

Near-peer Mentorship: Promoting Medical Student Research With Resident Pairing

Solomon Oak¹, Cynthia Glickman^{1,2}  and Katherine McMackin^{1,2}

¹Cooper Medical School of Rowan University, Camden, NJ, USA. ²Cooper University Hospital, Camden, NJ, USA.

Journal of Medical Education and Curricular Development
Volume 12: 1–5
© The Author(s) 2025
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/23821205251329659



ABSTRACT

BACKGROUND: Obtaining a clinical research mentor is a major barrier for medical students interested in research.

OBJECTIVE: To increase access to research, a Near-Peer Mentor Program (NPMP) was developed to pair medical students with resident mentors to submit case reports to an annual in-hospital research conference.

METHODS: Students and residents were recruited via surveys and paired based on students' specialty interests. Support in the form of templates, instructions and timelines were given. To evaluate the program's impact, we reviewed the number of pairs' projects at the conference, awards, and who advanced their projects to publications and conferences from 2019 to 2022.

RESULTS: During the study period, 173 students enrolled. The majority 106 (61.2%) were interested in medical specialties, followed by 47 (27.2%) in surgery and surgical subspecialties, and 20 (11.6%) undecided. All students were paired. One hundred and seventy (98.3%) had projects under resident mentors matching their specialty interests. One hundred and fifty (82.9%) completed the program and submitted a case report to the conference. Years with NPMP led to a 122% (55 in 2019 vs 122 in 2020) and 232% (50 in 2021 vs 166 in 2022) increase in medical student conference posters compared to the previous year without NPMP. In both years, NPMP students won all top 3 awards for best case report. Additionally, 10 pairs produced 6 peer-reviewed publications, 5 conference abstracts, and 2 conference oral presentations as first authors.

CONCLUSION: The NPMP successfully promoted medical student participation in clinical research. The program substantially increased student poster presentations and subsequent publications and presentations stemming from them.

KEYWORDS: mentorship, medical student research, resident mentorship, medical education, near peer, research mentorship

RECEIVED: October 29, 2024. **ACCEPTED:** March 9, 2025.

TYPE: Original Research

FUNDING: The authors received no financial support for the research, authorship, and/or publication of this article.

DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Cynthia Glickman, Division of Hospital Medicine, Cooper University Health Care, Education and Research Building (E & R Building), 401 Haddon Avenue, 3rd Floor, Camden, NJ 08103, USA.
Email: glickman-cynthia@cooperhealth.edu

Introduction

Research has become an increasingly important component of medical student education, with evidence showing it can improve critical thinking, problem-solving skills,¹ and even influence career choices.² Despite the growing emphasis on research, many medical students face barriers such as finding an available mentor in pursuing research.^{1,3} This is particularly relevant with the recent change in the United States Medical Licensing Exam (USMLE) Step 1 exam scoring, which has led to a greater focus on promoting medical student research for residency application preparation.

A near peer mentoring relationship has been defined as “one in which a more senior learner (a year or more above) provides guidance and support to a new junior learner to enable the new student to navigate his or her education.”⁴ This relationship has been shown to benefit mentees by helping them develop interpersonal relationships, integrate into a new environment and boost morale.^{5,6} It has shown benefit to mentors by increasing understanding of the subject matter, and improving communication, leadership and problem-solving skills.^{4,7} Pairing medical students with resident mentors has been successful in improving clerkship education⁸ and career advising.^{9–11}

However, its effectiveness in promoting medical student research remains unclear. While methods to improve research mentorship for fellowship applications and specific specialties have been studied,^{12–14} studies examining resident mentorship for medical student research across specialties have not been reported. To address this gap, we developed a Near-Peer Mentor Program (NPMP), which pairs students with resident mentors to submit case reports to an annual in-hospital research conference. The objective of this study is to describe the outcomes of the NPMP implemented at our institution.

Methods

A single-center retrospective review of medical student participation in a voluntary NPMP over 2 years (2020 and 2022) was performed. The NPMP was a voluntary program which paired medical students with resident mentors to submit case studies to an annual in-hospital research conference. The primary outcome was the number of pairs submitting case reports to the conference. Secondary outcomes included awards won and further scholarship. Further scholarship is defined as poster presentations, podium presentations or peer-reviewed publications completed by pairings of the NPMP after



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without

further permission provided the original work is attributed as specified on the SAGE and Open Access page (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

completion of the program. The reporting of this study conforms to the STROBE statement.¹⁴ The Cooper University Hospital IRB reviewed the research protocol and deemed the study exempt (Cooper University Hospital IRB #20-431).

