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# Program Factors Associated With Influencing Generalist Career Plans Among Primary Care Im Residents

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Program Factors Associated with Influencing Generalist Career Plans Among Primary  
Care IM Residents

A Thesis Submitted to the  
Yale University School of Medicine  
in Partial Fulfillment of the Requirements for the  
Degree of Doctor of Medicine

by

Olatunde Bosu

2014

## PROGRAM FACTORS ASSOCIATED WITH INFLUENCING GENERALIST CAREER PLANS AMONG PRIMARY CARE IM RESIDENTS.

Olatunde I. Bosu, Theodore Long, Krisda Chaiyachati, Bradley Richards, Nicole Krenitsky, Leslie Curry, John Moriarty, Stephen Huot.

The combination of a rapidly aging US population with the recent implementation of the Affordable Care Act has prompted a dramatic rise in health care demand for primary care services, most notably for general internal medicine physicians. This demand, however, coincides with a progressive decline in interest toward general internal medicine (GIM) careers with a notable disinterest among Primary Care Internal Medicine (PCIM) residents, whose selection of the PCIM residency is seemingly suggestive of a strong interest in GIM. The reasons for this discrepancy have been examined in prior surveys, citing perceptions of diminished lifestyle control, low prestige, and of frustrated general internists in practice. However, more in-depth study is warranted, particularly among PCIM residents who appear to be dissuaded from GIM careers, likely at some point during their residency. By gaining a more in-depth understanding of PCIM resident training experiences, the investigators aim to elucidate what program factors have the potential to encourage or discourage PCIM residents from GIM careers. The investigators in this study completed structured interviews with second and third year PCIM residents, analyzed the qualitative data obtained using grounded theory methods, and identified emergent themes from the interview transcripts. Among the seven study participants' responses, the investigators identified six program factor themes with a potential to encourage or discourage residents from GIM. Three potentially encouraging themes were: a culture of like-mindedness among colleagues, including comfort with change; positive reflections on the outpatient curriculum; and an appreciation of exposure

to various models of primary care. Three potentially discouraging themes were: a mismatch between trainee expectations and the actual experience with the practice of primary care; challenges with disjointed care, including interruption of continuity by inpatient rotations; and inadequate communication between practice teams and subspecialist physicians. Improving resident training experience by bolstering potentially encouraging program factors while addressing potentially discouraging program factors may influence a greater number of PCIM residents to enter GIM care.

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## INTRODUCTION

A primary care crisis looms in the United States. The US population is expected to reach 349 million by 2025, an increase in 18% from 2005 levels, with a disproportionate increase in US residents over sixty-five by 73% (1). From 2011 to 2029, 80 million members of the Baby Boom generation will turn sixty-five and become Medicare-eligible, at a rate of 10,000 per day (2), increasing the demand for Medicare services among the previously uninsured or underinsured Baby Boomers (3). In 2006, nearly two-thirds of the 133 million Americans living with a chronic medical condition were over the age of 65 (4). This surge among the aging populace is compounded by the inherent greater use of generalist care by the demographic, at twice the rate compared to those under age sixty-five (1). Before the ratification of Patient Protection and Affordable Care Act (PPACA), primary care workload was expected to increase by 29% between 2005 and 2025 (1), with an anticipated increase in demand by 38% for general internists from 106,000 in 2000 to 147,000 in 2020 (5). The resulting implementation of PPACA will provide first-time access to 32 million currently uninsured Americans by 2019 (6), further increasing the demand for primary care providers.

