Impact of an Institution-Wide Mentoring Program on a Single-Class Cohort of Pediatric Residents

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Abstract

Background: Formal mentorship programs have been shown to improve knowledge and clinical skills acquisition, enhance efficiency, and increase research interest. However, there are few detailed reports of mentoring for pediatric residents specifically.

Objective: To describe a formal, institution-wide and longitudinal resident mentoring program and to assess resident perceptions of their satisfaction with their primary (program-matched) mentor and their mentoring needs over time.

Methods: The program surveyed all residents annually about their experience (n = 108). We administered an additional survey to a selected class cohort in their 3rd year to assess perceptions of mentor assistance in specific domains. All survey data was de-identified and we used descriptive statistics.

Results: The selected class cohort consisted of 36 total residents, 30 of which were categorical. The survey response rate for categorical residents each of the three years was ≥ 90%. The response rate for the additional survey sent in the 3rd year of residency was 57% (17/30). Most residents desired to continue with their assigned mentor throughout residency. Mentorship domains that seemed most important to pediatric residents throughout training included: clinical skills, guidance with scholarly projects, & career planning. Later in training, job search skills, negotiation skills and wellness were seen as important mentorship needs. However, most residents perceived having little active assistance from their mentor related to their scholarly work.

Conclusions: An institutional mentorship program with careful formal mentor-mentee matching can be a successful strategy to initiate long-term 1:1 mentor relationships throughout residency training. As mentoring needs change across training years, mentoring programs should consider tailoring mentoring priorities and training to match needs associated with the year of training, in addition to the specific needs of the individual resident.
Keywords: Mentorship

Introduction

Mentoring in medicine has been explored in the literature since 1967 (Barondess 1995; Escoll, Wood 1967; Buddeberg-Fischer, Herta 2006). A majority of published studies regarding medical students report a positive impact of mentorship on specialty selection and research opportunities (Strowd, Reynolds 2013; Galicia, Klima, Date 1997; Sambunjak, Straus, Marusic 2006; Frei, Stamm, Buddeberg-Fischer 2010; Hirsch, Agarwal, Rand, DeNunzio, Patel, Truong 2014; Dimitriadis, von der Borch, Stormann, Meinel, Moder, Reincke 2012; Griffith, Georgesen, Wilson 2000). Formal mentorship programs for young faculty have been shown to improve knowledge and clinical skills acquisition, enhance efficiency, and increase research interest (Kashiwagi, Varkey, Cook 2013; Lord, Mourtzanos, McLaren, Murray, Kimmel, Cowley 2012; Morrison, Lorens, Bandiera 2014; Schenkenberg, Foster, Bromberg, DeWitt, Flanigan 2011; Berk, Berg, Mortimer, Walton-Moss, Yeo 2005; Thorndyke, Gasic, George, Quillen, Milner 2006; Fleming, Simmons, Xu, Gesell, Brown, Cutrer, Gigante, Cooper 2015; Flint JH, Jahangir AA, Browner BD, Mehta S 2009). However, there are few detailed reports of mentoring for pediatric residents specifically. We describe a formal, institution-wide and longitudinal resident mentoring program and present results from the first three years of the program that comprised a single-class resident cohort throughout categorical pediatric residency. Our objective was to assess resident perceptions of their satisfaction with their primary (program-matched) mentor, their mentoring needs over time and the degree to which the mentoring program provided adequate support in selected mentorship domains.

