RAMP It Up: Improving the Quality of Mentorship in Medical Residency

Jenna Thomason[1], Selma Carlson[2], Jenell Stewart[3], Emily Waner[4], Neha Deshpande[5], Shalina Mirza[6], Jennifer Best[7], Joyce Wipf[8]

Background:
Ample evidence demonstrates the critical importance of mentoring in residency, but the heterogeneity of young physicians and the abundance of potential career pathways available present a challenge to formal mentoring programs. This study sought to evaluate the University of Washington Internal Medicine Resident Advising Mentoring Program (RAMP) and to describe a revised program based on results of the evaluation.

Methods:
A confidential, 25-question qualitative and multiple-choice IRB-approved survey was distributed by email to all UW Internal Medicine residents at the end of the 2013-14 academic year.

Results:
Of 161 residents surveyed, 60 responded (37.3%). Most residents (61.7%) reported having multiple mentors, while six (10.0%) reported having 0 mentors. The majority of mentoring relationships were self-initiated (69.6%). Less than a third of respondents (28.3%) agreed that RAMP played a significant role in finding the right mentor. The most significant barriers to connecting with potential mentors included scheduling difficulties (due to resident’s schedule (46.7%) and/or mentor’s schedule (25.0%)), followed by unknown career interests (31.7%). Most respondents agreed that their relationship with their mentor was meaningful in their professional development (70.2%), however, only half (48.3%) felt satisfied with mentorship in our residency program. Satisfaction with
mentorship received was significantly associated with confidence in career plans (p=0.02) and number of mentors reported by residents (p=0.03). Free responses repeatedly touched on two themes: residents need more longitudinal career guidance and should be matched with RAMP advisers with similar interests.

Conclusions:

RAMP may improve resident satisfaction by matching residents with advisers in their chosen field of interest, optimizing timing of faculty and resident connections, ensuring longitudinal mentoring relationships, and defining clear responsibilities of the mentee, mentors, and advisors.

Keywords: mentorship, structured mentoring program, internal medicine residency, resident advising

Introduction

Ample evidence suggests that mentorship during residency has a positive impact on professional development, personal growth, research, and clinical work, as well as on residents' lives during this challenging stretch in one's medical career. Therefore, residency program leaders often seek methods for facilitating mentorship in their respective programs. However, the same approach is unlikely to fit all residents in the program; contemporary mentoring relationships face challenges unbeknownst to prior generations due to the heterogeneity of the new generations of doctors, the complexity of the field of medicine, and the variety of potential career pathways. Additionally, investigators have demonstrated the importance of mentor self-selection, which presents another challenge to formal mentoring programs.

In order to fill a mentorship void perceived by the internal medicine residents in 2007, our institution developed a formal mentorship program entitled the University of Washington Internal Medicine Resident Advising Mentoring Program (UW RAMP). From 2007 until 2015, RAMP randomly assigned each three-year track internal medicine intern to a "RAMP Faculty Advisor" at the outset of the intern year. This cohort of advisors was comprised of nine to ten senior faculty members in the Department of Medicine who were selected based on their diverse and well-established connections within the department. The faculty advisor hosted his or her assigned group of interns for a welcome dinner during intern orientation week. Interns were subsequently asked to meet individually with their RAMP faculty advisors within the first three months of residency. The primary goal of this initial meeting was to discuss the intern's clinical, research, and career goals. The RAMP faculty advisor then connected the intern to one or more faculty mentors within the Department of Medicine with an aligning career path or academic interests. After introductions were made to potential career-specific mentors, individual faculty advisor and intern pairs decided whether or not to arrange additional follow-up meetings. RAMP also facilitated peer mentorship by assigning each incoming intern to a second or third-year resident "buddy". Following its implementation in 2007, RAMP significantly increased resident satisfaction with mentoring and helped residents find the "right" mentor. This is based on survey data from UW residents in the 2007-2008 and 2008-2009 academic years; the control arm consisted of residents never enrolled in a structured mentoring program. However, despite its initial success, over the next several years, interns displayed variable levels of engagement in RAMP and there were ongoing calls for program revision.

