

# The 2017 Match and the Future US Workforce



For 25 years from 1980 to 2005, the number of US MD medical schools and the number of MD students did not increase because of predictions of an oversupply of US physicians by the Council on Graduate Medical Education (COGME).<sup>1</sup>

Then, in 2005, the COGME reversed its opinion and predicted a shortage of physicians. The COGME recommended a 15% increase in enrollment of US MD and DO medical students.<sup>2</sup>

In 2006, the Association of American Medical Colleges recommended a 30% increase (over the 2002 enrollment) of US MD medical students by 2019.<sup>3</sup> They recommended that the increase should be achieved by increased enrollment in Liaison Committee on Medical Education schools and an increase in the number of medical schools.<sup>3</sup>

In 2010, the COGME recommended an increase in the percentage of generalists from the then 32% to 40% of US practicing physicians.<sup>4</sup>

In response to these recommendations, there has been a brisk increase in the number of US MD and DO medical schools and in the number of enrolled medical students.<sup>5</sup> Will these increases solve the shortage of US physicians and will they increase the percent of generalist physicians? The results of the 2017 National Resident Matching Program (NRMP)<sup>6</sup> together with the 2017 American Osteopathic Association (AOA) match<sup>7</sup> provide some clues as to the future US medical workforce.

The 4 main groups of physicians who compete for postgraduate first-year positions are US MD graduates, US osteopath graduates, US international medical graduates, and non-US international medical graduates.

MD graduates of US and international medical schools compete for US resident postgraduate first-year positions through the NRMP.<sup>6</sup> Graduates of US osteopathic schools may enter the NRMP match or the AOA match.<sup>7</sup> An increasing number of DO graduates are entering the NRMP match rather than the AOA match.

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## APPLICATIONS FOR US POSTGRADUATE FIRST-YEAR POSITIONS IN 2002 AND 2017 NATIONAL RESIDENT MATCHING PROGRAM<sup>6,8</sup> AND AMERICAN OSTEOPATHIC ASSOCIATION MATCHES<sup>7,9</sup>

In 2017, applications for postgraduate first-year positions from US MD seniors increased by 29% and osteopath applicants increased by 128%. US MDs and DOs together increased by 45%. This increase in US MD and DO physicians meets the recommendations of the Association of American Colleges<sup>3</sup> and exceeds the recommendations of the COGME<sup>2</sup> In addition, there was a striking 150% increase in applications from US international medical graduates and a 60% increase in non-US international medical graduates.

Despite the large increases in US and non-US international medical graduates, US MD and DOs accounted for two thirds of the applicants. The total increase in applicants to the 2017 NRMP and AOA match was 57% greater than the 2002 applicants (**Table 1**).<sup>6-9</sup>

## WHICH APPLICANTS MATCHED TO WHICH POSTGRADUATE FIRST-YEAR POSITIONS?

As shown in **Table 2**, the number of available postgraduate first-year positions increased from 23,075 in 2002 to 31,412 in 2017, an increase of 36%. The number of US MDs matching to a postgraduate first-year position increased by 30% from 2002, and the number of US osteopaths increased by 37%. US MDs and DOs filled 71% of the postgraduate first-year positions. US international medical graduates and non-US

**Table 1** Applicants to National Resident Matching Program and American Osteopathic Association Match 2002 Versus 2017<sup>6-9</sup>

	2002	2017	% Increase
Total US MD	14,336	18,539	29%
DO NRMP/AOA	2602	5937	128%
Total US MD/DO	16,938	24,476	45%
US IMG	2029	5069	150%
Non-US IMG	4556	7284	60%
Total applicants	23,523	36,829	57%

AOA = American Osteopathic Association; IMG = international medical graduate; NRMP = National Resident Matching Program.

**Table 2** Matches to Postgraduate First-Year Positions in National Resident Matching Program and American Osteopathic Association Match<sup>6-9</sup>

	2002	2017	% Increase
PG1 positions	23,075	31,412	36%
US MDs matched	13,489	17,480	30%
DO matched NRMP/AOA	3580	4905	37%
US MDs and DOs matched	17,069	22,385	31%
US IMG matched	1092	2778	154%
Non-US IMG	2335	3816	63%
Total PG1 matched	20,496	28,979	41%

AOA = American Osteopathic Association; IMG = international medical graduate; NRMP = National Resident Matching Program; PG1 = postgraduate first year.

international medical graduates had significant increases in the matched positions. The number of physicians beginning resident training in 2017 was 8483 (41%) more than in 2002.<sup>6-9</sup>

### IMPACT OF 2017 MATCH ON PRIMARY CARE

One of the reasons for the recommendation for an increase in the number of US medical students and medical schools was the shortage of generalist (primary care) physicians in the United States.<sup>10</sup> The percent of generalist physicians in practice in 2002 was 32%.<sup>11</sup> The goal of the COGME was to increase the percent of primary care physicians to 40%.<sup>2</sup>

Will the huge (41%) increase in physicians entering residency programs in 2017 compared with 2002 increase the percent of generalists when they complete their residencies?