In 2006, 45% of the US population lived with at least one chronic medical condition, and one-half of these individuals suffer from multiple conditions (4). With the current and anticipated majority of these sufferers belonging in the senior demographic, the role of general internists to provide disease management and comprehensive care cannot be overstated. The prevention, early detection, and treatment of these chronic medical conditions by general internists, along with their vital role in coordination of

care, not only serves to maintain patient wellness and reduce hospitalization rates (7), but it also ensures a more efficient use of health care resources. Numerous studies have demonstrated that a strong primary care workforce is associated with better patient health outcomes, particularly a decreased mortality from heart disease, cancer, and stroke (8), at a reduced cost (9), and while using fewer resources (10). It is therefore not surprising that our country's largely specialist-driven health care system, relative to those of other developed nations, ranked lowest in both primary care functions and health outcomes but highest in medical spending. (11, 12, 13)

Unfortunately, with the anticipated shortage of general internists, this statistic is unlikely to improve. In 2011, primary care doctors comprised only 32% of the 800,000 practicing physicians (14). This number is expected to diminish over the next decade, as only two-thirds of current general internists are projected to maintain certification, and the remaining third will either leave practice permanently, due to retirement or career change, or may take a hiatus (16,17). This bleak projection is worsened by the fear that by 2016, the adult primary care workforce will shrink as the primary care physicians leaving practice will outnumber those entering (18). Trends in medical student and resident career choices over the past decade offer little optimism that this shortage can be avoided. Between 1998 and 2003, the number of US medical school graduates matching in primary care internal medicine residencies declined by 33% (19), and recently, less than 18% of graduating medical students are expected to ultimately practice primary care (14).

To address the anticipated physician shortage (and by extension, the diminished

student interest in PC), the Association of American Medical Colleges (AAMC) released in June 2006 the *AAMC Statement on the Physician Workforce*, arguing for increased medical student enrollment of 30% by 2012 (15). Between 2002 and 2014, the number of US medical school graduates increased by almost 7000 (36%) to 26500 due to enlarged class sizes in existing schools and due to the opening of 20 new Liaison Committee on Medical Education-accredited schools (20).

However, medical student interest is not aligned with primary care. Between 1985 and 2011, the number of graduating medical students matching into primary care residency positions declined 24% (21). A myriad of reasons have been attributed to medical student disinterest with primary care, namely with generalist medicine. Hauer et al. (22) found that although, med students are largely satisfied with their IM clerkship experience and that two-thirds considered continuity of care as attractive component of the broad field of internal medicine, they had strong concerns about their quality of life and lifestyle control in IM. The investigators found debt level to be unrelated to student career choice but that more than 40% of students were drawn to specialties with controllable lifestyles. Their study confirmed that student interest in GIM was low, that role modeling in internal medicine was less favorable compared to other specialties, and it suggested that students were aware of general internists' frustrations with current practice conditions.

Among Internal Medicine residents, the interest in general internal medicine careers is similarly low. Survey results obtained from residents participating in the Internal Medicine In-Training Examination (IM-ITE) demonstrated that the percentage of



all PGY-3 internal medicine residents who expressed an intent to pursue generalist careers decreased from 54% in 1998 to 27% in 2003 (19). Similarly, in 2003, a mere 19% of PGY-1 examinees expressed an interest. On the contrary, the percentage of PGY-3s expressing an interest in subspecialist careers jumped from 42% to 57%. A 2012 study surveying PGY-3 IM residents who took the IM-ITE between 2009 and 2011 revealed a similar percent (21%) of those planning generalist careers to the 2003 level (23). A cohort sample of these participants showed that only 14.9% of the group expressed generalist career plans as PGY-1 residents but that this number had risen to a more encouraging, yet lowly, 21.5% by their PGY-3 year. In contrast, 72.0% of interns reported subspecialty career plans and this number dropped to a persistently high 64.2% in their PGY-3 year.

This survey further evaluated participants by training program, specifically, between traditional IM residents and primary care IM residents. Surprisingly, it demonstrated that a mere 29.2% of primary care internal medicine (PCIM) interns reported general internal medicine (GIM) career plans but that this number had risen to 39.6% of PCIM residents by PGY-3. Nonetheless, this value was outweighed by the 52.5% of total PCIM PGY-3s who reported a subspecialty career plan. Although this suggests an increase in generalist career interest among PCIM residents, a presumed PCIM resident orientation to general internal medicine is contradicted by the persistent predilection to subspecialty medicine. As a result, the percentage of entering PCIM residents reporting a GIM career plan remains low, further supporting concerns of an impending generalist shortage.

