Received: 15 November 2021 | Revised: 3 June 2022 | Accepted: 7 June 2022

DOI: 10.1002/emp2.12775

JACEP OPEN
JOURNAL OF THE AMERICAN COLLEGE OF EMERGENCY PHYSICIANS OPEN
A GLOBAL JOURNAL OF EMERGENCY MEDICINE
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WILEY

CONCEPTS

General Medicine

Implementation and value of a student-run volunteer clinical research program at an academic medical center

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Funding and support: By *JACEP* Open policy, all authors are required to disclose any and all commercial, financial, and other relationships in any way related to the subject of this article as per ICMJE conflict of interest guidelines (see www.icmje.org). The authors have stated that no such relationships exist.

Abstract

Clinical research output in the emergency department (ED) continues to be constrained by limitations in funding for researchers, demands of patient care on ED providers, and difficulties in obtaining high-quality data. In response, several institutions have established programs in which student volunteers are integrated into department workflows to increase clinical research output and introduce pre-health students to careers in medicine. One such program, the student volunteer clinical research program, presently consists of over 40 undergraduate and post-baccalaureate student volunteers who screen, consent, and enroll patients into prospective studies in the ED of the University of California, Los Angeles (UCLA) Ronald Reagan Medical Center. The program is led by student coordinators who collaborate with departmental research staff and faculty. Our program is unique in that it is primarily run by the students themselves. Experienced student research associates facilitate recruitment through a competitive biannual application process, train new volunteers to perform on-shift research duties, and monitor participants for compliance with both hospital and program policies. Participation in the program provides students with exposure to frontline medical research, opportunities to observe clinical medicine, and access to a variety of program-specific resources including student-led committees, career development resources, and mentorship from peers, alumni, and faculty. This concept piece serves as a structural model for other institutions seeking to implement volunteer clinical research or bolster existing programs through increased student-led initiatives.

KEYWORDS

emergency medicine, post-baccalaureate, postgraduate, research, student, undergraduate, volunteer

Supervising Editor: Henry E. Wang, MD, MS.

1 | INTRODUCTION

Conducting prospective clinical research in the emergency department (ED) remains difficult, expensive, and underfunded.[1] Academic emergency medicine physicians struggle to balance research-oriented activities with clinical responsibilities.[2–5] Researchers in the ED face obstacles such as high patient volumes, lack of protected research time, and low federal funding for research activities in the ED when compared to that of other specialties.[3,6–15]

To address these obstacles, institutions have recognized the benefits of incorporating volunteer clinical research programs in the ED setting.[1,16–22] These programs integrate undergraduate and postgraduate student volunteers into the ED research workflow to support departmental research activities and inform the next generation of clinicians and researchers by exposing students to medical research and the clinical environment. Despite the success of these programs, difficulties in initiating and maintaining a volunteer research program in the ED setting without a clear structural schematic prevent their widespread adoption.[19]

In this concept piece, we describe the structure and workflow of 1 highly successful student-run program that has been in existence for more than 20 years: the student volunteer clinical research program at the UCLA Ronald Reagan Medical Center. The program supports departmental research efforts and provides participating students with invaluable exposure to clinical medicine. We outline the steps and key components necessary to implement and maintain a successful ED volunteer clinical research program at other institutions and improve those already in existence through our student-led model. We provide several appendices to allow interested departments to help replicate our successful program. We also report data to demonstrate our program's contributions to departmental research output, as well as report cross-sectional survey data collected from current members and alumni to substantiate the program's beneficial impact on student volunteers' career outcomes through exposure to clinical medicine, research, and student-developed resources.

2 | PROGRAM BACKGROUND

The student volunteer clinical research program began in 1998 with a handful of volunteers at the UCLA ED (program website: https://emra.dgsom.ucla.edu/pages/). Since then, the program has expanded to over 40 active volunteer research associates per academic year with over 290 program graduates—many of whom have gone on to pursue careers in medicine and research. The program's success arises from its unique student-led structure, which provides participants with unparalleled exposure to the fast-paced ED setting at a level 1 trauma center and benefits both faculty investigators and the institution at large in advancing its research mission.

3 | PROGRAM DESIGN

The program consists of volunteer general members, program coordinators, and program head coordinators who work with paid departmental research staff including program managers, staff research coordinators, principal investigators, faculty sponsors, and the ED research director (Figure 1; Table 1).