Methods

Our pediatric residency program is ACGME-accredited and situated within a tertiary-care, free-standing pediatric hospital. The program typically matches 36 residents per year in categorical pediatrics and combined training programs (neurology-pediatrics, internal medicine-pediatrics, and pediatrics-psychiatry). The Children’s Hospital of Pittsburgh of UPMC (CHP) Pediatric Residency Program instituted the "Bridges Mentoring Program" in 2014 as a formal pediatric resident mentoring program. Each incoming intern is formally matched with a primary mentor. Program directors determine matches by: 1) reviewing surveys of interns’ interests and preferences, 2) reviewing parallel surveys completed by trained CHP faculty mentors, and 3) including program directors’ knowledge of residents and faculty. Protected time is provided twice yearly for mentee-mentor dyads to meet. Additionally, mentor-mentee dyads are encouraged to meet as often as needed on their own time. Mentors are also invited to participate in semi-annual resident-program director meetings to integrate them into the resident’s ongoing education and progress. Mentors are invited to participate in training sessions offered annually to develop their mentoring skills.

To assess resident satisfaction with their primary (program-matched) mentor and to track changes in resident interests and needs, the program administered confidential electronic surveys in the spring of each academic year to all pediatric residents (n=108). The selected class cohort consisted of 36 total pediatric residents, 30 of whom were categorical. We decided to analyze the survey responses of only categorical pediatric residents of the selected class cohort since this represented a group with a homogeneous experience. All survey questions pertained to the resident's primary mentor. Mentees were encouraged to seek additional mentors as needed independently, but these relationships were not assessed specifically in the surveys. Our study team (CP, DH, DP, MT) administered an additional confidential survey in the fall of the third training year of the first cohort to assess resident perception of active assistance from their primary mentor in several domains. Surveys were developed by consensus by the
residency program directors and study team. All survey data were de-identified. We used descriptive statistics to analyze the survey responses. The project was deemed exempt by the University of Pittsburgh Institutional Review Board under reference number PRO15090148.

**Results**

The survey response rate for categorical residents of the selected class cohort each of the three years was ≥ 90%. The response rate for the additional survey sent in third training year was 57% (17/30). Demographics for the selected residency class cohort (n = 36) included the following: 77% were female, median age was 30 years (range 25-36), and 79% were white (5% were Black, 13% were Asian and 3% were Latino). In the third year of residency, residents indicated their career choice: 33% Primary Care or Hospitalist, 46% Subspecialty, 8% Critical Care, and 12% Undecided.

Among residents who responded, 81% and 69% desired to continue with their primary mentor during their first and second training year, respectively. Additionally, 53% desired to add faculty to their mentoring team during the first training year; 55% and 67% reported successfully adding mentors to their team during the second and third training years, respectively. Interest in research increased over the three years of training: 50% in the first year, 62% in the second year and 66% in the third year.

Figure 1 demonstrates residents' evolving self-reported needs throughout training.

Figure 1. End-Year Self-Reported Mentorship Domain Needs Deemed as "Very Important" for a Single-Class Pediatric Resident Cohort
Through all training years, the majority (defined as > 50%) of residents who responded identified career planning as a "very important" mentoring need. During the first and second training years, the majority of residents who responded also identified mentoring in the domains of "scholarly or qualitative improvement (QI) work" and "clinical skills" as very important. The importance of mentoring in the domain of "job search and negotiation skills" was low (16%) during the first training year, but was then indicated to be very important by 42% of third year residents who completed the survey. Third-year residents who responded reported receiving the most active assistance from primary mentors in the areas of career decision-making (87% "some" or "a good deal") and overall wellness (88% "some" or "a good deal"). These same responders identified having received the least active assistance in the identification, development and completion of scholarly work (Figure 2).

Figure 2. Self-Perceived Assessment of Active Assistance by an Assigned Mentor by a Single-Class Pediatric Resident Cohort in Different Domains
Discussion

Our findings provide a contribution to this area of investigation. While formalized mentoring programs have been shown to be effective, there are few reports of such programs for pediatric residents. Many other specialties also report inconsistency or lack of robust mentoring programs for trainees (Hsu, Tabae, Persky 2010; Flint, Jahangir, Browner, Mehta 2009; Healy, Healy, Cantillon, Malone, Kerin, 2012). We found that most residents who responded preferred to stay with their primary mentor throughout training, indicating the effectiveness of our program's matching process. Cohee, Koplin, Shimeall, Quast, Hartzell (2015) describe a similar matching process in which second and third year internal medicine residents selected faculty mentors based on faculty biographies. However, only 70% of residents reported having a formal mentor. In contrast, all residents in our program were matched with a faculty mentor at the outset of residency and these relationships were retained for most residents throughout training.

