

Development and Retention of Early-Career Clinician–Scientists through a Novel Peer Mentorship Program: Multidisciplinary Intensive Care Research Workgroup

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ABSTRACT

Background: Early-career clinician–scientists often leave academic medicine, but strong mentorship can help facilitate retention. Beyond the traditional dyadic mentor–mentee relationship, formal peer mentoring provides a rich means to augment career development and foster independence.

Objective: To describe a model for early-career peer mentorship and the retention of participating early-career clinician–scientists in academic medicine.

Methods: In 2015, a multidisciplinary and interprofessional group of early-career clinician–scientists focused on critical care developed a peer mentoring group at the University of Michigan called the MICReW (Multidisciplinary Intensive Care Research Workgroup). We describe the establishment, sustainability, guiding principles, challenges, and successes of MICReW.

Results: MICReW was established to be a formal, peer-only mentoring group without the direct participation of senior mentors. The purpose of MICReW was to support and promote the research and career development of early-career clinician–scientists

(Received in original form April 22, 2022; accepted in final form August 4, 2022)

ATS Scholar Vol 3, Iss 4, pp 588–597, 2022
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DOI: 10.34197/ats-scholar.2022-0039IN

by creating an environment that fostered diverse opinions, constructive feedback, and camaraderie. As a group, we wrote a mission statement and defined our guiding principles. Our sustainability, growth, and adaptability (seamlessly transitioning to all virtual meetings) were possible by the continued investment of our peer members. To date, MICReW has had 30 members, of whom 15 are current members and approximately half are women. Nearly all members ($n = 29/30$) remain in academic positions, and half ($n = 15$) have been awarded career development awards. Most members also report significant benefits from being a member of MICReW.

Conclusion: The MICReW peer mentorship model is a sustainable and adaptable peer mentoring model whose members continue to be engaged in academic medicine.

Keywords:

early-career; peer mentoring; mentorship; critical care

Early-career clinician–scientists often leave academic medicine (1–3). However, strong, supportive mentorship has been identified as a key strategy for promoting retention (4, 5). Historically, mentorship has focused on a formal dyadic relationship: the senior mentor partnered with the junior mentee. While, this mentor–mentee dyad is important, it may be insufficient to address all mentee needs and ensure success (6–8).

Peer mentoring refers to mentorship by individuals of similar age, experience, or clinical rank who have mutual goals or

interests (9, 10). There are distinctive benefits to peer mentoring for early-career clinicians, including 1) presenting work early to nurture both the work and one’s ability to receive and integrate feedback; 2) receiving pragmatic advice on navigating research environments; and 3) modeling successful behaviors of senior peer mentors (10). Most of all, peer mentorship pushes early-career clinician–scientists to develop their own reasoning, to describe and defend their ideas in a venue in which the senior mentor cannot rescue or judge them, and where it is safe to fail (10).

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Supported by the National Heart, Lung, and Blood Institute grants K08HL153799 (S.J.D.), K23HL157364 (E.M.V.), K08HL155407 (A.J.A.), and K23HL140165 (T.S.V.). This work does not necessarily represent the views of the U.S. Government or Department of Veterans Affairs (VA). This material is the result of work supported with resources and use of facilities at the Ann Arbor VA Medical Center.

Author contributions: E.M.V. designed the study, performed the analyses, interpreted the results, compiled the manuscript and is accountable for all aspects of the work. A.J.A., E.F.C., S.J.D., T.S.V., D.K.C., C.R.C., R.D., and T.J.I. helped interpret the results and provided critical revisions for the manuscript. H.C.P. assisted in interpreting the findings and provided critical revisions of the manuscript.

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Although peer mentoring has been described, pragmatic guidance for how to create a successful peer mentoring group for early-career clinician–scientists in critical care is lacking (11–13). In light of this gap, we offer our advice and experience on how to create and sustain an early-career peer mentorship group.

METHODS

Our early-career peer mentoring group, MICReW (Multi-disciplinary Intensive Care Research Workgroup), was established in 2015. The purpose was to complement traditional dyadic senior mentorship by providing diverse feedback on research and ideas, fostering early independence, promoting camaraderie, and developing skills for research dissemination and feedback.

