, thoughts, communications, actions, customs, beliefs, values, and institutions that are often specific to ethnic, racial, religious, geographic, or social groups. These components influence beliefs about health and delivery of health services. Providing culturally competent care has a positive effect on patient care by enabling providers to deliver services that are respectful of and responsive to the health beliefs, practices, and cultural and linguistic needs of diverse patients.

Health literacy is defined in *Healthy People 2010* as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[10] It is not simply the ability to read but requires a complex group of reading, listening, analytical, and decision-making skills, and the ability to apply these skills to health situations. According to the American Medical Association, poor health literacy is "a stronger predictor of a person's health than age, income, employment status, education level, and race."[83] In *Health Literacy: A Prescription to End Confusion*, the Institute of Medicine reports that 90 million people in the United States, nearly half the population, have difficulty understanding and using health information.[84]

As the health system moves toward "consumer-centric" health care, individuals must take an active role in health care decisions. To accomplish this, people need to have strong health information skills that fit within their cultural context, and providers need to understand how their interactions and office processes impact a patient's capacity to develop self-management skills. One population- based approach for addressing health literacy and promoting healthy behaviors is to engage in broad social marketing strategies.

Groups within the state should identify barriers and solutions for integrating health literacy and cultural competency practices, principles, and policies into their delivery of primary care. Providers should increase knowledge about health literacy and cultural competency by integrating these concepts into all health care curricula. The state should assess current practices and newly implemented strategies for addressing language, culture, and literacy (*e.g.*, every Patient-Centered Medical Home seeking accreditation by the National Committee for Quality Assurance or The Joint Commission will have to demonstrate staff competency in these domains). Faculty and student body diversity in health profession training should be ensured. Rural and inner city communities need clinical training opportunities to further increase cultural knowledge and competency. The state should establish a Center for Health Literacy to coordinate and fund activities that improve health literacy of Arkansans.

Implementation Partners: ADH, ACH, AHECs, Health Literacy Think Tank (UCA, ASU, UALR, American Public Health Association), Arkansas Health Literacy Partnership, Regional Health Literacy Council, CDC Region 6, Arkansas Literacy Council, Arkansas Library System, Arkansas institutions of higher education offering health professional programs, providers, practice sites, patient support and education organizations

Recommendation 1-7

Incorporate patient participation in delivery system evaluations.

Satisfaction is a direct measure of a patient's perception of how well a practice delivers on the promise of providing quality care. The patient's own experience of the health care relationship is the primary driver for engaging patients in positive behaviors. Patients and their families must feel connected to their individual provider and to the entire practice.

Evaluation tools, including surveys, should capture patient and family perception of self-care management, physician and staff communication, access to care, patient-centeredness and whole-person care, and overall satisfaction with services. Patient feedback is essential to practice improvement and response rates to surveys are significantly higher if providers and staff emphasize how important the survey is to improving the patient's experience. These tools are also useful in assessing individual providers within a practice. The results can inform practice comparisons within the group and more broadly across medical communities.

To stimulate quality improvement in primary care settings, current accreditation standards advanced by the National Commission for Quality Assurance and The Joint Commission call for the use of patient surveys. Practices are encouraged to survey patients at least every 6 months. Survey tools should incorporate appropriate cultural and literacy dimensions. Survey activity can be outsourced or the primary care setting can assign dedicated personnel. Multiple validated survey instruments are available for use in primary care settings.[85]

Primary care settings should improve capabilities for capturing patient experiences, including phone surveys, online surveys, kiosks in waiting rooms, or focus groups.

Implementation Partners: Arkansas Family Practice Association, Arkansas Primary Care Association, UAMS College of Public Health, providers, practice sites, patient support and education organizations

Recommendation 1-8

Utilize pharmacists as part of the care team for collaborative drug therapy management.

Pharmacists routinely suggest to physicians safer, more medically effective, or more cost-effective drug alternatives, a practice that is generally well-accepted. However, physicians sometimes view expanded roles for pharmacists within health care organizations with skepticism and as an encroachment on their territory.[86] With increasing specialization and prevalence of multidisciplinary and interdisciplinary teams—along with changes in reimbursement structures—the role of pharmacists could expand so that physicians and pharmacists can jointly manage drug therapy and disease states to improve patient outcomes.

Collaborative drug therapy management (CDTM) is the participation by a physician and a pharmacist in the management of drug therapy pursuant to a written protocol that includes information specific to the dosage, frequency, duration, and route of administration of the drug, authorized by a physician and initiated upon a prescription order for an individual patient and is agreed to by one physician and one

pharmacist; or is agreed to by one or more physicians in a single organized medical group, such as a hospital medical staff, clinic or group practice, including but not limited to organized medical groups using a pharmacy and therapeutics committee, and one or more pharmacists at a single pharmacy registered by the Board of Pharmacy.

Oregon and Washington have embraced CDTM as a worthwhile clinical practice. Its increased demand stems from the ability of the pharmacist to reduce adverse drug events and improve clinical outcomes based on extensive training in pharmacotherapy. Washington was the first state to allow prescriptive authority for pharmacists with the Board of Pharmacy and the authorizing prescriber overseeing the prescribing pharmacist. Studies in Washington and other locations have shown for years that health indicators improve when pharmacists collaborate with physicians to find the best medication treatments, as well as advise on dietary and lifestyle improvements.[87,88,89,90]

Even when local laws provide for collaborative arrangements, several constraints remain. Enough pharmacists must be available to assume collaborative drug therapy management responsibilities and pharmacists must be provided with training to perform such tasks. Second, it is difficult to determine how to pay pharmacists for these activities based on the value of, or savings gained, through collaboration. Finally, physicians must have a good understanding of pharmacists' expertise and know how their skill sets can be employed in patient care.

To utilize pharmacists for CDTM, Arkansas should remove any statutory or regulatory constraints that limit collaboration. The state should also educate physicians about CDTM potential and the aptitude of pharmacists to perform at a high level within a CDTM arrangement. Third, the state should advance payment and business models for further development of CDTM.

Implementation Partners: Arkansas State Board of Pharmacy, Arkansas State Medical Board, Arkansas Pharmacists Association, AMS, providers, practice sites

Recommendation 1-9

Organize mass health clinics for health assessments, preventive screenings and services, public and private health insurance enrollment, and eligibility for insurance exchange products and subsidies.

Mass clinics in Arkansas are generally free one- or two-day clinics sponsored by health care professional associations, such as the Arkansas Mission of Mercy that annually provides much-needed oral health care to Arkansans and residents of surrounding states. Services provided by mass clinics are limited in nature and are generally provided to uninsured or underinsured people.

Mass health clinics would be a useful short-term tool at the beginning of 2014 when 328,000[3] Arkansans will be newly insured[91] and likely seeking health care services. Although the services at these health clinics would be limited in nature, they should serve as an entry point where clinicians will be able to provide health assessments, screenings, and potentially diagnoses. Importantly, the clinics should also serve as an enrollment mechanism for those newly eligible for Medicaid and insurance exchange products.

Implementation Partners: ADH, state health professional associations, patient support and education organizations

Recommendations related to educational changes

Recommendation 1-10

Integrate inter-professional collaboration training into the health education pipeline, including preparation of academic faculty for teaching team-based care (TBC) and for providing continuing education programs. Educate providers about how TBC improves outcomes.

To make the system described above work properly, Arkansas needs to educate the appropriate number and types of health care providers. This may require educational institutions to recruit additional faculty and review admissions criteria and curricula including curricula designed to teach students about health system change and the provision of community and clinical preventive services. For example, institutions may educate more advanced practice nurses, physician assistants, health information technology specialists, and care coordinators. All future team members should be educated within a model of TBC so that they learn to work with other members of the team. Easily accessible continuing education courses on TBC should be developed for credit and promoted to all health professions.

Implementation Partners: Arkansas institutions of higher education offering health professional programs, ADHE, educators

Recommendation 1-11

Explore and survey existing care coordination programs, including current training, competencies, practice roles, functions, and availability of care coordinators. Define care coordination, including goals, qualifications, core competencies, practice role(s), training needs, and outcome metrics. Establish education, training, and certification programs, including career ladder training, for care coordinators, and develop and train care coordinators to be incorporated into care teams.

"Care coordination" is a person-centered, assessment-based, interdisciplinary approach to integrating health care and social support services in a cost-effective manner such that an individual's needs and preferences are assessed, a comprehensive care plan is developed, and services are managed and monitored by an evidence-based process that typically involves a designated lead care coordinator.[92] This definition emphasizes a person-centered approach in which support is given to the individual, as well as family members and other caregivers, to manage physical health, behavioral health, and psychosocial needs. In addition to addressing medical needs, care coordination encompasses services from multiple social support and community providers, bridges gaps in care, and ensures provision of the appropriate level of care.

Care Coordination Competencies:[93]	**Care Coordination Functions:**[93]
1. Develops partnerships	1. Provides separate visits and CC interactions
2. Communicates proficiently	2. Manages continuous communications
3. Uses assessments for intervention	3. Completes/analyzes assessments
4. Is facile in care planning skills	4. Develops care plans with families
5. Integrates all resource knowledge	5. Manages/tracks tests, referrals, and outcomes
6. Possesses goal/outcome orientation	6. Coaches patients/families
7. Takes an adaptable and flexible approach	7. Integrates critical care information
8. Desires continuous learning	8. Supports/facilitates care transitions
9. Applies team-building skills	9. Facilitates team meetings
10. Is adept with information technology	10. Uses health information technology

Care coordinator qualifications vary nationally depending on the program and state and range from no required experience or education to a bachelor's degree or licensure in nursing, social work, or another social service area. No official body currently provides universally accepted credentialing or authorization to function as a care coordinator, but several entities provide professional certification in this practice field.

Interdisciplinary teams are increasingly recognized as most effective in addressing the needs of people with multiple chronic conditions, with one member of the team taking direct responsibility for coordinating care for a particular individual. Care coordination expectations include enhanced patient, family, and staff satisfaction and improved patient and system outcomes.

Researchers have identified at least 15 care coordination models that have improved the quality, efficiency, or health-related outcomes of care for chronically ill older adults (see Appendix 7). These models fall into two categories:[94] primary care-based models, in which a care coordinator is based in a physician's office or other primary care setting, and community-based models. In the latter, the care coordinator is based in a hospital or community agency. Various models exist to provide acute care in patients' homes, focus exclusively on transitions of care, provide nurse-physician teams for residents of nursing homes, or provide comprehensive care in hospitals.

Barriers to implementing care coordination include current fee-for-service financing structures and start-up and implementation costs. Additionally, gaps in the evidence base supporting models can lead to confusion on which model to adopt or how to implement one. Consumer awareness and skepticism can also deter participation. Further, the state currently lacks interoperable information systems and accountability for transitions of care.

Arkansas has piloted multiple projects, most implementing a patient-centered medical home model that incorporates team-based, coordinated care into the matrix of clinical activity. They include Mercy Health Systems, Arkansas Blue Cross and Blue Shield, Arkansas Community Health Centers, and Arkansas Children's Hospital. A team should be organized to establish a blueprint for Arkansas to move forward in a systematic way to meet the care coordination needs of its citizens, including contributions from many sectors. To do this, the newly established group should be charged with developing the framework, models, and consensus necessary to design and deploy coordinated care programs, as outlined in national recommendations.[95]

Implementation Partners: Donald W. Reynolds Foundation, John A. Hartford Foundation, National Transitions of Care Coalition, National Institute on Aging, Arkansas AARP, DHS, AATYC, ADHE, state health professional boards, state health professional associations, payers, Arkansas institutions of higher education offering health professional programs, educators

Recommendations related to implementation support

Recommendation 1-12

Establish a Technical Assistance Center to provide support for providers who are setting up, transitioning to, and maintaining team-based care.

For a number of reasons, traditional primary care practices have underutilized non-physician providers and staff as well as technology in providing coordinated, comprehensive care. Physicians have not been trained to function within models of team-based, coordinated care.

To encourage practices to move toward these models, technical assistance should be widely available to help a practice. The Agency for Healthcare Research and Quality has a Resource Center dedicated to providing tools and resources to support the patient-centered medical home (PCMH), including briefs, a practice facilitation how-to guide, and other resources.[96] Additionally, the Patient-Centered Primary Care Collaborative is committed to providing public resources for practices transforming to a patient-centered medical home. Their publication "Theory into Practice: A Practical Guide to PCMH Transformation Resources" lists support organizations and contact information as well as a bibliography of publications that describe PCMH transformation studies, processes, and outcomes.[97]

Arkansas should survey these existing models and create an Arkansas-specific technical assistance program that will enable practices to define members, core competencies, practice roles, training needs, and outcome metrics for care teams; use health care providers in such a way that skilled care is delivered at the lowest cost; assure that patient safety and quality of care are protected in the assignment of clinical roles on the team; include care coordinators and non-traditional providers in primary care settings; and make sure patient needs are met.

The state should establish an office or direct an existing agency or organization to create this technical assistance program and to directly assist practices who are interested in implementing team-based care.

Implementation Partners: ADH, Arkansas Office of the Governor, AFMC, ACHI, AHECs, practices implementing TBC and/or PCMH

Recommendation 1-13

Increase clinical capacity for primary care providers by improving administrative efficiencies, including reducing paperwork and increasing care coordination. Identify nonmonetary incentives for implementing team-based care, *e.g.*, continuing education credit and minimization of prior authorization burdens.

While the degree of shortage of primary care providers has been debated, there is general agreement that the expected increase in the number of insured individuals in 2014 will result in more patients than can be adequately cared for by the current primary care workforce. Whatever other strategies are employed to improve the system's ability to care for the increased number of patients seeking primary care, it is clear that the capacity of primary care providers will need to increase to see more patients.

Currently, primary care providers spend a significant part of their available patient-care time carrying out tasks that could be done by other workers who are not trained to provide direct patient care. For example, primary care physicians are required to do administrative work related to care coordination, prior authorization, and claims that could be done by non-physician staff with appropriate training. Practices

that are converting to a team-based model should organize teams in a manner that assigns administrative and coordination tasks to team-members other than the primary-care provider.

Implementation Partners: practices implementing TBC and/or PCMH, Arkansas institutions of higher education offering health professional programs, state health professional associations

Recommendation 1-14

Employ mobile heath units.

Mobile health units (MHUs) are an innovative way to reduce health care disparities by moving care settings to underserved populations, who sometimes do not have transportation or other resources to seek care.[98] MHUs also provide an alternative portal into the health care system for the medically disenfranchised, *e.g.*, people who are underinsured, uninsured, or who are otherwise outside of mainstream health care because of issues of trust, language, immigration status, or simply location.[99] As providers of "last resort," they are essential components of the health care safety net providing prevention, screening, and appropriate triage into mainstream services.

A 2009 study[99] by BioMed Central showed a return on investment of 36:1 for MHUs, with annual costs to run the units at approximately $500,000 and savings of over $3 million in avoided emergency room visits and nearly $18 million in value of potential lives saved. The value of potential lives saved was calculated using the National Commission on Prevention Priorities (NCPP) research, which assigned a relative value to various prevention practices in terms of quality adjusted life years saved. The NCPP services provided were hypertension, vision, cholesterol, obesity, depression, and diabetes screening and diet counseling.

A 1998 study[100] showed that an MHU serving a rural elderly population in the mid-Atlantic region did not significantly alter hospital admissions, although visits to the emergency room decreased significantly. Visits to public health departments decreased somewhat, while the use of many other available community services remained stable. Cost of medications was a problem for patients early in the project, but facilitation by MHU staff of the use of pharmacy assistance for individuals who qualified for free medications resulted in an increase of more than 70% in the number of those receiving support.

Currently, Baptist Health operates one MHU in Arkansas. The unit is stationed in Arkadelphia and provides screenings, health education, first aid, and physician-directed medical services. Through the Arkansas Children's Hospital Dental Outreach program, Ronald McDonald House operates two mobile dental clinics that visit various areas of the state and offer full-service dental care for children.

MHUs have been used globally for education, counseling, mass screenings, diagnostics, and direct-care services. As an alternative or to complement mass health clinics, Arkansas should deploy MHUs to rural and underserved areas in which a source of primary care is consistently absent. MHUs should regularly visit rural and underserved areas—especially during the earliest months and, perhaps, years of expanded insurance coverage—to provide reliable, coordinated care assisted by appropriate information technology for effective management of preventive services and chronic disease.

Implementation Partners: ADH, state health professional associations, providers, payers

Recommendation 1-15

Establish circuit rider providers in each of the state's public health regions to assist in the provision of primary care services across the state.

