

Benchmarks for Support and Outcomes for Internal Medicine-Pediatrics Residency Programs: A 5-Year Review

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ABSTRACT

Background Combined internal medicine and pediatrics (medicine-pediatrics) residencies were Accreditation Council for Graduate Medical Education (ACGME) accredited separately from their corresponding categorical residencies in June 2006.

Objective We investigated how ACGME accreditation of medicine-pediatrics programs has affected the levels of support (both financial and personnel), the National Resident Matching Program (NRMP) match rate, performance on the board examination, and other graduate outcomes.

Methods From 2009 through 2013 we sent an annual SurveyMonkey online survey to members of the Medicine-Pediatrics Program Directors Association. Questions pertained to program characteristics, program director support, recruitment, ambulatory training, and graduate data. More than 79% of responders completed the entire survey for each year (sample size was 60 program directors).

Results Compared to the time prior to accreditation of the specialty, there was an increase in program directors who are dually trained (89% versus 93%), an increase in program director salary (\$134,000 before accreditation versus \$185,000 in 2013, $P < .05$), and an increase in the average full-time equivalent support (0.32 before accreditation versus 0.42 in 2013, $P < .05$). There was also an increase in programs with associate program directors (35% versus 78%), programs with chief residents (71% versus 91%), and an increase in program budgets controlled by program directors (52% versus 69%). The 2013 NRMP match rates increased compared to those of 2005 (99% versus 49%). Performance on the American Board of Pediatrics examination was comparable to that for pediatrics residents. Since accreditation, a larger number of residents are choosing careers in hospital medicine.

Conclusions Our data show widespread improved support for medicine-pediatrics programs since the 2006 start of ACGME accreditation.

Introduction

Internal medicine-pediatrics (medicine-pediatrics) is the only combined specialty accredited by the Accreditation Council for Graduate Medical Education (ACGME). In 2012, 362 positions were offered in the National Resident Matching Program (NRMP), which represent 1.5% of all available positions and 78% of combined residency positions. As of June 2006, combined medicine-pediatrics programs were accredited separately from their categorical residencies. Since 2007, a few medicine-pediatrics programs have been discontinued, although the number of residents participating in training has remained stable.¹ Regardless of the change to accreditation, combined residency program directors still work with the core programs of internal medicine and pediatrics. Robbins et al²

demonstrated that since 1999 there has been a movement toward greater administrative and financial independence for medicine-pediatrics programs. The study found that program directors were more likely to be dually trained, and that programs that employed a greater number of medicine-pediatrics faculty, were more likely to have a budget independent from the pediatrics and internal medicine budgets, and were more likely to have a chief resident.² This information was collected in 2004 and 2005, prior to ACGME accreditation. Data on postaccreditation changes in combined medicine-pediatrics programs from 2009 to 2013 may inform those currently sponsoring these programs and those considering the development of new training programs.

The Medicine-Pediatrics Program Directors Association (MPPDA) has conducted an annual membership survey since 2009. We utilized the MPPDA members as our primary source of data. We sought to examine how the levels of financial and personnel

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support, the board passing rate, the NRMP match rate, and graduate outcomes for medicine-pediatrics programs have changed in the half-decade since accreditation.

Methods

Survey

From 2009 through 2013, we invited each MPPDA member via e-mail to complete an annual Survey-Monkey online survey, with reminders sent every 2 weeks for 2 months. E-mail addresses were obtained from the MPPDA and ACGME lists. Each survey was divided into sections pertaining to (1) program characteristics; (2) program director support (ie, administrative personnel, program director, associate program director, chief resident, program coordinator, and financial contributions); (3) recruitment; (4) ambulatory training; and (5) graduate data. The content of the survey remained the same each year to maintain standardization.

Survey Creation and Validation

The survey was created by a MPPDA research committee, in which questions were created and refined and then approved by the MPPDA executive committee. No validity evidence was obtained.

An exemption was obtained by the State University of New York Buffalo Institutional Review Board.

Data Analysis

Data obtained for each year were compared to preaccreditation data from Robbins et al² where available. Multiple linear regression analysis was used in determining factors (attrition, NRMP fill rates, industry support) associated with board pass rates. Statistical analyses were done using a Student *t* test. Data are presented as mean \pm SD. A *P* value of .05 or less was considered significant.