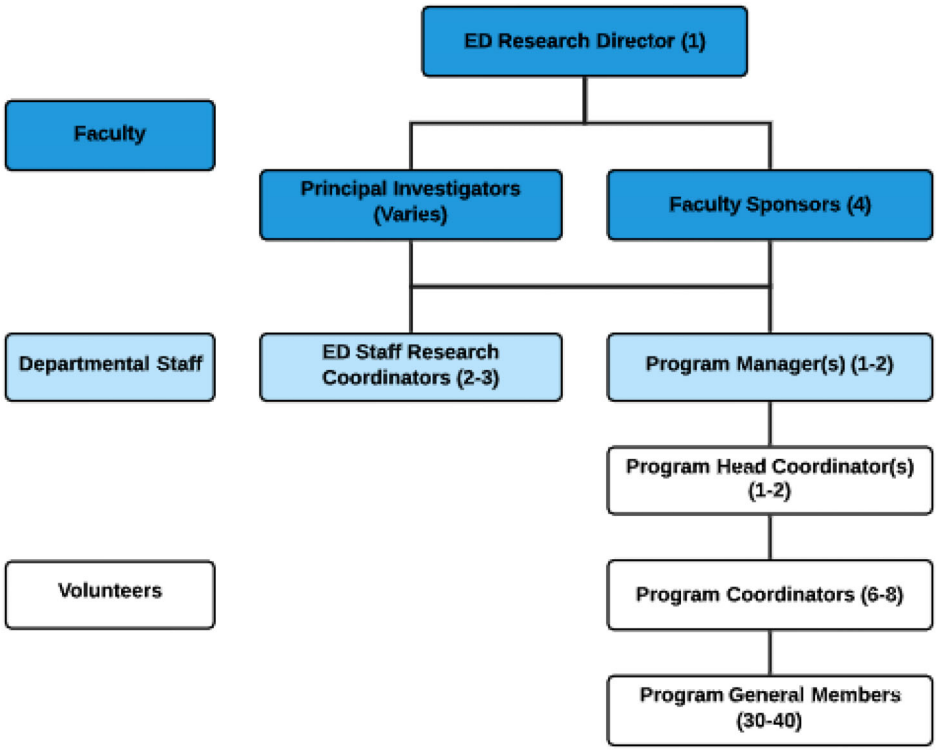

FIGURE 1 Leadership and personnel structure of the student volunteer clinical research program. Parenthetical numbers indicate how many individuals typically occupy each role

TABLE 1 Leadership and personnel role descriptions of the student volunteer clinical research program

Role	Status	Time commitment[a]	Description
ED research director	Employee	8 h/mo	An ED faculty member who oversees the program, serves as the primary faculty sponsor, and approves all program research projects
Faculty sponsors	Employee	4 h/mo	ED faculty members who support the program through student research program course sponsorship, mentorship, and didactic instruction for program participants at meetings and educational events
Principal investigators	Employee	2 h/mo	Residents, fellows, and faculty who partner with the student volunteer clinical research program to conduct data collection for their research investigations
ED staff research coordinators	Employee	40 h/wk	Departmental staff members who perform research tasks outside the scope of duties for student volunteer research associates and work with program managers to ensure efficient collection of high-quality research data for externally funded studies
Program managers	Employee	40 h/wk	Former program participants who oversee the volunteers in the program and serve as liaisons between paid and volunteer program leadership
Program head coordinators	Volunteer	6 h/wk	Former program coordinators who oversee the coordinator team by facilitating weekly meetings with program leadership and leading quarterly program-wide general meetings
Program coordinators	Volunteer	6 h/wk	Former general members in leadership roles who sustain the program by ensuring the maintenance of student volunteer shift schedules, organizing program-wide meetings, facilitating new member recruitment and training, overseeing research studies, and leading the development of committees
General members	Volunteer	6 h/wk	Undergraduate and post-baccalaureate student volunteer research associates who perform research duties for all ongoing studies in the ED during active program shift hours

Abbreviation: ED, emergency department.

[a]Time commitment details are limited to the amount of time dedicated solely to the program by each role.

3.1 | ED research director, faculty sponsors, principal investigators, ED staff research coordinators, and program managers

The ED research director provides administrative oversight of the program and its constituents. The research director also serves as the primary faculty sponsor for the student volunteer clinical research program. Faculty sponsors are departmental faculty members who support the program through student research program course credit sponsorship and mentorship of participants. Principal investigators include residents, fellows, and faculty who collaborate with the program in conducting their research investigations. Researchers who wish to take advantage of the student volunteer research program are required to submit a research plan for evaluation. These plans undergo faculty review and approval from the ED research director to ensure that the students are only involved in high-quality, meaningful research. The faculty sponsors and principal investigators also agree to provide didactic instruction to the student researcher that is level-appropriate and addresses the fundamental issues related to the research. Principal investigators also work with departmental faculty, program managers, and the assigned volunteer program coordinator to develop and implement the research study protocols necessary for data collection.

Several ED staff research coordinators typically perform regulatory and study coordinator duties for externally and federally funded studies and work alongside 1 or 2 program managers to refine the procedures and processes needed for the efficient collection of high-quality data. The program manager is a dedicated role that encompasses part of 1 of the department's staff research coordinator's duties. This paid departmental position allocates 80% of its time to study coordinator duties and 20% of its time to the student volunteer clinical research program by providing administrative oversight of hospital regulatory requirements of volunteers such as facilitating badge registration and electronic medical record (EMR) access. Program managers are often former student volunteer research associates taking a gap year before applying to pre-health and professional school programs. By working alongside the staff research coordinators, program managers serve as effective liaisons between the student program and hospital staff personnel. Each team member's role follows guidelines defining their scope of activity. These guidelines derive from institutional policies, including those for hospital-based research. Because ED staff research coordinators and program managers historically have not occupied a full-time role in the student volunteer clinical research program, the vast majority of the program's research workflow and the entirety of the program's member experience initiatives are led and facilitated by the student volunteer team which consists of program head coordinators, program coordinators, and general members.