Mission Statement: What Is Our Purpose?

Early on, we developed a public-facing mission statement available at <https://medicine.umich.edu/dept/intmed/divisions/pulmonary-critical-care-medicine/research/multidisciplinary-intensive-care-research-workgroup-micrew>: “To support and promote the research and career development of U-M (University of Michigan) early-career professionals who research critical illness by 1) providing constructive feedback on presentations, manuscripts, and grant applications, as well as early, evolving ideas; 2) sharing effective strategies for career development, networking, and work–life balance; and 3) helping members set and achieve realistic short- and long-term research goals. By doing this, we will grow U-M’s infrastructure for critical care research and advance the treatment of patients who are critically ill”.

Motivating Philosophy, Ground Rules, and Application

Peer mentoring must be distinguished from a group of trainees socializing or providing informal support. A formal structure and process elevate the tone to maximize the yield. To this end, we established an application process to join MICReW, set expectations for participation, and maintained norms regarding intellectual engagement.

The entrance criteria to MICReW were simple. Applicants had to 1) be an early-career investigator (defined as having neither independent R-level funding nor tenure); 2) have a senior mentor; 3) have a critical care research focus; and 4) have sufficiently protected research time to commit to regular participation. Expectations for participation were to attend MICReW meetings (90 minutes twice monthly) regularly and present work at least twice yearly.

Membership: Balancing Inclusivity with a Manageable Group Size

We set a cap of 20 active members to balance the diversity of membership with a manageable group size. This group size allows each member to share their works in progress at least twice yearly, encourages accountability as we all know each other, ensures cohesiveness, and supports member participation in providing feedback. The requirement to have a critical care research focus was intended to be sufficiently broad to include members from multiple divisions, departments, and disciplines and to ensure understanding and engagement in each other’s research.

To facilitate adding new members while adhering to our 20-person cap, we defined specific criteria for “graduation” from MICReW. Once a member obtained

independent funding (R01 or equivalent), they graduated out of MICReW.

Leadership

Although all members of MICReW were in the early stages of their academic career, we determined that defined group leaders were necessary to oversee the logistics of MICReW. Leaders ensure presenters are identified for each meeting and facilitate peer feedback sessions by keeping time, moderating the discussion, and summarizing feedback.

The Role of Senior Leadership

Maintaining and nurturing a successful peer mentoring group requires the support of senior leadership. We received a dedicated project manager effort to carry out the administrative components of MICReW, including scheduling meetings, identifying presenters, and keeping records. In addition, senior faculty served as key sponsors of MICReW by publicly endorsing MICReW and recommending their mentees apply to and participate actively in the group.

PEER MEETINGS

Scheduling

Building a community of early-career clinician–scientists requires regularly scheduled meetings that balance competing clinical, personal, and academic demands with member engagement. We scheduled meetings for 90 minutes twice monthly on Friday afternoons during standard work hours. Each meeting begins with member “accountability rounds” (described below), followed by two 30-minute member presentations of works in progress.

Accountability Rounds

Every meeting begins with accountability rounds in which each person identifies two research goals to accomplish by the next meeting (14). These goals are recorded by the MICReW project manager. At the next meeting, goals are reviewed, and each member reflects on their success or any barriers to achieving their goals.

We use accountability rounds for several purposes:

- 1) To hold ourselves publicly accountable for what we plan to accomplish;
- 2) To make visible reasonable expectations for productivity and pacing;
- 3) To learn how to break down complex projects into concrete tasks;
- 4) To develop the ability to forecast how long each step of a project will take;
- 5) To share obstacles encountered, with the possibility of brainstorming solutions;
- 6) To share successes.