Results

Overall Survey Response

We had a high response rate, with 81% (64 of 79), 71% (57 of 80), 80% (63 of 79), 76% (60 of 79), and 71% (57 of 74) from 2009 to 2013, respectively. More than 77% (49 of 64) of responders completed the entire survey instrument for each year. The average sample size was 60 program directors, and the average completion rate was 91% (274 of 301).

What was known and gap

Internal medicine-pediatrics programs were accredited by the Accreditation Council for Graduate Medical Education in June 2006, making this type of program a candidate for studying the impact of accreditation.

What is new

This study found improved financial and personnel support for medicine-pediatrics programs between 2009 and 2013.

Limitations

Lack of validity evidence for the survey instrument; some survey attrition.

Bottom line

Recent data show favorable trends for medicine-pediatrics programs compared to the period before the specialty was accredited. Further study is needed to confirm a causative relationship with accreditation.

Program Director Demographics

TABLE 1 summarizes demographics and support data for program directors from 2009 to 2013 compared to preaccreditation.² After accreditation, medicine-pediatrics program directors received an increase in salary support (\$134,000 prior to accreditation versus \$185,000 in 2013) and an increase in full-time equivalent (FTE) support (0.32 FTE prior to accreditation versus 0.42 FTE in 2013). A total of 88% of preaccreditation program directors in the Robbins et al² study reported having trained in a combined medicine-pediatrics residency compared to 94% (58 of 62), 98% (55 of 56), 94% (58 of 62), 97% (56 of 58), and 93% (53 of 57) for 2009 to 2013, respectively.

Levels of Program Support

TABLE 2 shows an increase in medicine-pediatrics staff, personnel, and administrative support compared to 2007. In 2013, 78% (43 of 55) of the programs had an associate program director, compared with 35% in the Robbins et al study.² The proportion of programs with a medicine-pediatrics chief resident had increased from 71% to 91% (50 of 55) in 2013. Prior to accreditation, 52% of programs directors controlled a separate budget for the medicine-pediatrics residency²; in 2012 and 2013, that number was 65% (36 of 55) and 69% (38 of 55), respectively. The number of programs receiving support from the industry decreased from 34% in 2005² to 11% (6 of 55) in 2013.

TABLE 1
Trends of Medicine-Pediatrics Program Directors Since Accreditation

Program Director Characteristic	Preaccreditation (n = 63)	2009 (n = 64)	2010 (n = 56)	2011 (n = 62)	2012 (n = 60)	2013 (n = 55)
Male, n (%)	63%	36 (58)	31 (55)	32 (52)	33 (57)	30 (53)
Average age (y), mean (± SD)	39.4 (± 5.6)	42 (± 6.2) ^a	42 (± 6.0) ^a	42 (± 10)	46 (± 11.7) ^a	43.1 (± 5.9) ^a
Academic rank, n (%)^b						
Assistant professor	N/A	39 (63)	34 (61)	34 (55)	28 (48)	28 (51)
Associate professor	N/A	15 (24)	18 (32)	22 (35)	24 (41)	21 (38)
Full professor	N/A	3 (5)	2 (4)	4 (6)	4 (7)	5 (9)
Practice type, n (%)						
Ambulist	N/A	26 (42)	18 (32)	23 (37)	21 (36)	19 (35)
Hospitalist	N/A	7 (11)	11 (20)	10 (16)	9 (16)	11 (20)
Inpatient and outpatient	N/A	24 (38)	21 (38)	25 (40)	24 (41)	22 (40)
Subspecialist	N/A	3 (5)	4 (7)	2 (3)	4 (7)	3 (5)
Annual salary (\$), mean (± SD)	134 000 (± 28 000)	159 000 (± 31 000) ^a	169 000 (± 36 500) ^a	164 000 (± 57 600) ^a	180 500 (± 36 900) ^a	185 000 (± 32 000) ^a
Length of time as program director (y), mean (± SD)	4.5 (± 3.9)	5.5 (± 4.4)	5.5 (± 4.7)	6.1 (± 4.3) ^a	6.1 (± 4.3) ^a	6.7 (± 4.5) ^a
Number of full-time equivalents dedicated to the program, mean (± SD)	0.32 (± 0.2)	0.39 (± 0.13) ^a	0.42 (± 0.14) ^a	0.41 (± 0.16) ^a	0.41 (± 0.14)	0.42 (± 0.10) ^a
Internal medicine-pediatrics trained, n (%)	89%	58 (94)	55 (98)	58 (94)	56 (97)	53 (93)

Abbreviation: N/A, not available.

