ANNUAL REPORT

ROBERT GRAHAM CENTER

Policy Studies in Family Medicine and Primary Care

Letter from the Director

Over the past two years, the Robert Graham Center for Policy Studies in Family Medicine and Primary Care has continued to work on many of the same important issues we have been tackling for years, ranging from medical education and workforce to access to care and public and community health. We continue to open our door and minds to our Larry A. Green Visiting Scholars and Robert L. Phillips, Jr., Health Policy Fellows. Their contributions enable us to extend our reach and broaden our scope well beyond our nine-person team. In addition to what you might normally expect from the Graham Center, including policy briefs, peer-reviewed manuscripts, and research reports, we are being called on to bring thought leaders together to discuss key issues facing primary care.

Convening national and international conversations has become an increasingly important component of the Graham Center's efforts over the past two years, with the specific aim of advancing meaningful dialogue related to evidence, ideas, and policy in a time when such interchange is scarce in Washington, DC. As evidenced by the examples described below, these conversations have a way of breeding more conversations, putting the Graham Center in an increasingly central role in organizing critical discussions relevant to primary care and policy.

Starfield Summit Series: In 2016, the Graham Center was proud to give birth to a new series of galvanizing dialogues with the support of a number of organizational and funding partners in primary care. These conversations were intended to honor the legacy of Barbara Starfield, MD (1932-2011), a professor, physician, and health services researcher internationally known for her work in primary care. The series built on Starfield's seminal work, which revealed that countries and areas with health systems that are primary care oriented have better population health outcomes, higher quality care, greater health equity, and lower costs.

Graham Center creators imagined the Starfield Summit series as an opportunity for compelling conversations among a diverse group of leaders in primary care research and policy. These leaders would foster, and ultimately disseminate, important discussions for public consumption, as well as setting a research and policy agenda in support of the primary care function as an essential catalyst in health system reform.

The first Starfield Summit was held in April of 2016 in Washington, DC. It engaged policy makers, researchers, patients, and leaders from family medicine, internal medicine, pediatrics, nursing, and beyond in a robust series of conversations about payment, measurement, and teams in primary care. The summit's innovative use of TED Talk and World Café formats was extremely well-received, and participants left so energized that two additional Starfield Summits were planned for 2017. The second summit took place in April of 2017 in Portland, Oregon, and specifically addressed health equity and social determinants of health in primary care. The third took place in October of 2017 in Washington, DC, and addressed measuring what matters in primary care.

These three events produced not only incredible energy and dialogue in a difficult political season but also multiple peer-reviewed publications; more than 30 original issue briefs; 40 videotaped TED and Ignite talks (available online at www.starfieldsummit.com/videos); a series of annotated bibliographies (available online at www.starfieldsummit.com/documents) summarizing key evidence on payment, measurement, and teams in primary care; and a pending framework and other guiding documents for measuring what matters in primary care. In addition, the events have reignited conversations across the primary care provider disciplines, resulting in an evolving Starfield Consortium that met by phone and in person between the first and second Starfield Summits.

Cross-national Symposium: The first Starfield Summit also spurred a binational conversation about how to increase sharing of best practices in primary care policy and research between the United States and Canada. As a result, the Graham Center partnered with the Canadian Institutes of Health Research (CIHR), the Agency for Healthcare Research and Quality (AHRQ), and the North American Primary Care Research Group (NAPCRG) to host a cross-national symposium entitled "Advancing the Science of Transformation in Integrated Primary Care: Informing Policy Options for Scaling-up Innovation." This invitation-only event took place in March of 2017 in Washington, DC, and brought together an array of high-level research and policy stakeholders—including clinicians, payers, policymakers, patients, and public health officials—to highlight bright spots and successes in three key areas: 1) patient-centered care for people experiencing multiple morbidities; 2) alternative payment models; and 3) ways to address health equity and disparities across diverse communities. The symposium highlighted opportunities for cross-border learning and binational research priorities, yielded several peer-reviewed publications, and was viewed as a remarkable success.

Embassy Series Events: During the March 2017 cross-national symposium, the Graham Center and American Board of Family Medicine (ABFM) partners hosted their sixth Embassy Series event. Held at the Canadian Embassy, the event was entitled "Alternative Payment Models and Primary Care in the United States and Canada." More than 150 attendees gathered to hear binational perspectives on the topic and policy makers' reactions before informally continuing conversation on the subject over food and drinks. The Embassy Series has been a success and continues to grow in impact and popularity.

Robert Graham Center Primary Care Forums: On December 1, 2016, the Graham Center hosted a primary care forum entitled "Beyond the Tipping Point: What Can Accountable Care Organizations Teach Us About the Future of Value-Based Payment?" The panelists were Farzad Mostashari, MD, MPH (CEO, Aledade); Clay Ackerly, MD (CMO, Privia); Michael Coffey, MD, FAAFP (President, Collaborative Health ACO); and Theodore Long, MD, MHS (Centers for Medicare & Medicaid Services). While the panelists were excited about primary care's role in accountable care organizations (ACOs) and value-based payment, they expressed concern about the payment model's future. Specifically, they noted the difficulty in continuing to generate savings over time and the lack of pathways to more sustainable value-based models, such as Medicare Advantage. They also reported that the ACO program might be viewed more favorably if policy makers recognized differences in performance between hospital-based ACOs and primary care-based ACOs, which consistently outperform their hospital-based counterparts.

In the spring of 2017, the Graham Center shifted its focus to primary care research with a primary care forum entitled "Primary Care Research: Critical to the Triple Aim and in Desperate Need of a Home." This came in response to calls for the AHRQ to be eliminated and potentially transitioned into the National Institutes of Health (NIH). The panelists were Andrew Bindman, MD (Former Director, AHRQ); Bernard Ewigman, MD, MSPH, FAAFP (Chair of Family Medicine, University of Chicago and NorthShore); Jennifer Carroll, MD, MPH (Director, American Academy of Family Physicians National Research Network); and Alex Fiks, MD, MSCE (Director, Pediatric Research in Office Settings, American Academy of Pediatrics). The panelists discussed how primary care research enhances scientific knowledge and the delivery of care. They also discussed how the absence of a federal funding strategy for primary care research contributes to missed opportunities, inadequate translation, insufficient innovation in primary care, and widening health disparities. While they believed that AHRQ's transition into the NIH would yield potential benefits, they were concerned about the agency's focus being subsumed into the disease- and organ-based culture of the NIH.

In the fall of 2017, a primary care forum entitled "What Do Patients Want from Telehealth?" highlighted the Graham Center's recent work on telehealth. This forum was a culmination of two years of work with funding from the Robert Wood Johnson Foundation and in partnership with Anthem, Inc. The goal of the forum was to highlight opportunities for using and funding telehealth to meet the needs of patients. Tammy Toscos, MS, PhD (Lecturer, School of Informatics and Computing, Indiana University; Research Scientist, Informatics, Parkview Mirro Center for Research and Innovation); Wally Adamson, MD (Staff Vice President, LiveHealth Online); Michael Rodriguez, MD, FAAFP (Family Physician, Broadlands Family Practice); and Regina Holliday (Patient Rights Activist, The Walking Gallery) were the forum panelists. They discussed barriers and successes related to telehealth adoption, with a focus on some of the specific challenges facing telehealth use in primary care.

In the summer of 2017, the Better Medicare Alliance sponsored a Capitol Hill briefing to highlight the Graham Center's work examining bright spots in care management. The briefing brought together leaders of organizations identified as "bright spots" in care management, including David Ramirez, MD (Chief Quality Officer, CareMore Health); Steven R. Counsell, MD (GRACE Team Care Model, Indiana University Health Methodist Hospital); and Phyllidia Ku-Ruth, MD (President, InterMed). These speakers discussed the innovative care management programs in use at their respective organizations and how care management has impacted their teams, patients, and health outcomes. This briefing was the culmination of the Graham Center team's case studies on care management.

All of the events listed above raise the profile of and the demands on a Graham Center team that is still dedicated to producing original evidence and has increased its production of such evidence in recent years. However, we see these events as increasingly critical to our mission to improve individual and population health care delivery; to "bring a family medicine and primary care perspective to health policy deliberations"; and to foster the dialogue that our nation needs now more than ever to advance effective health policy, with primary care at its center.

Publications in 2015

Three areas to highlight

ACCESS TO CARE

Family Physicians and Telehealth: Findings From a National Survey

Health care delivery in the United States is experiencing a convulsive transformation during the early decades of the 21st century with the implementation of the Patient Protection and Affordable Care Act (ACA), the push toward value-based care, and a declared national Triple Aim for health care of enhancing the patient experience, improving population health, and controlling costs. Simultaneously, the explosion of personal technology provides almost unlimited communication access through a variety of interfaces, altering not only how and when communication occurs, but also the content, pace, and quality of commu nication. At the intersection of these phenomena lies telemedicine. To solicit information on the use of telehealth services, and attitudes and beliefs related to these services, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care surveyed family physicians. Surveys were mailed to more than 5,000 randomly selected family physicians, with rural physicians intentionally oversampled. The 31 percent response rate (1,557 respondents) was high by typical physician survey standards. Fifteen percent of respondents indicated that they use telehealth in their practices. Key factors analyzed were practice characteristics of those who use telehealth compared to those who do not, and information about practice patterns of the telehealth services provided.

Klink K, Coffman M, Moore M, Jetty A, Petterson S, Bazemore A. Family physicians and telehealth: findings from a national survey. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/RGC 2015 Telehealth Report.pdf. Accessed April 19, 2018.

PRIMARY CARE COSTS & PAYMENT

Primary Care Physicians Are More Likely to Participate in Medicare EHR Incentives Than Other Eligible Physicians

Family medicine and general internal medicine physicians are more likely to participate in the Medicare electronic health record (EHR) incentive program compared with other subspecialties, after accounting for Medicare income and other factors. These findings support the continuation of incentive programs that assist physicians in the meaningful use of EHR technology.

Russell T, Petterson SM, Klink K, Bazemore AW. Primary care physicians are more likely to participate in Medicare EHR incentives than other eligible physicians. *Am Fam Physician*. 2015;92(3):182.

WORKFORCE

Opting Out of Medicaid Expansion May Cost States Additional Primary Care Physicians

States currently electing not to expand Medicaid possibly forego the opportunity to expand their primary care workforces by a total of 1,525 physicians. Increased demand from expansion states and a limited primary care physician pool may provide a pull across state lines to the disadvantage of nonexpansion states.

Lin MW, Petterson S, Gibbons C, Finnegan S, Bazemore A. Opting out of Medicaid expansion may cost states additional primary care physicians. *Am Fam Physician.* 2015;91(1):online.

Calling All Scholars to the Council of Academic Family Medicine Educational Research Alliance (CERA)

The current state of affairs is that as a specialty, we underperform in scholarly and research output compared with our peers in other specialties, and although this has been acknowledged for a while, improvements in research productivity have been slow. Many barriers remain to the generation of research and scholarly output from departments of family medicine. One important barrier is the relatively small size of family medicine departments and residency programs, which deters the formation of effective research teams. Other obstacles include the lack of research training, lack of role models or mentorship, lack of protected time, and lack of resources to support research. An increasingly significant barrier is the mounting pressure on departments and residency programs to focus on clinical productivity at the expense of scholarship.

Shokar N, Bergus G, Bazemore A, et al. Calling all scholars to the Council of Academic Family Medicine Educational Research Alliance (CERA). *Ann Fam Med.* 2011;9(4):372-373.

Considerations About Retirement From Clinical Practice by Obstetrician-Gynecologists

Retirement of obstetrician-gynecologists is becoming a matter of increasing concern in light of an expected shortage of practicing physicians. Determining a retirement age is often complex. We address what constitutes a usual retirement age range from general clinical practice for an obstetrician-gynecologist, compare this with practitioners in other specialties, and suggest factors of importance to obstetrician-gynecologists before retirement. Although the proportion of obstetrician-gynecologists >55 years old is similar to other specialists, obstetrician-gynecologists retire at younger ages than male or female physicians in other specialties. A customary

age range of retirement from obstetrician-gynecologist practice would be 59-69 years (median, 64 years). Women, who constitute a growing proportion of obstetrician-gynecologists in practice, retire earlier than men. The large cohort of "baby boomer" physicians who are approaching retirement (approximately 15,000 obstetrician-gynecologists) deserves tracking while an investigation of integrated women's health care delivery models is conducted. Relevant considerations would include strategies to extend the work longevity of those who are considering early retirement or desiring part-time employment. Likewise volunteer work in underserved community clinics or teaching medical students and residents offers continuing personal satisfaction for many retirees and preservation of self-esteem and medical knowledge.

Rayburn WF, Strunk AL, Petterson SM. Considerations about retirement from clinical practice by obstetrician-gynecologists. *Am J Obstet Gynecol.* 2015;213(3);335.e1–335.e4.

Only One Third of Family Physicians Can Estimate Their Patient Panel Size

In addition to payments for services rendered to individual patients, primary care physicians will increasingly be paid for their ability to achieve goals across the body of patients most closely associated with them: their "panel." In a 2013 survey, however, only one third of family physicians could estimate their panel size, raising concern about their ability to perform more advanced primary care functions.

Peterson LE, Cochrane A, Bazemore A, Baxley E, Phillips RL Jr. Only one third of family physicians can estimate their patient panel size. *J Am Board Fam Med.* 2015;28(2):173-174.

Shifting Sources of U.S. Primary Care Physicians

Trends in the composition of the primary care physician workforce since 2000 show a declining proportion of U.S. allopathic physicians, and increasing proportions of U.S. osteopath physicians and both U.S.-born and foreign-born international graduates.

Lin SX, Klink K, Wingrove P, Petterson S, Bazemore A. Shifting sources of U.S. primary care physicians. *Am Fam Physician.* 2015;91(11):758.