3.2 | Program head coordinators, program coordinators, and general members

One to two designated program head coordinators serve as liaisons between the departmental staff and the volunteer program participants. Program head coordinators oversee a team of 6–8 volunteer program coordinators by leading weekly meetings with program leadership and facilitating quarterly program-wide general meetings. Program coordinators are undergraduate and post-baccalaureate student volunteers who administratively support the program by maintaining student shift schedules, planning regularly scheduled organization-wide meetings, organizing member recruitment, overseeing committees, and facilitating member training. Each program coordinator is also a study head, managing one of the department's research studies that the student volunteers are involved with. The program coordinator role also involves representing the program in meetings with principal investigator(s), auditing patient enrollment records, and educating general members on study enrollment procedural updates. In coordination with principal investigator(s) and staff research coordinators, program coordinators develop the protocol and procedures that student volunteer research associates employ on-shift to perform their roles and enroll patients into each study. Program coordinators are former general members with at least 1 year of experience in the program who have been selected for leadership roles based on exemplary performance as student volunteer research associates during a biannual coordinator recruitment process. During this time, program head coordinators are also chosen for their increased leadership roles among former program coordinators who have exhibited exceptional performance in their duties.

General members constitute the bulk of the program and include 30–40 student volunteer research associates who actively screen patients in the ED, facilitate enrollment, and assist with data collection (eg, patient surveys, physician data forms, and lab samples) depending on the needs of a specific study. Student volunteer research associates are trained to assist with all active and ongoing research studies. This approach not only simplifies scheduling, but also ensures that students receive diverse exposure to medicine and clinical research.

4 | PROGRAM ADMINISTRATION

4.1 | Recruitment

The program consists of undergraduate and postgraduate students from various academic disciplines who are interested in healthcare or clinical research-oriented careers. Member recruitment occurs biannually and coincides with UCLA's undergraduate academic schedule.

Student program coordinators lead recruitment with support from general members. Promotional efforts include activity fairs, social media campaigns, classroom announcements, and informational sessions. The online application process includes written responses to a rotating set of questions and the providing of 2 professional references. These applications are de-identified, screened, and scored by student coordinators to determine eligibility for in-person interviews using rubrics assessing applicants' interest in the program, potential for contribution, diversity of experience, ability to write and communicate effectively, program fit, and intellectual aptitude. Primary interviews are conducted in multiple mini-interview format to gauge candidates for essential on-shift competencies such as professionalism in handling patient data, scenario-specific critical thinking capabilities, and research enrollment skills such as conscientiousness when interacting with patients and staff. A select pool of applicants are then selected for a secondary round of interviews that are conducted in panel format to appraise candidates' personal backgrounds, passions, and propensity for growth in the program. Interviews are generally conducted by ED staff research coordinators, program managers, program head coordinators, and program coordinators. During the primary interview stage, experienced general members are permitted to observe interviews to gain professional experience and prepare for future leadership roles.

Based on a review of our archival program records, the program received a median of 244.5 applications and accepted a median of 11.5 applicants per recruitment cycle from Fall 2013 to June 2019—with the exception of Spring 2016 when no recruitment cycle was conducted.

Due to the extensive onboarding and training process for our student volunteers, we require the accepted applicants to commit at least 1 year (4 academic quarters) to the program; however, most stay beyond this requirement (median = 7 academic quarters) to gain further experience, benefit from program career development resources, and pursue leadership roles.

4.2 | Training

After acceptance, new members undergo an extensive orientation, training, and evaluation process (Figure 2). During orientation, new members complete hospital-specific volunteer requirements to obtain a badge, secure institutional email address, and EMR access. New recruits are paired with experienced student volunteer research associates who supervise their training. Trainers follow standardized training materials created by program coordinators including educational modules, instructional videos, and study protocols detailing each study condition's relevant pathophysiology, current state of research, and research enrollment workflow (see Appendices S1 and S2 and Video S1 for sample educational module document, educational module video, and program-specific research study protocol available as supplemental material accompanying the online article). During training, new members become familiar with study requirements, EMR navigation, and screening processes for the individual research studies. After 3–5 training shifts, a program coordinator evaluates the trainee's ability to fulfill all program duties with a standardized checklist. If necessary, additional training is provided.

