Results of the 2017 National Resident Matching Program® and the American Osteopathic Association Intern/Resident Registration Program: An Examination of Family Medicine and Primary Care

Stanley M. Kozakowski, MD; Alexandra Travis; Julie P. Marcinek, DO; Ashley Bentley, MBA; Gerald T. Fetter Jr, MSHA

BACKGROUND AND OBJECTIVES: The purpose of medicine as a profession is to meet the health needs of people and communities. Despite empirical evidence worldwide that an appropriate foundation of primary care in a health care system leads to improved health outcomes, improved experience of health care, a reduction in health disparities, and lower overall cost of care, publicly available data from National Resident Matching Program® (NRMP) and the American Osteopathic Association (AOA) Intern/Resident Registration Program show that PGY-1 family medicine and primary care positions offered in the NRMP Match continue to grow, but are losing ground in comparison to the growth of non-primary care specialties. In ACGME-accredited family medicine programs, DO students have been displacing non-US citizen IMGs while the proportion of US seniors has remained stable over the past decade. The impact of the displacement of non-US citizen IMGs by DO students in ACGME programs is unknown and deserves future research. Continuing trends in the growth of non-primary care specialties should raise great concern that the current primary shortage will be exacerbated, not serving the needs of the population. A major overhaul of the graduate medical education (GME) system is required to align the medical education system with the transformation of the health care system needed to improve quality, population health, and cost control.

(Fam Med. 2017;49(9):679-85.)

This article is the continuation of a multidecade series of national studies conducted by the American Academy of Family Physicians (AAFP) that serves as a forecast of the primary care physician workforce. This article reports and analyzes the results of family medicine and other primary care specialties in the National Residency Matching Program® (NRMP) Main Residency Match, hereafter called the NRMP Match, and the American Osteopathic Association Intern/Resident Registration Program, hereafter called the AOA Match. The NRMP Match is the largest entry point into graduate medical education (GME) for most specialties (26,836 matches in 2016), and the AOA Match is the second largest (2,255 matches in 2016).\textsuperscript{1,2} Positions offered through these matching services reflect the priorities of the sponsoring institutions; fill rates by specialty reflect the relative attractiveness of any single specialty to medical graduates. Together, this information may serve as a barometer for advocates, policy makers, and other stakeholders who recognize the need for a robust primary care workforce to gauge the systematic and institutional support for primary care graduate medical education, as well as the attractiveness of primary care medical careers for medical graduates.

Traditionally, the articles in this series have focused on year-to-year changes in NRMP Match rates, comparing family medicine with other specialties. For the first time in this series, trends in the AOA Match are included. While the ultimate goal is to examine trends across all primary care specialties, the fact that the AAFP and AOA define primary care specialties differently limits the ability to examine trends beyond family medicine.
Methods
The authors used publicly available online data from the NRMP to obtain information about postgraduate year 1 (PGY-1) match rates for all participating specialties from 1986 through the 2017 match. Five years of AOA Match data is also publicly available online. The authors have used the same definitions for categories of applicants as defined by the NRMP and described in detail in previous articles in this series (US seniors, previous graduates of US MD-granting medical schools, students/graduates of Canadian medical schools, students/graduates of DO-granting medical schools, students/graduates of fifth-pathway programs, US citizen graduates of international medical schools, and non-US citizen graduates of international medical schools). Throughout this article, the term “US senior” refers to the NRMP definition of “a fourth-year medical student in a US allopathic school of medicine accredited by the Liaison Committee on Medical Education (LCME) with a graduation date after July 1 in the year before the Match.”

Primary care specialties in the NRMP Match are defined by the authors as family medicine, primary care internal medicine, primary care pediatrics, and medicine-pediatrics because graduates from these residency programs are most likely to deliver care that is integrated, accessible, and addresses a large majority of personal health care needs through sustained partnerships with patients and practice in the context of family and community. Categorical internal medicine and pediatrics are not included because a low percentage of graduates of those programs go on to practice primary care. This classification is consistent with the National Academy of Medicine, which defined primary care as a function of care and not as a discipline or specialty. A prior Council on Graduate Medical Education (COGME) Report estimated that “ninety-one percent of the physicians who complete family medicine residencies will likely practice comprehensive, longitudinal care; 44 percent of residents completing pediatric residencies will likely practice general pediatrics; and 10-20 percent of residents who graduate from internal medicine residencies will likely practice general internal medicine with a substantial comprehensive longitudinal outpatient practice.” The authors of the COGME Report opined that even the reported 10-20 percent of internal medicine graduates practicing traditional primary care may be an overestimation.

The AOA defines primary care more broadly to include family medicine, internal medicine, pediatrics, and osteopathic manipulative treatment.

The AOA Match does not distinguish between categorical internal medicine and primary care internal medicine or categorical pediatrics and primary care pediatrics programs, limiting the authors’ ability to capture and analyze primary care production between the NRMP and AOA matches.

Methods

Analysis

The authors utilized publicly available data from the NRMP and the AOA Match to capture and analyze primary care production between the NRMP and AOA matches.

