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Counting Physicians in Specialties: By What They Do or How They Train?

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ABSTRACT: The number of actively practicing physicians in the United States is not precisely known, nor do we know the total number of physicians required to meet population needs. The possible gap between these two numbers is a controversial issue, especially for primary care physicians. Primary care physicians can be counted in more than one way, either by their "area of practice" (in other words, what they do) or by the specialty in which they train. Regulatory agencies and other health organizations see the area of practice as more relevant to understanding physician supply. In North Carolina, the counts of primary care physicians were historically based on specialty of training. In 2010, the way physicians were counted was changed from definition by specialty of training to definition by area of practice, which resulted in an apparent drop in the number of primary care physicians by more than 16% in a single year. When terms such as "hospitalist," "urgent care," "student health," and "integrative medicine" were added to describe additional practice areas of physicians, most of the loss was accounted for. Researchers, regulators and policy makers need to be aware of the effects of a shift in how physicians are counted and assigned to specialties to understand the extent of pending shortages.

Introduction

The balance of physician supply to needs in the United States has been a longstanding policy concern. Claims of growing shortages of physicians as well as severe maldistribution between rural and urban areas and among the specialties are common.[1,2] The balance between the supply of primary care physicians and population is presented as a particularly important measure of access to care, affecting the ability of the system to deliver on the promise of public health insurance programs such as Medicare, Medicaid and Veterans' health care.[3] State policymakers are especially sensitive to the local supply of primary care practitioners, as many have invested in programs and incentives to produce and distribute physicians into under-served areas.[4,5]

The question of the adequacy of the supply of primary care physicians is a public policy issue in North Carolina.[6] To measure physician supply, data have been collected and reported annually by the North Carolina Health Professions Data System (HPDS) at the University of North Carolina to the state legislature since 1979. Physician data are collected from license files provided by the North Carolina Medical Board (NCMB). In 2011, North Carolina's annual summary report of its supply of actively practicing physicians noted that the number of primary care physicians practicing in the state dropped from 9,017 in 2010 to 7,520 in 2011.[7] As the report explained, the decline was due not to a real drop in the number of physicians, but rather was the result of a change in the way the data were collected. The NCMB had implemented a "redesign" of the online registration system that asked physicians to identify their "area of practice." The goal of this change was to capture better data on the specialty practice area in which the physicians are actively engaged as opposed to the specialty in which they were trained and/or practiced in the past. This article describes the concept of "areas of practice" using data North Carolina physicians reported on their license and re-registration forms and compares those designations to the physicians' specialty training. While using current specialty practice area to categorize physicians may provide a more accurate description of what physicians do, it disrupts the analysis of trends in physician supply by specialty in North Carolina. The disruption is especially problematic for primary care, as new roles and classifications are being applied to generalists. The North Carolina case may presage a change in specialty classification systems and

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taxonomies that better describe new and emerging specialties. This may spread nationwide as interests shift toward identifying practice areas in lieu of training specialty. If so, it will be important to clarify how physician specialty classifications have changed to prevent confusion in policy discussions over the best ways to meet the nation's physician workforce needs in primary care and other specialties in medicine.

Background

Determining the number and capacity of the physician workforce is a key component in the development of appropriate policies to ensure access to health care.[8,9] Public policies to affect the number and distribution of physicians have been part of the political landscape since the development of state-supported medical schools. Concern over the balance of the supply of physicians to the need for their services has been expressed by influential national commissions since the early 20th century and by the national government since the 1960s with the passing of Medicare and Medicaid legislation.[10] The federal role in supporting incentives to redistribute the supply of physicians started with the National Health Service Corps in 1968, then shifted to direct support for training physicians in selected specialties under Title VII programs along with support of graduate

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medical education via the Medicare program in the 1970s. These efforts were intended to solve geographic and specialty imbalances. Over time, debates have shifted back and forth over whether the nation faced a "surplus"[11] or "shortage" of physicians.[3,12] Recent discussions over the best policies to ensure the supply of physicians and the needs of the population have intensified the national focus on physician supply. Policymakers have asked: do we have enough physicians of the right kinds in the right places doing the right things?