^a Statistically significant ($P < .05$) compared with preaccreditation data.

^b Not available in the 2007 Robbins et al article.²

TABLE 2
Demographic and Support Data for Medicine-Pediatrics Programs Since Accreditation

	Preaccreditation ^a	2009	2010	2011	2012	2013
Average number of residents per program, mean (\pm SD)	15.9 (\pm 8.6)	17.4 (\pm 8.9)	18.1 (\pm 9.0)	18.6 (\pm 9.2)	18.6 (\pm 8.3)	19.6 (\pm 8.2) ^b
Average number of faculty FTEs per program, mean (\pm SD)	N/A	7.3 (\pm 10.2)	6.85 (\pm 8.1) ^c	8.5 (\pm 12.2)	6.5 (\pm 8.7)	7.8 (\pm 10.5)
Percentage with an APD, n (%)	35%	32 (50)	33 (60)	42 (68)	41 (66)	43 (78)
Average APD FTEs in programs with an APD, mean (\pm SD)	0.32	0.23 (\pm 0.22)	0.22 (\pm 0.19)	0.27 (\pm 0.22)	0.25 (\pm 0.21)	0.18 (\pm 0.12)
Has own program administrator, n (%)	N/A	42 (71)	46 (82)	49 (79)	45 (82)	39 (71)
Program administrator FTEs ^d , mean (\pm SD)	N/A	0.69 (\pm 0.36)	0.76 (\pm 0.33)	0.68 (\pm 0.30)	0.77 (\pm 0.55)	0.64 (\pm 0.40)
Internal medicine-pediatrics chief resident, n (%)	71%	49 (80)	49 (88)	54 (87)	51 (93)	50 (91)
Program-controlled budget, n (%)	52%	31 (51)	32 (57)	39 (63)	36 (65)	38 (69)
Program budget (\$), mean (\pm SD)	N/A	277 000 (\pm 573 000)	244 000 (\pm 425 000)	172 300 (\pm 350 000)	103 000 (\pm 28 000)	136 000 (\pm 361 000)
Industry support, n (%)	34%	14 (24)	8 (14)	7 (11)	8 (15)	6 (11)

Abbreviations: FTE, full-time equivalent; N/A, not available; APD, associate program director.

^a Only percentile frequency data included; *n* not available.

^b Statistically significant ($P < .05$) compared with preaccreditation data.

^c Core faculty: 3.42 FTEs/program in 2010; 3.9 FTEs/program in 2011.

^d Other support staff: 0.82 FTEs/program in 2010; 0.64 FTEs/program in 2011.

Board Performance Data

TABLE 3 shows the trends in board pass rates during the first years of accreditation. The reported American Board of Internal Medicine (ABIM) pass rates for medicine-pediatrics and internal medicine residents in 2006 were 88% and 91%, respectively.²⁻⁴ These results show a modest decline in the ABIM pass rate compared to 2006. For 2011, we found that first-time passing of the ABIM certification examination was negatively associated with attrition from the training program but not with fill rates on the NRMP or industry support. Our data also showed that medicine-pediatrics residents' pass rate on the American Board of Pediatrics (ABP) increased in both 2012 and 2013 compared with the period prior to accreditation, and is similar to the pass rate for pediatrics residents.

NRMP Match Data

Prior to accreditation, only 49% of medicine-pediatrics programs filled all of the positions offered in the NRMP.^{1,2} That proportion increased to 99% in the 2013 NRMP Match.

Graduate Outcomes

In the 2013 survey of program directors, we found that the graduates of medicine-pediatrics programs were choosing more hospital-based careers compared with the years before accreditation. In 2013, 33% (68 of 209) of graduates were planning an ambulatory career and 21% (44 of 209) were planning a hospitalist career. Of those planning a hospitalist career, 61% (27 of 44) chose a medicine-pediatrics position, 34% (15 of 44) chose an internal medicine position, and 5% (2 of 44) chose a pediatrics position. In 2013, 33% (68 of 209) of graduates planned to enter fellowship training. Of those choosing a fellowship, 49% (33 of 68) chose an internal medicine subspecialty, 35% (24 of 68) chose a pediatrics subspecialty, and 16% (11 of 68) selected a medicine-pediatrics fellowship position.