From the early days on the frontier, the "circuit rider," whether a judge, preacher, dentist, or physician, has been one of the cornerstone approaches to getting scarce resources to rural communities. Although the prevalence of circuit riders has waned, the need in rural communities has remained, especially given the transportation issues and the growing elderly populations in these communities.

The circuit-rider approach involves practitioners external to the area traveling to rural communities, usually on some regular schedule (*e.g.*, once a month or once a week). They may spend anywhere from a few hours to a few days seeing patients. Their work is commonly coordinated through local community institutions like churches, schools, or other agencies.

The limited access provided by circuit riders, although better than no access, should be a short-term solution only. In the past, the practice has presented problems for continuity of care. However, enhanced information technology has increased the mobility of practitioners, and circuit-riding physicians now have the capability of accessing a patient's electronic health records from remote locations. Efficient utilization of the technology will decrease the risk of fragmentation of care for rural patients.

It is unlikely that the state will be able to recruit primary care practitioners to rural or underserved areas in the short term to address the health needs of the population. Consequently, Arkansas should develop a circuit-rider program as a short-term goal to address the primary care needs of rural communities in each of the public health regions. The program should be coordinated with local public health units, although care may be provided at a number of non-traditional sites.

Implementation Partners: ADH, AHECs, AMS, ARNA, Arkansas Area Agencies on Aging

Recommendation 1-16

Provide easy, individualized access to community resources for self-management.

Strategies to provide access to health and wellness self-management include providing a web-based resource repository as well as alternative community-based models. Providers should also help increase patients' knowledge and confidence in self-management by providing education and other supportive interventions over time. This suggests partnering with patients in new ways such as providing access to information to community resources for self-management. This is best accomplished by convening and facilitating one or more partnerships with community and health organizations to develop sustainable systems to deliver and promote evidence-based community resources that support the self-management needs of people with chronic disease.

Expected outcomes from providing access to community self-management resources include improved self-management, services, treatment protocols, and increased collaboration among partners. These can be achieved by establishing referral resources in the community that support patient self-management behaviors (*e.g.*, YMCAs, prescription assistance programs, etc.), enlisting key community organizations in assessing current accesses to community services and planning relevant services where gaps are identified, creating and developing procedures to maintain lists and databases of key community resources, and developing processes of communication with community resource partners. Further, patients and family

members should be given schedules and contact information for targeted services and providers should write "prescriptions" for use of community resources to encourage participation.

Implementation Partners: ADH, patient support and education organizations, Arkansas Area Agencies on Aging, providers, practice sites, payers

Recommendation 1-17

Create a public relations/social marketing campaign to promote entry into care coordination.

Arkansas should advance public relations efforts to educate and learn from the providers and patients who will be directly involved with care coordination as part of their practices and lives. Some examples from the Gerontological Society of America[94] include:

- Partner with groups such as the Campaign for Better Care (funded by The Atlantic Philanthropies and led by the National Partnership for Women & Families, Community Catalyst, and the National Health Law Program) and the National Transitions of Care Coalition to learn how best to engage consumers, health care providers, and other professions to identify "what's needed, what's wanted, and what would be embraced at the local level"
- Pay attention to terminology that might influence the social marketing of care coordination, such as what a model is called and how its target audience is defined; for example, it should be clear that care coordination has relevance for many patient populations, not just older adults
- Exploit multiple media, including television, to frame positive messages about care coordination and older adults; the Public Broadcasting System, for example, counts older adults among its core audience and is interested in developing programs for this group, however, messages also should be mainstreamed to the public at large
- Develop consumer education programs for patients and their caregivers to promote effective use of the health care system and to create demand for coordinated, patient-centered care[94]

Implementation Partners: Communications Directors from DHS and ADH, payers, patient support and education organizations

Goal 2

Enhance and increase the use of health information technology

Health information technology (HIT) includes a variety of technologies and technology systems, including patient electronic medical records (EMRs), patient personal health records, clinical decision support systems, computerized physician order entry for medications, telemedicine equipment and connections, and personal health devices. The goal of HIT systems is to provide timely access to patient information and (if standardized and networked) to communicate health information to other providers, patients, and insurers. Creating and maintaining such systems is complex. However, the benefits can include dramatic efficiency savings, greatly increased safety, and health benefits.[101]

Recommendations related to deployment of health information technology

Recommendation 2-1

Improve access to appropriate levels of HIT technical assistance and ensure team technical capacity and technology literacy for HIT deployment.

As utilization of HIT increases, the need for technical assistance will also increase to support the software, hardware and human knowledge required to implement and maintain various types of HIT such as EMRs, telemedicine, personal HIT access, and mobile health devices. The number of trained technicians must be adequate to support to widespread use of HIT, and access to these trained individuals must be as easy and convenient as possible.

In Arkansas, specific ways to help improve access to HIT assistance should include the following.

- Make use of the support and training available through HITArkansas, existing EMR vendors, National Park Community College (NPCC) and others to utilize support and train existing provider staff for initial HIT use
- Identify core competencies of HIT technical assistance and create an easily identifiable and accessible list of certified technicians
- Increase the number of trained HIT technicians through vocational and higher education training programs, including potentially creating a certification program for HIT technicians, using the NPCC Health IT program as a guide and one example
- Work with existing HIT-related organizations in the state (Office of Health Information Technology, HITArkansas, vendors) to create a partnership program with HIT/IT students, using them as either free or paid interns to help provide a "pool" of phone and web-based TA providers while also helping students gain real-world experience and create professional relationships

Implementation Partners: OHIT, HITArkansas, NPCC Health IT Program, HIT users, HIT vendors, ADHE, AATYC, Arkansas institutions of higher education offering health professional programs

Recommendation 2-2

Improve deployment of electronic medical record systems in practice sites.

A small amount of financial and other nonfinancial support is currently available for some Arkansas primary care providers who wish to implement EMRs. HITArkansas, a division of the Arkansas Foundation for Medical Care, is the federally designated Health Information Technology Regional Extension Center in Arkansas. HITArkansas's purpose is to help health care providers in their use of health information technology by offering guidance, technical assistance, and education about financial incentives associated with transitioning to the use of EMRs. The goal of HITArkansas is to support the deployment of EMR systems for almost 1,300 primary care providers throughout the state by the end of 2011.

In addition to technical assistance, providers who meet certain requirements are eligible for up to $44,000 in Medicare incentives over a five-year period or $63,750 in Medicaid incentives over a six-year period for implementing a functional EMR. In Arkansas, Medicare and Medicaid incentives began being paid in

2011. To date, over $30 million has been paid out in federal Medicare and Medicaid EMR incentives to over 400 providers in Arkansas.[102]

Even when people understand the benefits and want to deploy an EMR system, it can be expensive and time-consuming to purchase and support a system and to get staff fully trained. Despite these challenges, it is vital that providers purchase and fully utilize EMRs. Arkansas has a quickly improving EMR deployment, but more must be done to improve deployment in Arkansas. The state must continue to educate providers about both Medicaid and Medicare incentive payments. A focus is needed on EMR deployment in primary care settings—a few primary care provider "champions" who have already implemented EMRs and have had success should be identified and their stories used (print, photo, video) to show other practices the benefits of implementing an EMR.

Implementation Partners: OHIT, HITArkansas, EMR vendors, EMR users, ACHI, ADH, providers, practice sites

Recommendation 2-3

Building on existing technology, expand capacity for telemedicine and tele-education through equipment acquisition and greater access to broadband.

Arkansas's state Medicaid program reimburses practitioners for telemedicine services, but to be covered by Medicaid, the practitioner and patient must be able to see and hear each other in real time. For instance, physician interpretation of fetal ultrasounds are covered by Medicaid as a telemedicine service if the physician views the echography or echocardiography output in real time while the patient is undergoing the procedure. In the area of telehome care and remote monitoring services, Arkansas Medicaid does not currently provide reimbursements. Reimbursement by private payers for telemedicine services varies.

To utilize telemedicine and tele-education, the proper equipment must be in place. Some collaboration and education can be done over regular internet lines, but the full potential of this technology is best met with specialized videoconferencing equipment. A number of educational and health institutions are installing this type of equipment, but more widespread implementation is needed, especially in rural and underserved areas.

The cost of fitting classrooms with telemedicine or tele-education equipment is a significant consideration, and each location must also have access to trained IT staff and training for staff members who will be using the equipment. There are also some interoperability concerns, although many of those have already been resolved and continue to be resolved over time.

To fully realize the benefit of technology to improve medicine and education, the following should occur:

- Existing broadband technology and access, such as Arkansas Research and Education and Optical Network and other broadband backbones, should be identified and expanded in areas or with entities that can partner or link with these existing technologies.
- Educational and health facilities should be encouraged to work with each other, and to consider partnering with local businesses, city and county government entities, schools, libraries, and other health providers to share or spread the cost of equipment and access. Because equipment can be used for multiple applications, there are opportunities to partner with numerous types of entities to equipment and maintenance costs in exchange for sharing time and functions.

- Facilities planning to purchase equipment and implement programs should work together to negotiate and bargain with vendors to get discounts and/or bulk pricing.
- Practices should research and apply for technology grants, especially for those focused on expanding technology and distance access for health and education purposes.
- Organizations wishing to utilize telemedicine across state borders should monitor any possible changes in licensure requirements to take advantage of opportunities to expedite adoption.

Implementation Partners: Connect Arkansas, OHIT, ARE-ON, ADHE, providers, practice sites, state health professional boards

Recommendation 2-4

Use the Arkansas Research and Education Optical Network to its fullest potential to facilitate connections to telemedicine and tele-education opportunities as well as to provide a backbone for access to electronic health information.

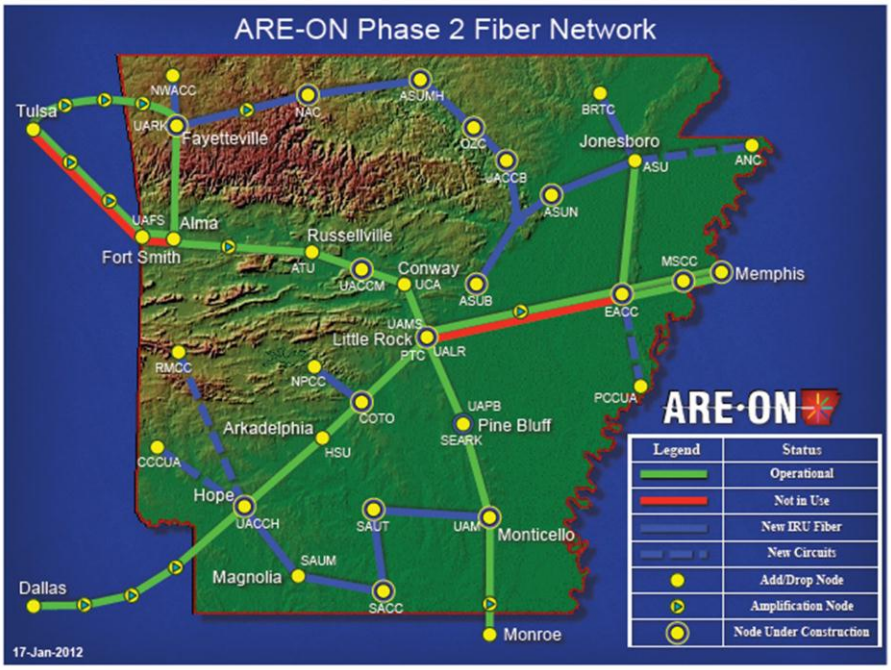
The Arkansas Research and Education and Optical Network (ARE-ON) is a network of high-speed fiber optic resources that is owned by Arkansas's higher education community. Its mission is to promote, develop, and apply advanced application and communication technologies to support and enhance education, research, public service, and economic development. One of its identified strategic issues is to use its resources to create a strong telehealth/telemedicine network in the state.

Although ARE-ON is not a commercial provider and is not able to provide resources to individuals or businesses not directly affiliated with an institute of higher education, there are several ways in which it can be used to support the education and training of the health workforce. It can provide bandwidth to support online or teleconferenced classes, provide appropriate links between institutes of higher education, and expand capability for telemedicine opportunities.

By the middle of 2012, ARE-ON will have completed construction of the network, which will be operational as depicted in Figure 4.

Implementation Partners: ARE-ON, ADHE, ADE

Figure 4: Arkansas Research and Education Optical Network



Recommendations related to provider and consumer engagement

Recommendation 2-5

Optimize consumer access to HIT, including access in non-traditional sites such as school wellness centers, libraries, pharmacies, worksite wellness centers, and retail outlets. Maximize HIT utilization to include consumer use for activities such as health self-management, distance monitoring of health conditions, home clinical assessments, online prescription refills, and access to personal health records.

The use of HIT is often focused on how providers and health facilities use technologies, but consumers have a great deal of opportunity to access HIT as well as influence how HIT is used to manage their own health conditions and mange health-related tasks such as accessing health records and filling prescriptions online.

There are a number of ways in which consumers could access health information such as personal health records, lab results, online scheduling, and prescription refill requests at non-traditional sites, increasing their ability to connect with their HIT-enabled providers. In addition, multiple health conditions are amenable to use of HIT to assist with self-management. Handheld and home health technology devices such as internet-enabled scales, running tracking programs, and glucose monitors are becoming more popular with consumers. Many providers and facilities already offer online patient portals, but patients may not be aware of the full array of possibilities that this access affords them.

Examples of HIT use are available through numerous health organizations throughout the country that have completed or are implementing pilot programs. For example, the following have conducted or are conducting programs for home monitoring of congestive heart failure: Humana (Florida, nationwide), Mercy Health System (Arkansas), Meridian at Home (New Jersey), Alegent Health Home Care (Nebraska), Purdue University's Regenstrief Center for Healthcare Engineering and St. Vincent Indianapolis Hospital (Indiana), Partners Health Care System (Massachusetts), and Georgetown University Medical Center (Washington, D.C.).

Although many people are unskilled in the use of technology or are wary of using technology, as the availability of broadband and the use of EMRs grow throughout the state, consumers will be exposed to HIT more often. As this exposure and use becomes more routine, consumers should become more comfortable with HIT, which will help increase their ability to maximize HIT in their lives.

Arkansas should employ the following strategies to help increase consumer use of HIT.

- Providers, facilities and retail vendors who offer EMRs with functionalities such as online patient access to health records, online scheduling, online or automatic prescription refills, and other HIT functions should partner to provide direct education to patients about the options that they have to access and use these features.
- Providers, facilities, and retail vendors who do not offer the ability to get patients involved with HIT should consider acquiring or moving to an HIT system that will allow at least some basic HIT functionalities.
- A repository of information, reports, and training about various HIT devices and how to use them should be created for providers, community health workers, and individual patients so that they have a trusted location to find credible information, and the models of how to best use them.

- Past and present pilot programs should be studied to adapt and create programs to assess and monitor patients with chronic health conditions that may be most easily managed and facilitated with patient-managed HIT, such as congestive heart failure, diabetes, and obesity.
- Sites that already offer internet connections, such as K–12 schools, colleges and universities, libraries, and workplaces, can be used to educate consumers about the availability of HIT and to promote its use.
- Computer terminals available to the public should have an option offering encrypted or secure systems to access health information, including direct links to approved health sites.
- Smart-phones could be encrypted or security-enabled to access health information.

Implementation Partners: OHIT, ADH, providers, practice sites, payers, employers, broadband and other internet service providers, libraries, schools, computer and smart-phone manufacturers

Recommendation 2-6

Establish web-based and tele-education programs that optimize learning opportunities, exposure of K–16 students to health professions, prerequisite classes for those pursuing health professions, career ladder programs for professional advancement, faculty development, clinical training sites, and clinical continuing education programs for clinicians and office support staff.

Both web-based and tele-education classes, programs, and other resources are already used in the state to provide education on many levels—elementary, high school, graduate, and professional education—but are not widespread or used to their fullest extent. Expanding use of these HIT-enabled educational opportunities will help expand the health workforce, recruit new workers, and educate the existing workforce.

The Arkansas Rural Nursing Education Consortium (ARNEC) is a group of eight community and technical colleges in Arkansas that provides licensed practical nurses (LPNs) and licensed vocational nurses the opportunity to earn a degree in Associate of Applied Science in Nursing through real-time interactive television coursework. This technology-based program allows students to sit for the NCLEX-RN, the registered nurse (RN) licensing exam, specifically meeting the needs of rural nurses who seek to attain higher degree status but are unable to travel outside their home areas.

