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Postgraduate Choices of Graduates from Medical Scientist Training Programs, 2004-2008

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To the Editor

There have been questions about the efficacy of medical scientist training programs (MSTPs) in training the next generation of physician scientists. [1,2] Although studies have identified postgraduate specialty choices of a subset of these students, [3,4] to our knowledge none have generated data based on a complete evaluation of graduates from all MSTPs. To better understand postgraduate choices of all National Institutes of Health (NIH)-sponsored MSTP graduates, we conducted a census of graduates from 2004 to 2008.

Methods

Graduate placement data from NIH-sponsored MSTPs were collected from official program websites for 2004 to 2008. Preliminary match data were not collected if the graduate matched into a PGY-2 residency program. If no such website was available, directors of MSTPs were surveyed for postgraduate choices of graduates from their program. Identifying information was removed from data, which were then analyzed for frequency of specialty choice. Number of US seniors entering a specialty was obtained from the websites of the three allopathic residency match programs: National Resident Matching Program [5], San Francisco Match, and the Urology Match.

Relative risk comparing MSTP graduates versus all other US medical school seniors for entrance into a specialty was determined. Data for preliminary-only matching graduates were excluded in calculation of relative risk. *P*-values for relative risk were calculated using the chi-

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Acquisition of data: Paik.
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square test, or two-sided Fisher Exact Test when expected cell frequencies fell below 5, with significance set at 0.05. Analyses were performed using SAS 9.1 (SAS Institute, Cary, NC).

Results

Graduate data were obtained from the websites of 34 of the 43 MSTPs; the remaining 9 programs were surveyed, and all responded. Positions filled by graduates from NIH-funded MSTPs and all other US seniors were tabulated for each specialty (Table). The most common residencies for MSTP graduates were internal medicine (n=367 [24.6%]), pathology (n=154 [10.3%]), pediatrics (n=149 [10.0%]), and diagnostic radiology (n=103 [6.9%]). For specialties with more than 100 positions from 2004 to 2008, MSTP graduates as compared to all other US seniors were most likely to enter residencies in radiation oncology (relative risk [RR], 8.01; 95% confidence interval [CI], 6.40 -10.03), child neurology (RR, 7.65; 95% CI, 4.67 -12.53), and pathology (RR, 5.48; 95% CI, 4.68 - 6.42). MSTP graduates were least likely to enter residencies in family medicine (RR, 0.03; 95% CI, 0.01 - 0.09), emergency medicine (RR, 0.16; 95% CI, 0.10 - 0.25), and obstetrics/gynecology (RR, 0.18; 95% CI, 0.11 - 0.30). Graduates not entering the match constituted 4.4% of total MSTP graduates. MSTP graduates were less likely to pursue residencies in primary care or surgical specialties. Further analysis of these data is available at the study website.[6]

Comment

These findings are consistent with previous data indicating that MD/PhD graduates are more likely to enter internal medicine, dermatology, neurology, and pathology and less likely to enter family medicine, obstetrics/gynecology, or emergency medicine. [3,4] However, this study also indicated that MSTP graduates are more likely to enter radiation oncology and child neurology, while they were less likely to enter anesthesiology and orthopedic surgery.

This study was limited by the assessment at graduation; data were not collected for graduates changing career path. These data cannot predict long-term outcomes since they did not assess any post-residency career choices. Because only small numbers of MSTP graduates and US seniors entered some specialties, some relative risk estimates may be susceptible to chance error.

Nevertheless, this study provides an initial baseline for further analysis of trends in early outcomes of MSTP graduates. For specialties that are not traditionally associated with strong physician-scientist role models, residency program directors and national specialty organizations may need to explore methods to retain physician-scientists as members of academic medicine communities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table

Postgraduate choices of graduates from Medical Scientist Training Programs (MSTPs), 2004-2008.

