CHP CENTER FOR HEALTH POLICY

December 2012

IMPROVING COMMUNITY HEALTH THROUGH
POLICY RESEARCH

INDIANA PRIMARY HEALTH CARE: DESCRIPTION, DISTRIBUTION, CHALLENGES, & STRATEGIC RECOMMENDATION TO EMPOWERED DECISION MAKING

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The mission of the Center for Health Policy is to conduct research on critical health-related issues and translate data into evidence-based policy recommendations to improve community health. The CHP faculty and staff collaborate with public and private partners to conduct quality data driven program evaluation and applied research analysis on relevant public health issues. The Center serves as a bridge between academic health researchers and federal, state and local government as well as healthcare and community organizations.

Table of Contents

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Over the past few years, and in light of the recent Supreme Court ruling on the Patient Protection and Affordable Care Act (ACA) and the result of the 2012 Presidential election, access to health care services has been in the forefront of health care discussions. Driving these discussions are rising chronic disease rates, skyrocketing health care costs, and the ever increasing number of individuals falling into that black hole known as the "uninsured" -- all of which are major burdens on Indiana's health system. Regardless of ones perspective on health reform, the links between primary health care access, health outcomes, and health care costs are undeniable[1-3]. People with access to primary health care services live longer, healthier lives, and the overall cost of their health care are less than those without access to these services.

Ensuring a strong primary health care system across the State of Indiana is crucial to ensuring the health of Hoosiers and improving the efficiency of Indiana's health system. However, before our current system can be strengthened, it must be understood. This begs the following questions: what is primary care?; why is it important?; who provides these services?; and where are they located? The development and implementation of health policies and primary health care programs that would secure Hoosier health relies on the ability of the State of Indiana to make informed decisions.

PRIMARY HEATLH CARE: DEFINED

The scope of primary care has drastically changed and expanded over the last several decades. Historically, primary care included a family practitioner who treated patients for a variety of different health aliments in their homes or in the practitioner's local office. Primary care was centered on the diagnosis and treatment of disease and was limited in scope.

As medical sciences have advanced, the scope of primary care has broadened. Most importantly, it is no longer centered solely on the diagnosis and treatment of diseases. It now encompasses health promotion, disease prevention, health maintenance, and patient education[4]. According to Zsolt Nagykaldi at the Institute of Medicine[1], the modern definition of primary care includes a broad range of responsibilities:

> *"Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."*

Today, primary care serves as the point of entry into the health care system. Primary care providers are no longer expected to treat and diagnose disease, but to encourage and promote the prevention of disease. Primary care has become a function which focuses on encouraging health, providing a broad range of integrated services, and acting as the first line of defense when a patient becomes ill.

The Value of Primary Care
Health Improvement
We know that adequate access to primary care prevents disease, improves health outcomes and lowers the overall cost of health care[1]. Consider a person who visits their primary care provider for annual physicals. This individual is diagnosed with hypertension, high blood pressure, at age 47 at his annual physical. His primary care provider discusses the risks associated with hypertension, prescribes medication, and recommends lifestyle changes, such as regular exercise and a healthy diet. This patient now has the choice to act on these recommendations or not, and, ultimately, may avoid a heart attack in years to come. Now consider if this same 47 year old male had never had an annual physical, never received a diagnosis of hypertension or valuable education on how he might change his lifestyle to improve his health. His undiagnosed blood pressure weakens his cardiovascular system, which places him at high risk for a heart attack, stroke, or other major event. In this situation, access to primary health care could mean life or death.

Care Coordination
In addition to preventive and chronic disease management, primary care practitioners coordinate specialty care for patients. When a primary care physician refers a patient to specialty care, it becomes the primary care physician's responsibility to coordinate the patients' care through multiple providers and to monitor the continuity of the patient's care[5]. Breakdowns in coordination of primary care and specialty care can have dire consequences for both the patient and the physician. Breakdowns have the potential "for missed or delayed diagnoses and treatments, repeated or unnecessary testing, adverse drug reactions, and a host of other problems, including an increased risk of litigation"[5].

