

Delivering on the Promise: Exploring Training Characteristics and Graduate Career Pursuits of Primary Care Internal Medicine Residency Programs and Tracks

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ABSTRACT

Background Specialized primary care internal medicine (PC IM) residency programs and tracks aim to provide dedicated PC training. How programs deliver this is unclear.

Objective We explored how PC IM programs and tracks provide ambulatory training.

Methods We conducted a cross-sectional survey from 2012 to 2013 of PC IM program and track leaders via a search of national databases and program websites. We reported PC IM curricular content, clinical experiences, and graduate career pursuits, and assessed correlation between career pursuits and curricular content and clinical experiences.

Results Forty-five of 70 (64%) identified PC IM programs and tracks completed the survey. PC IM programs provide a breadth of curricular content and clinical experiences, including a mean 22.8 weeks ambulatory training and a mean 69.4 continuity clinics per year. Of PC IM graduates within 5 years, 55.8% pursue PC or general internal medicine (GIM) careers and 23.1% pursue traditional subspecialty fellowship training. Curricular content and clinical experiences correlate weakly with career choices. PC IM graduates pursuing PC or GIM careers correlated with ambulatory rotation in women's health (correlation coefficient [ρ] = 0.36, P = .034) and mental health (ρ = 0.38, P = .023) and curricular content in teaching and medical education (ρ = 0.35, P = .035). PC IM graduates pursuing subspecialty fellowship negatively correlated with curricular content in leadership and teams (ρ = -0.48, P = .003) and ambulatory training time (ρ = -0.38, P = .024).

Conclusions PC IM programs and tracks largely deliver on the promise to provide PC training and education and produce graduates engaged in PC and GIM.

Introduction

The critical need for trained primary care (PC) physicians has focused attention on PC training in graduate medical education.^{1,2} Many internal medicine (IM) residency programs developed specialized PC IM programs or focused tracks within IM training programs aimed to provide dedicated training in PC.

Despite the importance of this mission, how PC IM programs and tracks provide PC training is unclear. Current literature skews heavily toward individual program descriptions.³⁻⁷ Collective study is limited due to the difficulty in identifying these programs.^{8,9} A survey of PC programs and tracks conducted in 2017 focused on continuity clinic factors and how

ambulatory training is structured.⁹ Assessment of curricula and clinical experiences provided by PC IM programs is needed.

This study aims to explore how PC IM programs and tracks provide ambulatory training, including curricular content and clinical experiences, and how these correlate with career pursuits of PC IM graduates.

Methods

We conducted a cross-sectional survey of program leaders of PC IM residency programs and tracks. First, we identified PC IM training programs and tracks using a stepwise approach from publicly accessible sources.⁸ We searched the National Resident Matching Program (NRMP) Residency Match listings from 2010 to 2012 to identify PC IM training programs with a distinct PC NRMP Match code.¹⁰

Second, to identify programs that did not utilize a PC NRMP code, we searched the Fellowship and

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Editor's Note: The online version of this article contains career pursuits and strengths and barriers of graduates of primary care internal medicine residency training program and tracks per survey of program leaders.

Residency Electronic Interactive Database Access (FREIDA).¹¹ We searched FREIDA using the terms “internal medicine” and “primary care track” to identify programs that self-identified as a PC-oriented IM program or track.

Next, we reviewed each identified program or track website to determine inclusion. For our study, we included PC IM programs and tracks with a stated mission to train PC physicians, provide structured PC training and education, and have a designated PC IM program leader. When it was unclear from website review, we contacted program leaders directly to ask if the program self-identified as a PC IM program or track. We excluded programs not actively recruiting and training, non-US-based programs, programs focused on PC outside the United States, and those that self-identified as a categorical IM training program. Two researchers (R.K. and S.M.H.) assessed extracted data to determine inclusion. Discord was settled by discussion until consensus was achieved.