This issue has been the focus recently of a variety of reports, projections, and models that use a wide range of data and arrive at different conclusions. Part of the problem is the lack of a single, authoritative and comprehensive source indicating the number of physicians practicing in the United States, and their practice specialties.[13] Because we are unsure of the numbers of practitioners, we are unable to answer the question of balance, i.e., do we train physicians in specialties that meet the needs of patients and the system? Traditionally, we have considered physician supply as a combination of specialists and generalists trained in residencies and fellowships after their medical school training. We have classified them by their specialty training,

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identifying them as family physicians, general internists, or as specialists in surgery or medicine pursuant to completion of a "board certification" process.[14,15] Over time, the number of specialties described by their training has expanded and in the most recent decades that expansion has accelerated.[16] As specialties change, so do the classifications, but no clear incentive exists for physicians, once classified, to change their designation or board certification. The trend to greater specialization has not been uniformly viewed as beneficial, with some claiming that it generates inefficiencies.[17] In the words of one study, the rise of more specialties has "confounded workforce projections," as it is more and more difficult to understand what physicians either are doing or can do.[18]

State Responsibilities in Determining Physician Supply

In the United States, individual state medical boards have the responsibility for licensing physicians and state appropriations are often used to support medical education. Thus, states have an important stake in determining the optimal number of practitioners to meet population needs. Additionally, states pay for direct patient care services for underserved and at risk populations, and are, therefore, motivated to use resources in the most efficient way possible to care for patients, prevent

disease and support public health obligations. Many states make use of Medicaid matching funds to support graduate medical education and, in at least one instance, in Utah, have used a Medicaid waiver to develop a prioritization of graduate medical education needs. That process required current and detailed knowledge of physician supply by specialty.[19] States have become more active in the development of accurate inventories of physicians to support policy decision-making. The National Center for Health Workforce Analysis has supported states in their efforts to improve data collection.[20]

Federal Responsibilities

The federal government supports multiple programs that are intended to enhance and optimize the supply and distribution of practitioners, especially those in primary care.[21] Accomplishing this goal requires current and accurate data on the distribution of physicians by geography, activity and specialty. The federal government has created its own inventories for practicing clinicians, including physicians — most notably the National Provider Identifier (NPI) issued by the National Plan and Provider Enumeration System (NPPES). That system was required by the Health Insurance Portability and Accountability Act (HIPAA)

IN 2013 ABMS AND AOA LISTED 260 INDIVIDUAL CLASSIFICATIONS OF SPECIALTIES AND SUBSPECIALTIES. THE ABMS ALONE RECOGNIZED 122 SUBSPECIALTY CERTIFICATES IN THAT YEAR.

legislation and registration is required of all providers who use electronic systems as part of their billing process. The NPPES is maintained in the U.S. Centers for Medicare and Medicaid Services (CMS) and has, to date, captured almost all medical (MD and DO) practitioners in the United States. No formal evaluation of the accuracy of the system has been conducted, but with its mandate in regulation and link to the systems that support key federal programs, suggestions to use it as a national supply inventory and as the basis for assessing under-service have been made within HRSA.[22]

The NPPES has created a physician specialty "taxonomy" that roughly includes all physician specialties under one or more headings or codes. The NPPES codes do not necessarily coincide with the "self-designated specialties" used by the AMA or the various specialty boards approved by the ABMS or AOA. Nevertheless, the 212 physician code classes (Fall 2014) cover almost all possible specialty groups. The NPPES system may be useful in assessing the distribution of specialties when the NPIs are merged with or included in other data sets. The applicability of NPI files to the analysis of supply issues is only now being tested.

Assigning Physicians to Specialties

The most common way of determining supply and the distribution of physicians by specialty is the use of inventories of licensed practitioners found in three different administrative data sets: self-reported specialty designation collected during state licensing and renewal, specialty data reported in the American Medical Association (AMA) Masterfile, and board certifications reported by the American Board of Medical Specialties (ABMS). There are now more than 300 different physician specialty and subspecialty titles in these data sets. No clearing-house, central agency, or organization plans or initiates the process for the development of newly emerging specialties and subspecialties, but the ABMS and its counterparts in osteopathic medicine review and approve the majority of specialty programs through their constituent boards. In 2011 24 ABMS boards oversaw general and subspecialty certification. In 2013 ABMS and AOA listed 260 individual classifications of specialties and subspecialties. The ABMS alone recognized 122 subspecialty certificates in that year. In 2011, the AMA listed 259 specialties as "self-designated" specialties in its Masterfile, including new certifications and designations that did not emerge from the traditional 24 ABMS boards. These new, organizational specialties describe what physicians are doing in an organizational context as opposed to a description of their clinical scope of practice, (e.g., "hospitalist," "student health," "urgent care") or forms of practice that reflect a combination of disciplines (e.g., "integrative medicine," "sleep medicine," "sports medicine"). As these descriptors and their formal definitions develop and gain acceptance, they are displacing clinical specialty categorizations.