Works in Progress

Each member is expected to present work in progress twice yearly. The work shared ranges from 1) early research ideas; 2) key elements of a manuscript in preparation (e.g., abstract, tables, and figures); 3) an aims page for a grant proposal; 4) slides for an upcoming talk; or 5) research materials (e.g., survey and interview guide). After introducing the work, we allow time for members to review the shared material independently and formulate their feedback before group discussion. We align our feedback with a project’s stage in development, focusing on organization and word choice for aims pages nearing submission or discussing additional experiments for early analysis plans. Regardless of the phase of work, we strive to provide constructive suggestions for improvement.

We have noted several advantages of sharing early works in progress. First, the presentation helps to advance the trainee’s sense of intellectual ownership of their project. For example, early on, it is typical for trainees to present ideas while admitting during the discussion that “well ... my mentor thought it was a good idea ... but ... I’m not sure why”. The experience of articulating this lack of understanding encourages deeper engagement with the ideas, leading to each member’s ability to independently justify scientific decisions: “Yes, my mentor and I discussed that, but I decided ...”. Second, it allows for the emergence of new ideas and approaches to be shared early with others. Lastly, there may be an increased willingness to

receive constructive critiques earlier in a project’s development than when near completion.

Shared Resources

Beyond peer mentorship and support, MICReW also provides concrete resources. The group has a shared repository with poster and presentation templates, prior successful NIH (National Institutes of Health) Loan Repayment Program and career development award proposals, and examples of forms and presentations used for institutional requirements.

Support and Sponsorship

As a peer group, we support each other through informal discussions about managing one’s mentors in the tradition of the “managing up” literature in business

Table 1. Lessons learned: challenges encountered and solutions implemented

Challenge	Solution
Lack of attendance	Over the summer months and holidays, when people were more likely to be traveling, we reduced the meetings to once a month.
Geographic separation requiring people to travel to attend meetings in person	We intentionally schedule meetings toward the end of the day to minimize the need to drive across campus multiple times. We additionally identified times that would align with other meetings occurring in the same building, to minimize the number of commutes. Moving forward, we will create a hybrid in-person/video conference model.
Meeting fatigue	In addition to limiting to one meeting during the summer months, we limit meetings to a maximum of 90 min. If we only have one presenter, we limit meetings to 60 min.
Conflicting engagements	We reevaluate every academic year whether our meeting times conflict with other important meetings for the group.
COVID-19 pandemic	When in-person meetings were canceled, we transitioned to all-virtual meetings via Zoom. Our project manager arranged for the calendar invites with the Zoom links.

Definition of abbreviation: COVID-19 = coronavirus disease.

(15). In addition, as many of us have young families, we also share strategies for navigating work–life challenges. Lastly, we sponsor and promote each other on social media by highlighting recent publications, grants, and conference presentations.

Lessons Learned

We have encountered several challenges, including lagging attendance, geographic separation, and coronavirus disease (COVID-19) pandemic. Solutions to these challenges are presented in Table 1. We continue to modify MICReW as group needs evolve.

Achieving MICReW Objectives

As a peer mentoring group, we hold ourselves accountable to ensure we are achieving our objectives, that are to 1) foster a collaborative environment in which constructive feedback is welcomed and received; and 2) develop a collaborative group of early career peer mentors. To evaluate the extent to which these objectives were met by MICReW, we conducted an anonymous online survey of current and former members.

RESULTS

Sustainability

Since 2015, MICReW has met twice monthly from September through May and monthly from June through August. Four individuals have served as leaders, and six research staff have provided administrative support over the 8-year period.

Membership and Academic Accomplishments

Since its inception, MICReW has had 30 early-career clinician–scientist members (Table 2). Members learned of MICReW through word-of-mouth and came from a

range of academic homes, including the Medical School’s Departments of Internal Medicine (Divisions of Pulmonary and Critical Care, Cardiology, and Palliative Care), Pediatrics (Division of Critical Care), Learning Health Sciences, and the School of Nursing’s Department of Systems, Population, and Leadership. Members have had diverse methodological focuses, including health services, epidemiology, clinical, and translational research. There are 15 current members, of which approximately half ($n = 7$) are women. Members of MICReW have been awarded NIH F32s, career development awards, loan repayment awards, and independent R-level awards (Table 2).