Another example for both execution and financing is the program connecting the UAMS College of Pharmacy and the UAMS Northwest campus at the University of Arkansas-Fayetteville, which allows students in Fayetteville to participate in the pharmacy program via tele-education. Classrooms at both the UAMS and Fayetteville campuses have been fitted for tele-education and are linked during classes and lectures, which are conducted at the UAMS campus in Little Rock. By creating similar programs that make classes available at multiple locations throughout the state, the number of students per faculty member can be maximized.

Using both the ARNEC program and the UAMS pharmacy program as examples, Arkansas should:

- Identify existing resources (technologies, relationships, curricula) and begin by finding new and different ways to use them; for instance, existing educational programs that are taught in a web environment to just one campus could be expanded to be offered on the web throughout the state

- Explore the possibility of having entire degree curricula or individual classes be partially web-based; in-person class time could be compressed and meet one day a week or for a weekend in a central area, with the balance of the curriculum being completed online
- Create health profession learning programs for K–16 students, including web-based or tele-education presentations for students studying for various health professions as well as those working in these fields; live interaction with students would allow them to connect with the presenters and to ask individual questions
- Build upon existing concurrent enrollment programs in which high school students can earn both high school and college credit while in high school; encourage high school students to enroll in health-related classes and in classes that may be used as prerequisites for health professions or to meet health-related degree requirements
- Use National Park Community College, part of the Community College Consortia Program's Health IT training program, as a model for creating and implementing web-based curricula
- Convert existing health career ladder programs (such as LPN-to-RN programs) to web-based or tele-education programs to expand their reach, especially to provide those already practicing in rural or underserved areas to more easily reach new levels of training or licensure and to meet continuing education requirements

Implementation Partners: ARNEC, ADHE, AATYC, Arkansas institutions of higher education offering health professional programs, Arkansas institutions of higher education currently offering tele-education opportunities and those that are planning to implement tele-education programs in the future

Recommendation 2-7

Create a county-level, web-based repository of community services that address health needs and provide online resources for provider support and patient self-management.

Community services are of great value to both providers and health care consumers, but it is difficult for both provider and consumers to keep up with the vast number of community and supportive services that are available. A statewide repository of programs and services would be helpful to utilize all existing resources, help relieve demand on providers, and provide better and more complete care for consumers.

The Pennsylvania Cancer Control Consortium (PAC^3) has created a searchable web-based Resource Database (www.resources.pac3.org) for cancer-related health conditions, searchable by geographic location, specific health condition and type of resource (*e.g,* financial, medical, personal support). In Pennsylvania, PAC^3 was initially supported by the Pennsylvania Department of Health and continues to receive state funding.

Financial resources must be found to support the cost of initial startup and continued technical support, and Arkansas should create a similar database for all conditions, not just cancer-related, that should be continuously updated to have the most complete information. The site should be available and easily useable by providers, community health workers, consumers, and others 24-hours a day, seven days a week, free of charge.

Implementation Partners: ADH, Arkansas Cancer Coalition, Arkansas Legislature, patient support and education organizations

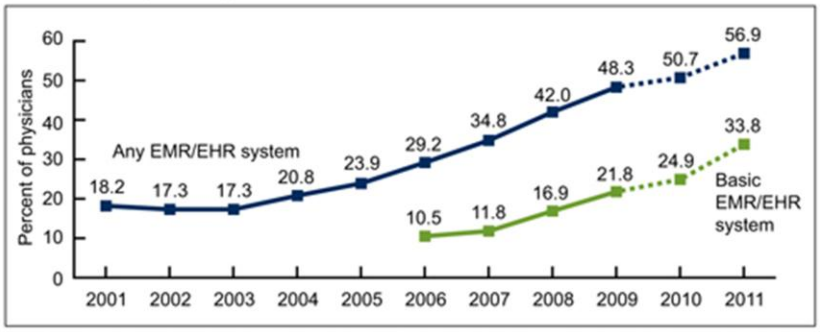
Recommendations related to utilization

Recommendation 2-8

Improve utilization of existing electronic medical record systems both in and across clinical practice sites.

According to a Centers for Disease Control Prevention National Center for Health Statistics study released in November 2011, 51% of Arkansas's office-based physicians are using an EMR system, which is slightly lower than the national average of 57%.[103] Since 2001, the percentage of U.S. office-based physicians using EMR systems has almost tripled (see Figure 5), but in Arkansas half of those are using only a basic system.[104]

Figure 5: Percentage of office-based physicians with EMR systems: United States, 2001–2009, and preliminary 2010–2011



NOTES: EMR/EHR is electronic medical record/electronic health record. "Any EMR/EHR system" is a medical or health record system that is all or partially electronic (excluding systems solely for billing). Data for 2001–2007 are from the in-person National Ambulatory Medical Care Survey (NAMCS). Data for 2008–2009 are from combined files (in-person NAMCS and mail survey). Data for 2010–2011 are preliminary estimates (dashed lines) based on the mail survey only. Estimates through 2009 include additional physicians sampled from community health centers. Estimates of basic systems prior to 2006 could not be computed because some items were not collected in the survey. Data include nonfederal, office-based physicians and exclude radiologists, anesthesiologists, and pathologists.
SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey.

According to a survey conducted in spring 2011 by the Arkansas Office of Health Information Technology, in which 39 of the state's 108 hospitals completed surveys, over half did not yet have a working EMR system, and only 28% reported that they had implemented an EMR and it works well.[105] In the same survey, in which 15.3% of providers replied, almost half (45%) of providers still use paper records or charts, and of those, almost half say that they have no plans to invest in an EMR or are unsure if they will or not.[105]

To support the full utilization of existing EMRs, Arkansas must continue to educate providers about Medicaid and Medicare incentive payments for meeting meaningful use requirements, which help measure how well and fully providers are using their EMRs; providers who meet meaningful use requirements are eligible for up to $44,000 in Medicare incentives over a five-year period or $63,750 in Medicaid incentives over a six-year period.[106] More and better information and training should be given to those providers who have existing EMRs, including how to better utilize features and education about new features and additional functionalities. Continued surveying of providers is needed to understand their use and needs, and to report out to involved and interested parties. With time, providers of all types and sizes will continue to utilize EMRs more fully.

Implementation Partners: OHIT, HITArkansas, EMR vendors, EMR users

Recommendation 2-9

Improve interoperability among all care sites, *e.g.*, wellness centers, worksites, clinical sites, pharmacies, schools, and homes.

Interoperability of EMRs and other electronic health information is one necessary component of care coordination. Without one site being aware of what other sites are doing, tests may be repeated, medication lists cannot be managed, and vital information about patients cannot be shared.

Using almost $8 million in federal funding, the Arkansas Office of Health Information Technology is in the process of implementing the State Health Alliance for Records Exchange (SHARE), which will create a system for the interoperability of EMRs throughout the state. SHARE has studied and incorporated ideas and processes from other states' health information exchanges such as the Utah Health Information Network (www.uhin.org), the Vermont Health Information Exchange (www.vitl.org), and the New Mexico Health Information Collaborative (www.nmhic.org). The initial phase of SHARE is to be complete by the end of 2012; it will include features such as a master provider index and the ability to transmit electronic health data securely between all care sites and health professionals.

Although SHARE will provide the opportunity for health professionals to share information and will eventually provide consumers an opportunity to access their health information, it will not require them to use it. It may take time for both providers and consumers to be comfortable with health information being shared among care sites and to become personally comfortable with using the system.

To support interoperability within the state, Arkansas should support SHARE. In order to share EMRs and the information contained in them between practice sites that are not currently connected, SHARE must be fully supported within the health community and consumers. Providers and all potential care sites should be informed about the need for SHARE and about the functionalities it will bring to care sites while consumers need education about the security and benefits of SHARE.

Implementation Partners: OHIT, CHCAs, state health professional associations, providers, practice sites, payers

Recommendation 2-10

Optimize the use of existing HIT and increase the use of new HIT to enhance communication among team members and across care sites.

HIT capacity such as telemedicine equipment, software, and support systems exist in multiple college and university settings throughout the state, but is available in few private or smaller clinical sites, and is not used to its capacity in almost any setting.

As always, the cost of systems and training is a concern when deploying any new technologies. Improving HIT should be seen by providers as an investment, in the same way that the purchase and use of computers was a major and more significant investment just a few decades ago.

Arkansas must maximize whatever existing HIT is in use by providers, and should consistently and rigorously increase use of new HIT by employing the following:

- Expand adoption of HIT in rural areas, especially to link single or small providers with other individual providers, specialist, hospitals, nursing homes, pharmacies, etc
- Utilize existing systems and devices as frequently and efficiently as possible at care sites already using HIT

- Utilize handheld devices or otherwise provide the ability to access patient information from home or from wherever a provider may be taking call or otherwise communicating with patients
- Teleconference with patients and other providers
- Communicate multi-directionally among multiple sites (health facilities, homes, workplaces, etc.), using communication methods as simple as email or remote login, or as complicated as full-scale telemedicine technologies
- Use secure email or text messaging for consultations with patients and other providers
- Expand adoption of HIT in rural areas, especially to link single or small providers with other individual providers, specialist, hospitals, nursing homes, pharmacies, etc.

In addition, technology innovators such as HIT vendors should be focused on constantly improving their products to offer the most efficient, easily used, and cost-effective technologies.

Implementation Partners: OHIT, HITArkansas, state health professional boards, providers, practice sites, HIT vendors

Goal 3

Increase the supply and improve the equitable distribution of primary care providers

Though Arkansas is expecting a modest increase in the supply levels of most providers, it will not keep up with the increase in population and increase in demand for health services. A larger problem than a lack of providers in sheer numbers is the maldistribution of providers in the state, which is especially pronounced in rural areas and underserved areas and populations. To relieve these problems, an increase in overall supply and a change in distribution of providers are needed.

Recommendations related to provider education and training

Recommendation 3-1

Recruit more diverse students into health professions, especially bi- or multilingual students.

According to a 2010 study by the Association of American Medical Colleges, 6.3% of the nation's physicians are black, while 5.5% are Hispanic and 12.8% are Asian.[107] A 2010 survey report by the U.S. Department of Health and Human Services Health Resources and Services Administration found that 5.4% of nurses were black, 5.8% were Asian, and 3.6% were Hispanic.[108] Blacks make up 12.6% of the U.S. population, while Hispanics represent 16.3% and Asians make up 4.8% of the population, according to 2010 U.S. Census Bureau data.[41]

Persistently, access to care for minorities, the poor, and the uninsured and underinsured has lagged behind access for the general population.[109] A *Health Affairs* study indicates that underrepresented minority physicians serve as a usual source of care for many of the nation's underserved populations, including those who are uninsured or underinsured.[110] To the extent that future minority health professionals follow this pattern, increasing minority representation among health professionals should increase access to care for the underserved.

Arkansas should seek to boost the number of minority health care professionals in an effort to address access in shortage areas. There are constitutional limitations on admission or hiring decisions based on race or ethnicity; however, some specific strategies that do not run afoul of constitutional limitations include public and private funding of organizations for health professions students that provide scholarships, loan forgiveness programs, and tuition reimbursement strategies to students and institutions, in preference to loans. Formal collaborations with minority clinical student organizations can be used as a recruiting and retention tool. Recruitment efforts could be coordinated through colleges and universities that have high minority enrollment while a broad range of sites should be used for the placement of program advertisements.

Implementation Partners: ADHE, DWS Arkansas Workforce Investment Board, Institutions of Higher Education Diversity Affairs Offices

Recommendation 3-2

Increase funding to support nursing and physician assistant education with additional faculty, student loan or payback programs, etc.

The country is facing a shortage of nurses, in great part due to the shortage of nursing faculty, with low pay often cited as a reason for difficulties in hiring adequate nursing faculty.[111,112,113] In addition, nursing students accrue large amounts of debt that they have difficulty repaying. There have been a number of grant opportunities made available to help address this problem, notably through the Patient Protection and Affordable Care Act, but Arkansas has received only about $700,000 to date through these opportunities to grow the nursing workforce.[114,115]

Nursing and physician assistant students also face limited funding for loans and loan payback. Currently available programs and funding sources include the Health Resources and Services Administration Nursing Education Loan Repayment Program,[116] the Arkansas Student Loan Program – Nurse Educator Loan, Registered Nurse/Licensed Practical Nurse Loan,[117] The Federal Student Aid Loan Forgiveness for Public Service Employees,[118] the Think Nurse Scholarship Fund[119] and the Faith A. Fields Nursing Scholarship Loan.[120]

To address these issues, increase the number of nursing school faculty positions, and increase the amount of funding obtained by Arkansas students and professionals in nursing and physician assistant science, the following should be done.

- Arkansas nursing and physician assistant schools should make sure that loan forgiveness programs are well-publicized to prospective, current, and former students.
- A panel with representatives from all nursing and physician assistant education facilities in the state should be formed to make a concerted effort to track and aggressively pursue grant opportunities to increase funding for Arkansas nursing and physician assistant students and faculty.

Implementation Partners: Arkansas institutions of higher education offering nursing and/or physician assistant education programs, Arkansas State Board of Nursing, ARNA, Arkansas Academy of Physician Assistants, Arkansas State Medical Board, AMS

Recommendation 3-3

Expand the number of graduate medical education residency slots in primary and preventive care, especially those dedicated to rural practice.

Studies demonstrate that special admission and training programs can increase the numbers of practitioners choosing and staying in rural practice.[121,122] Undergraduate medical education occurs in medical schools and involves a combination of two years of classroom learning and two years of clinical education. Graduate medical education (GME), also known as internship and residency, involves 3 to 5 or more years of training after medical school.

GME is usually based in a hospital, though lately there has been a gradual shift in emphasis toward training in outpatient settings, particularly for primary care specialties. The Area Health Education Center program, for example, was initiated as a response to the 1970 report of the Carnegie Commission on Higher Education, which recommended that undergraduate and graduate medical education be decentralized and that some training should take place in rural areas.

Despite the cap on overall residency slots, Arkansas should advocate in favor of expanded GME residency slots in primary care that are dedicated to rural practice. Training in rural environments increases the likelihood that residents will decide to practice in and make long-term commitments to rural communities. In addition, funding to establish residency slots in preventive care should be actively researched and pursued when available.

Implementation Partners: UAMS, AMS, Arkansas Hospital Association, AHECs

Recommendation 3-4

Establish the Arkansas Rural Scholars Program.

Studies show that rural physicians are more likely than their urban counterparts to come from rural backgrounds.[123] In addition, rural physicians are more likely to have had rural undergraduate training and more likely to have had rural postgraduate training. To increase practitioner supply in rural areas, health care professional school admissions processes need to address students' concealed preferences that are established before enrollment.

The Kansas School of Medicine has a model program to assess rural interest. Kansas's Scholars in Rural Health program is designed to attract and retain young rural Kansans with a high probability of successful physician careers in rural communities. Students who eventually practice in rural communities often report that they had an identifiable mentor and/or early pre-medical primary care experiences. Further, rural physicians are more likely to have grown up in a rural community. This program will shape the students' experiences toward rural health in preparation for entry into medical school. Scholars accepted into and satisfactorily completing this program will be admitted to the School of Medicine automatically. The anticipated outcome is an increase in the number of students from Kansas rural communities who choose to practice in rural Kansas.

Arkansas should look toward the Kansas program as a model for implementing the Arkansas Rural Scholars Program for undergraduate students seeking post-graduate degrees in medicine, nursing, or physician assistant studies. In addition, representatives in both the public and private sector should work together to establish scholarships, reduced tuition, or other financial assistance programs for student who complete a Rural Scholars Program or for other students representing rural areas.

Implementation Partners: ADHE, Arkansas institutions of higher education offering health professional programs

Recommendation 3-5

Increase collaboration among two- and four-year colleges to increase access to and quality of education and training for health professions.

The Commission for the Coordination of Educational Efforts was created by the Arkansas Legislature in 2003. The Commission, made up of representatives from Arkansas's institutes of education, is charged with recommending policies to improve the coordination among and between institutions from pre-K to graduate level. The commission is also charged with studying and making recommendations to improve various distance learning delivery systems in the state, recommending and improving the ability of students to transfer credits among institutions, aligning curriculums, recommending improvements to the use of educational technology, and recommending improvements to science, technology, engineering, and mathematics education.

Arkansas should work within the existing Commission for the Coordination of Educational Efforts or establish a new Higher Education Health Professions Consortium with representatives from each institute of higher education in the state that offers degrees or certificates in any health profession. The group should meet regularly and work together toward the following goals.