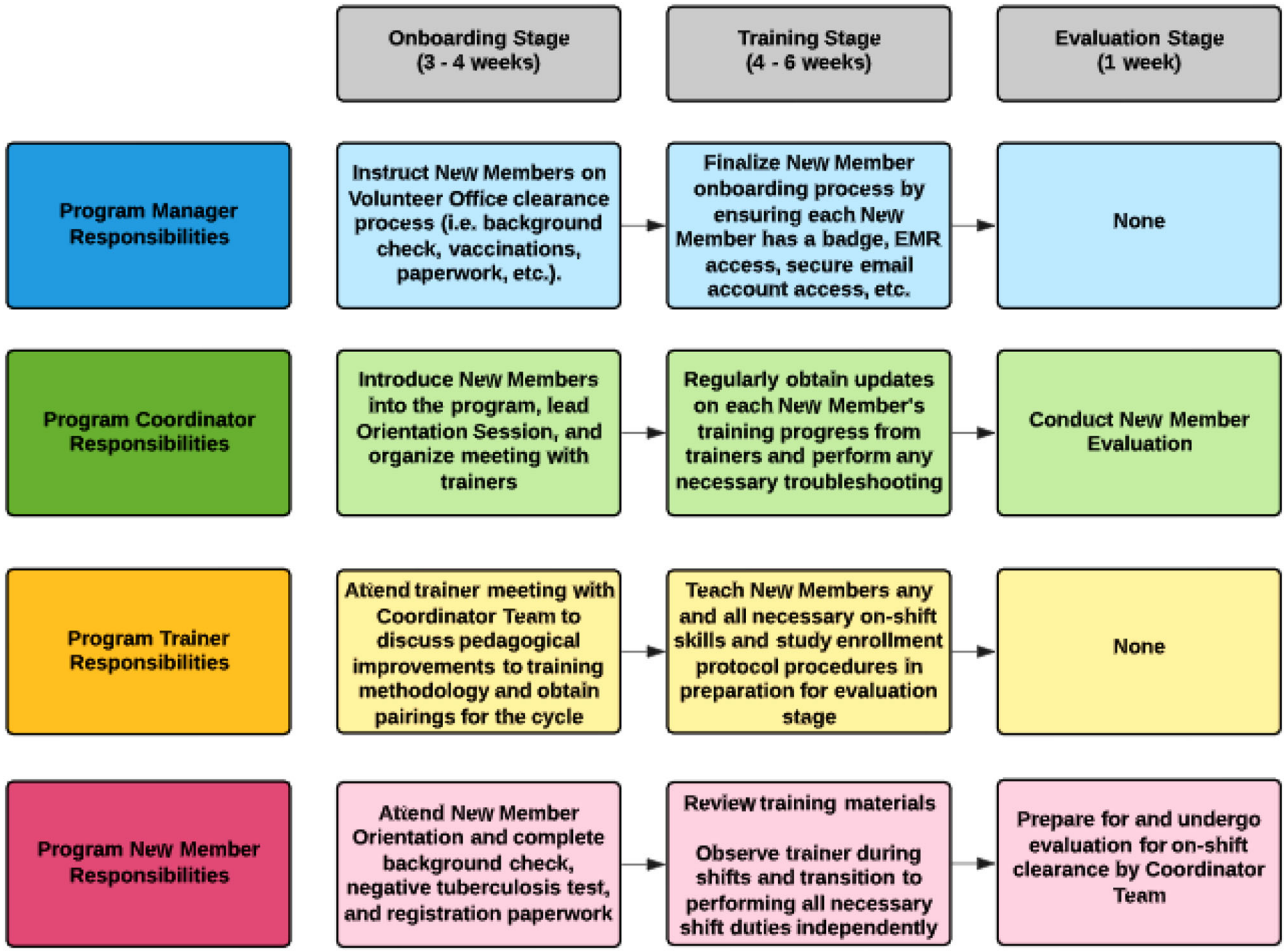

FIGURE 2 Overview of the student volunteer clinical research program new member onboarding, training, and evaluation process

4.3 | Monitoring

Due to program participants' frequent contact with patients, staff, and personal health information, the program's student volunteer leadership team continuously monitors members for professionalism and competency.

Institutionally, all members are required to complete hospital-specific volunteer requirements. Requirements include immunizations, background checks, and online training on hospital policies. The volunteer office monitors members through annual competencies and records members' volunteer hours. Additionally, members must follow hospital policies including professional attire and compliance with the Health Insurance Portability and Accountability Act (HIPAA).

At the organization level, our program outlines program-specific behavioral expectations in a written agreement that is read and signed by all participants during the onboarding process. Members are held accountable through a 3-strike disciplinary system. Strikes are warranted by concerns regarding adherence to deadlines, professionalism, and punctuality. A program participant with 3 strikes or a HIPAA violation is subject to removal from the program. Program coordinators regularly evaluate study competency and HIPAA compliance through drop-in shift evaluations, audits of enrollment records, and weekly assessments. Weekly quizzes in program-wide newsletters are used to assess and reinforce members' understanding of study protocols and identify areas of confusion. HIPAA compliance is monitored through biannual quizzes, modules, and presentations in collaboration with the hospital's office of compliance. General members also receive kudos and gift cards during program-wide meetings to recognize exemplary on-shift performance (eg, highest number of enrollments, outstanding displays of character, and additional shifts sign-ups).

4.4 | Communication

The student volunteer clinical research program employs various communication methods to perform its research duties while maintaining the privacy of personal health information (Table 2). All members encrypt their personal devices in accordance with institutional policy. All research-related duties and communication are conducted using secured, on-site devices on hospital premises using the hospital email system. Student volunteer research associates do not have remote access to patients' health records.

TABLE 2 Communication platforms used by the student volunteer clinical research program

Communication platform	Description	Purpose
Hospital pager	Dedicated program pager that remains in the hospital at all times with the student volunteer research associate currently on shift	Real-time notifications from the hospital system for potential study participants including trauma and sepsis alerts
Encrypted email	Protected, HIPAA-compliant email server used by hospital staff and volunteers	Correspondence containing study-related personal health information
Real-time online messaging	Messaging platform with channels, private groups, and direct messaging	Real-time non-personal health information communications between student volunteer research associates used for studies, committees, and general program updates
General meetings	Required, in-person, organization-wide meetings that occur twice during the Fall, Winter, and Spring academic quarters (6 meetings total annually)	Communication of major study and committee updates, principal investigators' presentation of new proposed studies, clarifications on general members' questions, educational opportunities through guest speaker events, and social opportunities for members to build camaraderie
Coordinator meetings	Weekly meetings with program managers, head coordinators, and coordinators	Discussion of program updates, workflow, and management
Online newsletters	Weekly organization-wide emails sent by the program coordinator team	Immediate program updates, announcements, and quality assurance assessments of members' knowledge of on-shift research procedures

Abbreviation: HIPAA, Health Insurance Portability and Accountability Act.