Apart from RAMP, residents also attend semiannual meetings with an assigned Associate or Assistant Program Director (APD). APDs hold the responsibility for reviewing performance feedback with paired residents and typically provide ongoing assessment of career decidedness and scholarship, but have traditionally had no duty to connect residents with mentors and no formalized personal mentorship role.
In this study, we sought to evaluate our RAMP mentorship program and identify areas for potential improvement utilizing an IRB-approved resident survey. We also describe subsequent program evolution and redesign which reflects our survey results.

**Methods**

**Study Site and Population**

Our survey was developed to evaluate the experience of Internal Medicine residents (graduating classes of 2014, 2015 and 2016) at the University of Washington. Preliminary Internal Medicine residents were excluded. At the time of administration of the survey in June 2014, the program was comprised of 161 residents, divided amongst three classes (PGY-1, PGY-2, PGY-3). The survey was administered to all three classes simultaneously. The four residents who designed the survey instrument were excluded from the study; otherwise all three-year track residents were invited to participate.

**Survey Development**

The survey was designed to assess mentorship in our residency program by investigating three main questions: 1)
Are residents receiving mentorship from faculty? 2) Are residents satisfied with the mentoring that they have received? 3) What role is RAMP playing in mentorship? We performed pilot testing of the questionnaire with 10 chief residents, who were all recent graduates of the program. The final survey consisted of 25 items (3 free response questions and 22 multiple choice questions) and required approximately 15 minutes to complete.

The following definitions were included in the introductory email:

A RAMP Faculty Advisor is the person assigned to each resident by the residency program to help the resident establish a mentor. A mentor is a faculty member from whom one seeks guidance regarding his/her career, personal life, etc.

Demographic data was collected, including residency program year (PGY-1, PGY-2, PGY-3), training track (categorical vs. primary care) and gender. We surveyed career intention by asking whether residents planned to pursue subspecialty training or enter a career as a primary care physician or hospitalist. Using a Likert scale, we assessed interest in entering an academic career as well as confidence in career plans. We requested information regarding number of current mentors and how and when these mentoring relationships were established. We assessed the role of RAMP in the formation of these relationships by determining when residents met with their RAMP faculty advisors, the number of meetings with potential mentors facilitated by faculty advisors, and whether the resident perceived their RAMP faculty advisor as playing a significant role in finding an appropriate mentor. Additionally we explored the barriers to connecting with mentors and the perceived benefits of established mentorship. We also included a brief assessment the utility of the RAMP "buddy" program.

Survey Administration

We distributed the survey via email to all Internal Medicine residents at the University of Washington in June 2014. We sent two additional electronic reminders to non-respondents to encourage participation. The survey was resent to the class of 2014 following graduation in January and February 2015 (with human subjects approval) to improve the response rate in this class. The introductory email emphasized that participation was voluntary and would not be documented in residency files and that all responses would be kept confidential. Emails included a hyperlink to the survey. Responses were recorded in the Catalyst WebQ software (a third party survey platform) and subsequently de-identified in order to maintain confidentiality. To encourage participation, we provided the option of entering a drawing for one of three $50.00 gift certificates to local restaurants. These gift certificates were donated by a senior investigator (JW).

Our study methods and survey were approved by the University of Washington Institutional Review Board.

Data Analysis

All quantitative analyses were performed using Stata version 12.1 (StataCorp, College Station, TX). Descriptive statistics were generated with cross tabulations and chi-squared calculations. A significance level of 0.05 was used for all hypothesis testing.

Results

Out of 161 residents surveyed, 60 responded (37.3%) (Table 1). Most respondents were senior residents in the program (n=16, 26.7% PGY-1; n=21, 35.0% PGY-2; n=23, 38.3% PGY-3). Career plans among respondents included subspecialty training (n=31, 51.6%), primary care (n=12, 20.0%), hospital medicine (10, 16.7%), undecided (n=6,10.0%), and other (n=1, 1.7%).
Most residents (n=49, 81.6%) met individually with their RAMP faculty advisors within the first 4 months of residency (Table 2); six (10.0%) never met with their RAMP faculty advisor. The majority of respondents (n=31, 51.7%) reported that their RAMP faculty advisor facilitated meetings with 1-3 mentors, while 23 (38.3%) respondents reported that their advisor did not put them in touch with any potential mentors.