Retention in Academics

Of the 30 members affiliated with MICReW, 15 are active, 8 are graduates, and 7 are former members who left the University of Michigan before graduating from MICReW. Nearly all (29 of 30) remain in academic medicine, and all 30 remain engaged in research (Table 2).

Member Satisfaction with MICReW

Of the 26 surveys sent, 22 were completed (response rate, 85%). The majority of members felt MICReW created an environment that fostered diverse thoughts (95%, $n = 21/22$), constructive feedback (91%, $n = 20/22$), provided them with a supportive environment (91%, $n = 20/22$), and benefitted them personally in their academic research careers (95%, $n = 21/22$) (Table 3).

DISCUSSION

MICReW is an early-career clinician–scientist peer-mentoring group designed to complement strong dyadic mentorship by collectively sharing experiences and strategies spanning topics in

research to work–life balance. MICReW has fostered the successful submission of career development award proposals and transition to independent funding.

The need for peer mentoring in medicine is growing because of challenges to the dyadic mentoring relationship (e.g., overcommitted senior mentors) and the recognition that strong mentorship facilitates retention and career satisfaction (6, 7, 10, 12, 16). Successful peer mentoring models have been described in academic medicine but have involved different peer groups (e.g., only medical

students and methodology-specific groups) with different intents (e.g., group projects) (12, 13, 17, 18). Our peer mentoring group is a unique model that has nurtured the pipeline of early-career clinician–scientists in critical care and built a community of multiprofessional early-career clinician-scientists. Despite critical care being a predominately male-dominated field, half of our members are women (19). Peer mentorship can provide a venue for women and other underrepresented individuals to find support and guidance (10, 16).

Table 2. Current ranks of current, former, and graduate members of the Multidisciplinary Intensive Care Research Workgroup and their academic accomplishments

Clinical Rank	Current Members n = 15	Former Members* n = 7	Graduate Members* n = 8
Fellow	5	1	0
Clinical Instructor	2	1	0
Clinical assistant professor	3	4	0
Tenure-track assistant professor	3	1	3
Clinical associate professor	0	0	1
Tenured associate professor	0	0	4
Other [†]	2	0	0

Academic Accomplishments	Submitted	Awarded
Individual postdoctoral fellowship awards	5	3
Individual career development awards [‡]	12	11
Institutional career development awards [§]	4	4
NIH loan repayment awards	10	8
R-level awards	10	8

Definition of abbreviation: NIH = National Institutes of Health.

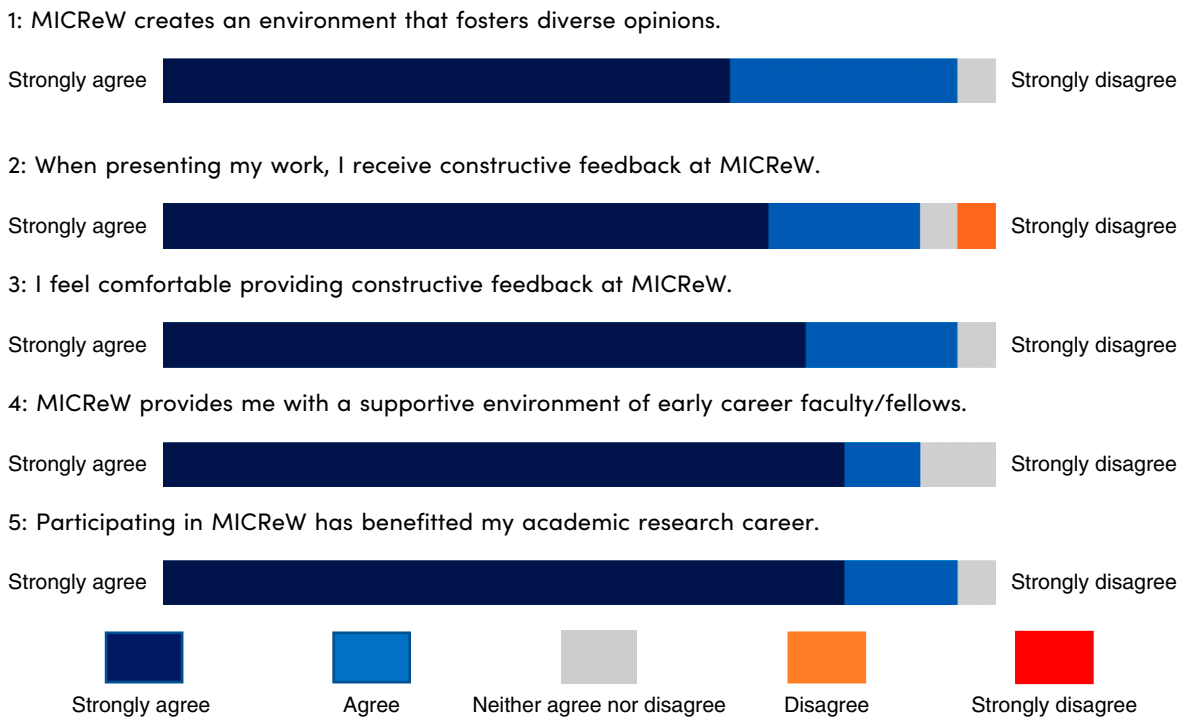
*Former members left the University of Michigan before graduating from MICReW (Multidisciplinary Intensive Care Research Workgroup), whereas graduates were either promoted to associate professor or received R-level awards while still at the University of Michigan and were thus graduated from MICReW.