5 | IMPACT ON CLINICAL RESEARCH

5.1 | Role in ED research workflow

Student volunteer research associates screen and enroll for 3–7 ongoing studies daily from 8 to 12 a.m.—excluding university holidays—in 4-hour shift increments. Student volunteer research associates' roles vary depending on study-specific requirements as outlined by the Institutional Review Board (IRB) (Figure 3). For high-risk interventional clinical trials, student volunteer research associates perform preliminary screenings and approach the patient's ED physician to confirm enrollment eligibility per inclusion and exclusion criteria. If eligible, student volunteer research associates assist staff research coordinators and program managers by providing patients with study documents or visual aids to facilitate enrollment. For minimal risk observational studies, student volunteer research associates prospectively collect baseline data and obtain informed consent from patients after confirming eligibility with their physician. Additionally, during weekly 2-hour clerical shifts, student volunteer research associates perform peripheral research duties such as auditing databases, assisting student volunteer research associates on shift, performing missed patient outreach for potential recruitment (eg, contacting patients not enrolled in studies due to arriving during non-shift hours), and contacting patients for phone follow-up in minimal risk observational studies. Per institutional guidelines for volunteers, student volunteer research associates are limited to 6 hours of service per week. Student volunteer research associates increase the research capacity of the department by allowing prospective enrollment and data collection during high patient volume hours in the ED.

5.2 | Research projects

To determine the student volunteer clinical research program's impact on departmental research output, we utilized a review of PubMed and faculty sponsor records to identify all published studies with program involvement in peer-reviewed research journals. Since its formation in 1998, the program has supported departmental research projects ranging from single center observational studies to multicenter prospective clinical trials. To date, the program's contributions have supported the publication of 83 manuscripts in peer-reviewed journals with an average of 3 publications per year (Figure 4).

6 | IMPACT ON PARTICIPANTS

To assess the program's impact on its student participants, we piloted 2 short surveys using the electronic Qualtrics platform to gather information and feedback anonymously from current program participants and alumni (see Appendices S3 and S4 for member and alumni surveys). Each questionnaire was developed to determine current and past program participants' attitudes toward the program, details of voluntary committee involvement, career outcomes, and valuation of their experience. The member survey was dispersed from April 2020 to May 2020 to all active student volunteers (n = 47) with an 89% response rate (42/47). A separate alumni survey was administered from April 2020 to October 2021 to all program alumni with active emails on file within the program's records (n = 127 out of 299 total program alumni) with a 48% response rate (61/127). Both surveys were reviewed and deemed exempt by the IRB.