Unfortunately, the reasons for the insufficient interest in general internal medicine careers among internal medicine residents are unclear. Among residents expressing a GIM career plan, longitudinal relationships with patients was the most highly valued factor (19, 24), along with a preference for a broad knowledge base and caring for ambulatory patients (19). Coincidentally, residents seeking subspecialty fellowships, as a whole, also valued longitudinal patient care but preferred a narrow practice scope along with care for critically ill patients.

Other factors affecting resident career decisions that have been cited have been separated into features drawing residents to subspecialty care and those discouraging them from primary care. The former have been cited as the intellectual content of subspecialty medicine, technological advancements, high prestige/income, and resident perceptions of a more controllable lifestyle in subspecialty medicine. Conversely, the factors dissuading residents have been cited as perceptions of job satisfaction among general internists, low prestige/income, high stress, and administrative burdens (19).

However, considering that these factors have been largely obtained from quantitative studies and surveys, it is uncertain whether they reflect speculations on resident values that may fail to represent a more comprehensive catalogue of decision factors (24). In addition, they may not reflect more complex values that residents attribute to their career pathways. These values likely represent an interplay among resident personality traits (25), prevailing impressions of generalist medicine, and experiences prior to and during residency (26). Because personality attributes are likely fixed, the vacillation in career plans among residents (27) during training suggest that the

impressions of general internal medicine and the experiences during training influence resident career paths. Indeed, Social Cognitive Career Theory states that career decisions are a result of experiences that produce personal success and positive feelings while engaging in tasks and that are affiliated with successful role models (28). These experiences, in turn, are guided by program structure and characteristics.

Gaining a clearer understanding of which program factors shape these experiences and perspectives, and in turn, influence career direction, will inform approaches to attract more PCIM residents to generalist medicine and sustain their interest during residency training. Employing qualitative interviews of current primary care internal medicine residents serves to provide insight into this interplay of complex values, with an emphasis on program characteristics and their relationship with their residency training experiences. By doing so, the authors seek to gain better awareness of how these program factors may encourage or discourage these residents from pursuing careers in primary care.

## METHODS

### Setting

The investigators focused this study on second and third-year residents in the Yale Primary Care Internal Medicine (PCIM) Residency Program, in the Section of General Internal Medicine, at Yale-New Haven Hospital (YNHH). YNHH serves as the fifth-largest urban academic medical center in the United States. The bulk of the residents' outpatient training is based at a single site – a nearby community clinic – with some accompanying rotations to practices in the surrounding area. This community clinic is staffed by the PCIM residents under the supervision of full-time attending physicians.

### Study Cohort

The PCIM residency housestaff is comprised of 47 residents (16 PGY-1s, 16 PGY-2s, and 15 PGY-3s) with 3 chief residents. An initial study population composed solely of third-year residents was later expanded to include second-year residents. The investigators obtained IRB exemption prior to participant recruitment. Participants were recruited via email from a pool of 31 eligible residents that comprised the PGY-2 and PGY-3 classes and invited to engage in the study. Up to six email invitations were sent to the eligible participants with no incentives provided for engaging in the study. Ultimately, an opportunity sample of 7 participants completed the interviews and was included in the study.

### Design

The research team used an instrument with 22 open-ended questions (see Appendix) developed from two in-person pilot interviews. These pilot interviews were transcribed, coded, and analyzed to determine which questions elicited the most relevant information. This author engaged in in-depth, face-to-face interviews with the study participants. The interviews were recorded with participant consent and later digitally transcribed for analysis.

### Analysis

Two members of the research team (TL, KC) generated codes from the primary transcripts that reflected themes found in the data. These investigators independently coded all transcripts, reviewed each other's coding scheme, and met to resolve discrepancies. The transcripts were coded in stages (based on grounded theory (29)), until theoretical saturation was achieved, and until no new codes were obtained from the transcriptions. The final theme list was produced using the constant comparative method (29). These themes were subsequently organized into six main themes. ATLAS.ti, a qualitative data analysis software program, was used for coding, for audit trails, and for obtaining representative quotes.