Cost Reduction
Primary care is the foundation for an efficient health care system[2, 6]. Health care systems which focus on primary care produce better population health outcomes and have greater patient satisfaction[3, 7]. However, it is not simply enough for primary care to exist within a system, adequate primary care infrastructure, providers and clinics/offices must be available to fully address access and reduce system costs[8].

Measuring Primary Care

The ratio of primary care physicians to population has been linked to the health of the population. The more primary care physicians per population the greater the overall health[9]. One study estimates that the addition of one primary care physician per 10,000 people within a state increases that state's health care quality rank by more than 10 places and reduces overall Medicare spending by $684 per beneficiary, per year[9]. In comparison, the study further found that for every specialist that was added per 10,000 people in the state, the overall health care quality rank drops nearly nine places and overall spending increases by $526 per Medicare beneficiary[9].

The Primary Care Shortage Crisis

Primary health care can improve health and reduce health care costs, but a shortage of primary care physicians threatens access to primary health care services. The American Academy of Family Physicians predicts that if the current shortage of primary care physicians continues, there will be a shortage of 40,000 physicians in as little as ten years. Furthermore, a study conducted by the Association of American Medical Colleges asserts that the overall shortage of primary care physicians may increase to 124,400 by 2025[10]. Many factors influence the shortage, including an increasing demand for primary care services and the decreasing supply of primary care physicians.

Increasing Demand
- People are living longer lives due to advances in medical science, which has drastically increased life expectancy over the past 100 years. As people live longer, the amount of health care they require increases[11], and as the baby boomer generation enters retirement and requires increased medical resources, Indiana's medical needs will almost inevitably increase[11].
- Chronic disease rates are rapidly increasing in all populations across the United States. As primary care physicians provide or coordinate care for the management of chronically ill patients, the number of primary care physicians needed to care for the population increases with these rates[11].
- The number of people with health insurance coverage will be increasing as a result of the Patient Protection and Affordable Care Act (ACA), which takes effect on January 1, 2014. Utilization of primary health care is linked to health insurance status[12], so these newly insured people are expected to increase the demand for primary care services.

Decreasing Supply
- Medical school graduates are choosing to pur-

sue residency in higher paying specialties due to the low salaries in primary care and the large debt associated with medical education.
- Primary care physicians earn less than other specialists, such as surgeons or anesthesiologists. The Bureau of Labor Statistics at the federal Department of Labor reports the average income for an American family physicians or general practitioner as $177,330, while the reported average for surgeons is $231,550 and anesthesiologist is $234,950. The average debt for a graduating medical student was $161,290[13]. In addition to less pay, primary physicians tend to work long hours and jobs are typically located in undesirable areas such as in the inner city and rural areas.
- The current primary care physician workforce is rapidly aging into retirement. This is most threatening to rural areas, which experience even greater recruitment and retention challenges (http://depts.washington.edu/uwrhrc/uploads/Aging_MDs_PB.pdf).

Primary Care in Capacity Indiana

In order to understand whether there are unmet primary healthcare needs in Indiana, it is important to know the current capacity. In September, the Bowen Research Center at the Indiana University School of Medicine published the 2012 Indiana Primary Care Clinician Workforce Report which provides detailed descriptive information on Indiana's primary care workforce. The full report can be found at http://ahec.iupui.edu/indiana-center-for-health-workforce-studies-reports/workforce-indiana-overview-mulitiple-professions/.
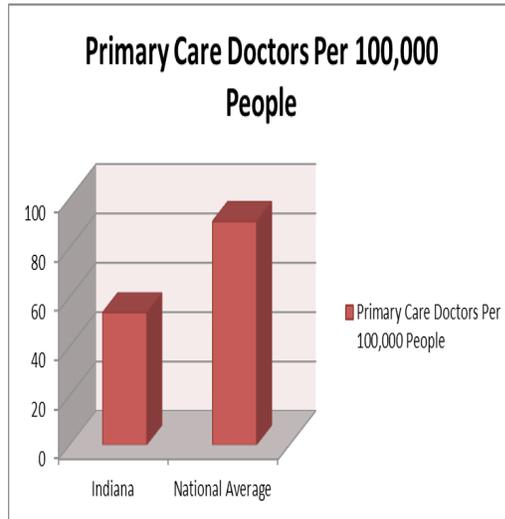
Primary Care Physicians

While the medical specialties considered as primary care workforce vary between organizations, the 2012 primary care report considered Indiana physicians as practicing primary care if they self-identified as one of the following: family practice/family medicine, general internal medicine, general pediatrics, general practice, and pediatric internal medicine. The table below lists the numbers of actively practicing primary care physician by specialty type.