Primary Care as a "Collective Specialty"

Perhaps the first new class of physician activity based on a combination of organizational as well as clinical roles was primary care. Primary care may be viewed variously as a cluster of specialties that are the first-contact physicians for a broad population[23] or as a way to practice medicine separate from a

specialty distinction. The "first contact" label is the most common way to define primary care and it usually includes family and general practice, general internal medicine and general pediatrics. This definition of primary care was supported by analysis of ambulatory-care-visit content by Rosenblatt and others and by Weiner and Starfield, who matched services that comprised "good primary care" with the specialties of the physicians providing those services.[24,25] Obstetrics-gynecology is sometimes seen as the primary-care specialty for women[26] and recognized as such in some settings as primary care.* Specialty boundaries have been disputed for decades. The organizational aspects of primary care that attract current attention are usually found in the context of new payment and care delivery models intended to reform health care delivery, including patient centered medical homes and accountable care organizations. These organizations affect the quality and quantity of the care provided by professionals and we should consider not only how many physicians there are[27,28] but also where they work when we assess overall supply.[29]

Primary care physicians treat a wide range of conditions and are responsible for the coordination of care for patients. However, a primary care physician may specialize in older people (geriatrician),

THE ESTABLISHMENT OF THE HOSPITALIST HAS CHANGED THE DYNAMICS OF PHYSICIAN PRACTICE AND DEMAND FOR PHYSICIANS IN COMMUNITIES WITH HOSPITALS.

children (general pediatrician or adolescent medicine), adults (general internal medicine) as well as the full range of the population in a community (family medicine). As a multivalent field of practice in medicine, primary care has undergone its own process of "specialization."[30] The emergence of the subspecialties of geriatrics, palliative care, and sports medicine that are recognized in family medicine by "Certificates of Added Qualifications" provide examples.† There have been recent trends toward an even finer focus: hospitalists have emerged as a typology describing generalist care for the inpatient.[31] Various forms of the terms "urgent care" or "critical care" have been used to describe the area of practice of primary as well as specialty care. These classifications reflect the organizational role of the physician. Thus, two axes of specialization describe the real world of medical practice: first, the clinical and second, the organizational — and they can occur simultaneously to meet the demands of the patient and/or the institution or organization.

Case: The rise of the "Hospitalist"

The organizational role of hospitalists — physicians who specialize in caring for patients in inpatient settings — is perhaps the example with the longest history as a "organizationally defined" specialty.[32] The American health care system has embraced hospitalists vigorously. The number of hospitalists has been estimated to be approximately 30,000 in 2014 — most of whom were trained in general internal medicine — followed by pediatric subspecialists, internal medicine subspecialists, general pediatricians and family physicians.[33] The establishment of the hospitalist has changed the dynamics of physician practice and demand for physicians in communities with hospitals. Far fewer general internists have hospital practices and demand for these jobs by physicians who wish to restrict their practice to an inpatient setting is strong.[34-37]

Data: The North Carolina Case

Historically, the NCMB requested a physician's primary certification during the process of initial licensure or license renewal, and initially included only ABMS or AOA certifications in the choice options. In 2010, the NCMB began using a new approach to determine the area of practice for physicians licensed in North Carolina. This change was prompted by an apparent recognition that the traditional designation of practice specialty did not provide an accurate depiction of the actual scope of a physician's practice. An additional impetus for the move to the designation "area of practice" was the policy guideline from the Federation for State Medical Boards, passed in April 2011, which recommended that states collect a minimum data set (MDS) on their licensees. The FSMB developed this MDS with support from the National Center for Health Workforce Analysis (NCHWA) at the Health Resources and Services Administration (HRSA), a federal agency that has promoted the development of minimum data sets for all licensed and some

*North Carolina General Assembly, Senate Bill 27, S.L. 1993-321, Page 75.

† See: https://www.theabfm.org/caq/ procedures.

credentialed health professions to support HRSA programs and policies.† In particular, the FSMB was interested in having physicians answer this question: "Which of the following best describes the area(s) of practice in which you spend most of your professional time?" The FSMB Workgroup on the Minimum Data Set explained that "This question provides input on the true areas of practice for a physician (primary care, dermatology, surgery)."[38] The FSMB suggested that specialty data be collected from the ABMS and included in a centralized database that the FSMB maintains. The state could continue to request a primary self-designated specialty and other fields or areas of practice. Members of the NCMB were involved in these discussions from the outset and promoted the idea of developing a better understanding of the content of licensee's practices as well as the particular specialty of their training.