## RESULTS

Of the 31 residents who met inclusion criteria, 7 completed the interview (4 women, 3 men) and consisted of four PGY-3s and three PGY-2s (22.6%) in the opportunity sample. The interviews ranged from 50 minutes to 1 hour in length. The participants ranged from 28-31 years old, with 4 residents identifying themselves as Caucasians, 2 as South Asian, and 1 as Hispanic.

All three of the PGY-2 residents were unsure of their career plans immediately following residency. Although they thought openly of pursuing subspecialist medicine, they remained open to pursuing a generalist career. With their position as trainees in the middle of their residency programs, they admitted a shorter exposure to and less experience with the program factors than their third year colleagues. As a result, they were still unsettled. This, along with an ongoing exposure to the intricacies of chosen career paths, contributed to their ambivalence concerning immediate career plans.

Three of the four PGY-3 residents reported generalist career plans (though each with personalized focus, including academic, policy, and global health elements), and the fourth reported a hospitalist career plan, citing concerns about generalists' quality of life and a desire for family time.

Interestingly, the three PGY-3 residents pursuing GIM also reported career goals with specific features characteristic to their interests. Further, each of the three residents were more committed to a generalist career orientation than to a traditional general medicine career. They implied that the idiosyncratic features that reflected their personal interests may either complement this generalist orientation or compete with it in their

future career path. Their opinions reflected their views that career plans are fluid, interdisciplinary, and mutable.

Relative to the replies of their PGY-2 colleagues, the PGY-3 resident responses demonstrated a deeper refinement of the role that their personal interests may play in their career. It further appeared that the reflections on their resident experiences played a more reminiscent role in their career outlook, and that the attitudes that they held about their past training experiences had been less connected to their prospect to the future. Nonetheless, their negative experiences dissuaded them from pursuing a traditional role in a traditional health care microsystem, but their interest in generalist medicine (and in their personalized iterations) persisted.

Among the resident transcripts, six themes were identified. Three were identified as imparting a potentially encouraging effect on generalist career orientation, and three were identified as imparting a potentially discouraging effect toward generalist career orientation. The three potentially positive themes identified were: a culture of like-mindedness amongst colleagues including comfort with change; positive reflections on the outpatient curriculum; and an appreciation of exposure to various models of primary care. The three potentially negative themes identified were: a mismatch between trainee expectations and the actual experience with the practice of primary care; challenges with disjointed care, including interruption of continuity by inpatient rotations; and inadequate communication between practice teams and subspecialist physicians. These programmatic themes were derived from codes that were consistently found in the interview transcripts among the seven residents and reflected perspectives specifically

toward their training experiences.

#### POSITIVE THEMES:

##### Culture of Like-mindedness and Comfort with Change

The residents spoke highly of the culture of primary care at the institution, stating that “I felt that they had similar visions to what medicine could be.” They reported feeling “very supported,” as being a member of a “community of doctors that I respected,” and they felt embraced for their uniqueness. “That mentality is just so penetrating. I think in the [Primary Care Program], in the clinic, especially, you can’t get out of here without it affecting you... which I’m really grateful for.” Of note, the participants noted empathy directed toward them from the faculty and clinic preceptors concerning challenges they faced while working at the community clinic. They further noted that the collegiality among residents and faculty, as well as the faculty's commitment to improving resident experience, boosted their morale. The residents not only endorsed the culture at the institution as one that influenced them, but they also embraced a role as stewards who, in turn, molded and maintained the culture. “This program has given me everything and it is like a lovely family, so if I can help shape the program, great.”

##### Positive Reflections on the Outpatient Curriculum

The participants expressed praise and enthusiasm for the office-based curriculum, describing it as a “resource that you can carry forward and continue to reference as a provider once you leave.” The residents expressed approval for what they described as a



“valuable resource” that alleviates the “burden of trying to figure out what's relevant.”

They also endorsed the weekly pre-clinic conferences.