Results

All ACGME-accredited family medicine residency programs completed the annual AAFP online census to achieve a 100% response rate. The annual census is limited in scope to include only ACGME-accredited programs.

NRMP Match

The gap continues to widen between the number of positions offered in the NRMP Match and the number that are primary care positions, especially since the year 2000. Over the last 32 years, the total number of PGY-1 positions has grown at an annual rate of 246 new positions per year (P<.001), while primary care positions have grown at an annual rate of 21 (P=.019) (Figure 1). Primary care currently represents approximately 15% of all PGY-1 positions offered in the NRMP Match.

Family medicine comprised nearly 80% of all the primary care positions each year over the last 30 years (Figure 2). The number of family medicine positions offered in the NRMP Match has followed a sinusoidal pattern, and has grown 32% since 2009 to reach an all-time high of 3,378 in 2017 (Figure 3). During this same time, the number of non-family medicine primary care positions grew by only 18%. Over the last 11 years, the number of family medicine positions has grown at an annual rate of 86 positions (P=.001) while the number of non-family medicine primary care positions did not increase at a statistically significant rate (P=.112).

Since 2006, the number of US seniors matching into family medicine increased annually at 44 per year (P=.001) and at a non-statistically significant rate of 10 per year for non-family medicine primary care (P=.878, Figure 4). Despite the steady growth in the number of US seniors matching into family medicine over the last decade, the number remains 810 fewer than the peak of 2,340 in 1997. The proportion of family medicine positions to total PGY-1 positions in the NRMP Match has remained approximately 12%.
Figure 1: Total Number of PGY-1 Positions Offered vs Number of PGY-1 Primary Care Positions Offered in the NRMP Match, 1986-2017

Figure 2: Primary Care PGY-1 Positions Offered and the Contribution of Family Medicine, NRMP Match, 1986-2017
Figure 3: Family Medicine PGY-1 Positions Offered, Filled, and Filled by US Seniors, NRMP Match, 1986-2017

Figure 4: Total Positions Offered and US Seniors Matched in Family Medicine and Non-Family Medicine Primary Care Specialties, NRMP Match, 1986-2017
AOA Match
In 2017, 45% of the 6,194 current graduates of DO-granting medical schools participated in the AOA Match. The remaining 55% participate in the NRMP, military, ophthalmology, or urology matches. One thousand, one hundred and eighty-six DO graduates (19.1%) entered AOA and/or ACGME-accredited family medicine residency programs (9.8% via the AOA Match and 9.3% via the NRMP Match). The percentage of family medicine positions offered in the AOA Match has grown significantly by approximately 0.5% annually from 28% in 2011 to 31% in 2017 ($P=0.001$).

ACGME-Accredited Family Medicine Residency Programs
Figure 5 shows the composition of the entering classes of ACGME-accredited family medicine residency programs from 2000 to 2017 by medical school type. This figure does not include DO graduates entering AOA-only accredited residencies and therefore underrepresents the true rate of family medicine production by DO-granting medical schools. The proportion of US MD graduates entering family medicine residencies has been relatively flat for the last 7 years ($P=0.202$), while there has been a statistically significant increase in the percentage of DO students by 1% annually ($P=0.038$) with a reciprocal decrease in the proportion of non-citizen IMGs ($P=0.038$). The number of ACGME-accredited family medicine residency programs and the total number of residents in all years of training in those programs grew rapidly during the early 1990s and followed a sinusoidal pattern since 1997 (Figure 6).

Discussion
Despite empirical evidence worldwide that an appropriate foundation of primary care in a health care system leads to improved health outcomes, improved experience of health care, a reduction in health disparities, and lower overall cost of care, in the United States PGY-1 family medicine and primary care positions offered in the NRMP Match continue to grow but are losing ground in comparison to the growth of non-primary care specialties. Over the last 32 years, non-primary care PGY-1 positions grew at an annual rate of 225 per year while primary care positions grew 21 per year. This is particularly concerning because it exacerbates the imbalance between primary care and subspecialty care. The Council on Graduate Medical Education (COGME) recommended that the proportion of primary care increase to at least 40%, yet it is approximately 32% and falling. Family medicine has comprised the clear majority of PGY-1 primary care positions in the NRMP Match for many years and family medicine positions have grown. Although the number of non-family medicine primary care positions offered in the NRMP Match has grown, the primary care delivery system may be further challenged as more graduates of primary care training enter non-primary care specialties.
care internal medicine residency programs become hospitalists, thereby reducing the contribution of primary care internal medicine programs to the practice of traditional primary care. The percentage of graduates of primary care internal medicine programs becoming hospitalists has increased from 28.3% in 2012 to 32.9% in 2015, while the percentage of family medicine graduates becoming hospitalists has shown a more modest increase from 6.5% to 7.4% in the same period.

The continued growth of both US MD-producing and DO-producing medical schools over the past 15 years and the relatively slower growth in the number of family medicine GME positions is creating a greater level of competition for these positions.