Family Physicians Contribute Significantly to Emergency Care of Medicare Patients in Urban and Suburban Areas

Rural populations rely on physicians trained in primary care to provide emergency services. Less is known about primary care's contribution to emergency services in urban and suburban settings. Two-thirds of family medicine and three-fourths of general internal medicine Medicare claims for emergency care are generated in urban settings, demonstrating primary care's significant contribution to the emergency workforce in the most populated areas.

Banks G, Wingrove P, Petterson SM, Klink K. Family physicians contribute significantly to emergency care of Medicare patients in urban and suburban areas. *Am Fam Physician.* 2015;92(6):445.

MEDICAL EDUCATION

Teaching Health Center GME Funding Instability Threatens Program Viability

The Teaching Health Center Graduate Medical Education (THCGME) program, funded since 2011 and set to expire in 2015, has increased the numbers of primary care physicians and dentists training to care for underserved populations nationwide. Without continued federal funding, most of these THCs report that they would be unlikely to continue current residency recruitment and enrollment, threatening the initial program investments and even the viability of the program itself.

Brown E, Klink K. Teaching Health Center GME funding instability threatens program viability. *Am Fam Physician*. 2015;91(3):168-170.

Family Medicine Graduate Proximity to Their Site of Training: Policy Options for Improving the Distribution of Primary Care Access

The US Graduate Medical Education (GME) system is failing to produce primary care physicians in sufficient quantity or in locations where they are most needed. Decentralization of GME training has been suggested by several federal advisory boards as a means of reversing primary care maldistribution, but supporting evidence is in need of updating. We assessed the geographic relationship between family medicine GME training sites and graduate practice location. Using the 2012 American Medical Association Masterfile and American Academy of Family Physicians membership file, we obtained the percentage of family physicians in direct patient care located within 5, 25, 75, and 100 miles and within the state of their family medicine residency program (FMRP). We also analyzed the effect of time on family physician distance from training site. More than half of family physicians practice within 100 miles of their FMRP (55%) and within the same state (57%). State retention varies from

15% to 75%; the District of Columbia only retains 15% of family physician graduates, while Texas and California retain 75%. A higher percentage of recent graduates stay within 100 miles of their FMRP (63%), but this relationship degrades over time to about 51%. The majority of practicing family physicians remained proximal to their GME training site and within state. This suggests that decentralized training may be a part of the solution to uneven distribution among primary care physicians. State and federal policy-makers should prioritize funding training in or near areas with poor access to primary care services.

Fagan EB, Gibbons C, Finnegan SC, et al. Family medicine graduate proximity to their site of training: policy options for improving the distribution of primary care access. *Fam Med.* 2015;47(2):124-130.

Estimating the Residency Expansion Required to Avoid Projected Primary Care Physician Shortages by 2035

The purpose of this study was to calculate the projected primary care physician shortage, determine the amount and composition of residency growth needed, and estimate the impact of retirement age and panel size changes. We used the 2010 National Ambulatory Medical Care Survey to calculate utilization of ambulatory primary care services and the US Census Bureau to project demographic changes. To determine the baseline number of primary care physicians and the number retiring at 66 years, we used the 2014 American Medical Association Masterfile. Using specialty board and American Osteopathic Association figures, we estimated the annual production of primary care residents. To calculate shortages, we subtracted the accumulated primary care physician production from the accumulated number of primary care physicians needed for each year from 2015 to 2035. More than 44,000 primary care physicians will be needed by 2035. Current primary care production rates will be unable to meet demand, resulting in a shortage in excess of 33,000 primary care physicians. Given current production, an additional 1,700 primary care residency slots will be necessary by 2035. A 10% reduction in the ratio of population per primary care physician would require more than 3,000 additional slots by 2035, whereas changing the expected retirement age from 66 years to 64 years would require more than 2,400 additional slots. To eliminate projected shortages in 2035, primary care residency production must increase by 21% compared with current production. Delivery models that shift toward smaller ratios of population to primary care physicians may substantially increase the shortage.

Petterson SM, Liaw WR, Tran C, Bazemore AW. Estimating the residency expansion required to avoid projected primary care physician shortages by 2035. *Ann Fam Med.* 2015;13(2):107-114.

Integrating Behavioral Medicine Into Primary Care GME: A Necessary Paradigm For 21st Century Ambulatory Practice

Limited access to child and adolescent, adult, and geriatric psychiatry, as well as other mental health providers, has a large impact on the capacity of our health care system to address mental health needs, particularly in underserved urban and rural areas. A major determinant of this limited access is an under-supply of mental health providers. The recently developed Teaching Health Center Graduate Medical Education (THCGME) program provides a promising resource to address this problem because of its unique educational setting, which could facilitate integration of behavioral medicine into primary care graduate medical education (GME). In this post we describe the workforce crisis limiting access to mental health providers, and we outline a new primary care GME paradigm addressing this crisis through integration of behavioral medicine into primary care GME. Axelson A, Xenakis S, Thompson K, et al. Integrating behavioral medicine into primary care GME: a necessary paradigm for 21st century ambulatory practice.

Health Affairs Blog. https://www.healthaffairs.org/do/10.1377/hblog20150424.047270/full/. Accessed April 19, 2018.

Teaching Health Centers: Targeted Expansion for Immediate GME Reform

We describe examples of current or proposed programs which illustrate the potential of these modifications. Need for immediate targeted GME expansion in primary care. Rieselbach R, Klink K, Phillips R, et al. Teaching health centers: targeted expansion for immediate GME reform.

Health Affairs Blog. https://www.healthaffairs.org/do/10.1377/hblog20150424.047245/full/. Accessed April 19, 2018.

Osteopathic Schools Are Producing More Graduates, But Fewer Are Practicing in Primary Care

The expansion of osteopathic medical schools was to be a boon for underserved areas in need of primary care service. However, the impact has thus far been diminished by the decrease in osteopathic graduates engaged in primary care practice. Policy makers and leaders should consider strategies for maintaining a proud tradition of primary care production in a time of looming primary care physician shortage.

Barnes K, Petterson S, Bazemore A. Osteopathic schools are producing more graduates, but fewer are practicing in primary care. *Am Fam Physician.* 2015;91(11):756.

The Social Mission in Medical School Mission Statements: Associations With Graduate Outcomes

Mission statements of medical schools vary considerably. These statements reflect institutional values and may also be reflected in the outputs of their institutions. The authors explored the relationship between US medical school mission statement content and outcomes in terms of graduate location and specialty choices. A panel of stakeholders (medical school deans, faculty, medical students, and administrators) completed a Web-based instrument to create a linear scale of social mission content (SMC scale), scoring the degree to which medical school mission statements reflect the social mission of medical education to address inequities. The SMC scale and targeted medical school outputs were analyzed via OLS regression, controlling for allopathic/osteopathic and public/private school designation. The medical school outputs of interest included percent physician output in primary care specialties (family medicine, pediatrics, and general internal medicine), as well as percent physician output in designated Health Professional Shortage Areas (HPSA) and Medically Underserved Areas/Populations (MUA/P). SMC scale was a statistically significant, positive predictor of the percent of physician graduates entering primary care (β=2.526, P=.001). When examining the specialties within primary care, the SMC scale only significantly predicted percent of graduating physicians entering family medicine (β =1.936, P=.003). SMC scale was also a statistically significant predictor of several measures of physician output to work in underserved areas and populations, the strongest of which was the percent of graduating physicians working in MUA/Ps (β =4.256, P≤.01). Mission statements that are diligently utilized by leaders in medical education may produce a higher degree of alignment between institutional structure, ideology, and workforce outcomes.

Morley CP, Mader EM, Smilnak T, et al. The social mission in medical school mission statements: associations with graduate outcomes. *Fam Med.* 2015;47(6):427-434.

Are Time-Limited Grants Likely to Stimulate Sustained Growth in Primary Care Residency Training? A Study of the Primary Care Residency Expansion Program

To examine the perceived likelihood of sustaining new residency positions funded by five-year (2010–2015) Primary Care Residency Expansion (PCRE) grants from the Health Resources and Services Administration, which aimed to increase training output to address primary care workforce issues. During September–December 2013, the authors administered an online or telephone survey to program directors whose residency programs received PCRE grants. The main outcome measure was perceived likelihood of sustaining the expanded residency positions beyond the expiration of the grant, in the outlying years of 2016 and 2017 (when the positions will be partially supported) and after 2017 (when the positions will be unsupported). Of 78 eligible program directors, 62 responded (response rate = 79.5%). Twenty-eight (45.1%; 95% CI 32.9%–57.9%) reported that their programs were unlikely to, very unlikely to, or not planning to continue the expanded positions after the PCRE grant expires. Overall, 14 (22.5%) reported having secured full funding to support the expanded positions beyond 2017. Family medicine and pediatrics program directors were significantly less likely than internal medicine program directors to report having secured funding for the outlying years (P = .02). This study suggests that an approach to primary care residency training expansion that relies on time-limited grants is unlikely to produce sustainable growth of the primary care pipeline. Policy makers should instead implement systemic reform of graduate medical education (GME) financing and designate reliable sources of funding, such as Medicare and Medicaid GME funds, for new primary care residency positions.

Chen RM, Petterson S, Bazemore A, Grumbach K. Are time-limited grants likely to stimulate sustained growth in primary care residency training? A study of the Primary Care Residency Expansion Program. *Acad Med.* 2015;90(9):1278-1283.

Graduates of Teaching Health Centers Are

More Likely to Enter Practice in the Primary Care Safety Net

The Teaching Health Center Graduate Medical Education (THCGME) program funds new primary care residencies at community health centers caring for the nation's underserved population. In a national census of third-year family medicine residents, those who trained in teaching health centers were more likely to plan to work in safety net clinics than residents who did not train in these centers.

Bazemore A, Wingrove P, Petterson S, Peterson L, Raffoul M, Phillips RL Jr. Graduates of teaching health centers are more likely to enter practice in the primary care safety net. *Am Fam Physician.* 2015;92(10):868.

The Imperative of Teaching Cost Consciousness in Graduate Medical Education

Residents are taught, or should be taught, the fallacy of believing that "if all you have is a hammer, everything looks like a nail." Using the wrong technique, the wrong drug, or the wrong therapy can do more harm than good. An important lesson is that sometimes doing little or nothing is appropriate care.

Petterson S. The imperative of teaching cost consciousness in graduate medical education. *J Grad Med Educ.* 2015;7(4):681-682.

PUBLIC & COMMUNITY HEALTH

Teaching Population Health in the Digital Age: Community-Oriented Primary Care 2.0

Providers and educators lack the tools and models necessary to address community problems. We describe an online curriculum intended to teach learners how to adapt established Community-Oriented Primary Care (COPC) principles for an age of ready access to clinical and population data and geospatial technology. Via our approach, users gain practical knowledge that allows them to operationalize the fundamental steps of COPC: community definition, identification of health needs, intervention development, and program monitoring. These skills are essential in a new era of population health management and in encouraging primary care providers to partner with their communities.

Liaw WR, Bazemore AW, Rankin J. Teaching population health in the digital age: community-oriented primary care 2.0. *J Community Med Public Health Care.* 2015;2:003.

"Community Vital Signs": Incorporating Geocoded Social Determinants Into Electronic Records to Promote Patient and Population Health

Social determinants of health significantly impact morbidity and mortality; however, physicians lack ready access to this information in patient care and population management. Just as traditional vital signs give providers a biometric assessment of any patient, "community vital signs" (Community VS) can provide an aggregated overview of the social and environmental factors impacting patient health. Knowing Community VS could inform clinical recommendations for individual patients, facilitate referrals to community services, and expand understanding of factors impacting treatment adherence and health outcomes. This information could also help care teams target disease prevention initiatives and other health improvement efforts for clinic panels and populations. Given the proliferation of big data, geospatial technologies, and democratization of data, the time has come to integrate Community VS into the electronic health record (EHR). Here, the authors describe (i) historical precedent for this concept, (ii) opportunities to expand upon these historical foundations, and (iii) a novel approach to EHR integration.

Bazemore AW, Cottrell EK, Gold R, et al. "Community vital signs": incorporating geocoded social determinants into electronic records to promote patient and population health. *J Am Med Inform Assoc.* 2016;23(2):407-412.

PRACTICE INFRASTRUCTURE & QUALITY

Smaller Practices Are Less Likely to Report PCMH Certification

Despite efforts to achieve broad transformation of primary care practices into patient-centered medical homes (PCMHs), certification rates have lagged in small and solo practices. The challenges these groups face with the transformation and certification processes should be addressed to continue national momentum toward reshaping the nation's primary care platform.

Raffoul M, Petterson S, Moore M, Bazemore A, Peterson L. Smaller practices are less likely to report PCMH certification. *Am Fam Physician.* 2015;91(7):440.

More Comprehensive Care Among Family Physicians is Associated with Lower Costs and Fewer Hospitalizations

Comprehensiveness is lauded as 1 of the 5 core virtues of primary care, but its relationship with outcomes is unclear. We measured associations between variations in comprehensiveness of practice among family physicians and healthcare utilization and costs for their Medicare beneficiaries. We merged data from 2011 Medicare Part A and B claims files for a complex random sample of family physicians engaged in direct patient care, including 100% of their claimed care of Medicare beneficiaries, with data reported by the same physicians during their participation in Maintenance of Certification for Family Physicians (MC-FP) between the years 2007 and 2011. We created a measure of comprehensiveness from mandatory self-reported survey items as part of MC-FP examination registration. We compared this measure to another derived from Medicare's Berenson-Eggers Type of Service (BETOS) codes. We then examined the association between the 2 measures of comprehensiveness and hospitalizations, Part B payments, and combined Part A and B payments. Our full family physician sample consists of 3,652 physicians providing the plurality of care to 555,165 Medicare beneficiaries. Of these, 1,133 recertified between 2007 and 2011 and cared for 185,044 beneficiaries. There was a modest correlation (0.30) between the BETOS and self-reported comprehensiveness measures. After adjusting for beneficiary and physician characteristics, increasing comprehensiveness was associated with lower total Medicare Part A and B costs and Part B costs alone, but not with hospitalizations; the association with spending was stronger for the BETOS measure than for the self-reported measure; higher BETOS scores significantly reduced the likelihood of a hospitalization. Increasing family physician comprehensiveness of care, especially as measured by claims measures, is associated with decreasing Medicare costs and hospitalizations. Payment and practice policies that enhance primary care comprehensiveness may help "bend the cost curve."