#### Appreciation of Exposure to Various Models of Primary Care

The residents stated an appreciation for exposure to various outpatient clinics and the accompanying variations in primary care delivery, describing it as “helpful to see differing practice styles”. “I've worked in a couple of other offices for two weeks at a time. That was helpful to see the differing practice styles that there are in Connecticut. Some of them are more well-to-do, and other ones were the same composition as or more similar to the ones you see at [the clinic].” They remarked on the better efficiency, coordination of care, and resources while working at the Veterans Affairs hospital. One resident remarked, “I'm grateful that we have outpatient blocks at private offices [with] many other different models of care. If I didn't, I think I would be in trouble.”

#### NEGATIVE THEMES:

##### Expectation/Experience Mismatch in Primary Care Settings

The participants most commonly endorsed an opportunity for longitudinal patient relationships, as well as a drive to form connections with their patients, as a motivating factor for pursuing primary care internal medicine. They valued the “excitement” that patients had when seeing their doctor, further describing that the patients they encountered in their pre-residency experiences were “inspiring,” “very relatable... very real.” “You have an opportunity to connect to somebody.” Although they valued this

exchange, they claimed that their ability to form these valued relationships as medical students was limited. “As a medical student, you don't get to see that very much. How many times to you get to see a patient twice?... it's mostly a theoretical interest.” They further professed a drive to serve as patient advocates. “Hearing the problems that [patients] had with access to care was a motivating factor for me to pursue primary care.” Another participant spoke of “being somebody's rock in the outpatient world.” However, all seven residents mentioned that their internal medicine exposure during medical school was largely inpatient-based, that their outpatient exposure comprised of four-week blocks with little patient continuity, and that they were largely unaware of most internal medicine residents' clinic experiences. One participant, however, mentioned that, as a medical student, she had often overheard medicine residents speaking “badly about clinic”, and that it had a “very negative connotation.”

Upon entering residency, the participants were met with a resource-poor clinic environment that struggled to meet the needs of a patient population with complex medical and social concerns, describing the experience as “challenging” and “exhausting.” They reported facing a community clinic that was “bare-bones”, with barriers including few non-physician providers, a non user-friendly medical record system, and a poor physical layout. The participants reported a need for social work and nurse practitioner roles in the clinic, citing, “A lot of the stuff I'm doing for my patients is stuff that could be done by other providers working in a team.” The electronic medical record and health care technology were described as “terrible,” “substandard,” and as a source of “personal frustration.” The layout was described as a “beehive of activity... that

adds to the transaction cost of daily clinic.” One resident commented on that the paucity of primary care doctors at the clinic was met with an “external pressure to see too many patients.” “You can't connect with patients. You really want to give them your time, but you have to see the next patient.” One participant voiced a concern about the sustainability of the health care model as well as a doubt in “my ability to be successful in a system that's so complicated and so broken. I can't provide the care that I want to provide.” Another participant voiced his sentiment that, “When I was an intern, I looked forward to months in the ICU because I didn't have clinic for a month.” Concerning the mismatch between expectations upon matriculation to residency with the experiences gained during training, one resident reported that nothing would have prepared the participant. “You just have to do it, to really experience it.”

#### Challenges with Disjointed Care & Interruption of Continuity by Inpatient Rotations

The participants expressed frustrations about their training schedule, describing it as “disjointed.” They reported the difficulty in “remaining current with everything that's going on with my patients” stemming from intervening inpatient or ICU rotations that keep them from clinic. “It's disjointed because we're not there all the time and because we don't have somebody who is there all the time.” “It's hard seeing my patients one day out of the week and then being gone for an entire week or, if I'm gone for a month on an inpatient or ICU rotation, then I'm not there during that period of time. A lot can transpire.” One participant described feeling “guilty” and that she believed at times that she had neglected some members of her patient panel to care for members of her

colleagues' panel. They report the challenge of seeing their patients one day of the week and struggling to arrange follow-up appointments that matched their schedule as not only a hindrance to maintaining their physician-patient relationships but also negatively impacting their "comfort level" with outpatient medicine.