Primary Care Physician Specialties	2011	
	Number	Percent
Family Practice/ Family Medicine	1,692	53.2
General Practice	90	2.8
Internal Medicine - General	795	25.0
Internal Medicine - Pediatrics	83	2.6
Pediatrics - General Pediatrics	523	16.4
Total	3,183	100.0

Primary Care Physician to Population Ratios: Indiana versus U.S.

Indiana currently has a ratio of 53.6 primary care physicians per 100,000 people. This is significantly (40%) lower than the national average of 90.5 per 100,000 people reported by the American Academy of Medical Colleges in 2011 (full report found at https://www.aamc.org/download/263512/data/statedata2011.pdf).

Primary Care Doctors Per 100,000 People

*Distribution of the Primary Care Workforce*

It is clear that the ratio of primary care physicians to population in Indiana is well below the national average; however, the ratio of physician to population is only one indicator of primary care access within a state. The geographic distribution of primary care physician to population is just as, if not more, critical. Detailed practice information on the existing health workforce is required to identify where providers are located and which communities are experiencing primary care shortages.

Workforce Information: A barrier to primary care access interventions

The following graphical map displays the distribution of the current primary care workforce as a stop light (red= significant shortage, yellow= nearing shortage, and green= adequate supply). In addition, the map shows the distribution of Medically Underserved Area/Population designations granted by the federal government.

This map clearly demonstrates numerous Indiana communities experiencing primary care shortages which do not have federal shortage designations. This is important because these designations are associated with federal allocation (money) for primary care workforce and infrastructure development. These communities cannot benefit from programs offering valuable assistance to improve

access to primary health care.
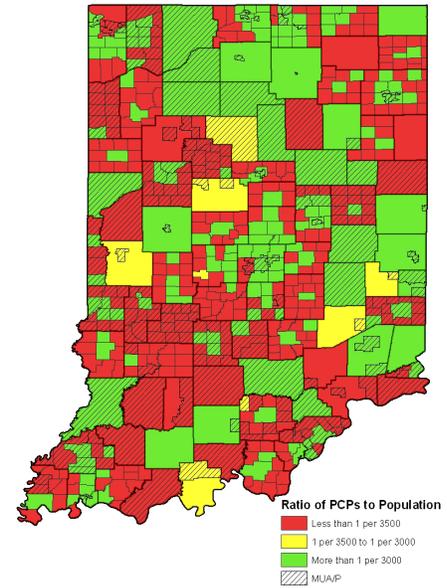
Why don't these areas have federal designations? Until recently, there was not a centralized source of data on Indiana's primary care workforce that contained the detailed practice information required to apply for a federal shortage designation. This map illustrates the value of health workforce information to inform public health policy and programming, and, ultimately, improve access to primary health care services.

Improving Health Workforce Data Management to Address Access

In 2009, the Primary Care Office at the Indiana State Health Department (ISDH) identified the collection and management of health workforce data as a major barrier to obtaining federal shortage area designations. In 2010, an analysis of existing sources of dental health workforce data was performed, and available sources were centralized/merged to create a Statewide Dentist Database. This database is now used to identify communities with shortages of dentists, and may also be used by the state to apply for dental health professional shortage area (DHPSA) designations. The PCO recently contracted with a team of researchers and graduate students from the Bowen Research Center in the Department of Family Medicine at the Indiana University School of Medicine to create a Statewide Physician Database (SPD). This project was developed to provide the PCO with the provider information required for the federal Primary Care and Mental Health Professional Shortage Area designations. The stop light map included in this document was generated from the SPD as a tool for Indiana to identify gaps in primary care service without shortage area designations.