Bazemore A, Petterson S, Peterson LE, Phillips RL Jr. More comprehensive care among family physicians is associated with lower costs and fewer hospitalizations. Ann Fam Med. 2015;13(3):206-213.

Publications in 2016

ACCESS TO CARE

Only 15% of FPs Report Using Telehealth; Training and Lack of Reimbursement Are Top Barriers

In a 2014 national survey, only 15% of responding family physicians (FPs) reported using telehealth in the previous year, even though most agreed that telehealth could improve access to and continuity of care for their patients. More than one-half of FPs identified lack of training and reimbursement as key barriers to adoption of telehealth, with more than 40% noting the cost of technology and liability issues as additional barriers.

Moore MA, Coffman M, Jetty A, Petterson S, Bazemore A. Only 15% of FPs report using telehealth; training and lack of reimbursement are top barriers. *Am Fam Physician.* 2016;93(2):101.

Access to Primary Care in U.S. Counties is Associated With Lower Obesity Rates

Obesity causes substantial morbidity and mortality in the United States. Evidence shows that primary care physician (PCP) supply correlates positively with improved health, but its association with obesity in the United States as not been adequately characterized. Our purpose was to characterize the association between PCP supply in US counties and adult obesity. We performed a multivariate logistic regression analysis to examine the relationship between county-level PCP supply and individual obesity status. We controlled for individual variables, including sex, race, marital status, income, and insurance status, and county-level variables, including rurality and poverty. Higher county-level PCP supply was associated with lower adult obesity after controlling for common confounders. Individuals living in counties with the most robust PCP supply were about 20% less likely to be obese ($P \leq .01$) than those living in counties with the lowest PCP supply. While the observed association between the supply of PCPs and lower rates of obesity may not be causal, the association warrants further investigation. This may have important implications for restructuring the physician workforce in the context of the current PCP shortage and implementation of the Affordable Care Act and the patient-centered medical home.

Gaglioti AH, Petterson S, Bazemore A, Phillips R. Access to primary care in U.S. counties is associated with lower obesity rates. J Am Board Fam Med. 2016;29(2):182-190.

Among Low-Income Respondents With Diabetes, High-Deductible Versus No-Deductible Insurance Sharply Reduces Medical Service Use

To contrast the effect of private insurance and deductibles (by size) on medical service use, health status, and medical debt for adult respondents with diabetes with low and high incomes. Using the 2011–2013 Medical Expenditure Panel Survey, bivariate and regression analyses were conducted to compare demographic characteristics, medical service use, diabetes care, and health status among privately insured adult respondents with diabetes, aged 18–64 years (n = 1,461) by lower (<200% of the federal poverty level) and higher (≥200% of the federal poverty level) income; and deductible vs. no deductible (ND), low deductible ($1,000/$2,400) (LD), and high deductible (>$1,000/$2,400) (HD). The National Health Interview Survey 2012–2014 was used to analyze differences in medical debt and delayed/avoided needed care among adult respondents with diabetes (n = 4,058) by income. Compared with privately insured respondents with diabetes with ND, privately insured lower-income respondents with diabetes with an LD report significant decreases in service use for primary care, checkups, and specialty visits (27%, 39%, and 77% lower, respectively), and respondents with an HD decrease use by 42%, 65%, and 86%, respectively. Higher-income respondents with an LD report significant decreases in specialty (28%) and emergency department (37%) visits. Diabetes care measures are similar by income and insurance; there were no changes in physical health status. Medical debt is similar by income, but deferred service use is two times greater for those indebted and with lower income. Private insurance with a deductible substantially and problematically reduces medical service use for lower-income insured respondents with diabetes who have an HD; these patients are more likely to report forgoing needed medical services.

Rabin DL, Jetty A, Petterson S, Saqr Z, Froehlich A. Among low-income respondents with diabetes, high-deductible versus no-deductible insurance sharply reduces medical service use. *Diabetes Care.* 2016;40(2):239-245.

Who is Using Telehealth in Primary Care? Safety Net Clinics and Health Maintenance Organizations (HMOs)

Despite rapid advancements in telehealth services, only 15% of family physicians in a 2014 survey reported using telehealth; use varied widely according to the physician's practice setting or designation. Users were significantly more likely than nonusers to work in federally designated "safety net" clinics and health maintenance organizations (HMOs) but not more likely than nonusers to report working in a patient-centered medical home (PCMH) or accountable care organization. Coffman M, Moore M, Jetty A, Klink K, Bazemore A. Who is using telehealth in primary care? Safety net clinics and health maintenance organizations (HMOs). *J Am Board Fam Med.* 2016;29(4):432-433.

High-Deductible Plans May Reduce Ambulatory Care Use

Although rates of uninsured Americans are declining because of the Affordable Care Act (ACA), there is growing concern about out-of-pocket expenditures associated with private high-deductible insurance plans. Although lower premiums are attractive to many, the trade-offs are large deductibles (more than $1,200 per person or more than $2,400 per family) and increased risk of medical debt. Many patients with these plans delay or avoid necessary treatment, including ambulatory and preventive care.

Jetty A, Rabin D, Petterson S, Froehlich A. High-deductible plans may reduce ambulatory care use. *Am Fam Physician.* 2016;94(9):727.

WORKFORCE

*Solo and Small Practices: A Vital, Diverse Part of Primary C*are

Solo and small practices are facing growing pressure to consolidate. Our objectives were to determine (1) the percentage of family physicians in solo and small practices, and (2) the characteristics of and services provided by these practices. A total of 10,888 family physicians seeking certification through the American Board of Family Medicine in 2013 completed a demographic survey. Their practices were split into categories by size: solo, small (2 to 5 providers), medium (6 to 20 providers), and large (more than 20 providers). We also determined the rurality of the county where the physicians practiced. We developed 2 logistic regression models: one assessed predictors of practicing in a solo or small practice, while the other was restricted to solo and small practices and assessed predictors of practicing in a solo practice. More than one-half of respondents worked in solo or small practices. Small practices were the largest group (36%) and were the most likely to be located in a rural setting (20%). The likelihood of having a care coordinator and medical home certification increased with practice size. Physicians were more likely to be practicing in small or solo practices (vs medium-sized or large ones) if they were African American or Hispanic, had been working for more than 30 years, and worked in rural areas. Physicians were more likely to be practicing in small practices (vs solo ones) if they worked in highly rural areas. Family physicians in solo and small practices comprised the majority among all family physicians seeking board certification and were more likely to work in rural geographies. Extension programs and community health teams have the potential to support transformation within these practices.

Liaw WR, Jetty A, Petterson SM, Peterson LE, Bazemore AW. Solo and small practices: a vital, diverse part of primary care. *Ann Fam Med*. 2016;14(1):8-15.

The Diversity of Providers on the Family Practice Team

Family physicians are increasingly incorporating other health care providers into their practice teams to better meet the needs of increasingly complex and comorbid patients. While a majority of family physicians report working with a nurse practitioner, only 21% work with a behavioral health specialist. A better understanding of optimal team composition and function in primary care is essential to realizing the promise of a patient-centered medical home and achieving the triple aim.

Bazemore A, Wingrove P, Peterson L, Petterson S. The diversity of providers on the family practice team. *J Am Board Fam Med.* 2016;29(1):8-9.

Shifting Tides in the Emigration Patterns of Canadian Physicians to the United States: A Cross-Sectional Secondary Data Analysis

The relative ease of movement of physicians across the Canada/US border has led to what is sometimes referred to as a 'brain drain' and previous analysis estimated that the equivalent of two graduating classes from Canadian medical schools were leaving to practice in the US each year. Both countries fill gaps in physician supply with international medical graduates (IMGs) so the movement of Canadian trained physicians to the US has international ramifications. Medical school enrolments have been increased on both sides of the border, yet there continues to be concerns about adequacy of physician human resources. This analysis was undertaken to re-examine the issue of Canadian physician migration to the US. We conducted a cross-sectional analysis of the 2015 American Medical Association (AMA) Masterfile to identify and locate any graduates of Canadian schools of medicine (CMGs) working in the United States in direct patient care. We reviewed annual reports of the Canadian Resident Matching Service (CaRMS); the Canadian Post-MD Education Registry (CAPER); and the Canadian Collaborative Centre for Physician Resources (C3PR). Beginning in the early 1990s the number of CMGs locating in the U.S. reached an all-time high and then abruptly dropped off in 1995. CMGs are going to the US for post-graduate training in smaller numbers and, are less likely

to remain than at any time since the 1970's. This four decade retrospective found considerable variation in the migration pattern of CMGs to the US. CMGs' decision to emigrate to the U.S. may be influenced by both 'push' and 'pull' factors. The relative strength of these factors changed and by 2004, more CMGs were returning from abroad than were leaving and the current outflow is negligible. This study supports the need for medical human resource planning to assume a long-term view taking into account national and international trends to avoid the rapid changes that were observed. These results are of importance to medical resource planning.

Freeman TR, Petterson S, Finnegan S, Bazemore A. Shifting tides in the emigration patterns of Canadian physicians to the United States: a cross-sectional secondary data analysis. *BMC Health Serv Res.* 2016;16(1): 678.

A Primary Care Panel Size of 2500 Is Neither Accurate nor Reasonable

Primary care panel sizes are an important component of primary care practices. Determining the appropriate panel size has implications for patient access, physician workload, and care comprehensiveness and will have an impact on quality of care. An often quoted standard panel size is 2500. However, this number seems to arise in the literature anecdotally, without a basis in research. Subsequently, multiple studies observed that a panel size of 2500 is not feasible because of time constraints and results in incomplete preventive care and health care screening services. In this article we review the origins of a panel size of 2500, review the subsequent work examining this number and effectively debunking it as a feasible panel size, and discuss the importance of primary care physicians setting an appropriate panel size.

Raffoul M, Moore M, Kamerow D, Bazemore A. A primary care panel size of 2500 is neither accurate nor reasonable. *J Am Board Fam Med.* 2016;29(4):496-499.

Office Visits for Women Aged 45-64 Years According to Physician Specialties

The increase in access to healthcare through the Affordable Care Act highlights the need to track where women seek their office-based care. The objectives of this study were to examine the types of physicians sought by women beyond their customary reproductive years and before being elderly. This retrospective cohort study involved an analysis of national data from the Medical Expenditure Panel Survey (MEPS) between 2002 and 2012. Women between 45 and 64 years old (n = 44,830) were interviewed, and reviews of corresponding office visits (n = 330,114) were undertaken. In 2002, women aged 45-64 years (62%) went to a family or internal medicine physician only and this reached 72% in 2012. The percentage of women who went to an obstetrician-gynecologist (ob-gyn) only decreased from 20% in 2002 to 12% in 2012. Most went to a family physician or general internist for a general checkup or for diagnosis or treatment. By contrast, visits to ob-gyn physicians were predominantly for general checkups. Those who went to an ob-gyn office were more likely to have a higher family income, live in the Northeast, and describe their overall health as being excellent. Women aged 45-64 years were substantially more likely to obtain care exclusively at offices of family physicians or general internists than of ob-gyn physicians. Overlap in care provided at more than one physician's office requires continued surveillance in minimizing redundant cost and optimizing resource utilization.

Raffoul MC, Petterson SM, Rayburn WF, Wingrove P, Bazemore AW. Office visits for women aged 45-64 years according to physician specialties. *J Womens Health (Larchmt).* 2016;25(12):1231-1236.

When Do Primary Care Physicians Retire? Implications for Workforce Projections

Retirement of primary care physicians is a matter of increasing concern in light of physician shortages. The joint purposes of this investigation were to identify the ages when the majority of primary care physicians retire and to compare this with the retirement ages of practitioners in other specialties. This descriptive study was based on AMA Physician Masterfile data from the most recent 5 years (2010–2014). We also compared 2008 Masterfile data with data from the National Plan and Provider Enumeration System to calculate an adjustment for upward bias in retirement ages when using the Masterfile alone. The main analysis defined retirement as leaving clinical practice. The primary outcome was construction of a retirement curve. Secondary outcomes involved comparisons of retirement interquartile ranges (IQRs) by sex and practice location across specialties. The 2014 Masterfile included 77,987 clinically active primary care physicians between ages 55 and 80 years. The median age of retirement from clinical activity of all primary care physicians who retired in the period from 2010 to 2014 was 64.9 years, (IQR, 61.4–68.3); the median age of retirement from any activity was 66.1 years (IQR, 62.6–69.5). However measured, retirement ages were generally similar across primary care specialties. Females had a median retirement about 1 year earlier than males. There were no substantive differences in retirement ages between rural and urban primary care physicians. Primary care physicians in our data tended to retire in their mid-60s. Relatively small differences across sex, practice location, and time suggest that changes in the composition of the primary care workforce will not have a remarkable impact on overall retirement rates in the near future.

Petterson SM, Rayburn WF, Liaw WR. When do primary care physicians retire? Implications for workforce projections. *Ann Fam Med.* 2016;14(4):344-349.

Family Medicine: An Underutilized Resource in Addressing the Opioid Epidemic?

Opioid overdose rates have tripled since 2000, and although overprescribing of opioids by physicians is widely accepted as a causal factor, the physician's role in providing medication-assisted treatment for opioid use disorder is less appreciated. Despite a clear willingness to prescribe opioids, few family physicians (FPs) have the necessary certification to treat opioid use disorder with buprenorphine, an effective, evidence-based treatment.

Crothers J, Petterson S, Bazemore A, Wingrove P. Family medicine: an underutilized resource in addressing the opioid epidemic? *Am Fam Physician.* 2016;94(5):350.

Rural Opioid Use Disorder Treatment Depends on Family Physicians

The nation's growing opioid use disorder epidemic disproportionately impacts rural areas, where physicians who can prescribe buprenorphine are scarcest. Among physicians approved to prescribe buprenorphine, family physicians (FPs) are the most likely to work in rural areas.