#### Inadequate Communication Between Practice Teams and Subspecialists

The participants collectively voiced their struggles with coordinating subspecialist care with providers that had variable or limited availability for patient referrals, had variable responsiveness to resident efforts at communication, that utilized incompatible electronic medical record systems, and that denied Medicaid patients. "The lack of coordination of care is challenging." Citing barriers to communication with a patient's multiple subspecialist providers, one participant remarked about her patient, "Every time I see her, she will have seen some of her [subspecialist providers], and maybe the GI doctor changed one of her medications, maybe her HIV doctor took her CD4 and viral load but I don't have access to it [...] As her primary care doctor, how am I supposed to know what to do with her when I don't even know what changes have been made [to her medication regimen] and she's not able to keep track of it because someone didn't do a good job of explaining? How am I supposed to coordinate that?" Participants remarked that these inefficiencies increased administrative work and time, extending their time spent in clinic while reducing their time treating patients.

## DISCUSSION

In this study of the interplay of residency program factors and resident experiences, we found six factors that shape resident experiences during training and may ultimately have an encouraging or discouraging impact on their generalist career orientation. The three factors associated with favorable resident training experiences include: a culture of like-mindedness among colleagues, including comfort with change; positive reflections on the outpatient curriculum; and an appreciation of exposure to various models of primary care. On the contrary, the three factors associated with unfavorable resident training experiences include: a mismatch between trainee expectations and the actual experience with the practice of primary care; challenges with disjointed care, including interruption of continuity by inpatient rotations; and inadequate communication between practice teams and subspecialists.

We found among the primary care residents and program faculty a culture of mutual respect for open mindedness and innovation about shaping primary care. The program faculty appeared responsive to resident needs during training, thereby granting these trainees a secure and nurturing environment for professional growth. The residents were impressed both by the dedication that the faculty had to primary care practice in spite of the ongoing clinic challenges and by their confidence and optimism in the residents' role in shaping the future of primary care. An earlier study supported resident valuation of positive role modeling during training and found that residents who rated their preceptors highly as role models were more likely to value clinic (30). Although the negative aspects of the current clinical setting resulted in a feeling of frustration among

the residents, the prevailing positive attitudes and demonstrated support within the cultured contribute to a feeling of empowerment about the direction of future care and their place in the changing landscape.

Concerning the advancement of their clinical knowledge, each of the participants cited didactic sessions and the office-based curriculum as positive factors in their training. Both the literature and group discussions were found to be invaluable in preparation for their experiences as future practitioners, imbuing a sense of confidence in their growing knowledge base.

Finally, the residents endorsed a positive attitude toward the diversity of outpatient settings to which they were exposed. Observing a plurality of delivery systems fostered an awareness of the functional aspects of disparate primary care microsystems, promoting inner reflection on the opportunities for integration of successful practice components. This would encourage resident innovation for future health care models and inspire resident confidence as potential agents of change in primary care reform.

Conversely, the participants voiced some strong concerns about their training, notably of an incongruity between their expectations of primary care practice that they held before residency and their experiences that they faced working in a dysfunctional practice setting. Considering the prevailing negative attitudes toward and stereotypes about resident clinic (31), it was disappointing, yet unsurprising to find that a negatively-viewed program factor was related to work experiences at the community clinic. Most participants admitted to having limited outpatient experiences during medical school that were nonetheless positive and encouraging. Their expectations of serving as advocates to

underserved patients in need of assistance navigating the health care landscape and smoothly forming strong rapport and longitudinal relationships with their patients were admittedly theoretical. The residents were alarmed when they faced organizational obstacles that undermined their efforts to provide the level of care that they had intended to serve their patients. A 2006 statement by the Education Committee of the American College of Physicians admitted that, “Trainees are immersed in frustrating practice models that discourage rather than excite them.” (32). The prevalence of flawed residency clinics has been attributed to competition within academic medical centers for scarce resources, namely with inpatient, subspecialty, and research interests (33). Trainees are introduced to a system that places undue pressure to accommodate an increasing number of patients per half-day, resulting in shorter encounters that address fewer concerns. Further, residents encounter patients with multiple chronic, complicated, interacting medical conditions that are exacerbated by overwhelming social and financial burdens. Their considerable care needs, namely requirements for longer, more frequent, appointments and close management between visits, are frustrated by barriers to access from limited financial resources, inadequate patient education, and understaffed clinics.