The authors (clinician-educators) developed and piloted the survey among PC and IM residency leadership at our institution who are not involved in the study. We sent the survey to leaders of identified programs via an online survey tool (Survey Monkey LLC, Palo Alto, CA) and gathered responses from September 2012 to April 2013.

We evaluated characteristics of PC IM programs and tracks, including subspecialty ambulatory experiences, PC curricular content, ambulatory training time, continuity clinic factors, and career pursuits of PC IM graduates. We queried program leaders about the career pursuits of residents who graduated from their program or track within the past 5 years. Specifically, we inquired about the proportion of those pursuing PC or general IM (GIM) employment, academic medicine employment, fellowship training in a primary care-oriented field (ie, geriatrics), and traditional subspecialty fellowship training (ie, cardiology). Primary care refers to providing outpatient care via a sustained patient relationship and GIM refers to a blend of outpatient primary care with some inpatient care. Academic medicine refers to practice in an academic setting in any specialty.

Correlation analyses assessed correlation between PC IM graduate career pursuits and curricular content and clinical experiences using Spearman's rho and Wilcoxon signed rank test, and a *P* value of .05 was used for statistical significance.

The study was declared exempt from review by the Institutional Review Board at Emory University School of Medicine.

What was known and gap

Specialized primary care internal medicine (PC IM) residency training programs and tracks are becoming more common, but it is not known how many are in the United States and how they are providing training.

What is new

A cross-sectional survey of program leaders of PC IM residency and tracks identified via search of national databases and websites, to determine curricular content, clinical experiences, and graduate career pursuits.

Limitations

Study data are from 2012 and 2013; therefore, included programs could have changed how they provide training and new programs could have emerged. Survey lacks validity evidence.

Bottom line

PC IM programs and tracks provide more continuity clinic and ambulatory training compared with categorical IM and produce graduates engaged in PC and general IM.

Results

Searches of FREIDA and NRMP listings identified 137 unique training programs as potential PC IM programs or tracks. Secondary screening via review of program websites and program outreach yielded 70 unique programs identified as PC IM programs or tracks. Program leaders of 45 of 70 (64%) PC IM programs and tracks completed the survey (TABLE 1).

Program Characteristics

Most PC IM programs and tracks were university affiliated (78%, 35 of 45), and 38% (17 of 45) reported having funding support for their program with US Health Resources and Services Administration funding mechanisms predominating.

Training Characteristics

On average, PC IM residents spend 22.8 weeks per year training in the ambulatory setting and engage 69.4 half-day continuity clinic sessions per year. Number of patient visits per continuity clinic session varied by resident level of training. Most reported that PC IM residents engage in more weeks of ambulatory training per year (89% [39 of 44] PC IM programs affiliated with a categorical IM program) and more continuity clinic sessions (77% [34 of 44] PC IM programs affiliated with a categorical IM program) than categorical IM residents at comparable levels of training. Specifically, PC IM residents engage in 8.8 more weeks of ambulatory training and 16.2 more continuity clinic sessions per year, on average, than categorical IM residents.

FIGURE 1 depicts the breadth of ambulatory clinical training experiences provided by PC IM programs. Specialty clinical experiences cited most often as a

TABLE 1

Training Characteristics of Primary Care Internal Medicine Residency Programs and Tracks