In an emergency medicine residency program, Bhatia, Takayesu, Nadel (2016) describe a matching process and programmatic support to provide protected time for mentoring meetings similar to our program; the authors performed a single survey after the mentoring program's fourth year. Evaluation of our program occurred on an annual basis. Our findings provide evidence for how residents' mentorship priorities change throughout training; notably, mentoring in the domain of career planning was indicated as very important throughout training; a desire for mentoring in the domain of wellness was highest later in training; and, mentoring in the domain of scholarly and QI work was indicated as very important in the first and second year of training. Yamada, Slanetz, Boiselle (2014) found that radiology residents with self-selected as opposed to assigned mentors perceived greater benefit from the mentoring relationship. In contrast, most residents who responded in our study reported receiving "a good deal of"
active assistance from their primary (program-matched) mentor in regards to post-residency decision-making and overall wellness and chose to continue with their originally assigned mentors.

Our study had limitations that should be acknowledged. Our study was performed at a single, large residency program and the findings may not be generalizable to other residency programs. In our program, though mentors were trained on general principles of mentorship, they were not specifically trained or instructed to offer research and scholarship support. Also, the majority of mentors who volunteered for the program were clinician-educators who were not necessarily engaged in research and may thus be more inclined to focus on non-research domains. Lastly, the response rate for the additional survey distributed in the third training year was lower than the annual program surveys.

**Conclusion**

An institutional mentorship program with careful formal mentor-mentee matching can be a successful strategy to initiate long-term 1:1 mentor relationships throughout residency training. As mentoring needs change across training years, mentoring programs should consider tailoring mentoring priorities and training to match needs associated with the year of training, in addition to the specific needs of the individual resident. For example, career planning should be addressed for all residents regardless of training level, while domains such as clinical skills and required scholarly work should be a focus earlier in training. In contrast, job search, negotiation skills, and wellness should be a focus of mentoring in the latter years of pediatric residency training. It may also be valuable to train and encourage mentors to provide more intentional support to their mentees in their pursuit of scholarly work. Future research should consider investigating the specific components of mentorship programming that contribute to important outcomes such as scholarly productivity, trainee wellness and career satisfaction.

**Take Home Messages**

**Notes On Contributors**

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Bibliography/References

Barondess JA (1995). A brief history of mentoring. Trans Am Clin Climatol Assoc. 106:1-24.

https://doi.org/10.1097/00001888-200501000-00017

Berk RA, Berg J, Mortimer R, Walton-Moss B, Yeo TP (2005). Measuring the effectiveness of faculty mentoring relationships. Acad Med. 80:66–71.

Bhatia K, Takayesu JK, Nadel ES (2016). A novel mentorship programme for residents integrating academic development, clinical teaching and graduate medical education assessment. Perspect Med Educ. 5(1):56-9.

https://doi.org/10.1007/s40037-015-0236-2

Buddeberg-Fischer B, Herta KD (2006). Formal mentoring programmes for medical students and doctors—a review of the Medline literature. Med Teach. 28(3):248-257.

https://doi.org/10.1080/0142159050313043

Cohee BM, Koplin SA, Shimeall WT, Quast TM, Hartzell JD (2015). Results of a Formal Mentorship Program for Internal Medicine Residents: Can We Facilitate Genuine Mentorship? Journal of Graduate Medical Education: 7(1), 105-108

https://doi.org/10.4300/JGME-D-14-00315.1

Dimitriadis K, von der Borch P, Stormann S, Meinel FG, Moder S, Reincke M, et al. (2012). Characteristics of mentoring relationships formed by medical students and faculty. Med Educ Online. 17:17242.