Wingrove P, Park B, Bazemore A. Rural opioid use disorder treatment depends on family physicians. *Am Fam Physician.* 2016;94(7):546.

Federal Research Funding for Family Medicine: Highly Concentrated, With Decreasing New Investigator Awards

A small proportion of National Institutes of Health and other federal research funding is received by university departments of family medicine, the largest primary care specialty. That limited funding is also concentrated, with roughly a quarter of all National Institutes of Health, Centers for Disease Control and Prevention, and Agency for Healthcare Research and Quality funding awarded to 3 departments, almost half of that funding coming from 3 agencies, and a recent trend away from funding for new investigators.

Cameron BJ, Bazemore AW, Morley CP. Federal research funding for family medicine: highly concentrated, with decreasing new investigator awards. *J Am Board Fam Med.* 2016;29(5):531-532.

MEDICAL EDUCATION

Over Half of Graduating Family Medicine Residents Report More Than $150,000 in Educational Debt

Primary care workforce shortages are thought to result not only from lower remuneration than other specialties but also from increasing amounts of debt at graduation. A census of 3083 graduating family medicine residents found that 58% reported having >$150,000 in educational debt and 26% reported having >$250,000—levels that may deter students' interest in primary care and constrain the practice location choices of those who do choose primary care.

Bazemore A, Peterson L, Jetty A, Wingrove P, Petterson S, Phillips R. Over half of graduating family medicine residents report more than $150,000 in educational debt. *J Am Board Fam Med.* 2016;29(2):180-181.

Status of Underrepresented Minority and Female Faculty at Medical Schools Located Within Historically Black Colleges and in Puerto Rico

To assess the impact of medical school location in Historically Black Colleges and Universities (HBCU) and Puerto Rico (PR) on the proportion of underrepresented minorities in medicine (URMM) and women hired in faculty and leadership positions at academic medical institutions. AAMC 2013 faculty roster data for allopathic medical schools were used to compare the racial/ethnic and gender composition of faculty and chair positions at medical schools located within HBCU and PR to that of other medical schools in the United States. Data were compared using independent sample t-tests.

Women were more highly represented in HBCU faculty (mean HBCU 43.5% vs. non-HBCU 36.5%, $p=0.024$) and chair (mean HBCU 30.1% vs. non-HBCU 15.6%, $p=0.005$) positions and in PR chair positions (mean PR 38.23% vs. non-PR 15.38%, $p=0.016$) compared with other allopathic institutions. HBCU were associated with increased African American representation in faculty (mean HBCU 59.5% vs. non-HBCU 2.6%, $p=0.011$) and chair (mean HBCU 73.1% vs. non-HBCU 2.2%, $p\leq0.001$) positions. PR designation was associated with increased faculty (mean PR 75.40% vs. non-PR 3.72%, $p\leq0.001$) and chair (mean PR 75.00% vs. non-PR 3.54%, $p\leq0.001$) positions filled by Latinos/Hispanics. Women and African Americans are better represented in faculty and leadership positions at HBCU, and women and Latino/Hispanics at PR medical schools, than they are at allopathic peer institutions.

Mader EM, Rodríguez JE, Campbell KM, et al. Status of underrepresented minority and female faculty at medical schools located within Historically Black Colleges and in Puerto Rico. *Med Educ Online.* 2016;21(1):29535.

Characteristics and Distribution of Graduate Medical Education Training Sites: Are We Missing Opportunities to Meet U.S. Health Workforce Needs?

Shortages of generalist physicians in primary care and surgery have been projected. Residency programs that expose trainees to community-based health clinics and rural settings have a greater likelihood of producing physicians who later practice in these environments. The objective of this study was to characterize the distribution of residency training sites in different settings for three high-need specialties-family medicine, internal medicine, and general surgery. The authors merged 2012 data from the Accreditation Council for Graduate Medical Education Accreditation Data System and 2010 data from the Centers for Medicare and Medicaid Services hospital cost report to match training sites with descriptive data about those locations. They used chi-square tests to compare the characteristics and distribution of residency programs and training sites in family medicine, internal medicine, and general surgery. The authors identified 1,095 residency programs and 3,373 training sites. The majority of training occurred in private, not-for-profit hospitals. Only 48 (of 1,390; 4%) family medicine training sites and 43 (of 936; 5%) internal medicine training sites were community-based health clinics. Seventy-eight (6%) family medicine sites, 8 (1%) internal medicine sites, and 16 (2%) general surgery sites were located in rural settings. One hundred thirty (14%) internal medicine sites were Department of Veterans Affairs medical facilities compared with 78 (6%) family medicine sites and 94 (9%) general surgery sites ($P < .001$). Relatively little training occurs in rural or community-based settings. Expanding training opportunities in these low-access areas could improve physician supply there.

Blanchard J, Petterson S, Bazemore A, Watkins K, Mullan F. Characteristics and distribution of graduate medical education training sites: are we missing opportunities to meet U.S. health workforce needs? *Acad Med.* 2016;91(10):1416-1422.

Teaching Health Center Graduate Medical Education Locations Predominantly Located in Federally Designated Underserved Areas

The Teaching Health Center Graduate Medical Education (THCGME) program is an Affordable Care Act funding initiative designed to expand primary care residency training in community-based ambulatory settings. Statute suggests, but does not require, training in underserved settings. Residents who train in underserved settings are more likely to go on to practice in similar settings, and graduates more often than not practice near where they have trained. The objective of this study was to describe and quantify federally designated clinical continuity training sites of the THCGME program. Geographic locations of the training sites were collected and characterized as Health Professional Shortage Area, Medically Underserved Area, Population, or rural areas, and were compared with the distribution of Centers for Medicare and Medicaid Services (CMS)–funded training positions. More than half of the teaching health centers (57%) are located in states that are in the 4 quintiles with the lowest CMS-funded resident-to-population ratio. Of the 109 training sites identified, more than 70% are located in federally designated high-need areas. The THCGME program is a model that funds residency training in community-based ambulatory settings. Statute suggests, but does not explicitly require, that training take place in underserved settings. Because the majority of the 109 clinical training sites of the 60 funded programs in 2014–2015 are located in federally designated underserved locations, the THCGME program deserves further study as a model to improve primary care distribution into high-need communities.

Barclift SC, Brown EJ, Finnegan SC, Cohen ER, Klink K. Teaching Health Center Graduate Medical Education locations predominantly located in federally designated underserved areas. *J Grad Med Educ.* 2016;8(2):241-243.

Sponsoring Institutions With Five or Fewer Residency Programs Produce a Larger Proportion of General Internists and Family Physicians

Policymakers are increasingly interested in addressing the US primary care physician shortage and achieving measurable accountability for the products of the nation's $15 billion investment in graduate medical education (GME). Using one such measure, we found that sponsoring institutions (SIs) with ≤5 residency programs produce a higher percentage of general internists and family physicians than larger SIs.

Hemeida S, Klink K, Bazemore A, Petterson S, Peterson L. Sponsoring institutions with five or fewer residency programs produce a larger proportion of general internists and family physicians. *J Am Board Fam Med.* 2016; 29(3):301-302.

PRIMARY CARE COSTS & PAYMENT

Characteristics of Early Recipients of Patient-Centered Outcomes Research Institute Funding

The Patient Protection and Affordable Care Act (ACA) is grounded in the goals of increasing access, improving quality, and reducing cost in the U.S. health care system. The ACA established the Patient-Centered Outcomes Research Institute (PCORI) to help accomplish these goals through patient-focused research. PCORI has a different charge than its federally supported counterpart, the National Institutes of Health (NIH)—to fund research that ultimately helps patients make better-informed health care decisions. The authors examined characteristics of the recipients and settings of the

first six rounds of PCORI funding and differentiated PCORI and NIH funding patterns to analyze the extent to which PCORI is accomplishing the goals set out by the ACA. The authors performed a retrospective review of publicly available datasets, supplemented by a short questionnaire to funded PCORI principal investigators (PIs). The authors analyzed PCORI's first six funding cycles (2011–2014) and data on NIH funding patterns (2000–2013) to determine whether PCORI and NIH funding patterns differed by investigator, department, and institution, and whether PCORI had funded research in primary care settings. The authors found that PCORI is funding a more diverse cadre of PIs and biomedical departments than is NIH, but not a greater diversity of institutions, and that less than one-third of PCORI studies involve or are relevant to primary care—the largest patient care platform in the United States. As PCORI looks to be refunded, it is important that research funding is further evaluated and publicly acknowledged to assess whether goals are being achieved.

Mazur S, Bazemore A, Merenstein D. Characteristics of early recipients of Patient-Centered Outcomes Research Institute funding. *Acad Med.* 2016;91(4):491-496.

Understanding the Impact of Medicare Advantage on Hospitalization Rates: A 12-State Study

Greater use of Medicare Advantage (MA) over traditional fee-for-service Medicare (TM) in certain populations, and even across small areas, has been associated with fewer overall hospitalizations and avoidable hospitalizations. Proponents suggest that these associations stem from successful care management, and a focus on preventive services and primary care among MA users. Detractors intimate that selection bias of healthier individuals into MA plans and other external factors may favorably influence hospitalization rates more than the structure of MA plans and the incentives this structure creates. We set out to update and advance previous analyses using the most contemporary multistate hospitalization data. We gathered the most recently available hospital utilization data from the Healthcare Cost and Utilization Project (HCUP, 2012) for the 12 states from which complete data were available. We compared avoidable hospitalization rates of MA enrollees and TM beneficiaries to the rates of hospitalization for marker conditions (i.e., those not preventable by ambulatory care). We found that MA enrollees are significantly less likely than TM beneficiaries to have avoidable hospitalizations, with a 10% decrease in the rate of such hospitalizations. This finding persists after controlling for age, gender, race/ethnicity, region, and various proxies for health. Furthermore, the rate of referral-sensitive hospitalizations, which are a marker for better outpatient care, is slightly higher among MA enrollees compared with TM beneficiaries. Of secondary interest, we noted that the favorable effect of MA penetration varied substantially across states.

Petterson S, Bazemore A, Jabbarpour Y, Wingrove P. Understanding the impact of Medicare Advantage on hospitalization rates: a 12-state study. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/BMA_Report_2016.pdf. Accessed April 19, 2018.

Medicare Part D: Patients Bear the Cost of 'Me Too' Brand-Name Drugs

Prescription drugs are a major source of US health care expenditure. "Me too" brand-name medications contribute to the cost of drugs, which is substantial for consumers. In 2013 patient copayments averaged 10.5 times more for two commonly prescribed brand-name medications versus generic therapeutic alternatives.

Gastala NM, Wingrove P, Gaglioti A, Petterson S, Bazemore A. Medicare Part D: patients bear the cost of 'me too' brand-name drugs. *Health Aff (Millwood).* 2016;35(7):1237-1240.

PRACTICE INFRASTRUCTURE & QUALITY

Care Coordination and Population Management Services Are More Prevalent in Large Practices and Patient-Centered Medical Homes

Despite efforts to better coordinate health care and improve population health, primary care practices may face difficulty dedicating an individual to provide these services. Using data from the American Board of Family Medicine, we found that the presence of care coordinators or population health managers was higher in larger practices and those with patient-centered medical home certification.

Moore M, Peterson L, Coffman M, Jabbarpour Y. Care coordination and population management services are more prevalent in large practices and patient-centered medical homes. *J Am Board Fam Med.* 2016;29(6):652-653.

Complexity of Ambulatory Care Visits of Patients With Diabetes as Reflected by Diagnoses per Visit

As the proportion of people with multiple chronic conditions grows, so does the complexity of patient care. Although office-based visits to subspecialists are expected to be intense, due to the focused nature of the visit, the complexity of office-based visits to primary care physicians has yet to be explored in depth. To explore complexity, we looked at diabetes as a case study to determine whether and how the complexity of office-based visits varies by physician specialty type, as measured by the number of diagnoses reported per visits. The Medical Expenditure Panel Survey data is used to create a nationally-representative sample of adults who self-report a diabetes diagnosis, the specialty of the treating physician for their care, and the number of diagnoses for each visit. Using cross tabulations, the distribution of office-based visits are analyzed

based on a categorization of patients by number of visit diagnoses, number of conditions reported, and type of physician seen. Almost 80 percent of visits made by adults with diabetes to subspecialist involved care for that single diagnosis; while 55 percent of visits to primary care involved care for at least one additional diagnosis. Almost 70 percent of visits in which only one diagnosis was reported were to subspecialist physicians. Almost 90 percent of visits in which four diagnoses were reported were to primary care physicians. Office-based visits to primary care physicians are made increasingly complex by growing population morbidity. Adults with diabetes report more conditions being cared for per visit with primary care physicians than with subspecialty physicians. Future studies into where our results hold for other chronic conditions would be beneficial. As recent United States legislation moves health care payment toward paying for value and population health, encounter complexity should be accommodated.

Moore M, Gibbons C, Cheng N, Coffman M, Petterson S, Bazemore A. Complexity of ambulatory care visits of patients with diabetes as reflected by diagnoses per visit. *Prim Care Diabetes.* 2016;10(4):281-286.

BEHAVIORAL HEALTH INTEGRATION

You Can't Treat What You Don't Diagnose: An Analysis of the Recognition of Somatic Presentations of Depression and Anxiety in Primary Care

Research suggests that 13-25% of primary care patients who present with physical complaints have underlying depression or anxiety. The goal of this paper is to quantify and compare the frequency of the diagnosis of depression and anxiety in patients with a somatic reason for visit among primary care physicians across disciplines. Data obtained from the National Ambulatory Medical Care Survey (NAMCS) from 2002 to 2010 was used to quantify primary care patients with somatic presentations who were given a diagnosis of depression or anxiety. The Patient Health Questionnaire (PHQ)-15, Somatic Symptom Scale, and the Child Behavior Checklist for Ages 6-18 were used to define what constituted a somatic reason for visit in this study. Of the patients presenting with a somatic reason for visit in this nationally representative survey, less than 4% of patents in family or internal medicine were diagnosed with depression or anxiety. Less than 1% of patients were diagnosed with depression or anxiety in pediatrics or obstetrics and gynecology. Less than 2% of patients with somatic reasons for visit in any primary care specialty had documented screening for depression. The rates of diagnosis of depression and anxiety in patents presenting with somatic reasons for visit were significantly less than the prevalence reported in the literature across primary care disciplines.