The US primary care workforce, the generalists, consists of general internists, general pediatricians, medical-pediatricians, and family practitioners. As shown in **Table 3**, the percent of 2017 applicants who entered these potential primary care residency programs increased by 43% from 2002 to 2017. How many of the physicians who entered these residency programs in 2017 will emerge as primary care physicians? Unfortunately, a minority of these physicians entering these residencies will enter practice as generalists.<sup>12</sup>

Most residents who complete a 3-year internal medicine residency take further training and enter practice as subspecialists.<sup>12</sup> The percent entering medical subspecialties increased from 30% in 2002 to 88% in 2015.<sup>13</sup>

There was a 52% increase in the number of internal medicine postgraduate first-year positions offered in 2017 (7944)

**Table 3** Number of Residents Entering Primary Care Residencies 2002 and 2017 (National Resident Matching Program and American Osteopathic Association (Match))

	2002	2017	% Change
Internal Medicine	4664	7628	64%
Medical-Pediatrics	340	356	5%
Pediatrics	2058	2733	33%
Family Medicine	3114	3825	23%
Totals	10,176	14,542	43%

**Table 4** Potential Primary Care Physicians in 2017 Postgraduate First-Year National Resident Matching Program<sup>6</sup> and American Osteopathic Association Match<sup>7</sup>

	No. Match	% Primary	No. Primary
Internal Medicine	7628	12%	915
Pediatrics	2733	60%	1640
Medical-Pediatrics	356	95%	338
Family Medicine	3825	95%	3634
	14,542		6527

than in 2002 (5237). Some 96% of the positions were filled. Because 88% or more of these internal medicine residents will become specialists or subspecialists, the percentage of internal medicine residents entering the US physician workforce as general internists will decrease. The same trend has decreased (to a lesser extent) the number of general pediatricians.<sup>14</sup> Nearly all who complete a medical-pediatrics residency will practice as generalists. Almost all residents who complete a 3-year residency in family medicine enter practice as family practitioners.

In **Table 4**, we predict how many of these residents will enter practice as generalists. We predict that less than half (~6527) of the 14,542 physicians who were matched to a primary care residency in 2017 will emerge as generalists. The majority will enter practice as specialists or subspecialists. If this prediction is accurate, 23% of physicians who begin residency in 2017 will become generalists and 77% will be specialists. There will be no progress toward the COGME goal of a workforce of 40% generalists.<sup>2</sup>

### IMPACT OF 2017 DRAFT ON FAMILY MEDICINE

The majority of US generalists in the future will be family practitioners. The number of general internists and general pediatricians will continue to decrease.

Will the continued increase in the number of US MD and DO medical students increase the number of future family practitioners? The number of postgraduate first-year positions in family medicine (NRMP)<sup>6</sup> and AOA draft<sup>7</sup> was slightly less in 2017 (4315) than in 2002 (4514). Some 98% of the family practice positions in 2017 were filled.<sup>6,7</sup> As shown in **Table 5**, 180 more US MD and DO physicians matched to family medicine in 2017 than in 2002 (a 7% increase). In

**Table 5** Physicians Matched to Family Medicine<sup>6-9</sup>

	2002	2017	%
US MDs	1395	1513	8%
DOs (NRMP and AOA)	1118	1184	6%
MD /DO	2517	2697	7%
IMGs (US + foreign)	596	995	67%
Total	3113	3692	19%
% PG1 FP positions filled	68%	86%	

AOA = American Osteopathic Association; FP = family practice; IMG = international medical graduate; NRMP = National Resident Matching Program; PG1 = postgraduate first year.

**Table 6** Percent of Applicants to National Resident Matching Program and American Osteopathic Association Match in 2017 Who Selected Family Medicine<sup>6,7</sup>

US MDs	9%
Osteopaths	24%
US IMG	24%
Foreign IMG	9%
Total	11%

IMG = international medical graduate.

addition, the number of international medical graduates entering family medicine residencies increased by 399. The total increase in family practice postgraduate first year from 2002 to 2017 was 579, a 19% increase over 2002. Although the number of physicians who matched in 2017 increased by 8483, only 579 (7%) entered family medicine residencies. **Table 6** demonstrates that family medicine was the first choice of only 9% of US MDs. Osteopaths and US international medical graduates were approximately 3 times as likely to choose family medicine than US MD graduates.

## CONCLUSIONS

The response to the 2005 COGME<sup>2</sup> and the Association of American Colleges' 2006 recommendations<sup>3</sup> for an increase in the enrollment of US Medical students has been dramatic. The 45% increase in US MD and DO physicians applying for postgraduate first-year positions in 2017 compared with 2002 indicates that the recommended increase in medical student enrollment was achieved by 2013 or earlier. In addition to the increase in US MD and DO graduates, there has been a significant increase in US and non-US international applicants. In 2017, 8638 more physicians entered US residency programs than in 2002: a 41% increase.<sup>6,7</sup> We predict that less than 25% of the physicians who began their residency in 2017 will enter the workforce as generalists. The remaining 75% will become specialists and subspecialists. The increase in the percent of US generalist physicians recommended by the COGME<sup>2</sup> will not occur. The percent of US physicians who are generalists will continue to decrease. If the number of US MD and DO medical schools continues to increase faster than the US population increases, a surplus of US specialists and subspecialists seems inevitable.

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