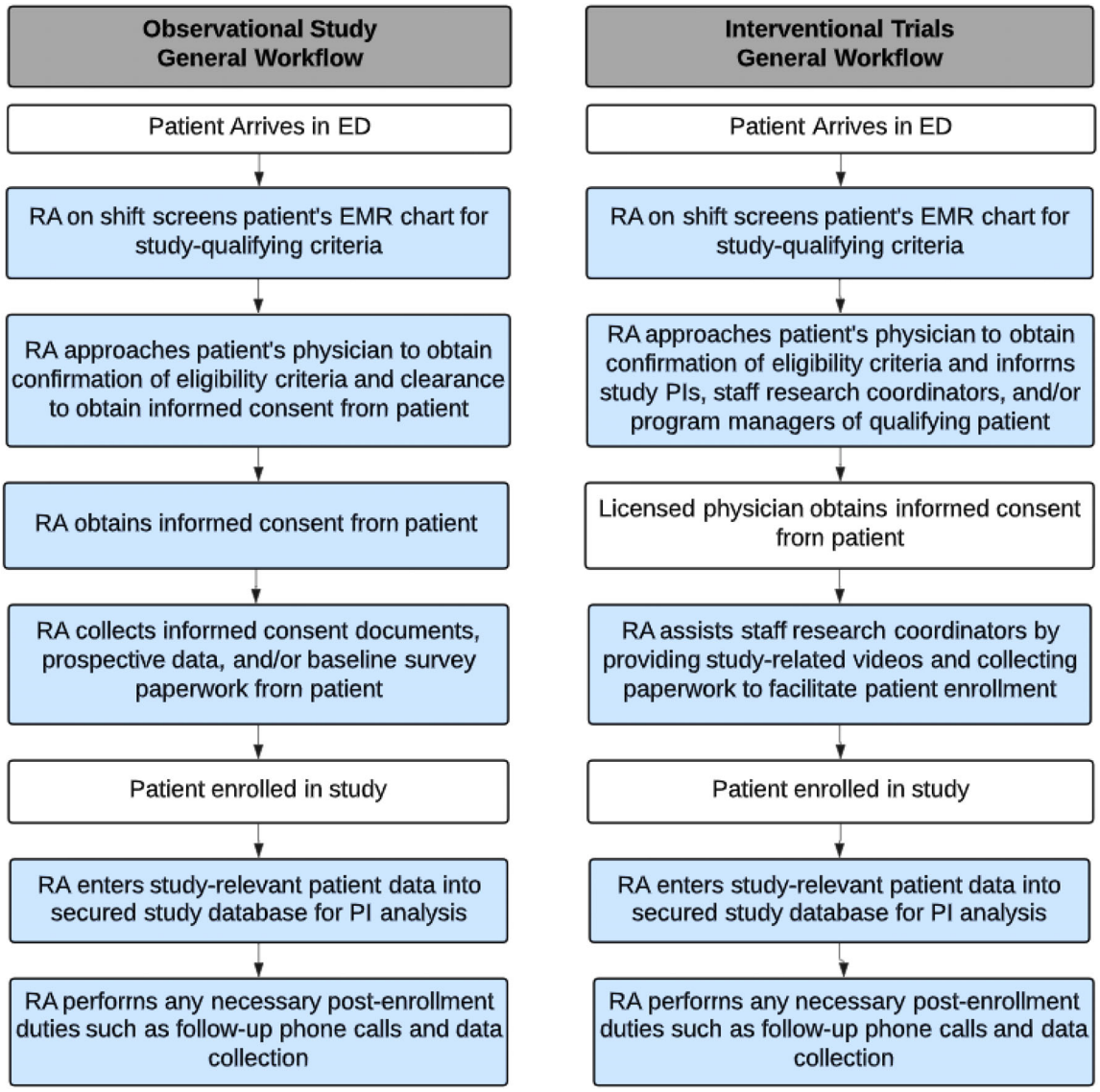

FIGURE 3 Flowchart of student volunteer research associates' (RA) role in ED research workflow for observational and interventional research studies. Boxes shaded in blue indicate workflow stages with direct RA involvement

6.1 | Student research program

Undergraduate members can receive university course credit for participation in the student volunteer clinical research program through the UCLA Student Research Program (SRP). All eligible undergraduate members are enrolled in the SRP 99 research course that grants 2 units per academic quarter. Highly motivated students can also enroll in the SRP 199 program to earn 4 upper division units through work on independent research projects under the supervision of program faculty sponsors. Participants on average earn 5.1 units of SRP course credit during their time in the program. These units contribute toward members' graduation requirements and quantify their involvement in the program for professional school applications.

Of the active student volunteers surveyed, 43% (18/42) of respondents indicated "SRP-99/199 course credit" opportunities as a motivational factor for program participation.

6.2 | Exposure to frontline medical research

Student volunteer research associates are exposed to frontline emergency medicine research and clinical practice, preparing them for careers in research and medicine. Student volunteer research associates learn about research study design, informed consent, and best practices for data collection. Furthermore, program participants in leadership positions help develop, maintain, and improve study protocols, effectively gaining a deeper understanding of research study design and implementation.

During UCLA's Undergraduate Research Showcase, members develop, investigate, and present independent research questions using study data the program helped to collect. ED faculty sponsors mentor teams of students, each presenting a scientific poster at the annual university-wide symposium.