- Establish agreed-upon core competencies for health professions
- Using existing classes and programs, create common or shared curricula for health professions
- Promote shared classes (in person or web-based) throughout the consortium for all levels of health-related education
- Establish paths of feeder institutions for students in health-related education to advance in education, training, certification, and licensing
- Identify financial benefits and explore potential financial arrangements for institutions originating programs as well as those participating in programs

Implementation Partners: ADHE Commission for the Coordination of Educational Efforts, state health professional associations

Recommendation 3-6

Expand strategies to provide longitudinal clinical experiences in primary care for medical students and enhance incentives and recognition for teaching primary care for all health care professions.

UAMS and the Area Health Education Centers currently offer a primary care experience for first- and second-year medical students in the form of preceptorships during summer breaks. The Department of Family and Preventive Medicine at UAMS was recently awarded a five-year grant to encourage more students to pursue a career in family medicine, especially in underserved areas.

Numerous strategies are underway, including mentorships and family medicine interest groups, to engage students in primary care interest during the first one or two years and throughout their education. The UAMS College of Medicine is currently undergoing a curriculum revision aimed at integration of clinical and basic sciences and is being encouraged to emphasize primary care taught in a longitudinal manner throughout the four years.

Two curricular experiences are associated with increases in the numbers of students choosing primary care; these are the requirement of family practice clerkships and longitudinal primary care experiences. In fact, the number of required weeks in family practice shows the strongest association with increased numbers of students choosing primary care.[124] Consequently, in addition to curriculum revisions emphasizing primary care, medical students need further exposure to clinical experiences over longer periods of time.

Although these targeted strategies have the potential for advancing primary care in a medical school setting, one barrier to advancing primary care is the availability of teaching faculty, a barrier that is not limited to medical school settings.[113]

Implementation Partners: Arkansas institutions of higher education offering health professional programs, AHECs

Recommendation 3-7

Strengthen primary care leadership curricula in primary care education, residencies, and preceptorships.

The integration of a leadership curriculum in primary care is important given the critical need for health systems improvement at the present time. Primary care leaders across the state should focus on developing a community of leaders in primary care delivery, innovation, and education. Faculty across the disciplines of medicine, nursing, and physician assistant sciences should demonstrate best practices as they change the way primary care is taught and delivered. The goal should be that students and residents are engaged in a more integrated home for primary care scholarship, and that they will use that education and knowledge to foster new leadership and innovation in care sites.

Harvard Medical School announced the launch of a new Center for Primary Care, a center of excellence geared toward transforming primary care education, research, and delivery systems in October 2010.[125] Building on that model, Arkansas should establish a Family and Preventive Care Advisory Group to review the structure, function, leadership, and on-going funding support for primary care programs and to identify opportunities to strengthen and expand them. Interest in primary care careers can be revitalized through innovative educational offerings that demonstrate the foundational role for primary care in the modern health care system, including educational offerings for students interested in careers in primary care practice and leadership.

Implementation Partners: Arkansas institutions of higher education offering post-graduate health professional programs, AHECs

Recommendation 3-8

Enhance outreach to educate guidance counselors and career coaches about opportunities for students to enter health professions.

Career coaches at the high school, college and professional level can greatly increase students' knowledge of health professions and influence their decisions to enter a health-related profession. To educate these coaches and counselors, and to encourage them to educate their students and clients about various health professions, the following should be implemented.

- Fliers and posters educating about and promoting entry into all levels of health professions should be sent to high schools and colleges throughout the state on an annual basis, accompanied by a resource guide that includes more detailed information about professions, prerequisites and curricula, and Arkansas schools offering various degree and certificate programs.

- Implementation partners should work together to have a health professions presence at existing job fairs and career education and recruitment events throughout the state, in high school, college, and professional environments.
- The existence of Health Professions Fair and recruitment events should be expanded, including on the high school level, using as one example the University of Central Arkansas' annual Health Career Fair, at which employers meet with students in various health programs to discuss professional opportunities.
- Using the Student Ambassador program at the University of Arkansas at Fayetteville's College of Education and Health Professions[126] as one example, a health professional speakers bureau of students and professionals can be created for those who would be interested in visiting high schools and colleges to discuss health professions with students.
- An outreach program should be developed to coordinate existing resources and programs; develop additional materials and programs as needed; and proactively reach out to and communicate with counselors, career coaches, and students.

Implementation Partners: ADE, ADHE, DWS Arkansas Workforce Investment Board, AATYC, Arkansas Association of Colleges and Employers, Arkansas Department of Career Education

Recommendation 3-9

Strengthen education in science, technology, engineering, and math (STEM) by strengthening curricula at all levels, offering grants and loans to support STEM development, and offering job training grants to support STEM job training and retraining.

According to the National Governor's Association, science, technology, engineering, and mathematics (STEM) education is an important opportunity for education enhancement in our state.[127] "The global economy has 'flattened' the world in terms of skills and technology. A new workforce of problem-solvers, innovators, and inventors who are self-reliant and able to think logically is one of the critical foundations that drive a state economy's innovation capacity. State K–12 education systems, with the support of postsecondary education, the business sector, foundations, and governments, must ensure that all students graduate from high school with the necessary science, technology, engineering, and math competencies to become this workforce and a greater number of students graduate from high school as potential professionals in STEM fields.

In August 2011, Governor Mike Beebe and his Workforce Cabinet announced the pilot program STEM Works, which focuses on STEM education in high schools and universities so that the state's workforce will be able to meet the escalating demand for employees in high-tech fields. STEM Works expects to have 10 pilot high schools implementing extensive project-based learning by the start of the August 2012 school year.

> "The first component of STEM Works will accelerate and transform secondary STEM education to better prepare high-school graduates to pursue college degrees in STEM disciplines. This will be achieved through the creation of New Tech High Schools and Relevant Education for Active Learning Schools, an initiative of Environmental and Spatial Technology schools. The second component, UTeach, provides special secondary teacher training for college STEM majors, ensuring that Arkansas produces a steady stream of qualified teachers."[128]

Implementation Partners: STEM Works, Arkansas Office of the Governor, Arkansas Governor's Workforce Cabinet, ADE, Arkansas Department of Career Education, ADHE, DWS, Arkansas Economic Development Commission, Arkansas Science and Technology Authority, AATYC

Recommendations related to provider recruitment

Recommendation 3-10

Develop more effective strategies to fill J-1 visa waiver slots and provide enhanced support for integration of international medical graduates into rural communities.

International medical graduates (IMGs) are defined as physicians working in the U.S. who graduated from medical schools outside of the U.S. and Canada. IMGs account for approximately one quarter of the nation's active physicians.[129] About half of IMGs who are not already citizens or permanent residents begin their U.S. medical careers by obtaining J-1 visas that allow training through U.S. residencies. After their training, J-1 visa holders must leave the country for at least two years before applying to return. A J-1 visa holder may be granted a waiver from this requirement upon agreement to practice for a specified period in a federally designated health professional shortage area (HPSA).

A 2009 study published in the Journal of Rural Health[130] found that IMGs are significantly more likely to be female, older, and less likely to practice family medicine than U.S. medical graduates (USMGs). The final conclusion of the study was that IMGs fill gaps in the primary care workforce in rural areas, but this varies widely among states. The study's state-level analysis in Arkansas showed that generalist IMGs were more likely to practice in small rural areas (populations of 2,500 to 9,999) but not at a statistically significant level. Also, generalist IMGs in Arkansas were no more likely to practice in isolated rural areas (populations of less than 2,500) than USMGs.

Arkansas should continue to explore opportunities to expand the use of IMGs and to further analyze whether they are more likely to practice in rural and underserved areas. Efforts are already underway to better inform J-1 visa holders about the waiver program. For example, the Delta Regional Authority (DRA) has implemented the Delta Doctors program, through which the Authority is able to recommend J-1 visa waivers to the State Department. Because the Authority's program covers only a portion of the state, Arkansas should expand upon the Delta Doctors program and continue to develop more effective strategies to recruit J-1 visa holders into the waiver program.

There will, of course, be certain communities that will be less tolerant of IMGs than other communities. Arkansas should enlist local hospital administrators to educate the community about the realities of today's medical market and the outstanding quality of care that IMGs can offer. Civic group officers, business leaders, physicians, members of the clergy, school administrators, newspaper editors, and other local leaders should share the responsibility of educating the community about what the physician will be able to offer patients. Arkansas should also enlist community leaders and provide access to resources to aid IMGs with bureaucratic barriers to practice.

Because of their diverse backgrounds, IMGs may offer new perspectives about medical care, creativity, and improvisation when resources are scarce. The availability and willingness of IMGs to work in the U.S. health care system should be considered an asset of our system.[131]

Implementation Partners: UAMS, ADH, AHECs

Recommendation 3-11

All state boards responsible for licensing health professionals should implement policies to reduce complexity and decrease licensing time for qualified applicants.

Currently, some providers anecdotally report having difficulty obtaining a license quickly and easily in health professions in Arkansas. This results in a lag in the time that providers are qualified to practice and when they are fully licensed to do so, decreasing the amount of time they are providing services to patients.

All health professional boards that are responsible for licensing providers should examine their policies and procedures to identify efficiencies and implement policies that will ease process, reduce complexity, and decrease the time it takes for qualified applicants to become licensed.

Boards may want to give special consideration to those who are applying to practice in specialties for which there are shortages, to those providing service to a rural or underserved population, and to those serving in rural areas, including those providing telemedicine services. Boards may also consider granting immediate temporary licenses to those having unencumbered license in another state while processing their applications for full licensure.

Implementation Partners: state health professional boards

Recommendations related to provider support

Recommendation 3-12

Create *locum tenens* programs to provide practice relief to overburdened providers, notably those in rural and underserved areas.

One of the major reasons that young physicians do not desire to practice primary care in rural areas is the isolation. Physicians in isolated areas are constantly "on-call" by virtue of their being the sole primary care provider in the area. As a result, the workload sometimes overwhelms them.[132]

One way to alleviate this problem is to create a *locum tenens* program for practice relief. A *locum tenens* program comprises readily available primary care practitioners through a centralized hub who provide practice relief to rural practitioners for short periods of time. The program could provide an outlet for the growing numbers of young practitioners who are seeking to practice medicine on a part-time basis.

The need for *locum tenens* doctors is increasing, according to a survey by a physician staffing company.[133] Experts indicated that the upward trend was in part a sign of an economic recovery, but a lack of enough physicians to fill a growing number of permanent slots was the far bigger factor. Further analysis of the survey shows that *locum tenens* physicians tend to be older doctors. In 2005, 54% of *locum tenens* physicians had been in medicine for 21 years or more. The number grew to 68% in 2010, based on a survey of 626 *locum tenens* doctors. Physicians with less than a year of experience comprised 5% of *locum tenens* physicians in 2005, but this number declined to 2% in 2010.

An elder/retired primary care practitioner service corps should be formed either within a *locum tenens* relief program or independently to attract older, part-time, or retired practitioners to continued practice. Although they may no longer have the desire to manage a practice full-time, elder or retired practitioners are able to provide years of experience and knowledge to younger practitioners and underserved

communities. Given the large number of aging practitioners in Arkansas, an elder service corps would provide an outlet for these practitioners to continue to serve.

Limited liability from malpractice suits should be explored for practitioners who participate in an elder service corps. Act 844 of 1995 by the Arkansas legislature made it possible for retired physicians to continue service to the community while maintaining immunity from civil suit. Only retired, licensed physicians and surgeons, however, are eligible under this act to receive immunity and only for services provided at no cost to the patient. This law should be amended to accommodate service through the elder service corps.

Implementation Partners: DWS, AMS, ARNA, UAMS Regional Programs

Recommendation 3-13

Optimize Arkansas's opportunity to secure National Health Service Corps participation.

The National Health Service Corps (NHSC) helps every U.S. state and most territories provide desperately needed primary health care in areas where health care providers are in short supply by awarding scholarships and loan repayment to clinicians in exchange for at least two years of service in a HPSA.[134] According to the U.S. Department of Health and Human Services, the number of NHSC members has nearly tripled since 2008 to more than 10,000 clinicians. More than 37,000 primary care, nurse practitioners, certified nurse midwives, physician assistants, dentists, dental hygienists, and mental health professionals have served in the NHSC since its inception in 1972. More than 75% of NHSC members report they plan to stay at the site where they are currently working after their obligation is fulfilled. There are more than 9,000 job vacancies in National Health Service Corps-approved sites today—and more are added every day. As of January 9, 2012, there were 64 available positions in a variety of disciplines across Arkansas.[135]

Arkansas's Rural Loan and Community Match programs should coordinate with NHSC to cross-promote availability of funding to increase interest and placement in all programs. Arkansas should also request that the NHSC program streamline decisions about designations for HPSAs. Additionally, the state should reexamine and improve the process by which potential HPSAs are identified within the state and decrease the time it takes to apply for designation from the federal government. Because Medicare primary care services performed in most HPSAs receive bonus payments,[136] this would provide relief to those areas that may qualify but are not currently designated as HPSAs by allowing the providers to receive HPSA reimbursement incentives.

Implementation Partners: AMS, ARNA, Arkansas State Dental Association, CHCAs, ADHE, Arkansas Mental Health Counselors Association, Mental Health Council of Arkansas

Recommendation 3-14

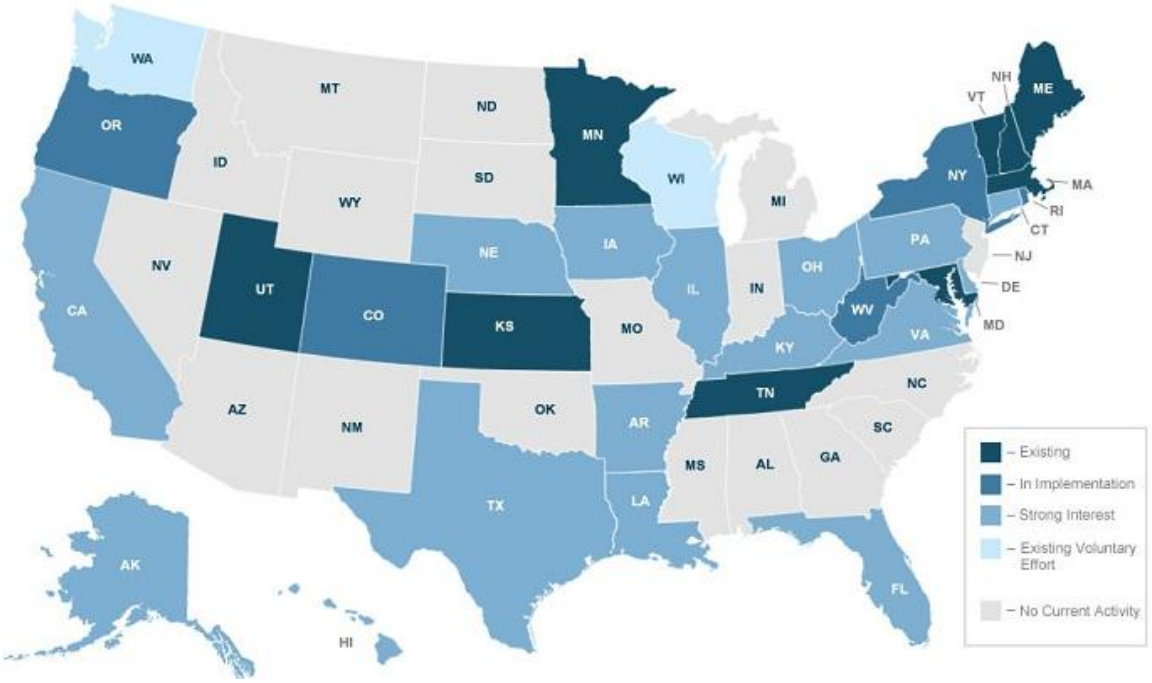
Establish processes and strategies for a centralized health care workforce data warehouse, responsible for gathering and reporting information to inform future health workforce supply, distribution, recruitment, and retention.

Although the Arkansas Department of Health is authorized to receive data from most health professional boards in the state, and the Arkansas Center for Health Improvement is authorized to receive some health information, there is not a true central repository for any longitudinal health data. In addition, boards and

associations do not collect uniform data and also do not collect data in a uniform manner, which creates problems and requires that additional steps are taken when analyzing data.

Only a handful of states have existing all-payer claims databases (APCDs), although many are in various processes of implementation (see Figure 6).