The program

The program was open to all medical students during the 2019-2020 and 2021-2022 academic years. The program was put on a hiatus during the 2020-2021 academic year due to the COVID-19 pandemic. Prior to NPMP, there was no formal program in our institution for medical students to be connected to mentors for research across all departments. Pre-clinical medical students would reach out to faculty members to find out about clinical research. Clinical medical students likewise would reach out to faculty either blindly or after rotating with them on a clinical service.

Medical student mentee and resident mentor pairings were made. The pairings were instructed to meet and complete case report patient identification, IRB registration, abstract and poster creation by predetermined deadlines to ensure submission to the in-hospital research conference. All work was mainly led by the medical student with resident supervision required only at checkpoints to ensure workload was mainly placed and led by the medical student.

Program recruitment

Medical students. Recruitment of medical students was made through an email link to an online signup form. Reminder announcements were made during small group learning sessions for medical students in their first academic year (M1) and medical students in their second academic year (M2). For medical students in their third academic year (M3), an announcement was made during the noon conference didactic session. When signing up, students indicated their top 3 specialty preferences.

Residents. Similar to the recruitment of medical students, residents were sent an email link to an online signup form. However, there were significantly more medical students who enrolled in the program compared to residents. As a result, resident recruitment also included emails to program directors for each specialty asking them to encourage their residents to sign up. Residents in each specialty who were graduates of the medical school were also contacted to recruit people within their residency. Finally, the NPMP founders sent personalized emails, texts and spoke to residents' in-person to increase resident enrollment.

Pairings. Students were matched to a resident listed in their top 3 specialty choices when able. If a match was not available for the specialty, the next closest specialty was chosen when able,

that is a different surgical specialty or an internal medicine resident for a student wanting pulmonology.

Resources for mentor/mentee pairings. Guidelines were set for both the mentor and mentee. This included templates of the clinical abstract and poster. The templates had breakdowns of the sections of a clinical abstract and direction of where in the medical record the students were most likely to find that information. Completed examples of each were also included.

Results

Across the 2 years of the program, 173 resident-medical student pairings were made (Table 1). All students who signed up for the program were paired with a resident in a specialty of interest to them. Of the 173 pairs, 150 pairs (86.7%) completed the program by presenting their case report at the hospital conference. Of the 23 students who did not complete the program, 16 (70%) were from nonsurgical specialties, 4 (17%) were from surgical specialties, and 3 (13%) were from undecided specialty interests. Among the 23 students who did not complete the program, 3 (13%) were first-year medical students, 7 (30.4%) were second-year medical students, and 13 (56.5%) were third-year medical students.

Most pairings were for third year medical students (113, 65%), followed by second year (35, 20%), first year (23, 13%), and fourth year (2, 1%) medical students. A total of 107 medical students (61.8%) were interested in nonsurgical specialty and they represented anesthesiology, dermatology, emergency medicine, family medicine, internal medicine (and its subspecialties), neurology, pediatrics, psychiatry, and radiology. Forty-six (26.6%) students indicated surgical specialty interests, including general surgery, obstetrics and gynecology, orthopedics, plastic surgery, vascular surgery, and urology. Twenty students (11.6%) indicated undecided specialty interests.

In the 2 years with the NPMP, compared to the previous year without the NPMP, medical student participation in the annual in-hospital conference increased by 122% (55 in 2019 vs 122 in 2020) and 232% (50 in 2021 vs 166 in 2022) (Figure 1). NPMP paired students accounted for 54.1% (66/122) of participating students in 2020 and 50.6% (84/166) in 2022. In both years, medical students from the NPMP won all top 3 awards for case studies research. Additionally, 10 pairs converted their case study into 6 peer-reviewed publications, 5 national conference abstracts, and 2 conference oral presentations as first authors.

Discussion

The NPMP addresses the evolving landscape of medical education by providing research mentorship to medical students across all specialty interests. Our results indicate a significant increase in medical student participation in the annual in-hospital conference, highlighting the program's success in fostering research engagement. With limited NIH-funded

Table 1. Characteristics of participants in near-peer mentorship program.