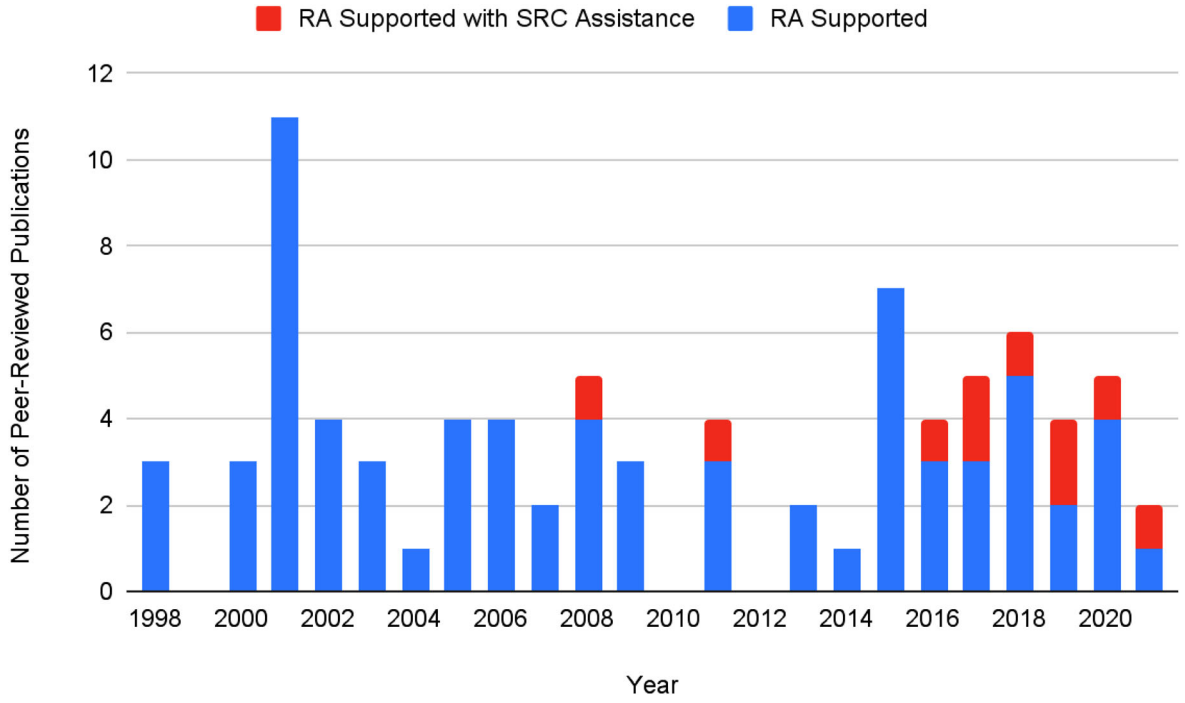

FIGURE 4 Number of faculty and principal investigator manuscripts published in peer-reviewed journals for research conducted with the support of the student volunteer clinical research program from 1998–2021. Publications are differentiated between research completed with exclusive student volunteer research associate (RA) support and combined RA support with staff research coordinator (SRC) assistance. This figure only details projects with data collected by the student volunteer clinical research program and does not represent all departmental research output

Supervised by ED faculty, small teams of experienced members may co-author peer-reviewed publications through mentored projects. These projects help members gain valuable research skills in data analysis, manuscript development, and technical writing.

Among current student volunteers surveyed, 95% (40/42) of respondents indicated "research experience" as a motivational factor for program participation. Additionally, 81% (34/42) of respondents indicated they either "strongly agree" or "agree" that program participation confirmed their interest in pursuing a career in clinical research.

6.3 | Clinical exposure

Program participants gain extensive clinical exposure to the ED setting as well as clinical education relevant to ongoing studies. Members are taught the pathophysiology of relevant conditions for each research study as well as study design and objectives by faculty sponsors and principal investigators. In the ED, student volunteer research associates regularly engage with patients, staff, and clinicians from various departments to perform their research duties at a major academic medical center and level 1 trauma center. In the process, members develop communication, collaboration, and leadership skills essential to careers in healthcare and research.

Members can also explore clinical medicine and patient care by shadowing ED physicians and attending department-organized educational conferences and journal clubs. These opportunities provide members exposure to medical education while creating opportunities for healthcare staff to mentor a motivated group of students.

Of the active student volunteers surveyed, 100% (42/42) of respondents listed "exposure to clinical medicine" and 88% (37/42) of respondents listed "shadowing opportunities" as a motivational factor for program participation. Furthermore, 100% (42/42) of respondents indicated they either "strongly agree" or "agree" that program participation confirmed their interest in pursuing a career in the medical field.

Out of 61 program alumni surveyed, 61% (37/61) of respondents reported ultimately pursuing medicine as a profession with the following breakdown: 16% (10/61) Doctor of Medicine (MD) degree recipients, 5% (3/61) Doctor of Osteopathic Medicine (DO) degree recipients, 2% (1/61) Master of Science in Nursing (MSN) degree recipients, 2% (1/61) Master of Science (MS) in Physician Assistant Studies degree recipients, 2% (1/61) Doctor of Philosophy (PhD) in Clinical Psychology degree candidates, 2% (1/61) MD-PhD dual degree candidates, and 33% (20/61) current MD degree candidates.

6.4 | Committees

Committees are collaborative, interest-based groups developed and led entirely by student volunteers with optional participation (Figure 5). Each committee oversees a specific delegated arm of the