Figure 6: All-Payer Claims Databases (APCD) by state[137]



Using existing APCDs as examples, Arkansas should create a list of data elements that are needed and desired to properly track and report statewide health workforce information. All health boards should develop collaborative strategies to collect the agreed-upon data elements from their members, and report it to both ADH and the Arkansas Health Data Initiative (HDI) on at least an annual basis. In collaboration between themselves and others as needed, ADH and HDI should create an annual analysis and report of health professions in Arkansas, including issues such as supply, demand, geographic distribution, practice attitudes, and distribution of patients by payer.

Implementation Partners: ADH, Arkansas Legislature, ACHI, HDI Data Advisory Committee, state health professional boards, state health professional associations

Recommendation 3-15

Train and retrain unemployed and underemployed workers who already reside in rural and underserved areas.

Access to well-trained and motivated health workers is a major rural issue. Training for rural practice has become critically important in the context of continuing shortages of physicians and other health care providers. Producing more health-care providers and expecting the excess to spill over from the cities into rural areas is not likely to solve the rural workforce shortage.

According to the U.S. Department of Agriculture Economic Research Service, the unemployment rate in rural Arkansas is 9%, while in urban Arkansas it is 7.2%.[138] The state has 29 hospitals identified as Critical

Access Hospitals for rural communities,[139] and there are 12 federally qualified health centers providing services at 75 service delivery sites in the state. There are also 73 rural health clinics in Arkansas.[140]

Recruiting workers to these rural areas has been difficult, but a strategy that has proven to be effective in retaining health workers in rural areas is educating and training people in the rural locations where they live.[141] For example the University of New Mexico's (UNM) family medicine residency program has more rural-background and minority residents choosing rural practice than all other UNM specialty graduates combined (26% compared to 10%). In addition to rotations in rural residency sites, the residents participate in a state-sponsored *locum tenens* program providing practice relief to rural practitioners. These types of experiences engender an affinity for and connection to the communities that increases the likelihood of practitioners' deciding to practice there.

Arkansas should maximize opportunities for rural education and training among all health disciplines. The state also should optimize online and other methods of education and training that do not require rural residents to leave their communities to receive instruction. Additionally, the state should target rural areas in which the unemployed or underemployed can be retrained within their communities. Retraining efforts should also focus on medically underserved areas.

Implementation Partners: DWS Arkansas Workforce Investment Board, ADHE, Arkansas Department of Career Education, Arkansas institutions of higher education offering health professional programs

Goal 4

Adopt new financing, payment, and reimbursement policies and mechanisms

Changes to health provider practice structure and patterns would be incomplete without changes to the method and manner in which providers are compensated. Reimbursement streams must be developed to compensate patient-centered, team-based care so that everyone shares in the resulting savings.[142]

Financing goals should incentivize providers and practice sites to adopt more comprehensive, coordinated, team-based care; implement and fully utilize health information technology; comply with quality-based outcome measures; and develop and maintain practices in rural or underserved areas. Additionally, reimbursement strategies should build on methods that promote accountability and flexibility and reflect the capacity of providers to meet certain goals.

Recommendations related to payment and reimbursement

Recommendation 4-1

Adopt reimbursement mechanisms that incentivize team-based care and appropriately value preventive and primary care.

The current fee-for-service reimbursement does not reward providers for efficiency or, in most cases, for quality of care or outcomes. Through improved efficiency and coordination, team-based care could help primary care providers see more patients and provide the services for which they are trained, slow spending or reduce costs by avoiding unnecessary repetition of medical tests and procedures, and achieve better patient outcomes. Team-based care can uncover and address many health problems at an earlier stage, thereby reducing the increased cost of treating advanced disease.

As new reimbursement strategies are developed, it will be important to recognize the value of team-based care and to reward practices that employ it wherever possible.

New reimbursement strategies for team-based care are being piloted or implemented across Arkansas, including private sector models of patient-centered medical homes. The Center for Medicare and Medicaid Services has designed the Comprehensive Primary Care (CPC) initiative, under which payments to primary care physicians will be enhanced with care coordination fees to fund new infrastructure and processes for managing patients with one or more chronic conditions.[143] Over time, providers participating in the CPC initiative will be rewarded with shared savings relative to a target cost for all services delivered to patients attributed to participating primary care providers within the market.

While these payment models intrinsically support quality improvement, they may be further augmented with additional incentives. For instance, some states are considering or have already implemented tiered payment programs, with providers receiving differential payment rates based on the achievement of quality standards.[144,145,146]

In some cases, extra precaution will be necessary to ensure that the new payment models will not result in underuse of care. Options to deal with this include making payment contingent on the delivery of care that is widely agreed to be the clinical practice standard.

Implementation Partners: payers, providers, state health professional associations

Recommendation 4-2

Adopt reimbursement mechanisms that support care coordination.

Reimbursement strategies should build upon methods that promote accountability and flexibility and reflect the capacity of providers to meet certain goals including the care coordination mechanisms.

Recommendations for mechanisms to reimburse for care coordination include the following:

- Payers contribute per member per month (PMPM) payments for care management and coordinating services or simply provide funds for providers to use as they see fit for these services
- Use a shared savings model as an incentive to reduce unnecessary emergency room and readmission costs
- Tier PMPM payments and make more money available to providers who achieve specific outcomes; to start, payers can initially consider performance-based payments that focus on process measures, and gradually phase in outcome-based payments
- Incentivize providers to reinvest PMPM payments in areas that will best support their patients
- Use payment methodologies that encourage the use of care coordination activities to improve health outcomes and reduce unnecessary health care utilization
- Provide differential payments for care coordinators in rural or underserved areas
- Encourage providers to apply for Attestation for the Medicare and Medicaid Electronic Health Records Incentive Program

Implementation Partners: Arkansas Payment Improvement Initiative, DHS, payers

Recommendation 4-3

Study the feasibility of differential reimbursements to incentivize providers to practice in rural or underserved communities.

To convince primary care clinicians to practice in rural and underserved areas, many states are offering incentive packages. Loan repayment, J-1 visa waivers, and flexible work options are various incentives states have used to lure clinicians away from more lucrative work in metropolitan areas and into shortage areas. While these strategies have sometimes proven effective in isolation, a comprehensive approach is needed, especially given the increasing costs of a medical education and the lifestyle needs and work patterns of this generation's clinicians.

Income potential is a factor for all student clinicians when deciding where to locate a practice.[147] The state should study the feasibility of differential payments, including financial and lifestyle incentives for primary care providers who choose to practice in rural or underserved areas.

Implementation Partners: ADH, DHS, AMS, ARNA, payers

Recommendation 4-4

Change payment and reimbursement structures to recognize providers' use of health information technology, *e.g.*, reimbursement for non-traditional patient encounters.

Currently, payment and reimbursement for health services is based on face-to-face encounters or on live telemedicine contact between a provider and a patient who can see each other in real time. It is imperative that this structure be changed so that providers can be paid for the time they spend caring for patients regardless of how it is accomplished.

Some states have passed legislation slightly expanding the ability of providers to provide and bill for telemedicine. For instance, California passed legislation in 1996 which specifically allows providers licensed in the state to practice via telemedicine.[148] Federally, the Balanced Budget Act of 1997 requires Medicare to pay for some telemedicine services in rural areas.[149] However there are still many limitations, including the exclusion of telephone calls, email, instant messaging, and fax communications from the definition of telemedicine.

In Arkansas, payment and reimbursement structures must be changed to pay for non-traditional encounters, specifically web-based consultation and treatment, even if it is not real time and even if patients and provider cannot see each other; phone, voicemail, email, instant message, text message, or fax communications and exchanges, including one-way communications from providers such as appointment or medication reminders; and provider and patient encounters that occur over state lines, such as telemedicine monitoring and consultation of Arkansas patients by out-of-state providers. This can be done through legislation requiring payers to recognize these encounters, or through voluntary changes in payment practices.

Implementation Partners: Arkansas Payment Improvement Initiative, DHS, payers, OHIT

Recommendation 4-5

Reduce the geographic disparity in Medicare payments to Arkansas providers.

Variation in Medicare provider reimbursement rates by geographic locality is a long-standing issue that sees Arkansas receiving the lowest reimbursement rate of any state.[150] The current financial disparity generated by the geographic practice cost indices places Arkansas at a disadvantage for recruiting health care professionals which in turn has significant implications for patient access.

Physician fee schedules and payment rates are calculated by a complex formula with the following three components.

- Relative value units (RVUs) are calculated and are associated with work (time and intensity associated with furnishing a service), practice expense (costs of maintaining a practice), and cost of malpractice insurance.[151]
- Adjustments called Geographic Practice Cost Indices are applied to each of the three relative values noted above. The purpose of these adjustments is to account for geographic variations in the costs of practicing medicine in different areas in the country.[151]
- The sum of the geographically adjusted RVU is then multiplied by a dollar conversion factor which is updated annually according to a formula specified by statute.[151]

While this calculation accounts for a number of factors, it does not recognize that although the gross cost of doing business and maintaining a medical practice may be lower in rural areas, a lower patient volume may not be as financially supportive as it is in more urban areas. In addition, when there are fewer providers, they are less able to collaborate with each other to share the cost of resources. More importantly, Arkansas clinics, hospitals and other entities must compete on a national level when trying to recruit physicians. Having the lowest Medicare rates in the nation places Arkansas at a significant competitive disadvantage when trying to attract physicians to practice in the state.

Changes must be made to this equation to properly reflect the hidden costs of doing business and providing medical care in rural areas, but this is not something within control of the state. Arkansas's Congressional delegation must work on a federal level to make changes to this payment structure.

Implementation Partners: Arkansas Office of the Governor, Arkansas Congressional delegation

Recommendation 4-6

Increase Medicare and Medicaid reimbursement rates for primary care.

Medicare rates for Arkansas providers are the lowest in the country[150] and Arkansas has not increased primary care Medicaid reimbursement rates enough to keep up with inflation for many years.[152] This significantly jeopardizes Arkansas's ability to competitively recruit health professionals, especially primary care providers.

Two provisions of the Patient Protection and Affordable Care Act will provide some temporary relief.

- Medicaid reimbursement for fee-for-service primary care services performed by primary care physicians will be increased to 100% of Medicare reimbursement rates in 2013 and 2014.[153] Because Medicaid reimbursement rates are about 78% of Medicare rates,[152] this will represent a great improvement in payment rates.

- Medicare reimbursement for primary care services performed by primary care providers, including physicians, nurse practitioners, and physician assistants, will include a 10% incentive payment in addition to scheduled reimbursement amounts from 2011 to 2015.[154]

Both of these payment increases will help primary care providers, but they are only temporary. Although it may be financially difficult, Arkansas must be financially competitive. Permanent increases to both Medicaid and Medicare reimbursement rates must be made to sustain providers who already practice in primary care and to attract new ones to the state.

Implementation Partners: DHS Medicaid, providers, Arkansas Office of the Governor, Arkansas Congressional delegation, AMS, ARNA

Recommendations related to financial and educational support

Recommendation 4-7

Increase funding for Rural Practice and Community Match programs to enable an increase in recipients and dollar amounts that reflect cost of education and living. Both programs should allow loan repayment for part-time practice in rural communities.

Physicians in loan repayment programs are nearly five times as likely to practice in rural areas as those without obligations.[155] Arkansas has two state-funded physician loan repayment programs in Arkansas. Both programs aim to increase the number of physicians practicing in rural areas.

The Community Match Rural Physician Recruitment Program matches a medical school graduate in residency or a graduate who has completed residency within the past two years with a rural or underserved community for a four-year full-time commitment. The funding provided is a maximum of $80,000, half of which is provided by the community. The Rural Practice Loan/Scholarship Program provides loans—typically in the amount of $12,000 annually—to enrolled medical students or students accepted for admission (including alternates). The loans are converted to grants for each year of full-time service in a rural or underserved community.

Funding for both programs is $350,000 each year, with no requirement that they split the money between programs equally. Given that the programs are driven by applications, some years there are more applications in one program than the other. Therefore, the split in funding may not be equal. Moreover, the funding varies depending on how many continue in the programs from year to year (the $350,000 is funding for all people accepted into the program—that is, those continuing and newly awarded).

Of those who have completed contractual obligations (in both programs), 67% have continued to practice in their original—that is, for Rural Practice students, the community that the practitioner went to originally—or match community. Seventy-eight percent have continued to practice in a "rural" community, even if it is not the same community as the original or match community. Ninety-five percent have continued to practice in Arkansas.

Although the programs appear to be working fairly well, Arkansas should ensure that the loans and scholarships keep pace with the cost of medical school to maintain their effectiveness and increase attractiveness. Medical school tuition with living expenses is approximately $30,000 for one year; consequently, $12,000 is not as attractive as it used to be. Second, Arkansas should develop a full rural practitioner curriculum. While a rural preceptorship is required for the Rural Loan program, there is no

rural curriculum geared towards attracting students into rural practice. Finally, the loan and scholarship programs should allow for flexible, part-time options so that practitioners will not be deterred from joining the programs because of lifestyle concerns.

Implementation Partners: ADHE, UAMS, AMS

Recommendation 4-8

Make Community Match and similar awards to other providers state-tax free. Provide low-interest loans to providers for housing, transportation, and construction or renovation of office space.

As of 2008, at least six states offer income tax credits to physicians who practice in underserved areas. For example, Georgia provides a maximum tax credit of $5,000 per year for five years to physicians who practice in designated shortage areas. New Jersey legislators also approved a bill in 2004 that provides tax deductions to primary care physicians working in underserved areas. That legislation also created a low-interest loan program for physicians to construct or renovate office spaces in areas designated as Health Enterprise Zones by the state commissioner of health and senior services.

Arkansas should provide tax credits or deductions to primary care providers who practice in rural or underserved areas for the amount of Community Match or other similar awards received to locate to those areas. Additionally, Arkansas should foster development of health care providers' "roots" by providing low-interest loans for home and office necessities.

Implementation Partners: ADHE, Arkansas State Medical Board, AMS, Arkansas State Board of Nursing, ARNA, DWS Arkansas Workforce Investment Board, Community Match Program Board

Recommendation 4-9

Educate primary care providers that behavioral counseling is reimbursable under the Patient Protection and Affordable Care Act.

Traditionally, most counseling for behavioral health issues has not been reimbursable to providers as a stand-alone service. However, the Patient Protection and Affordable Care Act now requires almost all insurers, including Medicaid, Medicare, and private plans, to cover United States Preventive Services Task Force (USPSTF) A & B Recommendations at no out-of-pocket cost to the insured individual. USPSTF behavioral health-related recommendations that are now required to be covered include alcohol misuse counseling, depression screening for adolescents and adults, healthy diet counseling, obesity screening and counseling for adults and children, and tobacco use counseling and interventions for pregnant women and non-pregnant adults.

Although these services are required to be covered by Medicaid, Medicare, and most private insurance plans, there is no guarantee that the reimbursement rate will be high enough to encourage providers to perform these services, or to fairly compensate providers for the time spent on these services. However, for providers who already perform counseling and do not get reimbursed for it, they will now be able to increase their revenue by billing for what they already do. In addition, there are some requirements that if counseling is provided, treatment and follow-up care must also be available. Some providers may only be able to provide these services by partnering with other providers.