Partners in Improving Primary Care Access
Currently, there are a number of Indiana organizations actively working toward improving access to primary health care. Each of these organizations has made great strides within their respective focus areas.

Organization	Focus
Indiana Area Health Education Center Network (AHEC)	Targeted health professional training initiatives
Indiana Primary Health Care Association (IPHCA)	Advocacy for primary care workforce and infrastructure
Covering Kids and Families (CKF)	Connecting families with government insurance programs and other resources
Indiana Family Social Services Administration (FSSA)	Administrator for Indiana Medicaid
Indiana State Department of Health (ISDH)	Administrator for state level primary care workforce and infrastructure programs and initiatives

Each of these organizations is making significant contributions to improving access to primary health care for Hoosiers, and each of them has a vested interest in the primary care workforce to target programs, perform needs assessments, or inform policy and program development. Information on the primary care workforce is critical to each of these organizations, the numerous stakeholders not mentioned, and the people of Indiana.

STRATEGIC RECOMMENDATIONS

Centralization of Health Workforce Data
Since economic resources are currently scarce around the globe, precious resources can no longer be squandered on the inefficient management of information that is vital to citizens of Indiana. Existing technology offers lower cost and higher efficiency for the collection and management of data on our health workforce. However, it is crucial that this data be centralized to avoid continued fragmentation.

To ensure Indiana has continuous access to comprehensive, high quality data, it is recommended key stakeholders support the establishment of a health workforce data repository. This repository should be developed with professional expertise and technological capacity to centralize existing sources of data on the health workforce, and enhance the data using efficient primary data collection methods.

Who Benefits
The State (ISDH and FSSA): With comprehensive and high quality data on the health workforce the State of Indiana could more efficiently perform needs assessments, identify shortages, apply for Federal funding, and allocate resources. Increased efficiency in these activities will ultimately impact the people of Indiana through increased access to health providers and programs.

Academic Institutions: Centralized health workforce data will enable academic institutions to more adequately plan, train, and evaluate their programs and the workforce they produce. For example, as discussed earlier the number of older adults in U.S. is growing exponentially and will continue for many years. This data will help accurately identify how many providers are currently practicing and project how many more will need to be trained to ensure access to and quality of care do not suffer.

Professional Associations: These associations represent the missions of their respective professional. Centralized data will enable informed decision making among the professions which will allow them to better serve their communities, further their profession and fulfill their missions.

Health System: With the movement towards a health care systems focused on quality improvement and patient satisfaction it is important for health systems to position themselves as providers of quality care where and when it is needed. The centralized data will provide information vital to strategic planning efforts and other organizational efforts, such as community benefits reporting.

Hoosier health: Ultimately, the health of the people of Indiana is dependent upon the cost, quality, and access of the health system.

Options for Health Workforce Data Management in Indiana
It is inevitable that the underlying questions during discussion of the management of important data are "who will control/own such data and how will

it be shared." First, the data should principally belong to the providers it represents. It should be used to create opportunities for them and help advance their respective missions to serve the health care needs of their communities. Second, the State must use this data to ensure pertinent decisions and efforts are informed and efficient. Its charge is to ensure the health, safety and security of the people of Indiana, while using their resources in the wisest manner. The State of Indiana has the ability to use this information to proactively define needs, which can in turn increase resources for the people of Indiana through federal allocations for health workforce development and programming.

While the data must be managed at the highest level of integrity, it must be allowed to flow freely to those who will use it to advance health and quality of life for the people of Indiana. Furthermore, it should be made available, in the appropriate format, to researchers and innovators of health care and health policy. Additional stakeholders, such as academic institutions, professional associations, and patient advocacy groups, provide invaluable contributions and should be allowed to access information, under specified agreements.