Most residents (n=37, 61.7%) reported having multiple mentors, however, six (10.0%) reported having 0 mentors. Of those who were undecided (n=10), 2 never met their RAMP advisor (p=0.24) and 5 never met with a potential mentor (p=0.44). The majority of mentoring relationships were self-initiated (n=39, 69.6%); 16 (28.6%) reported being referred to their mentor by their RAMP advisor. Less than a third of respondents (n=17, 28.3%) agreed that RAMP played a significant role in finding the right mentor. The most significant barriers to connecting with potential mentors included scheduling difficulties, primarily relating to the resident’s schedule (n=28, 46.7%) and/or mentor’s schedule (n=15, 25.0%), followed by uncertain career interests (n=19, 31.7%). Thirteen respondents (21.7%) cited lack of formal introduction by their RAMP faculty advisor as a significant barrier.

Table 1. Demographics

| Post graduate year | Total |
|-------------------|-------|
| 1 | 2 | 3 | N=60 |
| 16 | 35 | 35 | 60 |

| Gender | Total |
|--------|-------|
| Female | 33 | 55 |
| Male | 27 | 45 |

| Track | Total |
|--------|-------|
| Categorical | 44 | 73.3 |
| Primary care | 16 | 26.7 |

| Specialty/subspecialty plans | Total |
|-------------------------------|-------|
| Subspecialty training | 31 | 51.6 |
| Primary care | 12 | 20 |
| Hospital medicine | 10 | 16.7 |
| Undecided | 6 | 10 |

| Career plans | Total |
|--------------|-------|
| Academics with focus on education | 20 | 33.3 |
| Academics with focus on research | 11 | 18.3 |
| Community Practice | 9 | 15 |
| Global Health | 6 | 10 |
| Administration | 6 | 10 |
| Health Policy | 7 | 11.7 |

* Survey question allowed selection of multiple answers
Regardless of how their mentor was established, the majority of respondents found their mentors to be helpful for career planning (n=44, 80.0%) and establishing research opportunities (n=36, 65.5%). Most respondents agreed that their mentor relationship was a meaningful part of their professional development (n=40, 70.2%).

Most respondents (n=43, 71.7%) were contacted by their RAMP resident "buddy". These connections were most helpful for "transportation-related issues" (n=11, 39.3%), "work-related issues" (n=11, 39.3%), and "housing-related issues" (n=10, 35.7%).

Slightly less than half (n=29, 48.3%) of respondents felt satisfied with residency program mentorship. Satisfaction with mentorship received was significantly associated with confidence in career plans. Of the 38 residents responding "agree" or "strongly agree" related to confidence in their career plans, 23 (60.5%) responded with "agree" or "strongly agree" regarding mentorship satisfaction (p= 0.02). Furthermore, responses of "disagree" or "strongly disagree" with satisfaction in mentorship were associated with "disagree" or "strongly disagree" responses related to career plan confidence (p= 0.02). Correlation with satisfaction and career plans did not reach statistical significance but a tendency toward greater satisfaction was seen in respondents anticipating a subspecialty career (61.3%).

Regardless of how their mentor was established, the majority of respondents found their mentors to be helpful for career planning (n=44, 80.0%) and establishing research opportunities (n=36, 65.5%). Most respondents agreed that their mentor relationship was a meaningful part of their professional development (n=40, 70.2%).

Most respondents (n=43, 71.7%) were contacted by their RAMP resident "buddy". These connections were most helpful for "transportation-related issues" (n=11, 39.3%), "work-related issues" (n=11, 39.3%), and "housing-related issues" (n=10, 35.7%).

Slightly less than half (n=29, 48.3%) of respondents felt satisfied with residency program mentorship. Satisfaction with mentorship received was significantly associated with confidence in career plans. Of the 38 residents responding "agree" or "strongly agree" related to confidence in their career plans, 23 (60.5%) responded with "agree" or "strongly agree" regarding mentorship satisfaction (p= 0.02). Furthermore, responses of "disagree" or "strongly disagree" with satisfaction in mentorship were associated with "disagree" or "strongly disagree" responses related to career plan confidence (p= 0.02). Correlation with satisfaction and career plans did not reach statistical significance but a tendency toward greater satisfaction was seen in respondents anticipating a subspecialty career (61.3%).