The complex interplay of the patients' numerous chronic conditions warrants involvement by several specialists who each attend to only one of the patients' diseases. Residents cite their struggle in communicating and coordinating care as a chief frustration in their training experience and as an impediment to their administering optimal care. Initially, they face difficulties in arranging referrals to subspecialists who either deny coverage to patients with state insurance or whose earliest appointment availability is

several months after the referral is made. When patients are finally seen by their various subspecialist providers, IM residents face a further challenge in staying abreast of the subspecialists' management of their patients' conditions and often have to bypass the obstacle of using a different electronic medical record system from the specialists by obtaining the records from their offices.

At times, residents are compelled to compensate for the paucity of non-physician providers in these understaffed health centers by attending to patient social work needs, insurance company authorizations, and specialist appointment scheduling. The resulting physician frustration with their inability to address their patients' comprehensive needs, along with patient dissatisfaction with their care, compromises the ability to establish patient rapport and longitudinal relationships that initially attracted PCIM residents to generalist medicine.

Once established, the longitudinal relationships that are maintained through consistent interaction are challenged by the disjointed care that results from the interruption of continuity by inpatient rotations. In 2009, the Accreditation Council for Graduate Medical Education, Residency Review Committee (RRC) for Internal Medicine, in recognizing the increased emphasis of outpatient medicine in internists' careers, raised the number of required ambulatory half-day sessions from 108 to 130 over the three years of training and mandated a scheduling system that reduced conflict between ward and ambulatory experiences (34). However, the struggle to balance clinic, inpatient, intensive care, and other clinical responsibilities persists (35). The challenge to meet RRC requirements in resident scheduling has promoted a complex scenario in



which PCIM residents work to balance management of their patient panel with fulfillment of their inpatient duties, leading to a disjointed system where the residents occasionally care for patients in their colleague's panels while their colleagues perform rotations on the other services. More recently, some institutions have begun addressing this problem of disjointed care with novel solutions, including separating outpatient and inpatient duties into alternating blocks (36). Further study is needed to determine whether these interventions will improve resident longitudinal relationships with patients and increase trainee satisfaction.

However, efforts to improve resident training experiences are underway, most notably through improvements in primary care delivery. In 2006, the American College of Physicians (ACP) released the *The Advanced Medical Home: A Patient-Centered, Physician-Guided Model of Health Care* (37), that proposed a new model of primary care organization and delivery. The advanced medical home model centers on a patient-centered, physician-led, interdisciplinary team-based approach to primary care through an emphasis on comprehensive, preventive, and longitudinal care. The model promotes a doctor-patient partnership that encourages the physician to serve as an advocate to his patients. With an aim of focusing on each patient's unique needs, the general internist provides his patients guidance in health care system navigation, insight into their health awareness, and empowerment to serve as active participants in their own care. The following year, the ACP, with the American Academy of Family Physicians (AAFP), American Academy of Pediatrics (AAP), and the American Osteopathic Association (AOA), released the *Joint Principles of the Patient-Centered Medical Home*, proposing

the patient-centered medical home – a product of the unification of the efforts of the primary care professional organizations to advance primary care delivery that retained the central characteristics of the advanced medical home (38).

Recent efforts that have focused on applying patient-centered medical home-based principles to resident clinics have been promising. A recent study by Hochman et al. demonstrated that implementing only a limited number of patient-centered medical home (PCMH) -based interventions into a resident clinic contributed to a increase in resident satisfaction score from 39% to 51% in the intervention clinic during a one-year period as opposed to a decrease from 46% to 42% in control clinics within the same time period (39). Following the steps made to expand care access, enhance care coordination, and strengthen team-based delivery, the greatest improvements in resident satisfaction were found in continuity of care and coordination with subspecialists.