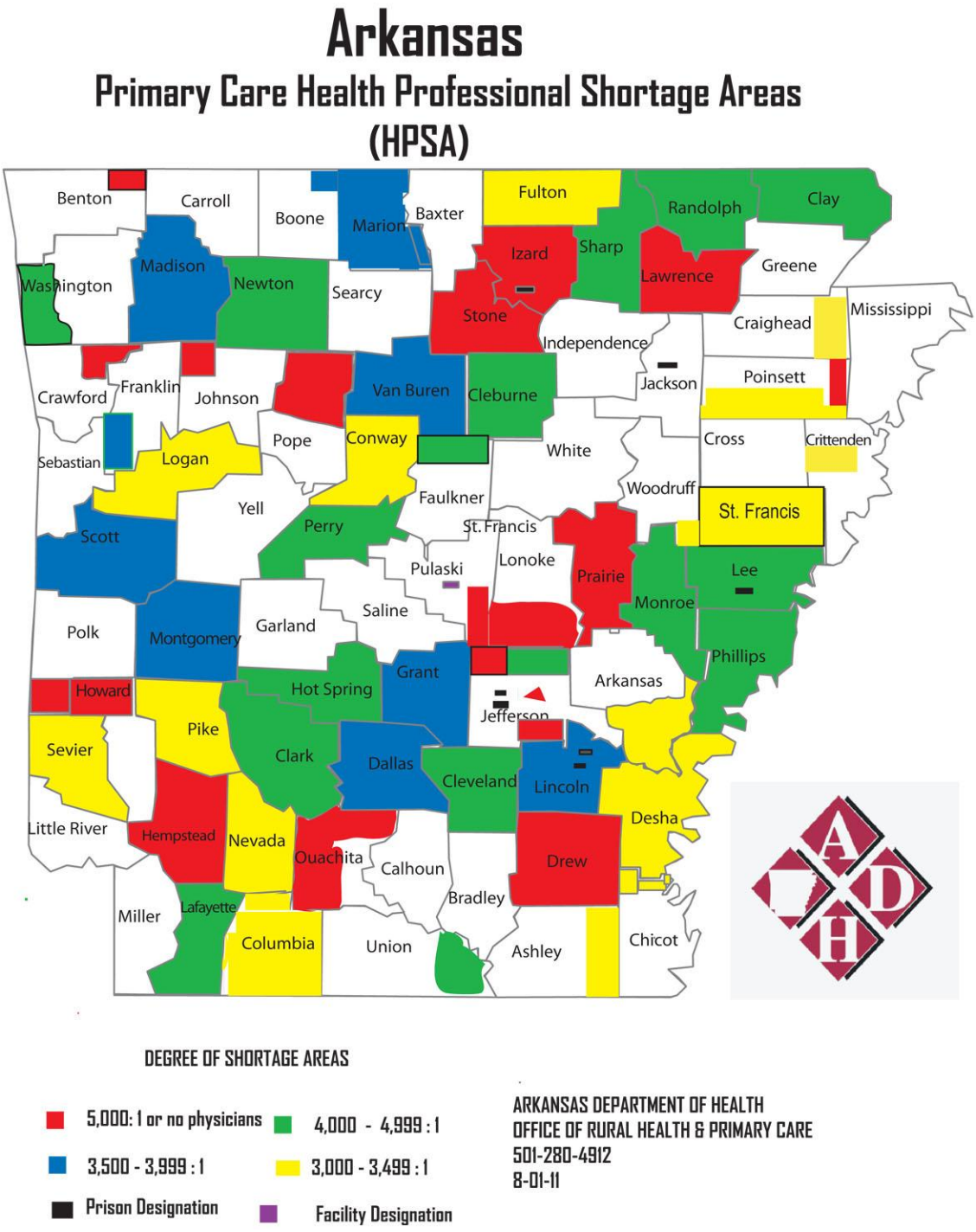
To educate providers about the changes that have made reimbursement for behavioral health counseling possible, the following should be implemented.

- Upon registration for Medicaid and Medicare provider numbers, those who identify themselves as primary care providers should be notified about the A&B recommendations that are reimbursable by Medicaid and Medicare.
- An integration model for practices should be created, outlining how the provision of these services can be integrated into actual care and create a good business case created based on cost and time spent by the provider.
- An education program should be targeted to primary care providers (physicians, advanced practice nurses, physician assistants) and their insurance and billing specialists that includes targeted letters and emails, webinars, and in-person classes or seminars that explain the new rules and walk through the integration model; this should be created by Medicaid, Medicare, private insurers, boards and associations.

Implementation Partners: ADH, ACHI, state health professional boards, state health professional associations, payers

Appendices

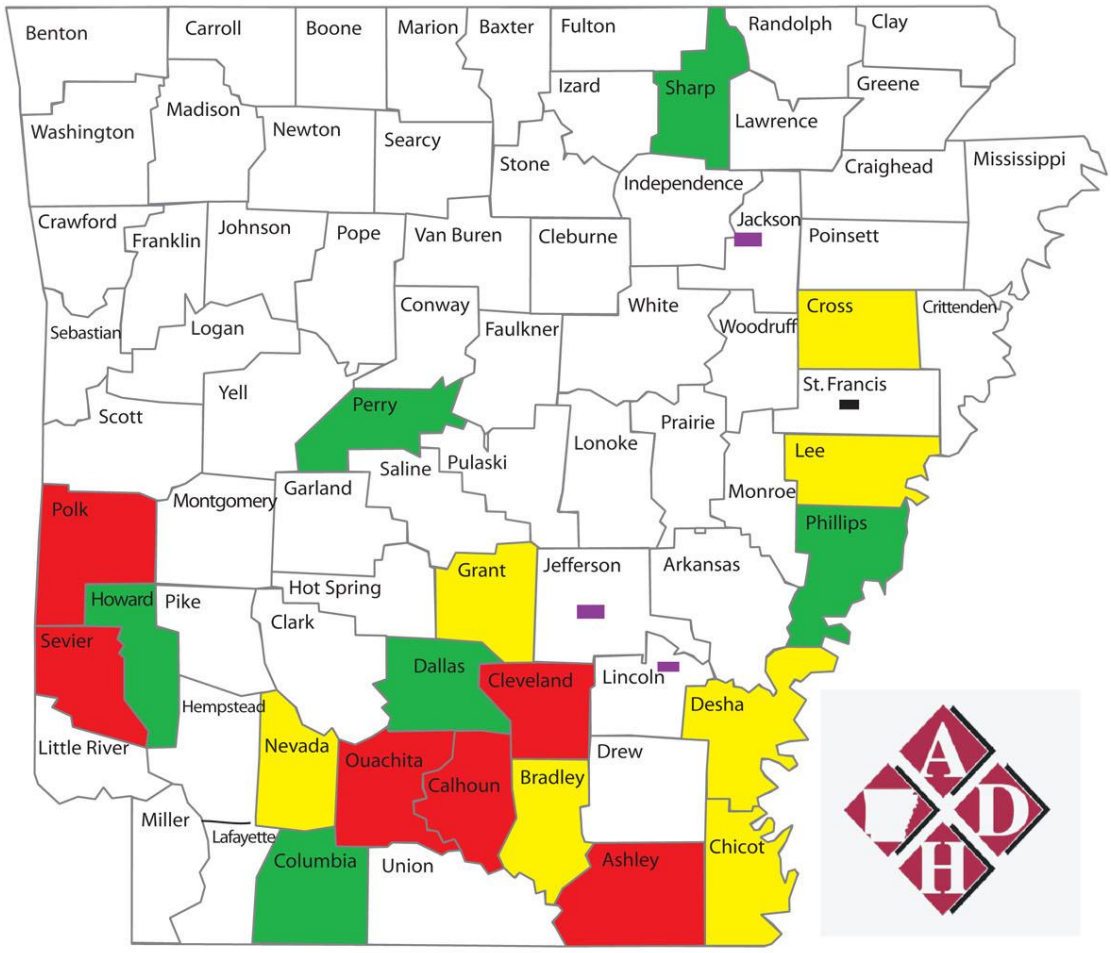
Appendix 1: Health Professional Shortage Areas in Arkansas[156]



Arkansas

Dental Health Professional Shortage Areas

(HPSA)



DEGREE OF SHORTAGE AREAS

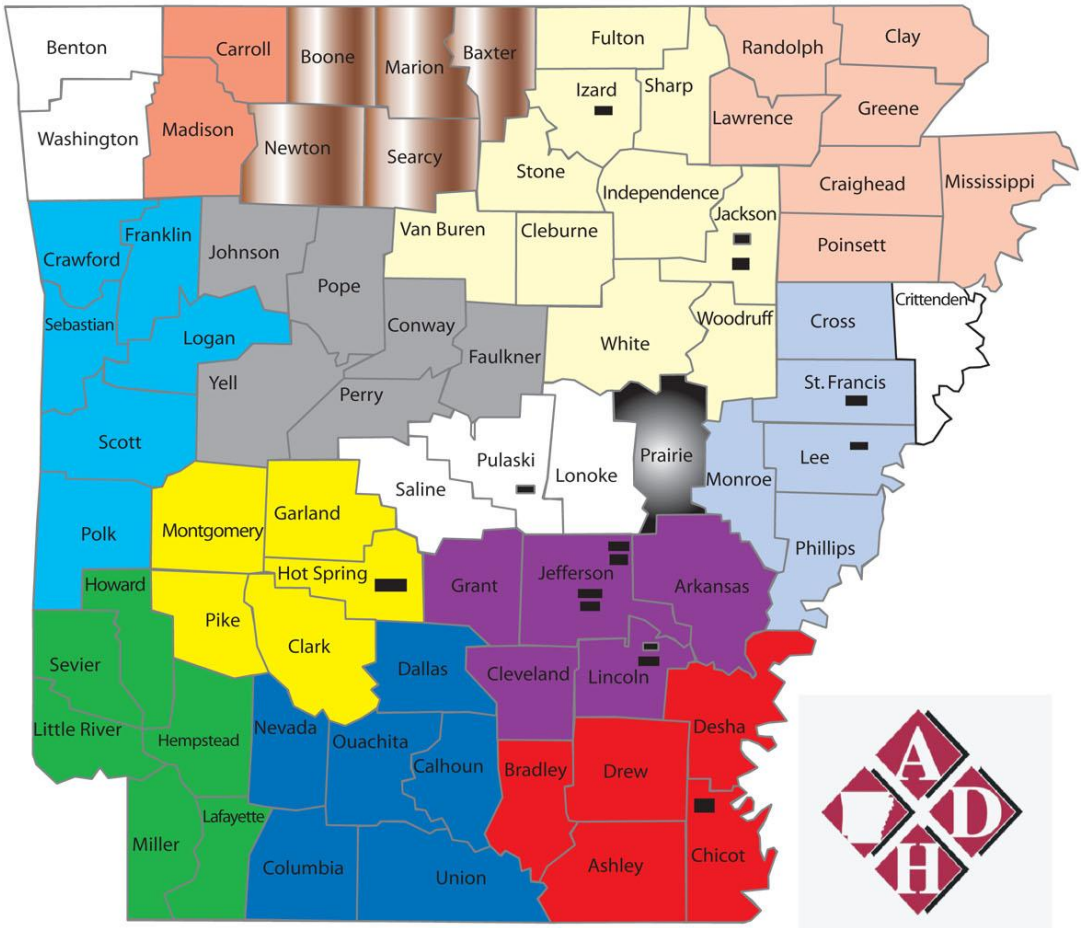
- 8,000 : 1- up or no dentist
- 6,000 - 7,999 : 1
- FEDERAL PRISON
- 5,000 - 5,999 : 1
- 4,000 - 4,999 : 1
- STATE PRISON

ARKANSAS DEPARTMENT OF HEALTH
OFFICE OF RURAL HEALTH & PRIMARY CARE
501-280-4912

9-01-11

Arkansas

Mental Health Professional Shortage Areas (HPSA)



CATCHMENT AREAS

- TEXARKANA
- EL DORADO
- MONTICELLO
- MT. HOME
- STATE/FEDERAL PRISONS
- FORT SMITH
- HOT SPRING
- PINE BLUFF
- HELENA
- MADISON/CARROLL
- RUSSELLVILLE
- BATESVILLE
- JONESBORO
- PRAIRIE

OFFICE OF RURAL HEALTH & PRIMARY CARE
501-280-4912

8-18-10
Each catchment has population-to psychiatrist ratio > than 30,000 to 1

Appendix 2: Arkansas Health Workforce Initiative Workgroup and Staff

Workgroup Members

Name	Organization/Association
Omar Atiq	Arkansas State Medical Board
Ed Franklin	Arkansas Association of Two-Year Colleges
Paul Halverson*	Arkansas Department of Health
Susan Hanrahan	Arkansas Department of Higher Education
Bob Mason	Arkansas State Dental Association
Linda McIntosh	Arkansas Nurses Association
Mark Mengel	University of Arkansas for Medical Sciences - Regional Programs
Michael Moody	Arkansas Academy of Family Physicians
Dan Rahn*	University of Arkansas for Medical Sciences
Mark Riley	Arkansas Pharmacists Association
Mike Smets	Arkansas Pharmacists Association
Billy Tarpley	Arkansas State Dental Association
Billy Thomas	University of Arkansas for Medical Sciences - Center for Diversity Affairs
Joe Thompson	Arkansas Center for Health Improvement
Artee Williams	Arkansas Department of Workforce Services
David Wroten	Arkansas Medical Society
Jean Zehler	Arkansas Nurses Association

*Co-chairs

Workgroup Staff

Name	Organization/Association
Arlo Kahn	ACHI, Senior Associate
Suzanne McCarthy	ACHI, Director of Government Relations
Shanoa Miller	ACHI, Research Assistant
Kenley Money	ACHI, Director of the Health Data Initiative
Pat Russell	ACHI, Executive Assistant
Hannah Vogler	ACHI, Consultant
Craig Wilson	ACHI, Senior Policy Analyst

Appendix 3: Arkansas Health Workforce Initiative Stakeholders

The *Arkansas Health Workforce Initiative* Stakeholder group is composed of representatives from the following organizations:

American Case Management Association
American Hospital Association
Area Health Education Center - Delta
Area Health Education Center - North Central
Area Health Education Center - Northeast
Area Health Education Center - Northwest
Area Health Education Center - Pine Bluff
Area Health Education Center - South
Area Health Education Center - Southwest
Area Health Education Center - West
Arkansas AARP
Arkansas Academy of Family Physicians
Arkansas Chapter of the American Academy of Pediatrics
Arkansas Academy of Physician Assistants
Arkansas Advocates for Children and Families
Arkansas Association of Two Year Colleges
Arkansas Baptist Hospital - Education
Arkansas Blue Cross Blue Shield
Arkansas Board of Examiners - Alcohol & Drug Abuse Counselors
Arkansas Board of Examiners in Counseling
Arkansas Board of Examiners in Psychology
Arkansas Board of Examiners - Speech/Language Pathology & Audiology
Arkansas Board of Health Education
Arkansas Board of Hearing Instrument Dispensers
Arkansas Board of Podiatric Medicine
Arkansas Board of Workforce Education & Career Opportunity
Arkansas Bureau of Legislative Research
Arkansas Career Training Institute
Arkansas Center for Health Improvement
Arkansas Chiropractic Association
Arkansas Chiropractic Society
Arkansas Department of Career Education
Arkansas Department of Education
Arkansas Department of Health
Arkansas Department of Health - Center for Health Advancement
Arkansas Department of Higher Education
Arkansas Department of Human Services
Arkansas Department of Human Services – Arkansas Medicaid
Arkansas Department of Workforce Services
Arkansas Department of Workforce Services – Arkansas Workforce Investment Board
Arkansas Dietetic Association
Arkansas Dietetic Licensing Board
Arkansas Distance Learning Association
Arkansas Foundation for Medical Care
Arkansas Gerontological Society
Arkansas Health Care Foundation
Arkansas Hospital Association
Arkansas Insurance Department
Arkansas Medical Society
Arkansas Mental Health Counselors Association
Arkansas Minority Health Commission
Arkansas Northeastern College
Arkansas Nurses Association
Arkansas Office of the Governor
Arkansas Office of Health Information Technology
Arkansas Optometric Association
Arkansas Pharmacists Association
Arkansas Physical Therapy Association
Arkansas Podiatric Medical Association
Arkansas Psychological Association
Arkansas Psychology Board
Arkansas Rehabilitation Association
Arkansas Rural Nursing Education Consortium
Arkansas School for the Blind - Athletic Training
Arkansas Social Work Licensing Board
Arkansas State Board of Acupuncture & Related Techniques
Arkansas State Board of Athletic Training
Arkansas State Board of Chiropractic Examiners