Program Characteristics	
Affiliated with a categorical IM residency training program, n (%)	44 (98)
Funding support of PC IM program (ie, HRSA grant), n (%)	17 (38)
Affiliated with AAMC accredited university, n (%)	35 (78)
Affiliated with community hospital or clinic, n (%)	10 (22)
Size of program, mean number of residents per year (95% CI)	16.0 (12.0–20.0)
Age of program, mean number of years (95% CI)	17.0 (13.2–20.8)
Training Characteristics	
Ambulatory Rotation	
Length of ambulatory rotation, n (%)	
1 to 2 weeks	12 (27)
4 weeks	31 (69)
5 to 6 weeks	4 (9)
8 weeks or longer	7 (16)
PC IM residents have inpatient coverage duties during ambulatory rotation, n (%)	20 (44)
PC IM residents engage in more weeks of ambulatory training per year than categorical IM residents, n (%) out of 44 programs affiliated with categorical program	39 (87)
Resident Continuity Clinic	
Offer PC residents more than 1 continuity clinic, n (%)	22 (49)
Offer multiple continuity clinic sites, n (%)	34 (76)
Continuity clinic settings, n (%)	
University clinic	22 (49)
Community, nonprofit clinic	15 (35)
Public hospital based clinic	13 (30)
Veterans Administration based clinic	10 (23)
Private practice clinic	10 (23)
PC IM residents engage in more continuity clinic sessions per year than categorical IM residents, n (%) out of 44 programs affiliated with categorical program	33 (75)
Quantity of Ambulatory Training	
Amount of time training in ambulatory setting, mean number weeks per year (95% CI)	22.8 (18.9–26.6)
Amount of continuity clinic sessions per year, mean number clinic sessions per resident per year (95% CI)	69.4 (62.1–76.7)
Patient encounters per continuity clinic session by resident level of training, mean number patient encounters (95% CI)	
PGY-1	3.5 (3.3–3.7)
PGY-2	4.9 (4.6–5.1)
PGY-3	5.7 (5.4–6.0)

Abbreviations: IM, internal medicine; PC IM, primary care internal medicine; HRSA, Health Resources and Services Administration; AAMC, Association of American Medical Colleges; PC, primary care; PGY, postgraduate year.

standard part of ambulatory training were geriatrics, dermatology, and women's health.

Curricular Content

Most PC IM programs (76%, 34 of 45) reported having a dedicated, primary care-specific curriculum. FIGURE 2 depicts the breadth of content included in PC IM curricula. Topics cited most often as a standard part of the PC IM curricula include patient-physician

communication, cultural competency, social determinants of health, and quality improvement.

Career Pursuits

Program leaders reported that 56% of graduates within the past 5 years pursue careers in PC or GIM, 10% pursue PC-oriented fellowship training, and 23% pursue traditional subspecialty fellowship training. Twenty-seven percent of graduates within the

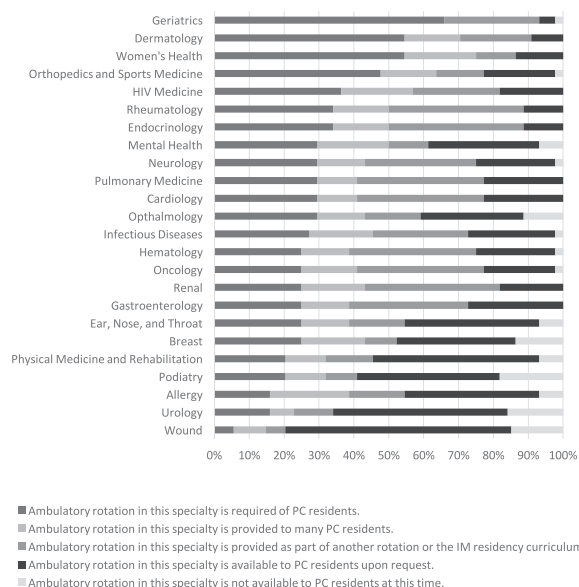


FIGURE 1
Clinical Ambulatory Training in Primary Care Internal Medicine Residency Programs and Tracks

past 5 years pursue careers in academic medicine. See the TABLE provided as online supplemental material.

TABLE 2 details the correlation between the training characteristics of PC IM programs and graduate career pursuits. There was no significant correlation between proportion of PC IM graduates pursuing PC or GIM employment with program size or age, having inpatient coverage duties during ambulatory rotation, having a dedicated PC IM curriculum, and number of continuity clinic sessions, sites, or volume of patient encounters per clinic session. Weeks of ambulatory training had a weak negative but significant correlation with PC IM graduates pursuing subspecialty fellowship training (correlation coefficient [ρ] = -0.38 , $P = .024$).