[†]Research associate, postdoctoral fellow.

[‡]Includes K08 and K23.

[§]Includes KL2 and KL12.

Table 3. Former and current member satisfaction with the Multidisciplinary Intensive Care Research Workgroup



6: To what extent do you feel that MICReW plays/played a role in your academic success?

Theme 1: Constructive feedback on early ideas

"I found it was a great opportunity to present early-stage work and get honest, constructive feedback. This helped immensely with developing successful ideas/improving my work for publication/presentation." Member 3

"MICReW provided helpful advice and feedback on early grant proposals, loan repayment program applications, and fellowship grants, for example." Member 5

"I greatly appreciate the ability to present early data and receive honest yet constructive and supportive feedback." Member 22

Theme 2: Having a supportive early career group of peer mentors

"There is a genuine excitement and support from members when someone succeeds, but also a shared empathy surrounding the challenges of being an early-career researcher." Member 22

"Being a part of a diverse community of brilliant young scholars helped motivate my own success through positive peer pressure." Member 10

"It was a supportive environment personally AND a stimulating environment intellectually, which allowed me to be creative, aim high, and get (and give) great feedback." Member 9

Definition of abbreviation: MICReW = Multidisciplinary Intensive Care Research Workgroup.

Although other peer mentoring groups have included senior faculty to oversee or facilitate the group, we have not. We felt that direct involvement of mid-career or senior faculty would change the group

dynamics and could result in junior members feeling less comfortable participating. Despite not having mid-career and senior faculty in MICReW, we do receive and benefit from the support of senior faculty

who provide credibility to our group. MICReW graduates often recommend and refer their mentees to MICReW, which ensures sustainability.

Limitations

There are several potential limitations to the MICReW model that should be noted. First, despite the face validity of MICReW and its track record of success, we are unable to assess the extent to which MICReW directly contributed to member success and retention, which are also reflective of the overall academic environment at U-M. Second, whereas the structure and processes of MICReW were well-reasoned and have worked for us, other institutions may consider different approaches. Finally, whereas project manager support through faculty discretionary funds has helped to sustain MICReW and decrease administrative work by members,

this support may not be feasible in other settings.

Conclusions

We describe an early-career clinician–scientist peer mentoring model that complements robust dyadic mentorship and has been associated with continued success and retention of early-career critical care clinician–scientists. This model may be transferrable to other institutions to enhance the training and retention of critical care clinician–scientists in academia.

Acknowledgment

The authors would like to acknowledge all MICReW (Multidisciplinary Intensive Care Research Workgroup) members and project managers who have supported MICReW over the years.

Author disclosures are available with the text of this article at www.atsjournals.org.

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