Table 2. Development of mentoring relationships

| Post graduate year |
|-------------------|
| 1 (%) | 2 (%) | 3 (%) | Total (%) |
| p=16 (26.7) | p=21 (35) | p=23 (38.3) | N=60 (100) |

| Timing of connection with RAMP advisor |
|--------------------------------------|
| Met with RAMP advisor within the first 4 months |
| 13 (81.3) | 18 (85.7) | 18 (76.3) | 49 (81.7) |
| Met with RAMP advisor after the first 4 months |
| 1 (6.3) | 2 (9.5) | 2 (8.7) | 5 (8.3) |
| Never met with RAMP advisor |
| 2 (12.5) | 1 (4.8) | 3 (11) | 6 (10) |

| Number of meetings facilitated by RAMP advisor |
|-----------------------------------------------|
| 0 |
| 7 (43.8) | 7 (33.3) | 9 (39.1) | 23 (38.3) |
| 1-3 |
| 6 (37.5) | 12 (57.1) | 13 (58.5) | 31 (51.7) |
| 4+ |
| 3 (18.6) | 2 (9.5) | 1 (4.5) | 6 (10) |

| Mechanism of establishing mentoring relationships |
|--------------------------------------------------|
| Self-initiated |
| 8 (57.1) | 14 (70) | 17 (73.3) | 39 (69.6) |
| Referred by RAMP |
| 5 (33.3) | 7 (35) | 4 (18.2) | 16 (26.6) |
| Referred by another faculty member |
| 2 (13.3) | 5 (25) | 6 (27.3) | 13 (22.2) |
| My RAMP advisor is my mentor |
| 2 (13.3) | 3 (15) | 4 (18.2) | 9 (16.1) |
| My APD is my mentor |
| 2 (13.3) | 3 (15) | 4 (18.2) | 9 (16.1) |
| Referred by APD |
| 0 (0) | 1 (5) | 1 (4.5) | 2 (3.6) |
| Other |
| 4 (26.7) | 7 (35) | 4 (18.2) | 15 (25.8) |

| Current number of mentors |
|---------------------------|
| 0 |
| 2 (12.5) | 1 (4.8) | 3 (13) | 6 (10) |
| 1 |
| 4 (25) | 7 (33.3) | 6 (26.1) | 17 (28.3) |
| 2 |
| 8 (50) | 9 (42.9) | 7 (30.4) | 24 (40) |
| 3+ |
| 2 (12.5) | 4 (19) | 7 (30.4) | 13 (21.7) |

a. Survey question allowed selection of multiple answers
b. Four survey participants did not respond to this question, therefore percentages are calculated for a total of 56 residents rather than 60.
especially compared with hospital medicine career (33.3%) and undecided respondents (16.7%) \((p=0.06)\). The number of mentors reported by residents was significantly associated with satisfaction with mentorship \((p=0.03)\). No significant correlations were observed between satisfaction and gender, postgraduate year, number of mentors suggested by RAMP faculty advisor, number of connections with potential mentors, or number of meetings with established mentors.

Free responses repeatedly touched on two themes: 1. *We need more career guidance, particularly in the 2nd and 3rd years*, and 2. *Residents should be matched with RAMP faculty advisors, or pick their own advisor, based on similarities of interests*. Several residents desired more advising on the process of applying to fellowship and suggested that we could benefit from the development of a career/fellowship timeline with reminders about important dates. Multiple respondents mentioned that they thought that more career guidance should come from the APDs and others suggested creating a catalog of mentors and their specific interests, including interests outside of internal medicine subspecialties (for example, health systems). One respondent suggested developing a survey to assess interests of incoming interns prior to their arrival so that interns could be paired with appropriate advisors.

**Discussion**

This study evaluated a structured mentoring program that was implemented in 2007 and continued without revision until 2015. Although at its onset the program significantly increased satisfaction with mentorship among residents compared to residents who were not enrolled in the program, the present study revealed that less than half of residents in 2014 were satisfied with mentorship in our residency program. Based on our results, we surmised that dissatisfaction is attributable to an outdated design as well as imperfect execution of the program. The 2007 RAMP design catered mostly to residents with an established subspecialty interest at the onset of intern year; we identified a large group of residents who were undecided regarding career plans and were therefore not well-served by this model. Despite the shortcoming of the program, we did find that most residents in our program had multiple mentors, and these mentors were most helpful for career planning and setting up research opportunities.