The North Carolina registration process, which occurs online, directs physicians to indicate their specialty in two ways. Physicians are asked about their board certification:

> "Physicians who are board certified must indicate their certifications below. The NCMB recognizes only certifications issued by boards approved by the ABMS, AOA or RCPSC (Royal College of Physicians and Surgeons of Canada). Do not report if you are 'board eligible.'"[39]

A listing of ABMS and AOA specialty names follows the instructions. Further, physicians are asked to enter their board certifications and dates of their "most recent certifications or re-certifications" in a free form entry, and many varieties of descriptors are entered. The language reads as follows:

> "Please select your primary/subspecialty board certifications along with the year of your most recent certification/recertification."[40]

Physicians are also asked about the area of practice. The definition of area of practice on the website reads as follows:

> "An area of practice is what you primarily do as a physician. Your area of practice may correspond to an ABMS/AOA certification or generally recognized area of work, e.g. 'hospitalist,' 'administrative medicine,' 'integrative medicine,' 'student health' and so forth. Please select all of your area(s) of practice and then designate one of them as your primary area of practice."[40]

These instructions are followed by a listing of specialties with check boxes and a box for an "other category" along with a space to enter that specialization. More than 99% of North Carolina physicians registering indicate an area of practice. The current areas of practice for North Carolina physicians are based on classifications used by AMA in its classification of physician specialties supplemented by additional areas of practice that are considered important by the NCMB.

THE NUMBER OF SELF-DESIGNATED HOSPITALISTS GREW FROM 81 PHYSICIANS IN 2010 TO 581 IN 2011; ADMINISTRATIVE MEDICINE GREW FROM 15 TO 188, AND URGENT CARE FROM 5 TO 105.

Results

2010 was the first year in which NCMB asked physicians to select an area of practice. In prior years they were offered a listing of specialties that matched the listing of specialties and specialty codes published by the AMA and used in its Physician Masterfile® to categorize physicians. In 2010 there were 241 AMA specialties, and the North Carolina data system included 213. The AMA listing included "hospitalists," but not administrative medicine," "integrative medicine," "student health," "body imaging," "physiatrist," or "bariatric medicine." These were in the NC listing because a physician either entered that category on a prior license renewal or an individual physician(s) requested the creation of a category.

Physicians were able to select multiple areas of practice. If more than one was selected, they would select a "primary area of practice." Use of these updated licensure and re-registration forms began in 2011 but selection of a primary area of practice was not a required field in that year. The NCMB licensing and renewal processes have since been updated, and all physicians are now required to select a primary area of practice. Of the 21,340 active physicians practicing in North Carolina in 2011 who were not employed by the federal govern-

† See: http://bhpr.hrsa.gov/healthworkforce/data/minimumdataset/index.html

ment nor in a residency, 10,500 (49.2%) indicated a primary area of practice from the list, 10,467 (49.0%) indicated at least one other area of practice but not a primary area of practice, and 373 did not indicate any area of practice. In the North Carolina Health Professions Data System, those physicians who did not indicate a primary care of practice were assigned a primary care designation based on their 2010 specialty in the earlier NCMB files or their most recent ABMS or AOA specialty certification. A small number of primary care physicians were assigned a category based on publicly available data (identification in inventories and listings on the Internet).

The most immediate and concerning effect of the change from collecting information about specialty of training to collecting information about area of practice was a 16.6% drop in the number of physicians classified as "primary care" and a 17.8% increase in other, non-primary care specialties. The drop in primary care was largely due to a shift in the self-designated area of practice by physicians previously identified in internal medicine to hospitalist (471 physicians), from family practice to hospitalist (42 physicians), and from family practice or internal medicine to administrative medicine (140 physicians). The number of self-designated hospitalists grew from 81 physicians in 2010 to 581 in 2011, administrative medicine grew from 15 to 188, and urgent care from 5 to 105. The lack of inclusion of these categories in the definition of "primary care" made the supply of primary care physicians appear to drop precipitously, changing a trend that had shown steady growth over the previous two decades.

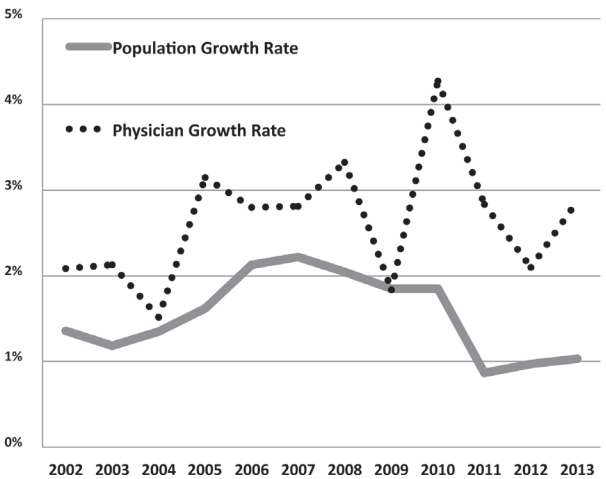
CHANGES IN THE WAY PHYSICIANS CHOOSE TO CATEGORIZE THEMSELVES...WILL REQUIRE RESEARCHERS, POLICYMAKERS, AND OTHER STAKEHOLDERS TO CLOSELY EXAMINE CONTENT OF WHAT CONSTITUTES PRIMARY CARE.