Postgraduate Choice	MSTP Graduates, No. (%) (N = 1495)	Non-MSTP US Seniors, Categorical Match Only, No. (%) [a] (N = 69458)	Relative Risk (95% CI) [b]	P value [c]
By individual categories				
Internal Medicine	367 (24.6)	13758 (19.8)	1.30 (1.19 - 1.42)	<0.001
Pathology	154 (10.3)	1373 (2.0)	5.48 (4.68 - 6.42)	<0.001
Pediatrics	149 (10.0)	8359 (12.0)	0.87 (0.75 - 1.02)	0.07
Diagnostic Radiology	103 (6.9)	4047 (5.8)	1.24 (1.03 - 1.50)	0.02
Dermatology	88 (5.9)	1144 (1.7)	3.76 (3.04 - 4.64)	<0.001
Radiation Oncology	84 (5.6)	512 (0.74)	8.01 (6.40 -10.03)	<0.001
Neurology	81 (5.4)	1569 (2.3)	2.52 (2.02 - 3.13)	<0.001
Psychiatry	76 (5.1)	3104 (4.5)	1.20 (0.95 - 1.49)	0.11
Ophthalmology	67 (4.5)	1858 (2.7)	1.76 (1.39 - 2.23)	<0.001
Anesthesiology	51 (3.4)	4890 (7.0)	0.51 (0.30 - 0.67)	<0.001
Surgery	33 (2.2)	4283 (6.2)	0.38 (0.27 - 0.53)	<0.001
Neurosurgery	28 (1.9)	785 (1.1)	1.74 (1.20 - 2.53)	0.003
Otolaryngology	22 (1.5)	1241 (1.8)	0.87 (0.57 - 1.32)	0.50
Orthopedic Surgery	21 (1.4)	2809 (4.0)	0.37 (0.24 - 0.56)	<0.001
Child Neurology	18 (1.2)	113 (0.16)	7.65 (4.67 -12.53)	<0.001
Emergency Medicine	17 (1.1)	5333 (7.7)	0.16 (0.10 - 0.25)	<0.001
Obstetrics/Gynecology	15 (1.0)	4010 (5.8)	0.18 (0.11 - 0.30)	<0.001
Urology	13 (0.87)	1140 (1.6)	0.56 (0.32 - 0.96)	0.03
Medicine/Pediatrics	12 (0.80)	1376 (2.0)	0.43 (0.24 - 0.75)	0.002
Plastic Surgery	6 (0.40)	401 (0.58)	0.73 (0.33 - 1.63)	0.44
Physical Medicine & Rehabilitation	5 (0.33)	903 (1.3)	0.27 (0.11 - 0.65)	0.002
Family Medicine	4 (0.27)	5673 (8.2)	0.03 (0.01 - 0.09)	<0.001
Nuclear Medicine	3 (0.20)	2 (0.003)	73.3 (12.3 - 438)	<0.001
Child Psychiatry	2 (0.13)	81 (0.12)	1.21 (0.30 - 4.90)	0.68
Medical Genetics	1 (0.07)	4 (0.01)	12.2 (1.37 - 109)	0.10
Medicine/Neurology	1 (0.07)	3 (0.004)	16.3 (1.69 - 156)	0.08
Neurology/Psychiatry	1 (0.07)	1 (0.001)	48.8 (3.05 - 781)	0.04
Preliminary/Transitional Only	7 (0.47)			
Postdoctoral Fellowship/Research	40 (2.7)			
Faculty Position	6 (0.40)			
Business/Industry/Consulting	15 (1.0)			
Other	5 (0.33)			
By group categories				
Primary Care Specialties [d]	553 (37.0)	30279 (43.6)	0.89 (0.84 - 0.95)	<0.001
Surgical Specialties [e]	190 (12.7)	12531 (18.0)	0.74 (0.65 - 0.85)	<0.001
Other Specialties	686 (45.9)	26648 (38.4)	1.24 (1.18 - 1.32)	<0.001
Not Entering Residency	66 (4.4)			

Abbreviations: 95% CI, 95% confidence interval

[a] Data for non-MSTP US seniors who had preliminary-only matches or entered alternative careers are unavailable for comparison. Specialties may not sum to 69458 because there were some specialties in which no MSTP graduate matched.

[b] Comparison of matching MSTP graduates versus all other matching US seniors, excluding preliminary/transitional matches and those not entering the match.

[c] Chi-square test or two-sided Fisher exact test when expected cell frequency was less than 5.

[d] Includes internal medicine, pediatrics, family medicine, and any combination of these.

[e] Includes general surgery, ophthalmology, orthopedic surgery, otolaryngology, neurosurgery, urology, plastic surgery, vascular surgery, and thoracic surgery.