The trendline illustrates the growth in family medicine resident population over 24 years.

Source: American Academy of Family Physicians (AAFP), Annual Residency Census Survey

The trendline illustrates the growth in family medicine resident population over 24 years.

Source: American Academy of Family Physicians (AAFP), Annual Residency Census Survey

The continued growth of both US MD-producing and DO-producing medical schools over the past 15 years and the relatively slower growth in the number of family medicine GME positions is creating a greater level of competition for these positions. In family medicine, DO students have been displacing non-US citizen IMGs in ACGME programs over the past decade, while the proportion of US seniors has remained stable.

There were 51 family medicine residency programs newly accredited by the ACGME between 2016 and 2017, which is a larger increase than would be expected if only accounting for the number of previous AOA-only accredited programs that have received ACGME accreditation through the Single Accreditation System process. There is a noteworthy growth in the number of new primary care positions by specialty since 2009 (family medicine 823; medicine-pediatrics 27; medicine-primary 94; and pediatrics-primary 4). These numbers reflect the priorities of those sponsoring institutions. Within primary care, over the last decade, family medicine is growing both in positions offered and positions filled with US seniors at a greater rate than the other primary care specialties. This may reflect the interest by institutions that sponsor GME to grow their primary care base in the community through family medicine rather than other primary care specialties.

Despite the authors’ wish to deepen the analysis of the NRMP and AOA Match data for primary care, there are several limitations that make comparison of the two matches challenging. Applicants from DO-granting medical schools who do not match in the AOA Match may also participate in the NRMP Match. While the number of NRMP positions remains fairly fixed throughout the Match, there appears to be more fluidity in the number of positions offered through the AOA Match, with the number varying slightly between the beginning and the end of the AOA Match for some specialties. Some off-cycle students enter family medicine outside of the Match or via a handful of exceptions to the NRMP All-In Policy, while osteopathic students can enter AOA

Figure 6: Family Medicine Resident Population and Number of ACGME-Accredited Family Medicine Residency Programs by Year, 1994-2017

Number of ACGME-Accredited Family Medicine Residencies by Year

The trendline illustrates the growth in family medicine resident population over 24 years.

Source: American Academy of Family Physicians (AAFP), Annual Residency Census Survey
While the NRMP distinguishes primary care and categorical programs for internal medicine and pediatrics programs, the AOA programs do not make these distinctions, thereby making direct comparisons for primary care between the two matches difficult. Whereas the COGME 20th report, “Advancing Primary Care”, cites estimated rates of posttraining practice of traditional primary care for those students who matched into internal medicine and pediatrics through the 2010 NRMP Match, there is not published data on the same estimates at this time for those matching through AOA Match. Small numbers of students enter ACGME-accredited family medicine programs through alternative pathways, such as off-cycle appointments; military match into civilian programs; rural scholars programs; and family medicine accelerated programs. Data from the military match is not publicly available.

Future research is needed to understand trends and variations in the practice patterns of internal medicine and pediatrics graduates trained at DO-granting and MD-granting medical schools to understand if they practice primary care at different rates. The transition to the Single Accreditation System for GME, a structure to create a unified system of GME accreditation between the ACGME, AOA, and the American Association of Colleges of Osteopathic Medicine, adds a level of complexity to this and future match analyses. As programs that were previously accredited only by the AOA receive ACGME accreditation, the number of positions offered in the AOA and NRMP Matches will continue to change until there is a single match system in the future, currently set for 2020. While this may create challenges in mapping trends prior to this merger, the Single Accreditation System will likely simplify research moving forward by unifying the nature and content of GME data collection.

The purpose of medicine as a profession is to meet the health needs of people and communities. Despite growth of family medicine and primary care in general over the last several years, the widening gap between the growth of subspecialties over primary care is very concerning. Evolving practice patterns away from primary care by graduates of primary care internal medicine residencies amplify the growing gap in the primary care workforce. Policy makers should prioritize revisions to national GME policy to address these gaps. Some medicine-primary care programs are being transformed to move the locus of training from the hospital to advanced primary care clinic settings. The leaders of the “Clinic First” model are hopeful that, as more residencies adopt these models, students and residents exposed to these training environments will drive more residency graduates to choose primary care careers. Corrective changes could include limiting the funding of subspecialty GME and using the savings to fund a greater number of primary care positions, mostly family medicine, with a goal to rebalance the US physician workforce to achieve the triple aim of better health care experience, improved health of populations, and reduced per capita costs of health care.

ACKNOWLEDGEMENTS: The authors would like to acknowledge Terri Lischka, MSPA and James Swartwout, AOA senior vice president of Education and Accreditation for preparation and sharing the AOAP Match data as well as William Venable, MBA, MPA for his assistance with statistical analysis.

CORRESPONDING AUTHOR: Address correspondence to Dr Kozakowski, American Academy of Family Physicians, Medical Education Division, 11400 Tomahawk Creek Parkway, 800-274-2237, ext: 6700, Fax: 913-906-6289, skozakowski@afap.org.

References