This apparent drop caused concern to outside observers. In December 2014, an op-ed article in the *Raleigh News and Observer* cited these statistics as evidence of a precipitous decline in primary care physicians in North Carolina, imperiling the state's ability to care for patients included in any expansion of Medicaid. The editorial stated: "North Carolina's supply of primary care physicians is dwindling, dropping from 9.4 per 10,000 people in 2010 to 7.9 doctors per 10,000 people in 2011."[41] The newspaper's conclusion was based on a misunderstanding about the shift in designation and reporting. To characterize North Carolina physician supply as declining ran counter to the data. North Carolina experienced a 2.8% growth in the number of physicians between 2010 and 2011, which was above the average annual 1.2% growth in population since 2001. Figure 1 tracks physician-to-population growth rates from 2002–2013. Overall, physician supply has grown twice as fast as population growth for the past decade and primary care physicians comprise a significant component of that growth.

In 2012 the numbers of primary care physicians appeared to continue to diminish, but only by small increments compared to 2011. In 2012, there were 103 fewer family physicians and 101 fewer internists in practice, but there was an overall increase in physician supply in the state of 566, with a gain of 86 general pediatricians. In 2013, the apparent decreases continued, with family practice seeming to lose 400 physicians and internal medicine losing 137. Again, these data do not point to a true loss of providers, but rather suggest that physicians are categorizing themselves into more sub-specialized areas of practice. Figure 2 highlights how North Carolina physicians chose to use new descriptors of primary care practice, including "hospitalists," "urgent care," "student health" and "integrative medicine." This trend has accelerated to the point where there were 1,828 practicing physicians electing to use those descriptors as their "primary area of practice" in 2013. Among those, 67% listed a primary board certification in one of the

Figure 1

Trends in Growth of Physicians and Population, North Carolina, 2002–2013



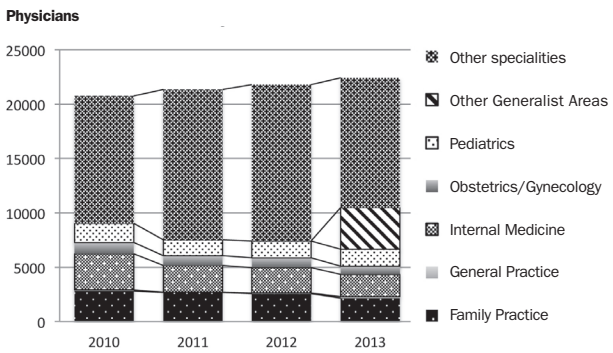
four traditional primary care specialties (family medicine, internal medicine, pediatrics and obstetrics-gynecology)[§]. If the expanded definitions — including new primary care descriptors such as "hospitalist," or "student health" — were used to describe the physician workforce in the state, then the trend in growth of primary care supply in North Carolina would have continued proportionate to overall physician supply growth or slightly faster.

Implications

By 2014, 245 named areas of practice were available for selection by North Carolina physicians (including "other") on the NCMB online form. The North Carolina experience suggests that diffusion of area of practice will continue as physicians identify new practice niches. Changes in the way physicians choose to categorize themselves by the work and services they provide will require researchers, policymakers, and other stakeholders to closely examine the content of what constitutes primary care. The construction of an algorithm to classify physicians into primary care and specialties will require inputs from multiple data sources, including certification data from the American Board of Medical Specialties and the American Osteopathic Association as well as practicing physicians themselves. The use of the NPI to estimate number of practitioners will also create another source for comparison. For example, the NPI system in December 2014 classifies 13,203 North Carolina physicians into the four primary care specialties, a number much higher than results from the approach described above.

Figure 2

Trends in Primary Care Physicians Totals, North Carolina, 2010–2013



[§] OBG, Obstetrics-Gynecology is defined as a primary care specialty by the North Carolina General Assembly.

At present, there is no perfect mechanism to guide assignment of specialty and specialty groups to physicians, or, for that matter, physician assistants and advanced nurse practitioners, who also increasingly specialize. If primary care is to continue to be a designation relevant to policy — such as in the generation of Health Professional Shortage Areas or eligibility for bonus payments and loan repayment support, then we must carefully examine the taxonomy by which we classify physicians.

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