https://doi.org/10.3402/meo.v17i0.17242

Escoll PJ, Wood HP (1967). Preception in residency training: methods and problems. Am J Psychiatry. 124(2):187-193.

https://doi.org/10.1176/ajp.124.2.187

Fleming GM, Simmons JH, Xu M, Gesell SB, Brown RB, Cutrer WB, Gigante J, Cooper WO (2015). A Facilitated Peer Mentoring Program for Junior Faculty to Promote Professional Development and Peer Networking. Acad Med.90:6.

https://doi.org/10.1097/ACM.0000000000000705

Flint JH, Jahangir AA, Browner BD, Mehta S (2009). The Value of Mentorship in Orthopaedic Surgery Resident Education: The Residents’ Perspective. Journal of Bone & Joint Surgery. 91(4):1017–1022.

https://doi.org/10.2106/JBJS.H.00934

Frei E, Stamm M, Buddeberg-Fischer B (2010). Mentoring programs for medical students—a review of the PubMed literature 2000-2008. BMC Med Educ. 10:32.
Galicia AR, Klima RR, Date ES (1997). Mentorship in physical medicine and rehabilitation residencies. American Journal of Physical Medicine & Rehabilitation. 76(4):268-275.

Griffith CH, 3rd, Georgesen JC, Wilson JF (2000). Specialty choices of students who actually have choices: the influence of excellent clinical teachers. Acad Med. 75(3):278-282.

Healy NA, Healy MB, Cantillon P, Malone C, Kerin MJ (2012). Role models and mentors in surgery. 204(2); 256–261.

Hirsch AE, Agarwal A, Rand AE, DeNunzio NJ, Patel KR, Truong MT, et al (2014). Medical student mentorship in radiation oncology at a single academic institution: A 10-year analysis. Pract Radiat Oncol. 5(3):e163-8.

Kashiwagi DT, Varkey P, Cook DA (2013). Mentoring programs for physicians in academic medicine: a systematic review. Acad Med. 88(7):1029-1037.

Lord JA, Mourtzanos E, McClaren K, Murray SB, Kimmel RJ, Cowley DS (2012). A Peer Mentoring Group for Junior Clinician Educators: Four Years' Experience. Acad Med. 87(3):378-383.

Morrison LJ, Loren E, Bandiera G, et al (2014). Impact of a Formal Mentoring Program on Academic Promotion of Department of Medicine Faculty: A Comparative Study. Med Teacher. 36, 608-614.

Slockers MT, van de Ven P, Steentjes M, Moll H (1981). Introducing first-year students to medical school: experiences at the Faculty of Medicine of Erasmus University, Rotterdam, The Netherlands. Med Educ. 15(5):294-297.

Sambunjak D, Straus SE, Marusic A (2006). Mentoring in academic medicine: a systematic review. JAMA. 296(9):1103-1115.

Schenkenberg T, Foster NL, Bromberg MB, DeWitt LD, Flanigan KM. (2011). Neurology Academic Advisory...
Committee: a strategy for faculty retention and advancement. Neurology. 77:684–690.

https://doi.org/10.1212/WNL.0b013e318229e67a

Strowd RE, Reynolds P (2013). The Lost Resident: Why Resident Physicians Still Need Mentoring. Neurology. 80, e244-246.

https://doi.org/10.1212/WNL.0b013e318298c247

Thorndyke LE, Gusic ME, George JH, Quillen DA, Milner RJ (2006). Empowering junior faculty: Penn State's faculty development and mentoring program. Acad Med 81:668–673.

Yamada K, Slanetz PJ, Boiselle PM (2014). Perceived benefits of a radiology resident mentoring program: comparison of residents with self-selected vs assigned mentors. Can Assoc Radiol J. 65(2):186-91.

https://doi.org/10.1016/j.carj.2013.04.001

Appendices

Declaration of Interest

The author has declared that there are no conflicts of interest.