Ambulatory rotation in women's health and mental health had a weak but significant correlation with proportion of PC IM graduates pursuing PC or GIM employment ($\rho = 0.36$, $P = .034$ and $\rho = 0.38$, $P = .023$, respectively). Clinical experiences in geriatrics, dermatology, orthopedics, HIV, rheumatology, endocrinology, neurology, pulmonary, cardiology, ophthalmology, infectious diseases, hematology-oncology, renal, gastroenterology, breast, physical medical, podiatry, urology, and wound were not significantly associated with PC IM graduate career pursuits.

Curricular content in teaching and medical education had a weak but significant correlation with proportion of graduates employed in PC or GIM ($\rho = 0.35$, $P = .035$). Curricular content in leadership and teams had a weak negative correlation with graduates pursuing subspecialty fellowship training ($\rho =$

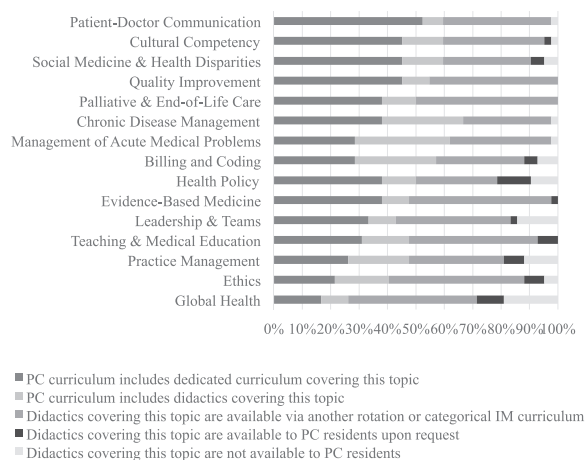


FIGURE 2
Curricular Content of Primary Care Internal Medicine Residency Programs and Tracks

-0.48 , $P = .003$). Curricular content in patient-physician communication, social determinants of health, cultural competency, health disparities, quality improvement, palliative care, chronic disease management, managing acute problems, billing and coding, health policy, ethics, practice management, evidence-based medicine, and global health were not significantly associated with PC IM graduate career pursuits.

Strengths and Barriers

A collegial atmosphere and variety and quality of ambulatory clinical training experiences were frequently cited as strengths to program development, while learner interest in PC, funding, and perception of PC were often cited as barriers to program development. See the TABLE provided as online supplemental material.

Discussion

We found that PC IM programs and tracks provide more continuity clinic and ambulatory training compared with categorical IM and offer a breadth of curricular content and clinical experiences. Given the aim to bolster the PC workforce, these programs were successful with 55.8% of graduates pursuing careers in PC or GIM and 10.3% pursuing PC-oriented fellowship training, according to program leaders.

Our findings of PC IM graduate career pursuits are in line with prior reports. Reports of long-term career plans of PC IM graduates cite 54% to 59% of graduates engaged in PC or GIM careers.^{12,13} A survey of PC IM programs and tracks in 2017 reported 57% of PC IM were employed in PC or

TABLE 2

Correlation Between Clinical Training Characteristics of Primary Care Internal Medicine Residency Program and Tracks and Graduate Career Pursuits Within Past 5 Years

Characteristics	Correlation With PC IM Graduates Pursuing PC or GIM Careers (Rho) ^a	P Value	Correlation With PC IM Graduates Pursuing SS Fellowship (Rho) ^a	P Value
Size of program, mean number of residents	0.16	.36	-0.16	.34
Age of program, mean number of years operational	0.12	.48	-0.08	.65
No. of weeks per year training in ambulatory setting	0.30	.08	-0.38	.024 ^b
No. of continuity clinic sessions per resident per year	0.17	.33	-0.19	.26
No. of continuity clinic sites available to PC residents	0.11	.51	-0.19	.27
No. of patient visits per continuity clinic session by resident level of training				
PGY-1	0.14	.42	-0.18	.29
PGY-2	0.13	.45	-0.12	.49
PGY-3	0.08	.65	-0.08	.65
PC IM includes ambulatory rotation in women's health	0.36	.034 ^b	-0.29	.09
PC IM includes ambulatory rotation in mental health	0.38	.023 ^b	-0.17	.33
PC IM curriculum includes teaching and medical education	0.35	.035 ^b	-0.31	.07
PC IM curriculum includes leadership and working with teams	0.29	.09	-0.48	.003 ^b