What are other states doing?
A number of states previously identified the centralization of health workforce as a strategic issue affecting their health care systems. Each of states have developed partnerships and/or established organizations to support the collection and management of this critical data. The organizational and financial structures of these organizations vary from state to state; however, each of the organizations provides critical information on the health workforce to the stakeholders in the states they serve. The table below lists each of these states, the organization primarily responsible for health workforce information, organizational structure and financing mechanism.

Other States' Health Workforce Organizations

State	Organization	Organizational Structure	Financing Mechanism
North Carolina: http://www.med.unc.edu/ahs/cahnc/workforce-studies	Southeast Regional Center for Health Workforce Studies	Center located within the Cecil G. Shepps Center for Health Service Research at the University of North Carolina at Chapel Hill	State supported Federal funding for specfic projects
New York: http://chws.albany.edu/	Center for Health Workforce Studies	Center located within the School of Public Health at the University of Albany	Business model - perform health workforce needs assessments and prepare federal shortage area designation applications
Illinois: http://www.uic.edu/sph/ichws/	Midwest Center for Health Workforce Studies	Center located within Institute for Health Research and Policy at the University of Illinois at Chicago	State supported Federal support for specific projects
Oregon: http://www.oregonhwi.org/index.shtml	Oregon Health Workforce Institute	Not-for-profit created through Governors initiative in 2006. Overseen by Board representing key stakeholders	Supported by administrative fee attached to health professional license renewal.
Washington: http://depts.washington.edu/uwchws/	Center for Health Workforce Studies	Center located within the Department of Family Medicine at the University of Washington School of Medicine	Supported by multiple states (Washington, Wyoming, Alaska, Montana, Idaho) Federal support for specific projects.

Source: This information was collected through key informant interviews and reviewing secondary data sources available on organization websites.

Organizational Structure Options:

Option 1: A formal Indiana Center for Health Workforce should be developed within Indiana University. In order to minimize conflicts of interest that could occur if the Center was located in a specific health professional school, the organization should be developed as a partnership between the IU Richard M Fraibanks School of Public Health at IUPUI and the State of Indiana. The main benefit to this structure is the availability of existing IU research infrastructure and faculty/personnel. Additionally, it would provide opportunities for training students and future decision makers.

Option 2: A separate not-for-profit organization, the Indiana Health Workforce Institute, could be established. The benefit to this structure is that it is not singularly affiliated with one academic institution (IU), improving access to the information for other academic institutions within the State of Indiana that concurrently educate and prepare the health workforce.

Under either organization structure, data collected during the biennial license renewal process should be extracted in raw format and sent to the Center/Institute where it will be cleaned, prepared, and enhanced through additional collection. It would be the primary duty of this organization to, on regular cycles, follow the pattern of renewals and provide data back to the appropriate State Agencies in prearranged formats. Also, descriptive workforce reports should be prepared and made available to all stakeholders and decision makers on the same biennial cycles.

Furthermore, academic institutions should be provided with data and reports to guide planning efforts, including graduate evaluation and tracking. This can be accomplished through the merging of data on health professional graduates into the centralized health workforce database to enable efficient examination of retention over specified periods of time. These only represent the tip of the iceberg of the products that can be produced efficiently through the centralization of this data. It will enable research and help to revolutionize the way we examine the impact health providers have on community health, down to the individual level.

A model must also be established for the sharing of information for tertiary organizations, such as those that provide continuing education service and other activities that can enrich or enhance the lives and health of others.

Funding Options

In an ideal economy, the organization could rely on support from all stakeholders, however given the current economic environment, obtaining piecemeal financial support from multiple organizations is not realistic. A sustainable source of funding is necessary to ensure that this resource is available for use by the State of Indiana and to continuously improve the health workforce. Under these constraints there are two options:

Option 1: A line item in the State of Indiana's budget

Option 2: An administrative/processing fee may be appended to health professions licenses

The second option offers a sustainable method of financing this organization without imposing tax on the population and has successfully been implemented in other states[14]. In the State of Indiana, there is currently an estimated 266,975 licensed health professionals. Generally, the license renewal fees for licensed Indiana health professionals are less than the contiguous states. Therefore, a $3-5$ biennial increase could be implemented while keeping licensing renewal fees well below the Midwest average. The following table illustrates Indiana's renewal fees for various health professionals compared to contiguous states. Option 2 would provide an annual operating budget of $667,438 for a $5 biennial increase or $400,463 for a $3 biennial increase. Furthermore, option 2 provides an operating budget proportional to the workforce size. The organization would be able to sustain its daily operations under the administrative fee funding structure as illustrated by the Oregon Health Workforce Institute[14]. It is important to note that the organization would have opportunities for additional income through additional activities such as consulting contracts with private firms.