Our results suggest that RAMP may improve resident satisfaction by matching residents with advisors in their chosen field of interest, eliminating excess meetings, and ensuring longitudinal mentoring relationships. Since semiannual meetings with the APDs are already built into our program, respondents suggested that the APDs could serve as another formalized source for career guidance. We hypothesize that improving satisfaction with mentoring in our program may improve confidence in career plans and vice versa.

**Mentorship program redesign**

In order to better tailor our structured mentorship program to the needs of our residents, the resident leadership team redesigned the RAMP mentorship program (Figure 2). As previously noted, in the past, RAMP faculty advisor and APD meetings existed as completely separate entities. These sources of mentoring were intertwined in order to achieve the following goals: (1) optimize timing of faculty and resident connections, (2) match residents and RAMP faculty advisors based on career interests, (3) ensure longitudinal mentorship throughout residency, and (4) define clear responsibilities of the mentee, mentors, and advisors. These three goals are addressed individually below.

1. **Optimize timing of faculty and resident connections:**

   According to survey data, not all residents were prepared to meet with senior faculty within the first few months of residency since many were undecided on their career plans. Conversely, incoming interns who had already decided
their career direction eagerly desired mentorship from the start of residency. Therefore, instead of a standardized approach, residents are now given access to the RAMP pathway whenever they feel ready to "differentiate" and explore a certain field or career option.

In our new system, incoming interns complete a brief post-match survey prior to starting residency with the goal of assessing career decidedness and identifying residents who are "differentiated" and ready to meet with an advisor in their chosen field. Those who are differentiated will meet with the RAMP faculty advisor early on with the hope of identifying long-term mentorship opportunities. Incoming residents who are not yet decided on a career direction will meet with their APD within the first 3 months of starting residency. During this meeting, the APD will review the pre-arrival survey and help the resident connect formally with one or more RAMP faculty advisors when ready.

(2) Match residents and RAMP faculty advisors based on career interests:

Free responses from our survey data indicated that the random assignment of RAMP faculty advisors often failed to create a meaningful connection between the RAMP faculty advisor and trainee. Our program has since expanded the group of RAMP faculty advisors so that each of the internal medicine subspecialties is now represented, including hospital medicine. Trainees who are decided in their career direction can now be matched with RAMP faculty advisors based on their specific career interests. If a resident is choosing between several specialties, multiple RAMP faculty advisors may be assigned.

(3) Ensure longitudinal mentorship throughout residency:

As previously described, our residency program already requires that each resident meet with an assigned APD semiannually to review evaluations and to discuss career planning. As above, APDs now connect trainees with advisors and are also tasked longitudinally with following up on the success of the RAMP faculty advisor meetings for all paired residents.

Once connected with a RAMP faculty advisor, as was the case in the prior RAMP design, this advisor will connect the trainee with one or more potential mentors to serve as longitudinal mentors throughout residency.

(4) Define clear responsibilities:

To help facilitate the success of the RAMP Faculty meetings, the RAMP leadership team created an advising encounter form. This form is provided for resident review and preparation prior to the RAMP faculty advisor meeting. Residents are asked to identify preliminary personal, professional, and educational goals with action plans and target dates for completion. This assists RAMP faculty advisors in identifying and meeting the residents' unique mentorship needs.
Residents as Mentors

There were no changes made to the RAMP "buddy" program based on the survey.

Study Limitations

We note that the results of this survey study were limited by a low response rate and that the opinions reflected therein may not necessarily represent all internal medicine residents. Improving the response rate for the next survey cycle to capture a broader cross-section of the resident cohort will be a high priority. Additionally, as we only collected responses from a single program, our results may not be generalizable to other programs.

It is also important to contextualize the role of informal mentorship in addition to formal advising programs, acknowledging that organic mentorship often occurs as residents encounter faculty while rotating through clinical settings. The goal of our structured mentorship program is simply to provide an additional avenue of opportunity for residents to connect to faculty interested in resident mentorship and career counseling. Reflective of this "open door" approach, all of our residents can directly and independently access the list of dedicated RAMP faculty advisors by visiting the internal medicine residency program website.