	COMPLETED	DID NOT COMPLETE
Total	150	23
Medical School Year		
M1	20	3
M2	28	7
M3	100	13
M4	2	0
Medical Student Specialty of Interest		
Medicine (Nonsurgical)	91 (60.7%)	16 (69.6%)
Anesthesiology	7	3
Dermatology	4	
Emergency Medicine	11	4
Family Medicine	3	
Internal Medicine	45	5
Neurology	2	2
Pediatrics	5	1
Psychiatry	9	1
Radiology	5	
Surgical	42 (28.0%)	4 (17.4%)
General Surgery	20	1
Obstetrics and Gynecology	10	
Orthopedic Surgery	5	2
Plastic Surgery	2	
Vascular Surgery	2	1
Urology	3	
Undecided	17 (11.3%)	3 (13.0%)

Subspecialty interests such as gastroenterology and rheumatology were categorized under its main specialty, internal medicine.

research at many institutions, the NPMP's emphasis on case studies offers a cost-effective gateway to research involvement and exposure to various specialties, thereby meeting the growing demand for research experiences in preparation for residency applications, especially with the shift to pass/fail grading on Step 1.

Previous studies have established the efficacy of residents as mentors for medical students in clerkship settings, demonstrating their potential to influence career decisions and even benefit the mentors by enhancing their skills as educators.^{15–18} However, research exploring the effectiveness of residents as mentors specifically for medical student research remains

limited. Despite this gap, investigations into departmental-specific research opportunities have shown promise. For instance, Schexnayder's study on orthopedic research committees revealed increased medical student involvement in departmental research, with elected students acting as vital bridges between faculty and medical students for collaborative projects.¹⁹ Similarly, the field of radiology has witnessed resident-mentored medical student research, resulting in a notable increase in peer-reviewed publications following the introduction of resident-managed peer mentoring programs.^{13,20}

Moving forward, it is essential to conduct in-depth investigations to examine the characteristics of students who did not complete the program and to develop strategies that enhance retention rates. These investigations could highlight opportunities to improve communication skills and responsiveness of residents and medical students, as well as the potential to create curriculum development opportunities. Offering subspecialty interests within a given specialty (eg, cardiology within internal medicine) or identifying overlaps in specialty interests (eg, Gynecologic Oncology, Hematology Oncology and Obstetrics and Gynecology) could be explored to maintain a high pairing rate without sacrificing specialty interest pairing. Another avenue for improvement is to establish a predetermined target journal or conference for the case reports to be converted into post the in-hospital conference. Future outcome metrics should encompass exploring match data, assessing concordance with the specialty interests indicated on NPMP, and examining reasons for students who did not complete the mentorship program. Additionally, studies indicating the impact of clerkship mentorship on specialty choice suggest the importance of investigating whether receiving research mentorship in a specific area makes students more prone to choosing that specialty.

Furthermore, the NPMP not only addresses the immediate need for research mentorship during medical school but may also have far-reaching implications for the future careers of participating students. Research consistently demonstrates that early exposure and mentorship significantly influence career choices in medicine.^{15,17,21} By providing medical students with resident mentors and research opportunities tailored to their interests, the NPMP may play a pivotal role in shaping the professional identities of aspiring physicians. Subsequent studies should delve into whether students engaged in this mentorship program are more inclined to pursue academic medicine, engage in scholarly activities throughout their careers, or assume leadership roles within their chosen specialties. Examining these long-term outcomes will offer valuable insights into the enduring impact of resident-led mentorship on the professional development of medical students.

Limitations

This observational study, outlining the implementation of a mentor program without a control group, comes with inherent