Licensing Renewal Fees (Biennial)									
Health Profession	IN	OH	MI	KY	IL	OR	Avg	IN %↓ Avg	Below the Avg?
Athletic Trainer	$50	$80	$400	*$33	$200	$250	$169	-70%	Y
Chiropractor	$100	$500	$190	$500	$300	$600	$365	-73%	Y
Dental Hygienist	$50	$122	$50	$150	$67	$150	$98	-49%	Y
Dentist	$100	$269	$190	$350	$167	$260	$223	-55%	Y
Dietician	$20	$190	$150	$100	$100	$150	$118	-83%	Y
Marriage & Family Therapist	$50	$120	$110	$450	$100	$350	$197	-75%	Y
Mental Health Counselor	$50	$120	$135	$300	$150	$350	$184	-73%	Y
Nurse (APN)ŧ	$10	$50	$125	$80	$125	N/A	$78	-87%	Y
Nurse (LPN)	$100	$90	$60	$100	$91	$145	$98	2%	N
Nurse (RN)	$50	$65	$60	$100	$91	$145	$85	-41%	Y
Occupational Therapist	$100	$80	$130	$100	$25	$150	$98	3%	N
Optometrist	$100	$175	$190	$400	$500	$646	$335	-70%	Y
Pharmacist	$200	$195	*$70	$160	$200	$200	$171	17%	N
Physical Therapist	$100	$80	$180	$300	$100	$200	$160	-38%	Y
Physician	$200	$305	$190	$300	$300	$444	$290	-31%	Y
Physician Assistant	$50	$200	$110	$300	$50	$350	$177	-72%	Y
Podiatrist	$100	$305	$190	$300	$400	$444	$290	-66%	Y
Psychology	$100	$50	$190	$300	$50	$750	$240	-58%	Y
Respiratory Therapist	$100	$100	$150	$150	$100	$100	$117	-14%	Y
Social Worker	$50	$60	$50	$50	$50	$260	$87	-42%	Y
Speech Lang. Pathologist/ Audiologist	$100	$200	$300	$250	*$90	$320	$210	-52%	Y

*Profession had two fees, which depended on the time of year in which the license was renewed. In this circumstance, the two fees were averaged.

ŧThere is a wide variation in license renewal policy for advanced practice nurses (APN).

Regulation and Evaluation

Regardless of the type of organizational structure Indiana chooses to purse, an advisory board made up of individuals representing stakeholder groups and the general public should be appointed to govern this organization. The board should include representatives from the Indiana Professional Licensing Agency, Indiana State Department of Health, other State Agencies, Academic Institutions, Professional Associations, the Boards, pertinent advocacy organizations, and the public at large. Board members would be assigned to serve on committees. The advisory board would met bi-annually, with specific committees meeting quarterly, or on a more frequent basis if necessary.

Organizational and financial information should be made available to all stakeholders to build support among stakeholders. This organization should perform frequent evaluation of internal processes and strategic plan to ensure maximum efficiency in a dynamic health care system.

CONCLUSION

Indiana's capacity to ensure all Hoosiers have access to primary care is threatened by a shortage of primary care physicians. This shortage will be exacerbated over the coming years with the expansion of health insurance and the increased health care demands associated with the aging populations and those who suffer with chronic illnesses. Prior to any large scale planning or policy development for Indiana's primary care workforce, a thorough evaluation of the current environment is required. In order to accomplish this Indiana requires a sustainable source of high quality, comprehensive information on primary care workforce. The development of a formal organization to centralize and manage this data must be a strategic initiative for the State of Indiana to ensure Hoosier health.

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