Discussion

Our study is the first comprehensive review of medicine-pediatrics program support and training outcomes since ACGME accreditation. Overall, we found increasing levels of financial and personnel support for medicine-pediatrics programs, comparable board performance to internal medicine and pediatrics programs, and an increasing NRMP Match

TABLE 3
Trends in Board Passage Rates Since Medicine-Pediatrics Accreditation

Year	ABIM		ABP	
	Internal Medicine–Pediatrics, %	Internal Medicine, %	Internal Medicine–Pediatrics, %	Pediatrics, %
Preaccreditation (2006)	88	91	76	79
2009	85	89	82	76
2010	83	88	75	76
2011	77	84	76	76
2012	84	85	85	86
2013	88	86	85	82

Abbreviations: ABIM, American Board of Internal Medicine; ABP, American Board of Pediatrics.

rate. It is plausible that these changes are due to ACGME accreditation.

We found an increase in the number of program directors and associate program directors and an increase in program-controlled budgets compared with the 2007 Robbins et al study² and a study by Wolfsthal et al⁵ that assessed support for internal medicine programs. We believe that this increased support is most likely due to increased recognition as an accredited residency by the sponsoring institution. No other public data are available on financial and personnel support of other residency programs since ACGME accreditation. Future studies are necessary to determine the positive outcomes of ACGME accreditation on other residency programs.

Robbins et al² demonstrated that 49% of responding medicine-pediatrics residency programs filled all of their positions in the NRMP; this was positively correlated with a higher first-time ABIM pass rate, and the presence of combined noon conferences as part of the curriculum. In 2013, we found that an astonishing 99% of medicine-pediatrics positions were filled in the NRMP Match. In our study, no other factor was associated with filling the Match, and we can only hypothesize that the increase in match performance since 2006 is due to ACGME accreditation and an enhanced emphasis on educational outcomes.

A study by Falcone⁶ demonstrated that the pass rate for examinees from accredited medicine-pediatrics programs was higher than that for examinees from programs without medicine-pediatrics programs. The authors proposed that the underlying cause for this observation was that residencies with internal medicine-pediatrics programs were larger, with substantially higher numbers of examinees than residencies without these programs.⁶ This study did

not consider changes in ACGME accreditation as a factor in examination outcomes. We found that both ABIM and ABP certification examination pass rates have remained variable. Ultimately, the reasons for examination performance are largely unclear; further study of variables associated with board pass rates is needed. Further research also is needed to assess whether medicine-pediatrics graduates are able to sustain some level of a combined practice postresidency.

Medicine-pediatrics training has been available for more than 40 years,⁷ and several studies have examined the changing curriculum, the adequacy of training, and the career paths of graduates.^{7–12} Primary care has been the most common career choice of medicine-pediatrics graduates, but our data suggest, similar to other disciplines, that the popularity of that choice is diminishing. Data for 2000 to 2006 showed that 93% of medicine-pediatrics graduates entered private practice. Chamberlain et al⁷ surveyed medicine-pediatrics residents and found that 55% planned a career in primary care, while 7% planned a career in hospital medicine. Our data show that a larger percentage (21%) now are choosing careers in hospital medicine. This may be a more general trend for internal medicine and pediatrics graduates, as data from the Society of Hospital Medicine show that the number of hospitalists increased 172% between 2003 and 2010.¹³ In 2012, there were approximately 34 000 hospitalists working in US hospitals.¹⁴

The major limitation to our study was the lack of validity evidence for our survey; other limitations included self-reported data, bias, and some attrition.¹⁵ We also did not have access to all of the raw data from the Robbins et al article²; therefore, we were unable to make statistical comparisons in some key areas. Although this study reports important findings about the impact of ACGME accreditation on medicine-pediatrics programs, future studies are needed to confirm our findings and attribute these findings directly with changes in ACGME accreditation. Additional studies will also be necessary to determine the effects of a new accreditation system that emphasizes competency-based assessment and improvement in patient safety and quality outcomes¹⁶ on medicine-pediatrics programs and outcomes for their graduates.

Conclusion

Our data show widespread improved support for medicine-pediatrics programs since 2006, the start of ACGME accreditation. This includes improvements in financial and personnel support, improved performance in the NRMP Match, and stabilized board pass rates.

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