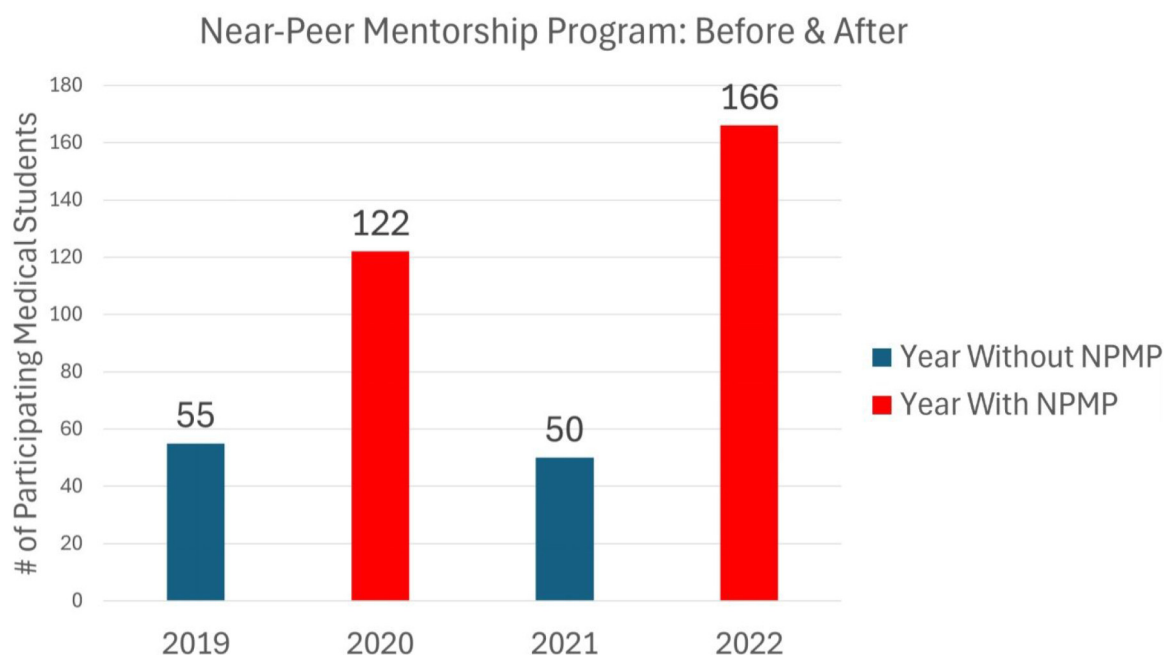


Figure 1. Medical student participation in the in-hospital research conference across 4 years. A significant increase in the participation rate is seen during the years 2020 and 2022, when the NPMP was available to students.

limitations. The generalizability of our findings may be influenced by factors such as the alumni status of many mentors and the program's founders. The willingness and participation rate of residents to serve as mentors may be elevated compared to other institutions, potentially inflating the overall success and impact of the NPMP. Additionally, the distribution of medical students' specialty interests may not accurately reflect those in other institutions due to variations in school missions, such as our school's emphasis on primary care. Moreover, differences in resident population availability across various specialties at different institutions may impact the program's effectiveness.

Conclusion

The NPMP has successfully encouraged medical student participation in clinical research, demonstrating potential for residents to serve as research mentors. The program has significantly increased the number of student poster presentations, leading to a notable rise in subsequent publications and presentations.

Author's Contribution

Solomon Oak did data collection and drafted manuscript.

Cynthia Glickman and Katherine McMackin co-founded and co-ran NPMP, co-submitted to IRB for project exemption, revised manuscript.

Consent

The Cooper University Hospital IRB reviewed the research protocol and deemed the study exempt.

Ethics

Ethical practices were followed for all aspects of this study.