Arkansas State Board of Dental Examiners
Arkansas State Board of Dispensing Opticians
Arkansas State Board of Massage Therapy
Arkansas State Board of Nursing
Arkansas State Board of Optometry
Arkansas State Board of Pharmacy
Arkansas State Board of Physical Therapy
Arkansas State Dental Association
Arkansas State Dental Hygienists' Association
Arkansas State Medical Board
Arkansas State Orthotic & Prosthetic Association
Arkansas State University - Beebe - Advanced Technology & Allied Health
Arkansas State University - Jonesboro
Arkansas State University - Mountain Home
Arkansas State University - Newport
Arkansas State University - Searcy
Arkansas State University Technical Center
Arkansas Student Loan Authority
Arkansas Tech University
Arkansas Tech University - Health Information Management Program
Arkansas Tech University - Ozark Campus
Baptist Health
Baptist Health Home Health Network
Baptist Health Schools Little Rock Nursing Program
Baptist Health Schools Little Rock Practical Nursing Program
Black River Technical College
Community Health Centers of Arkansas, Inc.
Cossatot Community College
Crowley's Ridge Technical Institute
Developmental Disabilities Provider Association
East Arkansas Family Health Center
Eastern Arkansas Community College
Governor's Advisory Council on Aging
Grow Learning Centre
Harding University
Harding University - College of Pharmacy
Healthy Connections, Inc.
Henderson State University
HomeCare Association of Arkansas
Hospice and Palliative Care Association of Arkansas
Mental Health Council of Arkansas
Mercy Systems
Mercy Systems - Bella Vista Clinic
Miracle Kids Success Academy
Mitchell Williams Law Firm
National Park Community College
National Park Community College – Health Sciences - Health Information Technology Program
North Arkansas College
Northwest Arkansas Community College
Northwest Technical Institute
Opticians Association of Arkansas
Ouachita Baptist University
Ouachita Technical College
Ozarka College
Petit Jean Medical
Philander Smith College
Phillips Community College of the University of Arkansas - DeWitt Campus
Pulaski Technical College
QualChoice of Arkansas
Rich Mountain Community College
South Arkansas Community College
Southark Community College Betty Owen School of Practical Nursing
Southeast Arkansas College
Southern Arkansas University
Southern Arkansas University Tech
St. Vincent Health System
St. Vincent Home Care
United Health Care
University of Arkansas at Fayetteville
University of Arkansas at Fayetteville - Eleanor Mann School of Nursing
University of Arkansas at Little Rock
University of Arkansas at Little Rock - College of Science and Mathematics
University of Arkansas at Monticello
University of Arkansas at Monticello College of Technology - McGehee
University of Arkansas Community College - Batesville
University of Arkansas Community College at Hope
University of Arkansas Community College at Hope – Division of Industry Training and Continuing Education
University of Arkansas Community College at Morrilton
University of Arkansas for Medical Sciences

University of Arkansas for Medical Sciences - Arkansas Aging Initiative
University of Arkansas for Medical Sciences – Center for Diversity Affairs
University of Arkansas for Medical Sciences - College of Health Related Professions
University of Arkansas for Medical Sciences - College of Public Health
University of Arkansas for Medical Sciences - Department of Physiology and Biophysics
University of Arkansas for Medical Sciences – Donald W. Reynolds Institute on Aging
University of Arkansas for Medical Sciences – Donald W. Reynolds Institute on Aging – Department of Geriatrics
University of Arkansas for Medical Sciences - Regional Programs
University of Arkansas Fort Smith
University of Central Arkansas

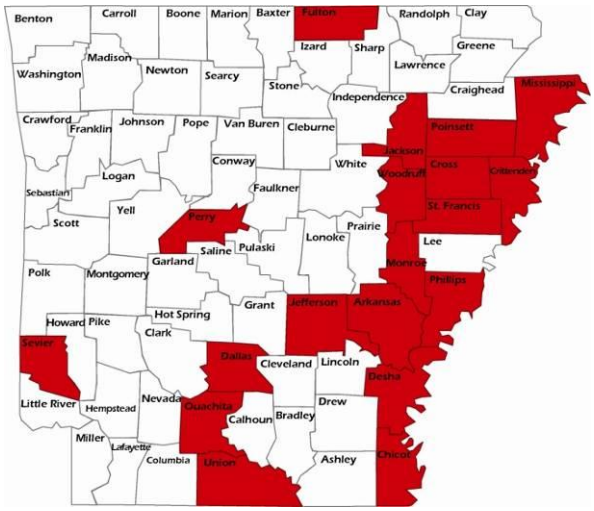
Appendix 4: Arkansas's Challenges—Disease Burden, Risk Factors, Resources[157]

Developed by the Arkansas Department of Health

Disease Burden: Arkansas has the highest stroke mortality rate in the nation, and by most other measures, we rank at or near the bottom for health status among the states. According to America's Health Rankings, we rank 43rd in obesity, 40th in smoking, 45th in cancer deaths, 45th in cardiovascular deaths, 43rd in preventable hospitalizations, 45th in years lost to premature deaths, and 43rd in infant mortality, with an overall health ranking of 48th. Even worse, based on data from our recent Arkansas Cardiovascular Health Examination Survey (ARCHES) the major risk factors for stroke—hypertension, obesity and diabetes—are all about 50% higher in prevalence than self-reported data from the Behavioral Risk Factor Surveillance System (BRFSS). The actual prevalence of hypertension is 45%, of obesity 48% and of diabetes 15%. Further, ARCHES data show that only 75% of those with high blood pressure are aware of it; of these, only 69% are on treatment; and of these, only 59% are adequately controlled. Thus, the overall blood pressure control rate in the state is less than 30%. Similarly, only 62% of diabetics in Arkansas are aware of their diagnosis, only 45% of known diabetics are on treatment and only 28% of all diabetics are controlled.

Socioeconomic Indicators: Arkansas ranks near the bottom among states in terms of socioeconomic status: our median household income ranks 48th in the U.S., per capita income ranks 46th, and at 17.3% we have the second highest rate of persons living in poverty; we rank 49th in the number of persons 25 years and older with a bachelor's or higher degree, we pay our public school teachers less than 30 other states, and our violent crime rate is 12th highest.

Arkansas's "Red Counties": Perhaps the best way to look at the overall effect of these conditions and rankings in Arkansas is to look at one of the most important indicators of general health—**life expectancy**—and the discrepancies that exist in the state.



Concerned about discrepancies in life expectancy, this year the **Arkansas legislature passed Act 790, designating 19 counties with the lowest life expectancies in the state as "Red Counties"**. The 2005-2007 life expectancy in Arkansas was 75.8 years, lower than the national average of 77.9 years. Seventy-two of the 75 (96%) Arkansas counties fall below the national average and the difference between the county with the highest and lowest life expectancies is 10 years (Benton County, 80.1 years; Phillips County, 70.3 years). One study ranked Phillips County 8th worst in the nation for life expectancy among men and 13th among women. Act 790 encourages state agencies, boards, and commissions to provide programs, services, and research to improve health and health care in the "red" counties. Most of these 19 counties lie along the eastern border of the state, in the Delta region, while others fall in the southwestern portion.

Demographics: All but 3 of the 19 red counties are **rural**, and contain greater than average proportions of the state's **minority** populations. About 57% of residents in the red counties are non-Hispanic Whites, 37% (and up to 61%) are non-Hispanic Blacks, and 4% (and up to 32%) are

Hispanics. This distribution differs from the state overall: 75% White, 16% Black, and 6% Hispanic). These 19 counties are among the **poorest** in the state with up to 35% living below the federal poverty level (state, 18.5%; nation, 14.3%) and a median household income of as little as $24,427, with all red counties having median household income averages below the state average ($37,888) and the U.S. ($50,221). With respect to **educational attainment**, 2005-2009 (5-year) estimates show that the percentage of persons ages 25 years and older with a high school education was as low as 67.5% in Monroe County with a maximum of 82.4% in Perry County (state: 81.3%, nation: 84.6%). The percentage of persons with a Bachelor's degree or higher ranged from 8.4% to 16.6%, all of which were below the state (18.9%) and national (27.5%) averages.

Medically Underserved: In a state where **73 of the 75 counties** are designated wholly or partially medically underserved areas (MUA), access to health care services in Arkansas is substantially lacking—all of the 19 red counties fall in these categories. Most of these counties have less than 10 primary care physicians per 10,000 population, and up to 35% of adults reported having no personal doctor. Health care access is also limited by lack of health insurance, with up to 44% of adults reporting no insurance coverage.

Disparities in Disease Burden & Five Leading Causes of Death: Heart disease, cancer, stroke, diabetes, and hypertension accounted for 58.7% of deaths in Arkansas in 2007. Between 2003 and 2007, the age-adjusted **coronary heart disease mortality rate** in the 19 red counties was 30% higher than the state rate (215.8 vs 166.6 per 100,000), a discrepancy that held true for all race and gender subgroups as well—in particular, Mississippi County, had coronary heart disease mortality rates twice as high as the state's rate in each subcategory. Eleven of the 19 counties had **cancer mortality rates** higher than the state rate (range: 155.7–349.0 cases per 100,000, state: 199.9 cases per 100,000), as well as a higher **cancer incidence rates** than the state overall (range: 385.0–603.2 cases per 100,000, state: 442.9 cases per 100,000), again holding true for race and gender subgroups.

Arkansas has the highest stroke mortality rate in the US, and the **19 red counties combined are even more disproportionately affected by stroke** (red counties: 72.8 deaths per 100,000, range: 52.7–106.83 deaths per 100,000; state: 61.9 deaths per 100,000; years 2003-2007). Stroke mortality rates among males in the red counties are **23.6% greater** than that seen for the state overall, and similar patterns are seen among females, Whites and Blacks.

Statewide, BRFSS data reveal that **Black Arkansans are disproportionately affected by diabetes** (13.9%) compared to whites (9.3%), and males (10.7%) had a higher prevalence than females (9.6%). Adult diabetes prevalence is greatest in the eastern portion and the southwest corner of the state, with 16 of the 19 red counties (range: 5.0–17.2%) having diabetes prevalence above the state prevalence (10.1%). Diabetes mortality is 31.6% higher among the red counties (36.2 deaths per 100,000, range: 18.9–66.2 deaths per 100,000; years 2003-2007) than the state (27.5 deaths per 100,000), with males being 27.6% more likely to die from diabetes compared to females, and Blacks being twice as likely to die compared with Whites. Blacks in Phillips County alone have a diabetes mortality rate of almost four times the state rate.

Disparities in Major Chronic Disease Risk Factors: Although Arkansas has made great strides in recent years to lower **adult smoking rates** (1995, 25.2%; 2009, 21.5%), the state smoking prevalence rate remains higher than the U.S. (2009, 17.9%) More than half of the red counties (range: 13.6%–38.2%) have a self-reported smoking prevalence greater that the state's prevalence. County-level prevalence estimates cannot be broken down by race or gender, but the state-level adult smoking rates by gender do not vary substantially (male, 21.0%; females, 21.9%). In 2009, Blacks (23.4%) reported slightly higher smoking rates than their White counterparts (21.2%).

Hypertension prevalence is higher among the majority of the 19 red counties (range: 23.3–45.1%, 2009 self-reported data) compared to the state overall (34.4%) and the nation (28.7%). County-level breakouts for individual demographic subgroups are not available; however, the ADH Chronic Disease Branch is currently conducting a health assessment survey among the 19 red counties to identify and reach out to populations in need. At the state level, based on BRFSS data Blacks (42.2%) have a greater prevalence of hypertension compared to whites (34.8%) and males (36.5%) have a higher prevalence of hypertension compared to females (32.4%).

Sixteen of the red counties (range: 64.0–76.2%, 2009 data) have **overweight/obese** prevalence greater than the state prevalence (66.6%). County-level disparities data are not available; however, state data show that Blacks (77.1%) and males (75.4%) were more likely to report being overweight or obese compared to Whites (65.5%) and females (57.7%).

Prevalence of **high blood cholesterol** centers over the mid-northern portion as well as the southwestern tip of the state. In 2009, 13 red counties (range: 30.2–54.6%) had higher prevalence compared to the state (38.7%). Similarly, 14 red counties (range: 36.9–58.8%) had higher prevalence of **physical inactivity** than the state prevalence (52.7%, 2009 data). State data show that a greater percentage of Blacks (54.8%) and females (57.6%) were physically inactive than Whites (52.5%) and males (47.4%), respectively. Also, 13 red counties (range: 76.9–86.9%, 2009 data) had higher levels of **inadequate consumption of fruits and vegetables** compared with the state overall (79.6%), and at the state level males (84.0%) and Blacks (81.3%) were more likely to consume inadequate amounts of fruits and vegetables compared with females (75.4%) and Whites (79.8%), respectively.

Appendix 5: Health Provider Supply in Arkansas[27]

Number of Family Practice, General Practice, and Internal Medicine Physicians by County

County	Family Practice, General Practice, and Internal Medicine	County	Family Practice, General Practice, and Internal Medicine
State of Arkansas	**2,345**		
Arkansas	13	Lee	6
Ashley	11	Lincoln	3
Baxter	43	Little Rock	10
Benton	148	Logan	13
Boone	30	Lonoke	17
Bradley	8	Madison	5
Calhoun	3	Marion	4
Carroll	16	Miller	15
Chicot	8	Mississippi	14
Clark	10	Monroe	3
Clay	6	Montgomery	3
Cleburne	17	Nevada	3
Cleveland	0	Newton	2
Columbia	14	Ouachita	19
Conway	12	Perry	3
Craighead	138	Phillips	11
Crawford	30	Pike	5
Crittenden	22	Poinsett	3
Cross	8	Polk	10
Dallas	4	Pope	36
Desha	6	Prairie	2
Drew	8	Pulaski	635
Faulkner	65	Randolph	11
Franklin	6	Saline	44
Fulton	8	Scott	5
Garland	96	Searcy	5
Grant	6	Sebastian	168
Greene	26	Sevier	7
Hempstead	4	Sharp	8
Hot Spring	12	St. Francis	9
Howard	6	Stone	10
Independence	37	Union	44
Izard	2	Van Buren	7
Jackson	10	Washington	210
Jefferson	69	White	46
Johnson	16	Woodruff	5
Lafayette	2	Yell	13
Lawrence	11		

Number of Pediatric Physicians by County

County	Pediatricians	County	Pediatricians
State of Arkansas	**466**		
Arkansas	1	Lee	0
Ashley	0	Lincoln	0
Baxter	3	Little Rock	0
Benton	22	Logan	0
Boone	3	Lonoke	1
Bradley	0	Madison	0
Calhoun	0	Marion	0
Carroll	0	Miller	3
Chicot	0	Mississippi	3
Clark	4	Monroe	0
Clay	0	Montgomery	3
Cleburne	0	Nevada	0
Cleveland	0	Newton	0
Columbia	1	Ouachita	0
Conway	0	Perry	0
Craighead	14	Phillips	1
Crawford	3	Pike	0
Crittenden	7	Poinsett	0
Cross	1	Polk	1
Dallas	0	Pope	9
Desha	0	Prairie	0
Drew	0	Pulaski	247
Faulkner	17	Randolph	0
Franklin	0	Saline	11
Fulton	0	Scott	0
Garland	16	Searcy	1
Grant	0	Sebastian	28
Greene	3	Sevier	2
Hempstead	2	Sharp	0
Hot Spring	0	St. Francis	2
Howard	0	Stone	0
Independence	3	Union	4
Izard	0	Van Buren	1
Jackson	1	Washington	31
Jefferson	8	White	9
Johnson	0	Woodruff	0
Lafayette	0	Yell	0
Lawrence	0		

Number of Geriatric Physicians by County

County	Geriatricians	County	Geriatricians
State of Arkansas	**4**		
Arkansas	0	Lee	0
Ashley	0	Lincoln	0
Baxter	0	Little Rock	0
Benton	0	Logan	0
Boone	0	Lonoke	0
Bradley	0	Madison	0
Calhoun	0	Marion	0
Carroll	0	Miller	0
Chicot	0	Mississippi	0
Clark	0	Monroe	0
Clay	0	Montgomery	0
Cleburne	0	Nevada	0
Cleveland	0	Newton	0
Columbia	0	Ouachita	0
Conway	0	Perry	0
Craighead	0	Phillips	0
Crawford	0	Pike	0
Crittenden	0	Poinsett	0
Cross	0	Polk	0
Dallas	0	Pope	0
Desha	0	Prairie	0
Drew	0	Pulaski	1
Faulkner	0	Randolph	0
Franklin	0	Saline	0
Fulton	0	Scott	0
Garland	0	Searcy	0
Grant	0	Sebastian	0
Greene	0	Sevier	0
Hempstead	0	Sharp	0
Hot Spring	0	St. Francis	0
Howard	0	Stone	0
Independence	1	Union	0
Izard	0	Van Buren	0
Jackson	0	Washington	2
Jefferson	0	White	0
Johnson	0	Woodruff	0
Lafayette	0	Yell	0
Lawrence	0		