Gates K, Petterson S, Wingrove P, Miller B, Klink K. You can't treat what you don't diagnose: an analysis of the recognition of somatic presentations of depression and anxiety in primary care. *Fam Syst Health.* 2016;34(4):317-329.

No Room for Prevention: The Unintended Consequence of Mental Health Stigma Reduction Efforts

Decades of societal and cultural misunderstanding leave mental health shrouded in judgement, infused with moral disapprobation, and in many ways generally viewed as a character failure. Despite substantial advances in our scientific understanding of mental health over the years, there remains a disconnect between evidence and public perception, a disconnect even between the science and clinicians. Efforts to normalize how mental health is seen in the public often take the form of public education campaigns aimed to destigmatize mental health, and attempt to usher in a new understanding of health, inclusive of mental health. Stigma has been defined in two ways: public stigma and self-stigma. However, both essentially address the same phenomenon: negative thoughts attributed to mental health leading to a negative behavior (e.g. avoiding seeking care because of what people will think). Further, mental health stigma has been found to have a negative impact on such important areas like employment and health care costs. In response to these countless studies on the negative impact of stigma, public education and stigma reduction campaigns have been a major strategy. But like all things public health, this one too does not occur without some controversy and unintended consequence.

Westfall J, Miller B, Bazemore A. No room for prevention: the unintended consequence of mental health stigma reduction efforts. Health Affairs Blog. https://www.healthaffairs.org/do/10.1377/hblog20160630.055649/full/. Accessed April 19, 2018.

PUBLIC & COMMUNITY HEALTH

Community Vital Signs: Taking the Pulse of the Community While Caring for Patients

In 2014 both the Institute of Medicine and the National Quality Forum recommended the inclusion of social determinants of health data in electronic health records (EHRs). Both entities primarily focus on collecting socioeconomic and health behavior data directly from individual patients. The burden of reliably, accurately, and consistently collecting such information is substantial, and it may take several years before a primary care team has actionable data available in its EHR. A more reliable and less burdensome approach to integrating clinical and social determinant data exists and is technologically feasible now. Community vital signs—aggregated community-level information about the neighborhoods in which our patients live, learn, work, and play— convey contextual social deprivation and associated chronic disease risks based on where patients live. Given widespread access to "big data" and geospatial technologies, community vital signs can be created by linking aggregated population health data with patient addresses in EHRs. These linked data, once imported into EHRs, are a readily available

resource to help primary care practices understand the context in which their patients reside and achieve important health goals at the patient, population, and policy levels.

Hughes LS, Phillips RL Jr, DeVoe JE, Bazemore AW. Community vital signs: taking the pulse of the community while caring for patients. *J Am Board Fam Med.* 2016;29(3):419-422.

Perspectives in Primary Care: A Conceptual Framework and Path for Integrating Social Determinants of Health Into Primary Care Practice

The United States falls behind other industrialized nations on most health indicators and remains plagued by stark health disparities. Efforts to understand the factors underlying these persistent inequalities and other shortcomings highlight the role of social determinants of health (SDH).

DeVoe JE, Bazemore AW, Cottrell EK, et al. Perspectives in primary care: a conceptual framework and path for integrating social determinants of health into primary care practice. *Ann Fam Med.* 2016;14(2):104-108.

Supporting Health Reform in Mexico: Experiences and Suggestions From an International Primary Health Care Conference

Primary care is essential for sustainable health care. Mexico is undergoing socioeconomic and health care developments, but a barrier is policy makers' poor understanding of the role and function of primary care. Consequently, the country struggles to meet the health needs of its population. The Mexican College of Family Medicine (MCFM) has the potential to lead health systems change with strong primary care, but lacks capacity. A pre-conference at the 2015 Cancun NAPCRG conference aimed to develop an action plan and build leadership capacity for MCFM.

van Weel C, Turnbull D, Ramirez J, et al. Supporting health reform in Mexico: experiences and suggestions from an international primary health care conference. *Ann Fam Med.* 2016;14(3):279-280.

Publications in 2017

ACCESS TO CARE

Family Physicians Report Considerable Interest in, but Limited Use of, Telehealth Services

Little is known about the attitudes toward and adoption of telehealth services among family physicians (FPs), the largest primary care physician group. We conducted a national survey of FPs, randomly sampled from membership organization files, to investigate use of and barriers to using telehealth services. Using bivariate analyses, we examined how telehealth usage affected FPs' identified barriers to using telehealth services. Logistic regressions show the factors associated both with using telehealth services and with barriers to using telehealth services. Surveys reached 4980 FPs; 1557 surveys were eligible for analysis (31% response rate). Among FPs, 15% reported using telehealth services during 2014. After controlling for the characteristics of the physicians and their practice, FPs who were based in a rural setting, worked in a practice owned by an integrated health system or other ownership structure, and provided hospital/urgent/emergency care were more likely to use telehealth. Physician and practice characteristics by telehealth use status, sex of the physician, practice location, years in practice, care provided, and practice ownership were associated with the barriers identified. Telehealth use was limited among FPs. Many of the barriers to using telehealth services cited by FPs are amenable to policy modification.

Moore MA, Coffman M, Jetty A, Klink K, Petterson S, Bazemore A. Family physicians report considerable interest in, but limited use of, telehealth services. *J Am Board Fam Med.* 2017;30(3):320-330.

Rural Family Physicians Are Twice as Likely to Use Telehealth as Urban Family Physicians

Telehealth has the potential to reduce health inequities and improve health outcomes among rural populations through increased access to physicians, specialists, and reduced travel time for patients. Although rural telehealth services have expanded in several specialized areas, little is known about the attitudes, beliefs, and uptake of telehealth use in rural American primary care. This study characterizes the differences between rural and urban family physicians (FPs), their perceptions of telehealth use, and barriers to further adoption. Nationally representative randomly sampled survey of 5,000 FPs. Among the 31.3% of survey recipients who completed the survey, 83% practiced in urban areas and 17% in rural locations. Rural FPs were twice as likely to use telehealth as urban FPs (22% vs. 10%). Logistic regressions showed rural FPs had greater odds of reporting telehealth use to connect their patients to specialists and to care for their patients. Rural FPs were less likely to identify liability concerns as a barrier to using telehealth. Telemedicine allows rural patients to see specialists without leaving their communities and permits rural FPs to take advantage of specialist expertise, expand their scope of practice, and reduce the feeling of isolation experienced by rural physicians. Efforts to raise awareness of current payment policies for telehealth services, addressing the limitations of current reimbursement policies and state regulations, and creating new avenues for telehealth reimbursement and technological investments are critical to increasing primary care physician use of telehealth services. Jetty A, Moore MA, Coffman M, Petterson S, Bazemore A. Rural family physicians are twice as likely to use telehealth as urban family physicians. *Telemed J E Health.* August 2017, ahead of print.

Trends in the Types of Usual Sources of Care: A Shift From People to Places or Nothing at All

To examine usual source of care (USC) trends across four categories (No USC, Person USC, Person, in Facility USC, and Facility USC), and (2) to determine whether USC types are associated with emergency department (ED) visits and hospital admissions using 1996–2014 Medical Expenditure Panel Surveys. We stratified each USC category, by age, region, gender, poverty, insurance, race/ethnicity, and education and used regression to determine the characteristics associated with USC types, ED visits, and hospital admissions. Those with No USC and Facility USCs increased 10 and 18 percent, respectively, while those with Person USCs decreased by 43 percent. Compared to those in the lowest income bracket, those in the highest income bracket were less likely to have a Facility USC. Among those with low incomes, individuals with No USC, Person, in Facility, and Facility USCs were more likely to have ED visits than those with Person USCs. A growing number are reporting facilities as their USCs or none at all. The impact of these trends is uncertain, although we found that some USC types are associated with ED visits and hospital admissions. Tracking USCs will be crucial to measuring progress toward enhanced care efficiency.

Liaw W, Jetty A, Petterson S, Bazemore A, Green L. Trends in the types of usual sources of care: a shift from people to places or nothing at all. *Health Serv Res.* 2017. Epub ahead of print.

WORKFORCE

Analysis of 2011 Physician Assistant Education Debt Load

This study seeks to investigate how physician assistants (PAs) finance their education and to characterize the educational debt of PA students. Data from the 2011 American Academy of PAs (AAPA)-Physician Assistant Education Association Graduating Student Survey were used to explore the educational debt of PA students. The median total educational debt of a PA student graduating in 2011 was $80,000. Little financial assistance, other than student loans, is available to PA students. Eighty-five percent of PA students report owing some PA education debt amount, with 23% owing at least $100,000. This study provides a baseline look at PA student debt loads as a starting point for more detailed and robust research into new graduate specialty choices and PA career migration into other specialties. Further research is needed to explore the effect of student debt on students' specialty choices.

Moore MA, Coffman M, Cawley JF, Crowley D, Miller A, Klink K. Analysis of 2011 physician assistant education debt load. *JAAPA.* 2017;30(3):37-43.

Primary Care Research Should Be Done in Primary Care Settings

Letter to the Editor

Liaw W, Westfall JM. Primary care research should be done in primary care settings. *Academic Medicine.* 2016;91(10):1329.

Prevalence of Burnout in Board Certified Family Physicians

Physician burnout has become a critical issue in a rapidly changing health care environment and is reported to be increasing. However, little is known about the prevalence of this problem among board-certified family physicians. Using an abbreviated burnout survey, we found a lower prevalence of this problem than has been previously reported.

Puffer JC, Knight HC, O'Neill TR, et al. Prevalence of burnout in board certified family physicians. *J Am Board Fam Med.* 2017;30(2):125-126.

Provision of Palliative Care Services by Family Physicians Is Common

Provision of palliative care services by primary care physicians is increasingly important with an aging population, but it is unknown whether US primary care physicians see themselves as palliative practitioners. This study used cross-sectional analysis of data from the 2013 American Board of Family Medicine Maintenance of Certification Demographic Survey. Of 10,894 family physicians, 33.1% (n = 3609) report providing palliative care. Those providing palliative care are significantly more likely to provide non–clinic-based services such as care in nursing homes, home visits, and hospice. Controlling for other characteristics, physicians reporting palliative care provision are significantly ($P < .05$) more likely to be older, white, male, rural, and practicing in a patient-centered medical home. One third of family physicians recertifying in 2013 reported providing palliative care, with physician and practice characteristics driving reporting palliative care provision.

Ankuda CK, Jetty A, Bazemore A, Petterson S. Provision of palliative care services by family physicians is common. *J Am Board Fam Med.* 2017;30(2):255-257.

Family Physicians Practicing High-Volume Obstetric Care Have Recently Dropped by One-Half

Previous research has shown a decline in the percentage of family physicians practicing low- or medium- volume obstetrics. Using 13 years of data through 2016, we found continued declines in low- and medium- volume obstetrics, in addition to a new 50% decrease in family physicians providing high-volume obstetrics.

Barreto T, Peterson LE, Petterson S, Bazemore AW. Family physicians practicing high-volume obstetric care have recently dropped by one-half. *Am Fam Physician.* 2017;95(12):762.

PRACTICE INFRASTRUCTURE & QUALITY

Bright Spots in Care Management in Medicare Advantage

This report examines care management under Medicare Advantage, with the premise that the financial framework of risk based, capitated payments under Medicare Advantage offers the opportunity to improve service delivery through care management to better meet patient needs and improve outcomes. It is important to identify and better define the essential elements prevalent in these successful models of care management so they can be replicated by plans and providers and incentivized by policymakers. The report concludes with the identification of essential elements of effective care management and recommendations to policymakers.

Barreto T, Bazemore A, Coffman M, Jabbarpour Y, Liaw W. Bright spots in care management in Medicare Advantage. http://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/BrightSpotsCareManagement%20.pdf. Accessed April 19, 2018.

The Impact of Primary Care Practice Transformation on Cost, Quality, and Utilization: A Systematic Review of Research Published in 2016

Jabbarpour Y, DeMarchis E, Bazemore A, Grundy P. The impact of primary care practice transformation on cost, quality, and utilization: a systematic review of research published in 2016. http://www.graham-center.org/content/dam/rgc/documents/publications-reports/reportsImpactPrimaryCarePracticeTransformationCostQualityUtilization.PDF. Accessed April 19, 2018.

Community Health Workers Bring Cost Savings to Patient-Centered Medical Homes

The Patient-Centered Medical Home (PCMH) model demonstrated that processes of care can be improved while unnecessary care, such as preventable emergency department utilization, can be reduced through better care coordination. A complementary model, the Integrated Primary Care and Community Support (I-PaCS) model, which integrates community health workers (CHWs) into primary care settings, functions beyond improved coordination of primary medical care to include management of the social determinants of health. However, the PCMH model puts downward pressure on the panel sizes of primary care providers, increasing the average fixed costs of care at the practice level. While the I-PaCS model layers an additional cost of the CHWs into the primary care cost structure, that additional cost is relatively small. The purpose of this study is to simulate the effects of the PCMH and I-PaCS models over a 3-year period to account for program initiation to maturity. The costs and cost offsets of the model were estimated at the clinic practice level. The studies which find the largest cost savings are for high-risk, paneled patients and therefore do not represent the effects of the PCMH model on moderate-utilizing patients or practice-level effects. We modeled a 12.6% decrease in the inpatient hospital, outpatient hospital and emergency department costs of high and moderate risk patients. The PCMH is expected to realize a 1.7% annual savings by year three while the I-PaCS program is expected to a 7.1% savings in the third year. The two models are complementary, the I-PaCS program enhancing the cost reduction capability of the PCMH.