ORCID iD

Cynthia Glickman  <https://orcid.org/0009-0002-9934-0314>

REFERENCES

- Jacobs RJ, Caballero J, Kane MN. Medical students' confidence in their abilities and barriers to conducting research: a mixed-methods study. *Cureus*. 2022;14(1):e20896. doi: 10.7759/cureus.20896. PMID: 35145801; PMCID: PMC8809207.
- Aagaard EM, Hauer KE. A cross-sectional descriptive study of mentoring relationships formed by medical students. *J Gen Intern Med*. 2003;18(4):298-302. doi: 10.1046/j.1525-1497.2003.20334.x. PMID: 12709098; PMCID: PMC1494842.
- Kumar J, Memon A, Kumar A, Kumari R, Kumar B, Fareed S. Barriers experienced by medical students in conducting research at undergraduate level. *Cureus*. 2019;11(4):e4452. doi: 10.7759/cureus.4452. PMID: 31205838; PMCID: PMC6561510.
- Akinla O, Hagan P, Atiomo W. A systematic review of the literature describing the outcomes of near-peer mentoring programs for first year medical students. *BMC Med Educ*. 2018. <https://doi.org/10.1186/s12909-018-1195-1>
- Singh S, Singh N, Dhaliwal U. Near-peer mentoring to complement faculty mentoring of first-year medical students in India. *J Educ Eval Health Prof*. 2014. <https://doi.org/10.3352/jeehp.2014.11.12>
- Cho M, Lee YS. Voluntary peer-mentoring program for undergraduate medical students: exploring the experiences of mentors and mentees. *Korean J Med Educ*. 2021;33(3):175-190. doi: 10.3946/kjme.2021.198. Epub 2021 Aug 27. PMID: 34474525; PMCID: PMC8413850.
- Trujillo G, Aguinaldo PG, Anderson C, et al. Near-peer STEM mentoring offers unexpected benefits for mentors from traditionally underrepresented backgrounds. *Perspect Undergrad Res Mentor*. 2015;4(1). <http://blogs.elon.edu/purm/files/2015/11/Riggs.GT-et-al-PURM-4.1.pdf>. Epub 2015 Nov 11. PMID: 27668127; PMCID: PMC5034940.
- Sobbing J, Duong J, Dong F, Grainger D. Residents as medical student mentors during an obstetrics and gynecology clerkship. *J Grad Med Educ*. 2015;7(3):412-416. doi: 10.4300/JGME-D-14-00667.1. PMID: 26457148; PMCID: PMC4597953.
- Prunuske A, Houss B, Wirta Kosobuski A. Alignment of roles of near-peer mentors for medical students underrepresented in medicine with medical education competencies: a qualitative study. *BMC Med Educ*. 2019;19(1):417. doi: 10.1186/s12909-019-1854-x. PMID: 31711472; PMCID: PMC6849195.

10. Mahmood H, Zheng K, Elias S, et al. Implementation and evaluation of "I-Guide," a pilot near-peer internal medicine mentorship program. *Can Med Educ J*. 2021;12(2):e100-e102. doi: 10.36834/cmej.70315. PMID: 33995727; PMCID: PMC8105568.
11. Indyk D, Deen D, Fornari A, Santos MT, Lu WH, Rucker L. The influence of longitudinal mentoring on medical student selection of primary care residencies. *BMC Med Educ*. 2011;11:27. doi: 10.1186/1472-6920-11-27. PMID: 21635770; PMCID: PMC3128853.
12. Bajaj SS, Wang H, Williams KM, et al. National Institutes of Health R01 grant funding is associated with enhanced research productivity and career advancement among academic cardiothoracic surgeons. *Semin Thorac Cardiovasc Surg*. 2021;33(4):1047-1056. doi: 10.1053/j.semtcvs.2020.12.002. Epub 2020 Dec 24. PMID: 33359763.
13. Lakhani DA, Swaney KJ, Hogg JP. "Resident managed peer-mentoring program": a novel way to engage medical students and radiology residents in collaborative research. *Acad Radiol*. 2022;29(9):1425-1431. doi: 10.1016/j.acra.2021.11.004. Epub 2021 Dec 2. PMID: 34863631; PMCID: PMC9156656.
14. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies.
15. Hertling S. Lack of residents due to COVID-19 pandemic. Can a mentor-mentee program during medical studies have a positive influence on the choice for specialist training in gynecology and obstetrics? A review of current literature and results of a national wide survey of medical students. *Arch Gynecol Obstet*. 2022;305(3):661-670.
16. Coe TM, McKinley SK, Hamdi I, et al. The Big Sibling program: impact of a medical student-resident mentorship program during the surgery clerkship. *Am J Surg*. 2023;225(4):650-655.
17. Sobbing J, Duong J, Dong F, Grainger D. Residents as medical student mentors during an obstetrics and gynecology clerkship. *J Grad Med Educ*. 2015;7(3):412-416.
18. Day KM, Schwartz TM, Rao V, et al. Medical student clerkship performance and career selection after a junior medical student surgical mentorship program. *Am J Surg*. 2016;211(2):431-436.
19. Schexnayder S, Starring H, Fury M, Mora A, Leonardi C, Dasa V. The formation of a medical student research committee and its impact on involvement in departmental research. *Med Educ Online*. 2018;23(1):1424449.
20. Som A, Lang M, Capua D, Chonde J, Cochran DB, L R. Resident-led medical student radiology research interest group: an engine for recruitment, research, and mentoring-radiology in training. *Radiology*. 2021;300(1):E290-E292.
21. Zuzuarregui JR, Wu C, Hohler AD. Promoting careers in neurology: mentorship of medical students. *Semin Neurol*. 2018;38(4):413-417.