That these focused, yet modest steps yielded notable improvements in resident experience is encouraging, but implementation of a broader PCMH framework will present novel challenges. The incorporation of PCMH principles to resident clinics will necessitate innovative strategies to optimize resident educational experiences while perserving the ongoing pursuit of improved health care delivery that characterizes the PCMH ideal. Notably, residents' limited clinical experience and reduced availability will present complications in the trainees' assimilation into the health care team and in delivering optimal longitudinal patient care (39). Ultimately, it will prompt program directors to carve a discrete role for trainees in clinics that will eventually reflect an unique delivery system, less closely based on pure PCMH principles.

Nonetheless, their efforts may prove worthwhile in attracting a greater number of residents to generalist careers. In a recent survey, most residents reported that their clinic experience influenced their career choice. Increased satisfaction among residents with personal experience, learning, and clinic operations has demonstrated an association with greater interest in a GIM career (40). In accord with Social Cognitive Career theory, the residents who had stronger inclinations toward pursuing a GIM career demonstrated higher scores on measures related to finding experiences “rewarding, enjoyable, and in balance with personal pursuits.” Further, they found an association between a poor learning environment and a low interest in general IM.

In conclusion, two-thirds of all internal medicine residents surveyed yearly in the IM-ITE will alter their career plans at some time during training (25). The mutable nature of their career decisions implies a degree of resident impressionability, supporting the notion that improvements in training experience may attract residents even at the latter stages of their residencies. This study revealed shared programmatic themes with strong influences in resident experiences that can serve as points of emphasis in ongoing improvement efforts in IM graduate medical education. Effective interventions in residency training can be accomplished through program changes that reinforce favored program components while addressing disfavored components to improve resident satisfaction. This, in turn, serves to validate program directors' hope that their efforts to strengthen their respective programs will encourage more residents to pursue primary care practice.

Our study has several limitations. First, the study employed opportunity sampling

with a small sample size and a low participation rate among eligible residents. It is possible, therefore, that the views reflected in this study are not reflective of the larger group of second and third-year residents in the program - that a selection bias may exist. In addition, these findings, from a single primary care internal medicine residency program in an urban academic medical center setting, may not necessarily be generalizable to other PCIM residency settings, particularly those with different program structures and resident clinic environments. To address these two concerns and to gain a broader understanding of resident experiences in disparate training settings, the investigative team aims to continue in their efforts by studying residents at two other uniquely-structured primary care residency programs. The investigators anticipate that these subsequent efforts will support these current findings and lead to the identification of how currently less-understood program factors shape resident experiences and potentially influence orientation to generalist careers.

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## Appendix 1: List of Questions from Interview Instrument

### Introductory Questions:

Please tell me about yourself.

Where did you complete your undergraduate training? Your medical school training?

Did you pursue a premed emphasis during your undergraduate training?

Did you spend time outside of medical education and training at some point after your undergraduate training?

### Path to Primary Care:

How would you define primary care?

What was your exposure to primary care while in medical school?

Did you have a role model in medical school (or before), and if so, can you describe this relationship?

Tell me about your decision to pursue a primary care residency.

What drew you to primary care?

Did you consider other specialties before applying?

Did you have any reservations about pursuing primary care?

What program factors influenced you during the residency application process?

Please describe for me your path to this residency programs.

### Primary Care Residency Experience:

What are the most important characteristics of a primary care residency program to you?

How has your overall outpatient training during residency compared to your

expectations?

Probe: How has your outpatient clinic experience during residency compared to your expectations?

Has your interest in primary care changed since you started residency? If so how?

What, if anything, would you change about your primary care residency training?

Plans for After Residency:

Has your interest in primary care changed since you began residency?

Can you tell me a bit about what's next for you?

Probe: What, if anything, may have caused you to think twice about choosing a career in primary care?

Demographics:

How old are you?

Are you male or female?

What would you consider your race/ethnicity?

What PGY are you?

Where are you from?

What did/do your parents do for a living?

What medical school did you graduate from?

Was a primary care program your first choice among the residency programs you applied to?