Moffett ML, Kaufman A, Bazemore A. Community health workers bring cost savings to patient-centered medical homes. *J Community Health.* 2018;43(1):1-3.

Using Drug Prescribing Patterns to Identify Stewards of Cost-Conscious Care

To characterize family physicians (FPs) who are stewards of care by consistently prescribing omeprazole over esomeprazole. Cross-sectional analysis of physicians prescribing omeprazole or esomeprazole under Medicare Part D in 2014. There was a regional trend with 49% of Western FPs but only 6% of Southern FPs rarely prescribing esomeprazole. Physicians had increased odds of being a steward if they worked with a care coordinator ($P < .001$), at a patient-centered medical home ($P < .001$), or in a large practice ($P < .001$). If these findings are replicated across multiple drugs, future outreach could be conducted based on provider prescribing patterns.

Gastala NM, Wingrove P, Liaw W, Petterson S, Bazemore A. Using drug prescribing patterns to identify stewards of cost-conscious care. *J Am Board Fam Med.* 2017;30(6):824-827.

New "Core Quality Measures": Only a Beginning

A plethora of quality measures are used in health care for quality improvement, accountability (including reimbursement), and research. The Core Quality Measures Collaborative, with input from the American Academy of Family Physicians, recently released several groups of reduced core measure sets, including one for primary care. The proposed measures are less helpful for the increasing proportion patients with multiple morbidities or advancing illness. Going forward, the development of quality measures that assess multidimensional patient experiences and how closely the health care patients receive matches their goals in the face of multiple morbidities and advancing illness should be the focus.

Nowels D, Kamerow DB. New "core quality measures": only a beginning. *J Am Board Fam Med.* 2017;30(1):4-7.

MEDICAL EDUCATION

Increasing Family Medicine Faculty Diversity Still Lags Population Trends

Faculty diversity has important implications for medical student diversity. The purpose of this analysis is to describe trends in racial, ethnic, and gender diversity in family medicine (FM) departments and compare these trends to the diversity of matriculating medical students, the diversity of all medical school faculty, and the population in general. We used the Association of American Medical Colleges Faculty Roster to describe trends in proportions of female and minorities under-represented in medicine (URM) in FM department full-time faculty in U.S. MD-granting medical schools. Among FM faculty, the proportions of female and URM faculty have grown more than 2-fold between 1980 and 2015. Increasing faculty rank was associated with lower diversity across the study period. FM departments had higher female and URM proportions than the average of all other specialties, but URM representation still lagged population trends. Although FM faculty diversity is growing over time, continued attention to URM representation should remain a priority.

Xierali IM, Nivet MA, Gaglioti AH, Liaw WR, Bazemore AW. Increasing family medicine faculty diversity still lags population trends. *J Am Board Fam Med.* 2017;30(1):100-103.

The Effects of Training Institution Practice Costs, Quality, and Other Characteristics on Future Practice

Medicare beneficiary spending patterns reflect those of the 306 Hospital Referral Regions where physicians train, but whether this holds true for smaller areas or for quality is uncertain. This study assesses whether cost and quality imprinting can be detected within the 3,436 Hospital Service Areas (HSAs), 82.4 percent of which have only 1 teaching hospital, and whether sponsoring institution characteristics are associated. We conducted a

secondary, multi-level, multivariable analysis of 2011 Medicare claims and American Medical Association Masterfile data for a random, nationally representative sample of family physicians and general internists who completed residency between 1992 and 2010 and had more than 40 Medicare patients (3,075 physicians providing care to 503,109 beneficiaries). Practice and training locations were matched with Dartmouth Atlas HSAs and categorized into low-, average-, and high-cost spending groups. Practice and training HSAs were assessed for differences in 4 diabetes quality measures. Institutional characteristics included training volume and percentage of graduates in rural practice and primary care. The unadjusted, annual, per-beneficiary spending difference between physicians trained in high- and low-cost HSAs was $1,644 (95% CI, $1,253–$2,034), and the difference remained significant after controlling for patient and physician characteristics. No significant relationship was found for diabetes quality measures. General internists were significantly more likely than family physicians to train in high-cost HSAs. Institutions with more graduates in rural practice and primary care produced lower-spending physicians. The "imprint" of training spending patterns on physicians is strong and enduring, without discernible quality effects, and, along with identified institutional features, supports measures and policy options for improved graduate medical education outcomes.

Phillips RL Jr, Petterson SM, Bazemore AW, Wingrove P, Puffer JC. The effects of training institution practice costs, quality, and other characteristics on future practice. *Ann Fam Med.* 2017;15(2):140-148.

Funding Instability Reduces the Impact of the Federal Teaching Health Center Graduate Medical Education Program

The Teaching Health Center Graduate Medical Education (THCGME) program is a decentralized residency training component of the Affordable Care Act, created to combat critical shortages and maldistribution of primary care physicians. The Accreditation Council of Graduate Medical Education and federal data reveal that the THCGME program accounted for 33% of the net increase in family medicine residency positions between 2011 and 2015. However, amid concerns about the program's stability, the contribution of the THCGME program to the net increase fell to 7% after 2015.

Kurz T, Liaw W, Wingrove P, Petterson S, Bazemore A. Funding instability reduces the impact of the federal Teaching Health Center Graduate Medical Education Program. *J Am Board Fam Med.* 2017;30(3):279-280.

Changes in Primary Care Graduate Medical Education Are Not Correlated With Indicators of Need: Are States Missing an Opportunity to Strengthen Their Primary Care Workforce?

Federal and state graduate medical education (GME) funding exceeds $15 billion annually. It is critical to understand mechanisms to align undergraduate medical education (UME) and GME to meet workforce needs. This study aimed to determine whether states' primary care GME (PCGME) trainee growth correlates with indicators of need. Data from the American Medical Association Physician Masterfile, the Association of American Medical Colleges, the American Association of the Colleges of Osteopathic Medicine, and the U.S. Census were analyzed to determine how changes between 2002 and 2012 in PCGME trainees—a net primary care physician (PCP) production estimate—correlated with state need using three indicators: (1) PCP-to-population ratio, (2) change in UME graduates, and (3) population growth. Nationally, PCGME trainees declined by 7.1% from the net loss of 679 trainees (combined loss of 54 postgraduate year 1 trainees in internal medicine, family medicine, and pediatrics and addition of 625 fellowship trainees in those specialties). The median state PCGME decline was 2.7%. There was no correlation between the percent change in states' PCGME trainees and PCP-to-population ratio ($r = -0.06$) or change in UME graduates ($r = 0.17$). Once adjusted for population growth, PCGME trainees declined by 15.3% nationally; the median state decline was 9.7%. There is little relationship between PCGME trainee growth and state need indicators. States should capitalize on opportunities to create explicit linkages between UME, GME, and population need; strategically allocate Medicaid GME funds; and monitor the impact of workforce policies and training institution outputs.

Coutinho AJ, Klink K, Wingrove P, Petterson S, Phillips RL Jr, Bazemore A. Changes in primary care graduate medical education are not correlated with indicators of need: are states missing an opportunity to strengthen their primary care workforce? *Acad Med.* 2017;92(9):1280-1286.

HEALTH GEOGRAPHY

Regional Variation in Primary Care Involvement at the End of Life

Variation in end-of-life care in the United States is frequently driven by the health care system. We assessed the association of primary care physician involvement at the end of life with end-of-life care patterns. We analyzed 2010 Medicare Part B claims data for US hospital referral regions (HRRs). The independent variable was the ratio of primary care physicians to specialist visits in the last 6 months of life. Dependent variables included the rate of hospital deaths, hospital and intensive care use in the last 6 months of life, percentage of patients seen by more than 10 physicians, and Medicare spending in the last 2 years of life. Robust linear regression analysis was used to measure the

association of primary care physician involvement at the end of life with the outcome variables, adjusting for regional characteristics. We assessed 306 HRRs, capturing 1,107,702 Medicare Part B beneficiaries with chronic disease who died. The interquartile range of the HRR ratio of primary care to specialist end-of-life visits was 0.77 to 1.21. HRRs with high vs low primary care physician involvement at the end of life had significantly different patient, population, and health system characteristics. Adjusting for these differences, HRRs with the greatest primary care physician involvement had lower Medicare spending in the last 2 years of life ($65,160 vs $69,030; P = .003) and fewer intensive care unit days in the last 6 months of life (2.90 vs 4.29; P <.001), but also less hospice enrollment (44.5% of decedents vs 50.4%; P = .004). Regions with greater primary care physician involvement in end-of-life care have overall less intensive end-of-life care.

Ankuda CK, Petterson SM, Wingrove P, Bazemore AW. Regional variation in primary care involvement at the end of life. *Ann Fam Med.* 2017;15(1):63-67.

Mobility of US Rural Primary Care Physicians During 2000-2014

Despite considerable investment in increasing the number of primary care physicians in rural shortage areas, little is known about their movement rates and factors influencing their mobility. We aimed to characterize geographic mobility among rural primary care physicians, and to identify location and individual factors that influence such mobility. Using data from the American Medical Association Physician Masterfile for each clinically active US physician, we created seven 2-year (biennial) mobility periods during 2000–2014. These periods were merged with county-level "rurality," physician supply, economic characteristics, key demographic measures, and individual physician characteristics. We computed (1) mobility rates of physicians by rurality; (2) linear regression models of county-level rural nonretention (departure); and (3) logit models of physicians leaving rural practice. Biennial turnover was about 17% among physicians aged 45 and younger, compared with 9% among physicians aged 46 to 65, with little difference between rural and metropolitan groups. County-level physician mobility was higher for counties that lacked a hospital (absolute increase = 5.7%), had a smaller population size, and had lower primary care physician supply, but area-level economic and demographic factors had little impact. Female physicians (odds ratios = 1.24 and 1.46 for those aged 45 or younger and those aged 46 to 65, respectively) and physicians born in a metropolitan area (odds ratios = 1.75 and 1.56 for those aged 45 or younger and those aged 46 to 65, respectively) were more likely to leave rural practice. These findings provide national-level evidence of rural physician mobility rates and factors associated with both county-level retention and individual-level departures. Outcomes were notably poorer in the most remote locations and those already having poorer physician supply and professional support. Rural health workforce planners and policymakers must be cognizant of these key factors to more effectively target retention policies and to take into account the additional support needed by these more vulnerable communities.

McGrail MR, Wingrove PM, Petterson SM, Bazemore AW. Mobility of US rural primary care physicians during 2000-2014. *Ann Fam Med.* 2017;15(4):322-328.

Measuring the Attractiveness of Rural Communities in Accounting for Differences of Rural Primary Care Workforce Supply

Many rural communities continue to experience an undersupply of primary care doctor services. While key professional factors relating to difficulties of recruitment and retention of rural primary care doctors are widely identified, less attention has been given to the role of community and place aspects on supply. Place-related attributes contribute to a community's overall amenity or attractiveness, which arguably influence both rural recruitment and retention relocation decisions of doctors. This bi-national study of Australia and the USA, two developed nations with similar geographic and rural access profiles, investigates the extent to which variations in community amenity indicators are associated with spatial variations in the supply of rural primary care doctors. Measures from two dimensions of community amenity: geographic location, specifically isolation/proximity; and economics and sociodemographics were included in this study, along with a proxy measure (jurisdiction) of a third dimension, environmental amenity. Data were chiefly collated from the American Community Survey and the Australian Census of Population and Housing, with additional calculated proximity measures. Rural primary care supply was measured using provider-to-population ratios in 1949 US rural counties and in 370 Australian rural local government areas. Additionally, the more sophisticated two-step floating catchment area method was used to measure Australian rural primary care supply in 1116 rural towns, with population sizes ranging from 500 to 50 000. Associations between supply and community amenity indicators were examined using Pearson's correlation coefficients and ordinary least squares multiple linear regression models. It was found that increased population size, having a hospital in the county, increased house prices and affluence, and a more educated and older population were all significantly associated with increased workforce supply across rural areas of both countries. While remote areas were strongly linked with poorer supply in Australia, geographical remoteness was not significant after accounting for other indicators of amenity such as the positive association between workforce supply and coastal location. Workforce supply in the USA was negatively associated with fringe rural area locations adjacent to larger metropolitan areas and characterized by long work commutes. The US model

captured 49% of the variation of workforce supply between rural counties, while the Australian models captured 35-39% of rural supply variation. These data support the idea that the rural medical workforce is maldistributed with a skew towards locating in more affluent and educated areas, and against locating in smaller, poorer and more isolated rural towns, which struggle to attract an adequate supply of primary care services. This evidence is important in understanding the role of place characteristics and rural population dynamics in the recruitment and retention of rural doctors. Future primary care workforce policies need to place a greater focus on rural communities that, for a variety of reasons, may be less attractive to doctors looking to begin or remain working there.

McGrail MR, Wingrove PM, Petterson SM, Humphreys JS, Russell DJ, Bazemore AW. Measuring the attractiveness of rural communities in accounting for differences of rural primary care workforce supply. *Rural Remote Health.* 2017;17(2):3925.

PRIMARY CARE & PAYMENT

Impact of Gaps in Merit-based Incentive Payment System Measures on Marginalized Populations

As the United States enters a new era of value-based payment heavy in emphasis on primary care measurement, careful examination of selected measures and their potential impact on outcomes and vulnerable populations is essential. Applying a theoretical model of health care quality as a coding matrix, we used a directed content analysis approach to categorize individual Merit-based Incentive Payment System (MIPS) measures. We found that most MIPS measures related to aspects of clinical effectiveness, whereas few, if any, related to aspects of access, patient experience, or interpersonal care. These gaps suggest that MIPS may fail to measure the broader aspects of health care quality and even risk worsening existing disparities.

Eggleton K, Liaw W, Bazemore A. Impact of gaps in Merit-based Incentive Payment System measures on marginalized populations. *Ann Fam Med.* 2017;15(3):255-257.