Future Research and Program Development
We will continue to assess the RAMP program to ensure we are meeting the needs of our diverse group of resident physicians. The changes to the RAMP program implemented in the 2015-2016 academic year will be reassessed in 2018, three years after the above described restructuring of the mentoring program.

Conclusions

Our study suggests that mentors are highly valued resources for residents and elaborates on the benefits of and barriers to mentorship in a population of internists in training. Overall satisfaction with the first iteration of our program’s formalized mentorship program was low in 2014 and the program has been redesigned in a manner that which reflects our survey results. We believe that this description of our mentorship model will aid other programs facing the challenge of mentoring residents with a wide variety of interests and varying degrees of career differentiation.

Take Home Messages

1. Residents benefit in multiple ways from mentoring relationships. In the present study mentors were most helpful for career planning and setting up research opportunities.
2. Formalized mentoring programs in residency programs may be more effective if they can individualize the program for each resident
3. We plan to improve our own mentoring program by:
   a. Optimizing timing of faculty and resident connections
   b. Matching residents and RAMP faculty advisors based on career interests
   c. Ensuring longitudinal mentorship throughout residency
   d. Defining clear responsibilities of the mentee, mentors, and advisors

Notes On Contributors

**Jenna L. Thomason, MD, MPH** is fellow in the University of Washington, Department of Medicine, Division of Rheumatology. She graduated from the University of Washington Internal Medicine Residency program in 2015.

**Selma Carlson, MD** is fellow in the University of Washington, Department of Medicine, Division of Cardiology. She graduated from the University of Washington Internal Medicine Residency program in 2015.

**Jenell Stewart, DO, MPH** is a Chief Resident in the University of Washington Departments of Medicine and Global Health, and is currently working at the Naivasha Sub-County Referral Hospital in Naivasha, Kenya.

**Emily E. Waner, MD, MPH** graduated from the University of Washington Internal Medicine Residency Program in 2016. She is currently working as a hospitalist at a University of Washington affiliated hospital.

**Neha S. Deshpande, MD** is an Internal Medicine Resident in the University of Washington, Department of Medicine.

**Shalina Mirza, MD** is an Internal Medicine Resident in University of Washington, Department of Medicine.

**Jennifer A. Best, MD** is the Associate Program Director for Professional Development for the University of Washington Internal Medicine Residency Program and the Associate Dean for Graduate Medical Education at the
Joyce E. Wipf, MD is a Professor of Medicine at the University of Washington, VA Section Chief of General Internal Medicine and Director of the Seattle Center of Excellence in Primary Care Education at VA Puget Sound.

Acknowledgements

The authors wish to thank Dr. Andrew Brookens and Dr. Katie Benziger who assisted with designing our survey.

Bibliography/References

1. Ramanan RA, Taylor WC, Davis RB, Phillips RS. Mentoring matters. Mentoring and career preparation in internal medicine residency training. J Gen Intern Med. 2006 Apr;21(4):340-5.

   https://doi.org/10.1111/j.1525-1497.2006.00346.x

2. Flint JH, Jahangir AA, Browner BD, Mehta S. The value of mentorship in orthopaedic surgery resident education: the residents' perspective. J Bone Joint Surg Am. 2009 Apr;91(4):1017-22.

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

3. Champion C, Bennett S, Carver D, El Tawil K, Fabbro S, Howatt N, Noei F, Rae R, Haggar F, Arnaout A. Providing mentorship support to general surgery residents: a model for structured group facilitation. Can J Surg. 2015 Dec;58(6):372-3.

   https://doi.org/10.1503/cjs.004315

4. Sanfey H, Hollands C, Gantt NL. Strategies for building an effective mentoring relationship. Am J Surg. 2013 Nov;206(5):714-8.

   https://doi.org/10.1016/j.amjsurg.2013.08.001

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

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

6. Moskowitz D, Zia J, Smith CS, Wipf JE. 2010. A structured mentorship program increases residents' satisfaction with mentoring: a two-year cohort study at a multi-hospital internal medicine residency program. Oral presentation given at the 2010 SGIM National Meeting, Minneapolis, MN.

Appendices
Declaration of Interest

_The author has declared that there are no conflicts of interest._