^a Spearman's rho correlation with 1 to 0.70 a high positive correlation, 0.69 to 0.50 a moderate positive correlation, 0.49 to 0.30 a low positive correlation, 0.29 to 0.00 a negligible positive correlation, -1 to -0.70 a high negative correlation, -0.69 to -0.50 a moderate negative correlation, -0.49 to -0.30 a low negative correlation, and -0.29 to 0.00 a negligible negative correlation.

^b P value < .05, level of statistical significance.

Abbreviations: PC IM, primary care internal medicine; PC, primary care; GIM, general internal medicine; SS, subspecialty; PGY, postgraduate year.

GIM, 14.4% employed as hospitalists, and 15.6% pursued traditional fellowship training immediately following training.⁹

While there are no specific requirements for PC IM programs or tracks beyond the standard requirements for IM training programs, more training in the ambulatory setting is expected. We found that ambulatory time training had a weak negative but significant correlation with the proportion of graduates pursuing subspecialty fellowship training. Simply put, more ambulatory training time was associated with fewer graduates pursuing subspecialty training.

Continuity clinic factors, including the number of clinics and patient encounters, were not significantly associated with graduate career choice, although clustering around the mean likely played a role. Evidence suggested that the continuity clinic experience may negatively influence interest in PC.^{12,14,15} A survey of PC IM programs and tracks found no significant association between PC IM graduate career choice and continuity clinic factors.⁹ In fact,

X+Y block scheduling was inversely related to graduate PC employment.⁹

We identified novel clinical and curricular components that correlated with career choice, including ambulatory rotation in women's health and mental health and curricula in teaching and leadership. Training in these areas may be of importance given its direct applicability to PC. Graduates of programs that emphasize training in these areas may feel better equipped for PC practice. A study of PC IM residents found that residents wanted enhanced integration of PC with behavioral health services to help manage complex patient needs.¹⁴

Alternately, the variables we found that correlate with career pursuits may reflect learner interest or program investment in PC. Medical students keenly interested in PC may gravitate toward programs that provide rotations of interest and go on to pursue careers in PC. Breadth and availability of ambulatory rotations may be a marker of program commitment to ambulatory education and training. PC IM

programs and tracks that are deeply invested in ambulatory education may have robust institutional support and resources dedicated to ambulatory education and training.

One major limitation of this study is that data reported were collected from 2012 to 2013. It is possible that existing programs have changed how they provide training or that new PC IM programs and tracks may have emerged in the intervening period. A study of PC IM programs conducted in 2014 utilized a similar stepwise approach and identified 75 PC IM programs.⁸ A survey of PC IM programs and tracks conducted in 2017 included 100 programs, although they did not employ a systematic method of identifying and screening the 25 newly identified programs.⁹

Another limitation is that we did not inquire about hospitalist careers. It is possible that some leaders included hospitalists with PC or GIM. However, the remaining 10% of graduates not accounted for in other categories may account for those employed as hospitalists, and this value aligns with earlier reports.^{9,13} Third, we did not perform multiple comparison analysis; therefore, many identified correlations may be spurious. We relied on program leader reporting, which is subject to recall bias if graduate careers are not tracked routinely by the program. Lastly, the survey has little validity evidence, thus respondents may not have interpreted questions as intended.

Understanding graduate career choice is critical. Additional longitudinal studies are needed to determine how and why curricular and clinical experience influence graduate career choice. A readily accessible database of PC IM programs would enable collaboration and inquiry.

Conclusion

PC IM programs and tracks provide more continuity clinic and ambulatory training compared to categorical IM and a breadth of curricular content and clinical experiences.

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