Navigating Payer Heterogeneity in the United States: Lessons for Primary Care

With most providers accepting private and public funding, the US exemplifies hybridization, which results in both systemic benefits and harms. While this practice stimulates innovation, encourages practices to be efficient, and increases choice, it has also been linked to gaps in patient safety and overtreatment. We propose three lessons from the US for navigating a public and private system: hybridization allows for innovation; hybridization leads to administrative complexity; and if the costs of participation outweigh the benefits, practices may undergo dehybridization.

Liaw W, McCorry D, Bazemore A. Navigating payer heterogeneity in the United States: lessons for primary care. *J Prim Health Care.* 2017;9(3)200-203.

Aggregation to Promote Health in an Era of Data and Value Based Payment

Opinion Piece

Liaw W, Bazemore AW, Phillips RL. Aggregation to promote health in an era of data and value based payment. *Healthc (Amst).* 2017;5(3):92-94.

Team-Based Primary Care: Opportunities and Challenges

Wohler D, Liaw W. Team-based primary care: opportunities and challenges. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/StarfieldSummit_Report_TeamBasedPrimaryCare.pdf. Accessed April 19, 2018.

Effective Payment for Primary Care: An Annotated Bibliography

Gold SB, Park BJ. Effective payment for primary care: an annotated bibliography. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/StarfieldSummit%20Annotated%20Bibliography_Payment-FIN.pdf. Accessed April 19, 2018.

Measures in Primary Care: An Annotated Bibliography

Jabbarpour Y. Measures in primary care: an annotated bibliography. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/Starfield%20Summit%20Annotated%20Bibliography_Measures.pdf. Accessed April 19, 2018.

Teams in Primary Care: An Annotated Bibliography

Jabbarpour Y. Teams in primary care: an annotated bibliography. https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/StarfieldSummit%20Annotated%20Bibliography_Teams.pdf. Accessed April 19, 2018.

Valuing, Measuring, & Paying for Primary Care's Foundations: Comprehensiveness, Continuity, & Coordination

WONCA Policy Bite

Bazemore A, Phillips R. Valuing, measuring, & paying for primary care's foundations: comprehensiveness, continuity, & coordination. http://www.globalfamilydoctor.com/News/PolicyBitefromtheGrahamCenter.aspx. Accessed April 19, 2018.

PHC Funding a Percent of Total Health Care Spending

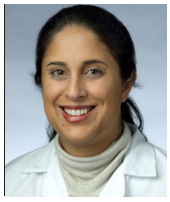
WONCA Policy Bite

Phillips R, Bazemore A. PHC funding a percent of total health care spending. http://www.globalfamilydoctor.com/News/PolicyBitePHCfunding.aspx. Accessed April 19, 2018.

Fellows

Robert L. Phillips Health Policy Fellowship

Funded by a Health Resources and Services Administration (HRSA) Title VII Grant, the Graham Center continues its policy fellowship partnership with Georgetown University.


Yalda Jabbarpour, MD

In 2015-2016, Yalda Jabbarpour, MD, was the Robert L. Phillips, Jr., Health Policy Fellow at the Graham Center. Dr. Jabbarpour is interested in primary care payment and measurement. During her fellowship, she helped author two reports for the Better Medicare Alliance: a quantitative analysis of secondary data looking at the impact of Medicare Advantage (MA) on hospitalization rates, and a qualitative study examining the bright spots in care management in the MA population. She also synthesized the current research on primary care payment and measurement into two comprehensive annotated bibliographies used for the first annual Starfield Summit, held in Washington, DC. She continues to work closely with the Graham Center and the Patient-Centered Primary Care Collaborative (PCPCC) on the Annual Review of the Evidence for the Patient-Centered Medical Home.

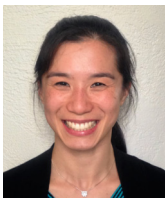

Tyler Barreto, MD

In 2016-2017, the Robert L. Phillips, Jr., Health Policy Fellows were Julie Petersen Marcinek, DO, and Tyler Barreto, MD. Dr. Marcinek's research interests include graduate medical education (GME) and rural health issues, leading to a particular focus on the American Osteopathic Association/Accreditation Council for Graduate Medical Education (AOA/ACGME) GME transition to the Single Accreditation System and its primary care workforce implications. During her time at the Graham Center, Dr. Barreto's work focused on the family medicine obstetrics workforce, low-value care, and health center screening and management of substance and alcohol use.


Robert Baillieu, MD


Hannah Jackson, MD

As of the fall of 2017, the Robert L. Phillips, Jr., Health Policy Fellows are Robert Baillieu, MD, and Hannah Jackson, MD. Dr. Baillieu's research interests include how communities organize to advocate for improved health, workforce organization, health disparities, and the role of information technology in primary care. He is currently working on projects that look at community integration into the management of chronic diseases, residency training outcomes, scope of practice, and electronic health record (EHR) use across practice settings. Dr. Jackson's research interests include advanced payment models, better ways to measure quality, and innovative models of care delivery in primary care.


Vivian Jiang, MD

The Graham Center has been pleased to work with Vivian Jiang, MD, Virginia Commonwealth University-Family Medicine for America's Health (VCU-FMAH) research fellow. At the Graham Center, Dr. Jiang is currently working with a team to update the American Academy of Family Physicians' (AAFP's) graduate medical education policy. Eventually, she plans to narrow her GME focus to improving primary care access for rural and urban underserved populations.

Scholars

From 2015 to 2017, the Graham Center has hosted the following Larry A. Green Visiting Scholars:
Troy Russell, MD, Georgetown University
Claire Ankuda, MD, University of Washington
Anastasia Coutinho, MD, University of Vermont
Kristin Gates, MD, Middlesex Hospital
Nicole Gastala, MD, University of Iowa
Murray Tilyard, MD, University of Otago
Cornelius Powell, MD, East Tennessee State University
John Stoeckle, MD, Thomas Jefferson University
Diana Wohler, MD, Harvard Medical School
Ali Abdallah, DO, The Wright Center for Graduate Medical Education
Paige Bennett, MD, University of Colorado School of Medicine
Meenadchi Chelvakumar, MD, MPH, University of Washington
David Nowels, MD, University of Colorado
Brian Park, MD, Oregon Health & Science University
Justin Mutter, MD, Mountain Area Health Education Center
Kyle Eggleton, MD, University of Auckland, New Zealand
Alicia Agnoli, MD, Robert Wood Johnson Foundation Clinical Scholars Program – Yale University School of Medicine
Alison Shmerling, University of Colorado
Troy Kurz, Creighton University School of Medicine
Keith Egan, The Wright Center/Unity Healthcare
Fiona Doolan-Noble, University of Otago
Richard Bruno, MD, Franklin Square Hospital Center and Johns Hopkins University
Emilia Hansson De Marchis, University of California, San Francisco
Ji H. Kim, University of Rochester
Sara Martin, Harvard Medical School
Rho Olaisen, Case Western University
Oluwatosin Omole, Howard University Hospital
Robert Rock, Yale School of Medicine
Michael Kidd, MD, Flinders University, Australia
Kenetra Hix, MD, MPH, Duke University
Winfred Frazier, MD, University of Pittsburgh
Chris van Weel, MD, Radboud University Medical Centre, Nijmegen (The Netherlands)
Neha Sachdev, MD, Virtua Family Medicine, Sidney Kimmel Medical College at Thomas Jefferson University
Kevin Stephens, MD, Georgetown University

Additionally, the Graham Center hosted the following scholars:
Sumithra Nair, The Dartmouth Institute
Melissa Hayban, Davidson College
Jonathan "Jack" Kent, Georgetown University
Richard Young
Racheli Schoenburg, Georgetown University
Meera Nagaraj, Davidson College
Alex Webb, Georgetown University

Primary Care Forums

Robert Graham Center Primary Care Forums are open discussions led by brief panel presentations that focus on timely issues in primary care. The forums are intended to inform the audience about important issues affecting primary care and family medicine, and to generate discussion among attendees. Recent examples include graduate medical education outcomes and accountability, telehealth in primary care, and disruptive innovations in primary care.

Past Forums

(Please note: Position information listed below for panelists, moderators, and reactors was up-to-date at the time of each forum but may have changed by the time of publication.)

October 13, 2017 – What Do Patients Want From Telehealth?

As the U.S. population grows and ages, innovative solutions to meeting the growing demands on the primary care workforce and infrastructure are needed. Telehealth—caring for patients remotely—has become a key strategy to increasing access to specialty care in many rural communities. Its penetration into primary care has been slower than in many specialty settings, and little is known about patient perceptions and attitudes towards telehealth. In this forum, an expert panel offered their insights into how telehealth can be deployed and funded to meet the needs of patients.

Panelists:

- Tammy Toscos, MS, PhD – Lecturer, School of Informatics and Computing, Indiana University; Research Scientist, Informatics, Parkview Mirro Center for Research and Innovation
- Wally Adamson, MD – Staff Vice President, LiveHealth Online
- Michael Rodriguez, MD, FAAFP – Family Physician, Broadlands Family Practice
- Regina Holliday – Patient Rights Activist, The Walking Gallery

Moderator:

- Andrew Bazemore, MD, MPH – Director, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care

May 25, 2017 – Primary Care Research: Critical to the Triple Aim and in Desperate Need of a Home

Primary care is the largest health care delivery platform in the United States, well-known to policymakers as essential to achieving the Triple Aim. Less well-known is its innovative, diverse research enterprise that not only translates knowledge for the front lines, but also generates new insights through creative partnerships. With an expansive portfolio encompassing chronic disease management, prevention, behavioral health integration, social determinants of health, and big data analytics, primary care research lies at the nexus of powerful social movements. Despite its important role, primary care research is perpetually underfunded and threatened by its dependence on several small federal funding sources under siege. In this exciting primary care forum, we explored primary care research's impact on health and how to unlock its potential through thoughtful policy.

Panelists:

- Andrew Bindman, MD – Former Director, Agency for Healthcare Research and Quality
- Bernard Ewigman, MD, MSPH, FAAFP – Chair of Family Medicine, University of Chicago and NorthShore
- Jennifer Carroll, MD, MPH – Director, American Academy of Family Physicians National Research Network
- Alex Fiks, MD, MSCE – Director, Pediatric Research in Office Settings, American Academy of Pediatrics

Moderators:

- Andrew Bazemore, MD, MPH – Director, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care
- Winston Liaw, MD, MH – Medical Director, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care

December 1, 2016 – Beyond the Tipping Point: What Can Accountable Care Organizations Teach Us About the Future of Value-Based Payment?

The United States is approaching a tipping point at which half of payments will be tied to improved care and cost. The Patient Protection and Affordable Care Act (ACA) and the Medicare Access and CHIP Reauthorization Act (MACRA) accelerate this transition through vehicles such as accountable care organizations (ACOs). ACOs aim to reduce costs and improve quality and have generated modest savings. Since they are relatively new, little is known about how ACOs have affected the delivery of care. In this forum, we explored ACO bright spots that have enhanced primary care and lessons learned from the ACO experience that can inform the future of value-based payment models. We had an exciting discussion of the model's promises and limitations.

Presenters:

- Farzad Mostashari, MD, MPH – Chief Executive Officer, Aledade
- Clay Ackerly, MD – Chief Medical Officer, Privia
- Michael Coffey, MD, FAAFP – President, Collaborative Health ACO
- Theodore Long, MD, MHS – Centers for Medicare & Medicaid Services

Moderator:

- Winston Liaw, MD, MPH – Medical Director, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care

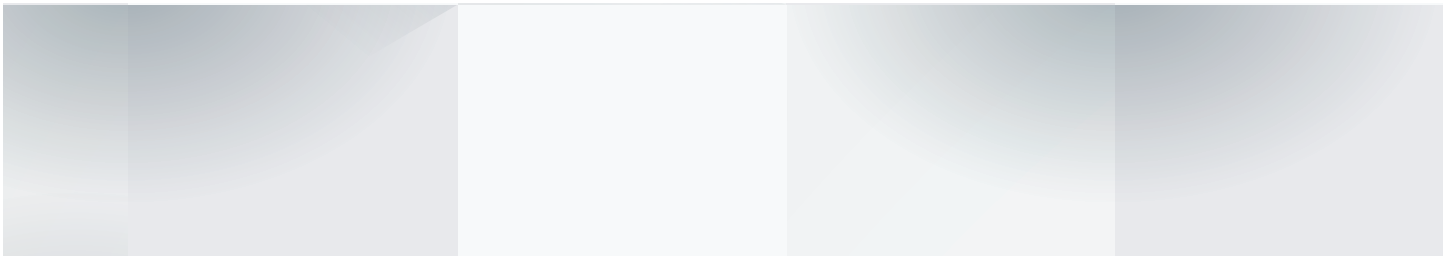
April 11, 2016 – Achieving Effective Team-Based Primary Care in an Age of MACRA & Measurement

Over a much-celebrated career of research, Barbara Starfield, MD, revealed that primary care-oriented health systems have better population health outcomes, higher quality care, greater health equity, and lower costs. Her prolific work supported the idea that first-contact, coordinated, continuous, comprehensive primary care was a path toward achieving these outcomes, now labeled the Triple Aim for U.S. health care.

Dr. Starfield's heirs have lamented how poorly the health care payment system in this country serves team-based primary care capable of delivering on this robust primary care function. The Medicare Access and CHIP Reauthorization Act (MACRA) promises substantive changes in federal payment for health care, including a push toward paying for measurable value and alternative payment models aimed at achieving population health. But what will this new age of measurement mean for team-based primary care?

Panelists:

- Kurt Stange, MD, PhD – Physician, Neighborhood Family Practice; Gertrude Donnelly Hess Professor, Case Western Reserve University
- Amanda Howe, MA, MD, MEd, FRCGP – Professor, University of East Anglia
- Erin E. Sullivan, PhD – Research and Curriculum Director, Harvard Medical School Center for Primary Care



July 28, 2015 – Achieving the Triple Aim: Linking Clinical Health Services and Public Health to Improve Outcomes & Costs

A promising strategy for controlling the costs of health care (and entitlement spending for Medicare/Medicaid) is to address the so-called "super-utilizers," Americans with multiple chronic health conditions and social needs who account disproportionately for health care costs in the United States.