Number of Obstetric and Gynecologic Physicians by County

County	Obstetricians and Gynecologists	County	Obstetricians and Gynecologists
State of Arkansas	**292**		
Arkansas	1	Lee	0
Ashley	2	Lincoln	0
Baxter	4	Little Rock	0
Benton	18	Logan	0
Boone	2	Lonoke	0
Bradley	0	Madison	0
Calhoun	0	Marion	0
Carroll	0	Miller	0
Chicot	1	Mississippi	2
Clark	2	Monroe	0
Clay	0	Montgomery	1
Cleburne	0	Nevada	0
Cleveland	0	Newton	0
Columbia	2	Ouachita	1
Conway	2	Perry	0
Craighead	19	Phillips	3
Crawford	0	Pike	0
Crittenden	3	Poinsett	0
Cross	0	Polk	2
Dallas	0	Pope	7
Desha	0	Prairie	0
Drew	1	Pulaski	98
Faulkner	12	Randolph	1
Franklin	0	Saline	7
Fulton	0	Scott	0
Garland	11	Searcy	0
Grant	0	Sebastian	22
Greene	3	Sevier	0
Hempstead	0	Sharp	0
Hot Spring	1	St. Francis	1
Howard	0	Stone	0
Independence	7	Union	3
Izard	0	Van Buren	0
Jackson	4	Washington	32
Jefferson	9	White	5
Johnson	2	Woodruff	0
Lafayette	0	Yell	1
Lawrence	0		

Number of Specialist Physicians by County

County	Specialists	County	Specialists
State of Arkansas	**2,787**		
Arkansas	0	Lee	0
Ashley	2	Lincoln	1
Baxter	58	Little Rock	0
Benton	107	Logan	2
Boone	29	Lonoke	4
Bradley	1	Madison	0
Calhoun	0	Marion	0
Carroll	11	Miller	7
Chicot	3	Mississippi	6
Clark	3	Monroe	1
Clay	0	Montgomery	0
Cleburne	12	Nevada	0
Cleveland	0	Newton	0
Columbia	4	Ouachita	8
Conway	3	Perry	0
Craighead	141	Phillips	3
Crawford	9	Pike	0
Crittenden	17	Poinsett	1
Cross	2	Polk	8
Dallas	0	Pope	37
Desha	4	Prairie	0
Drew	5	Pulaski	1,317
Faulkner	68	Randolph	1
Franklin	5	Saline	35
Fulton	1	Scott	0
Garland	158	Searcy	1
Grant	2	Sebastian	200
Greene	17	Sevier	1
Hempstead	4	Sharp	1
Hot Spring	2	St. Francis	5
Howard	4	Stone	2
Independence	36	Union	34
Izard	0	Van Buren	3
Jackson	4	Washington	276
Jefferson	61	White	43
Johnson	10	Woodruff	0
Lafayette	0	Yell	4
Lawrence	3		

Appendix 6: Agency for Healthcare Research and Quality (AHRQ) Definition of the Medical Home[158]

The medical home model holds promise as a way to improve health care in America by transforming how primary care is organized and delivered. Building on the work of a large and growing community, the Agency for Healthcare Research and Quality (AHRQ) defines a medical home not simply as a place but as a model of the organization of primary care that delivers the core functions of primary health care. The medical home encompasses five functions and attributes:

- **Patient-centered**: The primary care medical home provides primary health care that is relationship-based with an orientation toward the whole person. Partnering with patients and their families requires understanding and respecting each patient's unique needs, culture, values, and preferences. The medical home practice actively supports patients in learning to manage and organize their own care at the level the patient chooses. Recognizing that patients and families are core members of the care team, medical home practices ensure that they are fully informed partners in establishing care plans.
- **Comprehensive care**: The primary care medical home is accountable for meeting the large majority of each patient's physical and mental health care needs, including prevention and wellness, acute care, and chronic care. Providing comprehensive care requires a team of care providers. This team might include physicians, advanced practice nurses, physician assistants, nurses, pharmacists, nutritionists, social workers, educators, and care coordinators. Although some medical home practices may bring together large and diverse teams of care providers to meet the needs of their patients, many others, including smaller practices, will build virtual teams linking themselves and their patients to providers and services in their communities.
- **Coordinated care**: The primary care medical home coordinates care across all elements of the broader health care system, including specialty care, hospitals, home health care, and community services and supports. Such coordination is particularly critical during transitions between sites of care, such as when patients are being discharged from the hospital. Medical home practices also excel at building clear and open communication among patients and families, the medical home, and members of the broader care team.
- **Superb access to care**: The primary care medical home delivers accessible services with shorter waiting times for urgent needs, enhanced in-person hours, around-the-clock telephone or electronic access to a member of the care team, and alternative methods of communication such as email and telephone care. The medical home practice is responsive to patients' preferences regarding access.
- **A systems-based approach to quality and safety**: The primary care medical home demonstrates a commitment to quality and quality improvement by ongoing engagement in activities such as using evidence-based medicine and clinical decision-support tools to guide shared decision making with patients and families, engaging in performance measurement and improvement, measuring and responding to patient experiences and patient satisfaction, and practicing population health management. Sharing robust quality and safety data and improvement activities publicly is also an important marker of a system-level commitment to quality.

  AHRQ recognizes the central role of health IT in successfully operationalizing and implementing the key features of the medical home. Additionally, AHRQ notes that building a primary care delivery platform that the Nation can rely on for accessible, affordable, high-quality health care will require significant workforce development and fundamental payment reform. Without these critical elements, the potential of primary care will not be achieved.

Appendix 7: Care Coordination Programs with the Strongest Evidence of Reductions in Hospitalizations and Costs for Patients with Chronic Illnesses[159]

Structural Characteristics:						
	Naylor (2004)	**Coleman**	**Lorig**	**Wheeler**	**Mercy**	**HQP**
• Target population	CHF inpatients	Inpatients w/ chronic illness	Chronic illness	Women with cardiac problems	Heart Problems	Chronic illness
• Setting	Hospital/home	Hospital/home	Community	Community	Outpatient hospital	PCPs office / patient's home
• Intervention Type	TR	TR	SM	SM	CC	CC
• Length of Intervention	3 months	1 month	7 weeks	1 month	Open-ended	Open-ended
• Staffing	APN	APN	Medical and non-medical personnel	Medical and non-medical personnel	RN BSN	RN
• Use of social worker	No	No	No	No	Yes	No
• Use of volunteer/ leader	No	No	Yes	Yes	No	No
• Staffing ratio	5 APNs for 118 patients	Each APN managed 24-28 patients	87 leaders for 664 participants	Each leader taught 6-8 participant	Caseload at full enrollment: 1:40 to 1:60	Caseload at full enrollment: 1:94
Focus of Intervention:						
	Naylor (2004)	**Coleman**	**Lorig**	**Wheeler**	**Mercy**	**HQP**
• Adherence	X	X	X	X	X	X
• Monitoring	X	X	X	X	X	X
• Working with PCP	X	X			X	X
• Improving communication	X	X	X	X	X	X
• Getting physicians to change treatment	X	X			X	X
• Arranging support services	Limited	Limited	Limited	Limited	Limited, except for high severity patients	Limited, except for high severity patients

Evaluation Features:						
	Naylor (2004)	**Coleman**	**Lorig**	**Wheeler**	**Mercy**	**HQP**
• Follow-up length	1 year	180 days	6 months	21 months	30 months on average	30 months on average
• Sample size (nt/nc)	118/121	379/371	664/476	233/219	463/467	739/725
• Methodology	RCT	RCT	RCT	RCT	RCT	RCT
• Impacts	–10.5% rehosps at 1yr –$4,845 in mean total costs at 1yr	–3.6% rehosps at 30d –5.8% rehosps at 90d –4.5% rehosps for same condition at 90d –5.3% rehosps for same condition at 180d –$488 mean hosp costs at 180d	–0.8 fewer nights in hospital –$820 in 6-month costs	–46% in-patient days –49% in-patient costs	–17.0% # hosps –$113 pmpm	–13.6% # hosps –$100 pmpm
• Costs	Total cost of intervention: $115,856 ($982 pm)	Annual cost of intervention: $74,310 ($196 pm)	$70 pm	$374 pm	$248 pmpm	$102 pmpm
TR = transitional care intervention SM = self-management intervention CC = coordinated care intervention pm = per member pmpm = per member per month						

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27 Family & general practice, Internal medicine, Pediatrician, Geriatrician, and OB-GYN extracted from the Arkansas State Medical Board file dated 1/15/2012 (state: AR; license status: active; license categories: unlimited, unlimited-IMG, Site specific; titles: MD or DO). Family & general practice includes 1,464 using codes F&PM, FM/FP, FMD, FP, FPMED, FPPD, GP, IMP, and M. Internal medicine includes 881 using code IM. Pediatrician includes 466 using codes ADL and PD. Geriatrician includes 4 using codes GER and GMI. OB-GYN includes 292 using codes GYN, MFM, OBG, REI, and RWOBGYN. Specialists extracted from the 2011 Arkansas State Medical Board file (state: AR; license status: active; license categories: unlimited, unlimited-IMG, Site specific; titles: MD or DO), and include 2,787 using all codes except ADL, F&PM, FM/FP, FMD, FP, FPMED, FPPD, GER, GMI, GP, GYN, IM, IMP, M, MFM, OBG, PD, REI, and RWOBGYN; 554 from the 2010 Arkansas State Board of Chiropractic Examiners (license status: active, active-probation, renewal due); and 106 from the 2010 Arkansas Board of Podiatric Medicine (all).

28 All counts extracted from 2010 American Medical Association Masterfile. MailState and/or OfficeState = AR or Null. Primary TOP: 020 (Direct Patient Care), 072 (Semi-Retired), 074 (Temporarily not in Practice), or 100 (No classification). Present Employment = 011 (Self-Employed Solo Practice), 013 (Two Physician Practice--Full or Part Owner), 014 (Two physician practice-employee), 021 (Other--Patient Care), 022 (Locum Tenens), 030 (Group Practice), 035 (HMO), 060 (City/County/State Government), 064 (City/County/State Other Than Hospital), 085 (Veterans Affairs), 086 (Other Federal Agency), or 110 (No Classification). TOPS = LO (Locum Tenens), PO (Office Based Practice), NO (Other), or NC (Not Classified). Providers were assigned one specialty code based on primary specialty and secondary specialty. Unknown or unspecified specialties were counted as specialists. Family & general practice includes 847 using codes FP – Family practice and GP – General practice. Internal medicine includes 228 using code IM – Internal medicine. Pediatrician includes 209 using codes ADL – Adolescent Medicine (Pediatrics) and PD – Pediatrics. Geriatrician includes 50 using codes FPG – Geriatric medicine (Family medicine) and IMG – Geriatric medicine (Internal medicine). OB/GYN includes 213 using codes GYN – Gynecology, OBG – Obstetrics & Gynecology, OBS – Obstetrics, and REN – Reproductive Endocrinology and Infertility. Specialists include 1,906 using all codes except ADL – Adolescent Medicine (Pediatrics), FP – Family practice, FPG – Geriatric medicine (Family medicine), GP – General practice, GYN – Gynecology, IM – Internal medicine, IMG – Geriatric medicine (Internal medicine), OBG – Obstetrics & Gynecology, OBS – Obstetrics, PD – Pediatrics, and REN – Reproductive Endocrinology and Infertility.

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30 All counts extracted from the Arkansas Medicaid Primary Care Provider file dated October 2011. Providers were assigned one specialty code based on a number of identified specialties; there were no unidentified specialties. Family & general practice includes 925 using codes 01 – General Practice and 08 – Family Practice. Internal medicine includes 282 using code 11 – Internal Medicine. Pediatrician includes 276 using codes 37 – pediatrics, AA – Adolescent Medicine, and E3 – EPSDT. Geriatrician includes 16 using code 38 – Geriatrics. OB/GYN and Specialists were not included in the counts.

31 All counts extracted from 2009 Medicare Part B non-DMERC claims for Arkansas. Provider state = Arkansas. Provider type = 0 – Clinics, groups, associations, partnerships, or other entities (note: count was 0), 1 – Physicians or suppliers reporting as solo practitioners, 3 – institutional providers, 5 – Clinics (multiple specialties), and 7 – Other entities. Each unique provider was assigned one specialty code based on the majority number of claims filed in all specialties by provider. Although non-physician providers have separate specialty codes, some non-physician providers may be included in the physician counts. Family & general practice includes 1,127 using codes 01 – General practice and 08 – Family practice. Internal medicine includes 471 using code 11 – Internal medicine. Pediatrician includes 129 using code 37 – Pediatric medicine. Geriatrician includes 35 using code 38 – Geriatric medicine. OB/GYN includes 244 using code 16 – Obstetrics/gynecology. Specialists includes 3,511 using codes 02 – General Surgery, 03 – Allergy/immunology, 04 – Otolaryngology, 05 – Anesthesiology, 06 – Cardiology, 07 – Dermatology, 09 – Interventional pain management, 10 – Gastroenterology, 12 – Osteopathic manipulative medicine, 13 – Neurology, 14 – Neurosurgery, 17 – Hospice and palliative care, 18 – Ophthalmology, 20 – Orthopedic surgery, 21 – Cardiac electrophysiology, 22 – Pathology, 23 – Sports medicine, 24 – Plastic and reconstructive surgery, 25 – Physical medicine and rehabilitation, 26 – Psychiatry, 27 – Geriatric psychiatry, 28 – Colorectal surgery, 29 – Pulmonary disease, 30 – Diagnostic radiology, 33 – Thoracic surgery, 34 – Urology, 35 – Chiropractic, 36 – Nuclear medicine, 39 – Nephrology, 40 – Hand surgery, 44 – Infectious disease, 46 – Endocrinology, 48 – Podiatry, 66 – Rheumatology, 70 – Multi-specialty clinic or group practice, 72 – Pain management, 76 – Peripheral vascular disease, 77 – Vascular surgery, 78 – Cardiac surgery, 79 – Addiction medicine, 81 – Critical care (intensivists), 82 – Hematology, 83 – Hematology/oncology, 84 – Preventive medicine, 85 – Maxillofacial surgery, 86 – Neuropsychiatry, 90 – Medical oncology, 91 – Surgical oncology 92 – Radiation oncology, 93 – Emergency medicine, 94 – Interventional radiology, 98 – Gynecological/oncology, and 99 – Unknown physician specialty.

32 All counts extracted from 2010 Arkansas Employee Benefits Division provider file. Provider state = Arkansas. Provider type = physician, physician-osteo, unknown, chiropractor, or podiatrist. Providers were assigned one specialty code based on primary specialty, secondary specialty and provider type. Although non-physician providers have separate specialty codes, some non-physician providers may be included in physician provider codes and therefore in physician counts. Unknown provider types were included in or excluded from counts based on specialty codes and provider type; unknown provider types with the majority of specialty codes assigned to physicians were included, and unknown provider types with the majority of specialty codes assigned to non-physicians were excluded. Family & general practice includes 1,192 providers using codes 01 – General practice and 08 – Family practice. Internal medicine includes 486 providers using code 11 – Internal medicine. Pediatrician includes 369 providers using code 37 – Pediatric medicine. Geriatrician includes 70 providers using code 38 – Geriatric medicine. OB/GYN includes 321 providers using code 16 – Obstetrics/gynecology and 0MM – Maternal/fetal medicine. Specialists includes 4,842 providers using codes 02 – General Surgery, 03 – Allergy/immunology, 04 – Otolaryngology, 05 – Anesthesiology, 06 – Cardiology, 07 – Dermatology, 09 – Interventional pain management, 10 – Gastroenterology, 13 – Neurology, 14 – Neurosurgery, 18 – Ophthalmology, 20 – Orthopedic surgery, 22 – Pathology, 24 – Plastic and reconstructive surgery, 25 – Physical medicine and rehabilitation, 26 – Psychiatry, 28 – Colorectal surgery, 29 – Pulmonary diseases, 30 – Radiology/diagnostic, 33 – Thoracic surgery, 34 – Urology, 35 – Chiropractor, 36 – Nuclear medicine, 39 – Nephrology, 40 – Hand surgery, 44 – Infectious disease, 46 – Endocrinology, 48 – Podiatry, 66 – Rheumatology, 72 – Pain management, 77 – Vascular surgery, 78 – Cardiac surgery, 81 – Critical care, 82 – Hematology, 83 – Hematology/oncology, 84 – Preventive medicine, 85 – Maxillofacial surgery, 86 – Neuropsychiatry, 90 – Oncology medical, 91 – Oncology surgical, 92 – Radiation oncology, 93 – Emergency medicine, 94 – Interventional radiology, 98 – Gynecological/oncology, 0CV – Cardiovascular surgery, 0IC – Interventional cardiology, 0NE – Neuropathology, 0OM – Occupational medicine, 0PD – Dermatology, 0PH – Pediatric hematology, 0PN – Pediatric neurology, 0PP – Pediatric pathology, and 0SM – Sports medicine.

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