Presenters at this briefing showed how researchers are using "hot spotting" to locate the areas in which such patients live and the leading diagnoses responsible for their admissions. Often, it is the lack of health-promoting resources in their home and neighborhood environments (what some call "cold spots") that is at the root of their illnesses. Many hospitals are finding business arguments for investing in community-based solutions to reduce admissions and demands on health care systems. Public health systems in many localities are testing solutions such as integrating primary care with public health interventions and building partnerships with businesses, schools, and community and faith-based organizations to work collectively to improve health outcomes. Presenters highlighted policies that support public health systems and hospitals in implementing solutions that link health care with other sectors, such as housing and education, to decrease the rates of chronic disease and reduce health care spending.

Panelists:

- Chris Allen, FACHE - Executive Director, Detroit Wayne County Health Authority
- Nick Macchione, MS, MPH, FACHE – Director, Health and Human Services Agency, San Diego County; John J. Hanlon Executive Scholar, San Diego State University
- Katherine Neuhausen, MD, MPH – Associate Director, Virginia Commonwealth University (VCU) Office of Health Innovation; Clinical Assistant Professor, Department of Family Medicine and Population Health, VCU

Moderator:

- Steven Woolf, MD, MPH

Reactor:

- Monica Feit, PhD, MPH – Director, Public Health Services Division, U.S. Department of Health and Human Services

June 18, 2015 – Innovations in Population Health for PC Practices

A transformation of the nation's largest platform for health care delivery—primary care practices—is underway, attempting to broaden its focus on individual patients to include panel and population health management in order to achieve the nation's Triple Aim. This radical shift presents considerable challenges for the providers, practices, payers, and planners, and requires both innovation and growth of a supporting infrastructure. In this forum, we heard from a panel of innovators about efforts to grow infrastructure in support of primary care practice transformation to achieve population health, and we discussed the barriers and opportunities to scale and expand such efforts nationally.

Panelists:

- Arthur Kaufman, MD – Vice Chancellor for Community Health Sciences, University of New Mexico Health Sciences Center; Director, Health of the Public Program, New Mexico
- L. Allen Dobson, Jr., MD – President and CEO, Community Care of North Carolina; Visiting Scholar at the Engelberg Center for Health Care Reform at the Brookings Institution, Washington, DC
- Murray Tilyard, FRNZCGP, BSc, MB CHB, MD – Professor of General Practice/Past Chair, Department of General Practice and Rural Health, Dunedin School of Medicine, University of Otago; Executive Director, South Link Health

Moderator:

- Andrew Bazemore, MD, MPH – Director, The Robert Graham Center for Policy Studies in Family Medicine and Primary Care

Reactor:

- Marci Nielsen, PhD, MPH – Chief Executive Officer, Patient-Centered Primary Care Collaborative (PCPCC)

Staff

ANDREW BAZEMORE, DIRECTOR

Andrew Bazemore is a practicing family physician and the Director of the Graham Center, which he joined in 2005. He oversees and participates in the Graham Center's research with a particular interest in access to care for underserved populations, health workforce and training, and spatial analysis. Dr. Bazemore has authored over 150 peer-reviewed publications, while leading the Graham Center's emphasis on developing tools that empower primary care providers, leaders, and policymakers. This is exemplified in his efforts to create and grow geospatial tools that foster access, visualization, and effective of use data to inform planning and policy. Prior to joining the Graham Center, he was a member of the faculty for the University of Cincinnati's Department of Family and Community Medicine, where he completed his residency training and a fellowship, and where he remains an associate professor. Dr. Bazemore also serves on the faculties of the Department of Family Medicine at Georgetown University, the Department of Family Medicine and Population Health at Virginia Commonwealth University (VCU), and the Department of Health Policy and Management at George Washington University's Milken Institute School of Public Health. He practices weekly and teaches students and residents at VCU-Fairfax Family Medicine Residency program. Dr. Bazemore received his BA from Davidson College, his MD from the University of North Carolina, and his MPH from Harvard University. He is an elected member of the National Academy of Medicine (NAM) and an appointed member of the federal Council on Graduate Medical Education (COGME).

MARK CARROZZA, DIRECTOR, HEALTHLANDSCAPE

Mark Carrozza joined the Graham Center in March 2014 after the Graham Center acquired HealthLandscape. He is directly responsible for the development of successful web-based data analysis and mapping systems. Recent research includes creating "hot spots" of child abuse based on child abuse treatment records and police calls for service; exploring race disparities in Southwest Ohio; and monitoring the effect of ACA implementation on the homeless population and access to health care. Mark is also an alumnus of the Larry A. Green Visiting Scholars Program at the Graham Center, where he focused research related to social capital, access to care, and health status. He earned a master's degree in sociology from the University of Cincinnati and is currently completing a doctorate in the same program.

MEGAN COFFMAN, HEALTH POLICY ADMINISTRATOR
Megan Coffman joined the Graham Center in February 2013 as the Health Policy Administrator. Her work at includes project, budget, and grant management. Prior to joining the Graham Center, Megan managed projects for educational and health nonprofits. She got her start in public health as a Peace Corps volunteer in Mauritania and Mali. In 2010, Megan received her Master of Science in Health Communication from Tufts University. She holds a BA in political science from Butler University.

YOONIE CHUNG, SENIOR HEALTH SERVICES RESEARCHER
YoonKyung "Yoonie" Chung is an economist with a background in quantitative analysis. She joined the Graham Center in September 2016 as a Senior Health Services Researcher. In this role, she conducts research related to measurement of primary care, practice transformation, access to care, and graduate medical education. She holds a PhD in economics from the University of California, Davis. Her dissertation examined the relationship between the onset of a chronic disease and economic outcomes in the long run. Prior to joining the Graham Center, she worked as an energy economist in areas of climate change and renewable energy at the Korea Energy Economics Institute.

KEITH GARDNER, USER ENGAGEMENT SPECIALIST, HEALTHLANDSCAPE
Keith Gardner joined HealthLandscape in March 2017. His primary responsibilities include user support and engagement. He provides training and technical support and manages communications and social media efforts for HealthLandscape. Prior to joining HealthLandscape, Keith provided user support and training for software firms in diverse industries. He earned a BA in philosophy with a concentration in ethics from the University of Southern Maine.

JENÉ GRANDMONT, SENIOR MANAGER FOR APPLICATION DEVELOPMENT & DATA SERVICES, HEALTHLANDSCAPE
Jené Grandmont joined the Graham Center in March 2014 with the acquisition of HealthLandscape. Her primary responsibilities include managing geographic data, deploying and maintaining client sites, and working with users to understand how they can use data to make better informed decisions. She has extensive experience in social science research, including study design and advanced analytic techniques. Research interests include the count, maintenance, and distribution of the health care workforce; access to healthy foods; and opportunities for active living. Jené earned a master's degree in sociology from the University of Cincinnati.

DAVID GROLLING, GEOSPATIAL INFORMATION SYSTEMS STRATEGIST, HEALTHLANDSCAPE
David Grolling joined HealthLandscape in January 2015. His primary responsibilities include managing the geospatial data for the UDS Mapper, producing special purpose maps, and programming. He has experience in GIS, spatial analysis, veteran's health data and military health records, data management and quality, and user acceptance testing. His research interests include public health, infectious disease epidemiology, and HIV/AIDS. He earned an MPS in GIS from the University of Maryland at College Park and a BS in anthropology from The College at Brockport, State University of New York.

YALDA JABBARPOUR, MD, CO-MEDICAL DIRECTOR
Yalda Jabbarpour serves as interim Co-Medical Director of the Graham Center. In this role, she oversees the Larry A. Green Visiting Scholars Program and conducts research on high-performing primary care and practice transformation. Dr. Jabbarpour first came to the Graham Center as a Robert L. Phillips, Jr., Health Policy Fellow in 2015. She continues to work as Director of Ambulatory Care in the Medical Student Education Division of the Georgetown University Department of Family Medicine. She also serves patients at the MedStar Health family medicine center in Spring Valley. Dr. Jabbarpour received her undergraduate degree at the University of California, Los Angeles. She attended medical school at the Georgetown University School of Medicine and completed her residency in family medicine at the Georgetown University-Providence Hospital Family Medicine Residency.

ANURADHA JETTY, RESEARCH ASSOCIATE
Anuradha Jetty joined the Graham Center in July 2014 and currently serves as the Research Associate. Her work is focused on conducting secondary data analysis of large databases to assess the health care workforce, access, utilization, costs, and outcomes. Her career in public health includes designing and conducting cross-sectional studies to evaluate the open heart surgery observation program for high school students at Inova Heart and Vascular Institute and the National Longitudinal Transition Study of students with disabilities at the Department of Health Administration and Policy, George Mason University. She received her Bachelor of Homeopathic Medicine and Surgery from Osmania University, Hyderabad, India, and her MPH in epidemiology from George Mason University, Fairfax, Virginia.

DOUGLAS KAMEROW, MD, SENIOR SCHOLAR IN RESIDENCE

Douglas Kamerow joined the Graham Center in March 2014 as Senior Scholar in Residence. He also teaches medical students and family medicine residents at Georgetown University as a professor of family medicine and is an associate editor and regular columnist for the global medical journal The BMJ. Previously, Dr. Kamerow was a chief scientist in health services and policy research at the nonpartisan research institute RTI International. For 20 years before that, he led a range of clinical, health policy, and research activities in the US Public Health Service, including the US Preventive Services Task Force, retiring as an Assistant Surgeon General in 2001. Dr. Kamerow received an AB from Harvard College, an MD from the University of Rochester, and an MPH from Johns Hopkins University.

ZACHARY LEVIN, ECONOMIST

Zachary Levin joined the Graham Center as an Economist in 2017. He works extensively with survey and claims data, providing analyses on health workforce topics, medical cost/utilization, and health care outcomes. Additionally, he provides research support and collaboration with visiting scholars and interns and consults for the AAFP's Government Relations Division. Prior to coming to the Graham Center, Zachary worked in the private sector doing health care antitrust analysis and in academic health policy centers at Stanford University and the University of California, San Francisco. He earned his bachelor's degree in economics from Reed College in Portland, Oregon.

WINSTON LIAW, MD, MEDICAL DIRECTOR (UP TO JULY 2017), CO-MEDICAL DIRECTOR (PRESENT)

Winston Liaw joined the Graham Center in 2016, served as the Medical Director up to July 2017, and currently serves as Co-Medical Director. As Medical Director, he oversaw the visiting scholars and fellowship programs and conducted research on workforce, access, practice transformation, and the integration of public health and primary care. As Co-Medical Director, he continues his work in the research areas listed above. Prior to joining the Graham Center, he was on faculty at the Virginia Commonwealth University-Fairfax Family Medicine Residency Program. In that role, he taught residents and medical students, directed the residency's Global and Community Health Track, and served on the boards for his practice's accountable care organization and a community health center in northern Virginia. Dr. Liaw received a BA degree from Rice University, an MD from Baylor College of Medicine, an MPH from the Harvard School of Public Health, family medicine residency training from Virginia Commonwealth University, and health policy fellowship training from the Graham Center.

STEPHEN PETTERSON, RESEARCH DIRECTOR

Stephen Petterson joined the Graham Center in 2005. He is currently the Research Director, both overseeing and contributing to the Graham Center's analytical activities. Previously, as a sociologist and social statistician, he was on faculty at the University of Virginia and was a researcher at the Southeastern Rural Mental Health Research Center. Stephen has taught courses in graduate and undergraduate statistics, welfare policy, problems of urban life, and sociology of work. He earned a PhD in sociology from the University of Wisconsin, and an undergraduate degree in sociology and anthropology from Haverford College.

JENNIFER RANKIN, SENIOR MANAGER FOR RESEARCH & PRODUCT SERVICES, HEALTHLANDSCAPE

Jennifer Rankin joined HealthLandscape in March 2015. Prior to this, she served as the Geospatial Informatics Senior Analyst for the Graham Center. She directs all geospatial projects for HealthLandscape, most notably the UDS Mapper. Her career has focused on issues related to primary care and access to care, with a special interest in the geography of access to health care. She has worked with the HRSA Maternal and Child Health Bureau, the Texas Association of Community Health Centers, and the Association of State and Territorial Health Officials. Jennifer earned her Master of Health Administration degree from the Tulane University School of Public Health and Tropical Medicine. She earned an MS in health information sciences, and an MPH and PhD in public health informatics from The University of Texas Health Science Center at Houston.

MICHAEL TOPMILLER, GEOGRAPHIC INFORMATION SYSTEMS STRATEGIST, HEALTHLANDSCAPE

Michael Topmiller joined the Graham Center in March 2014 following the acquisition of HealthLandscape. His primary responsibilities include managing data, creating map services, setting up and managing Community Data Portals, and providing training and technical support to users. Michael has expertise in GIS and qualitative research methods, and has experience conducting interviews, analyzing qualitative data, and working as a GIS specialist for community-based participatory research (CBPR) projects in Mexico, North Carolina, and Cincinnati, Ohio. His current research interests include health disparities, Latino health care issues in nontraditional destinations, health and the built environment, and participatory GIS. Michael earned an MA in Latin American studies from San Diego State University and a BA in mathematics and secondary education from the University of Kentucky.

SANDRA WINGATE-BEY, CENTER ADMINISTRATOR
Sandra Wingate-Bey joined the Graham Center as Center Administrator in 2017. Previously, she was Director of Administrative Services at a national nonprofit organization based in Washington, DC, where she was also responsible for the daily operations of the headquarters office. Sandra has served within the nonprofit sector for the past 28 years. During that time, she managed a national awards program, more than two dozen standing and ad hoc committees staffed by member volunteers, and board elections. She also served as Assistant Board Secretary. In that role, she supported the president, president-elect, and immediate past president in their work as chairs of several committees that oversaw some of the organization's key activities. She earned a bachelor's degree in business administration from South Carolina State University.

1133 Connecticut Ave., NW
Suite 1100
Washington, DC 20036