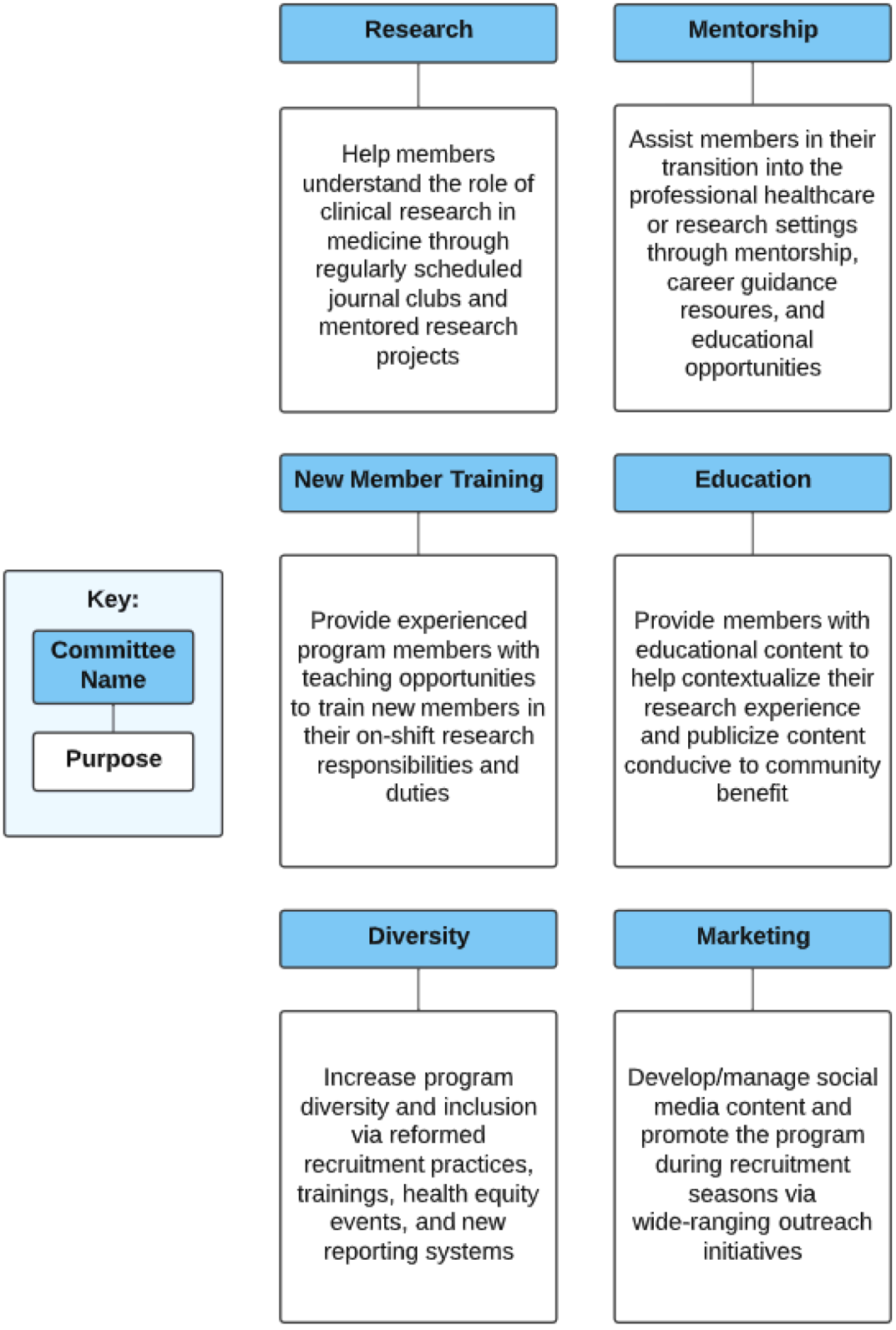

FIGURE 5 Overview of committees in the student volunteer clinical research program

program such as training, research, and career development resources. These smaller group settings allow participants to interact and foster teamwork, initiative, and presentation skills crucial to future success in healthcare and research. Each committee also offers its members leadership opportunities and avenues for input on ongoing program improvement. Committees are entirely student-run and exemplify the program's ongoing growth to provide member opportunities, such as leading research poster teams, developing pre-health student resources, mentoring peers, and training new recruits.

Of the 42 current volunteers surveyed, 83% (35/42) of respondents indicated participation in at least 1 committee with the following breakdown: 64% (27/42) Research Committee involvement, 57% (24/42) Mentorship Committee involvement, and 50% (21/42) New Member Training Committee involvement. Note that committee participation breakdown includes volunteers' participation in multiple committees concurrently. The Diversity, Education, and Marketing Committees described in Figure 5 are recent developments and were not present during the time of member survey administration.

6.5 | Career guidance and development

Student volunteer research associates also benefit from career development opportunities including (1) mentorship pairings, (2) guest speaker presentations, (3) educational events, and (4) professional development resources.

1. Peer mentorship can be valuable for students pursuing healthcare.[23–25] Our program establishes these relationships through mentorship within the program as well as from alumni. Intra-Program Mentorship pairs new members with experienced student volunteer research associates; these pairings assist new members in acquiring research enrollment skills and provide pre-health guidance from peers. Additionally, the Resident and Alumni Mentorship Programs pair current members with resident physicians and alumni in healthcare and research, respectively, to assist current members in navigating their chosen career paths.
2. During general meetings, all members hear from guest speakers including physicians of allopathic and osteopathic medicine, healthcare staff from non-traditional backgrounds, and dual-degree practitioners. Additionally, members can refine presentation skills by presenting during these meetings on topics related to medicine and research.
3. Select participants are invited on a rotating basis to attend weekly department of emergency medicine resident educational conferences and monthly research journal clubs. These educational events provide members exposure to frontline academic medicine and research.
4. The program offers a series of professional development resources facilitated by the Mentorship Committee. These include premedical coursework guidance counseling sessions, entrance examination preparation course discounts, alumni-donated Medical College Admissions Test (MCAT) and Graduate Record Examination study materials, professional school application process workshops, question-and-answer sessions with admissions committee faculty, mock interviews, résumé/curriculum vitae review sessions, and wellness workshops.

Among the current volunteer members surveyed, 52% (22/42) attended an educational resident conference, 48% (20/42) participated in shadowing, 40% (17/42) received professional/graduate school application guidance, and 14% (6/42) received a MCAT course discount. Additionally, 93% (39/42) of respondents designated at least one form of career development as a motivational factor for program participation with the following breakdown: 93% (39/42) "professional development," 74% (31/42) "career guidance," 74% (31/42) "mentorship from physicians," and 64% (27/42) "mentorship from other research associates."

Each resource supports members through their development into becoming healthcare and research professionals. Program alumni often sustain these resources for current members through voluntary involvement in alumni mentorship, guest speaker presentations, and pre-professional workshops, even after graduating from the program.

7 | DISCUSSION

Through over 20 years of experience, the student volunteer clinical research program has established an effective model for incorporating student volunteer research associates into the ED setting to support departmental research efforts and promote student exploration of healthcare and research. Our program produces substantial benefit to participants, emergency medicine investigators, and the institution as a whole. This report serves as a developmental schematic on how similar programs can be structured, implemented, and maintained at other institutions.

Our program's unique student-run, faculty-supported structure simultaneously provides consistent support to departmental research output, valuable mentorship opportunities between emergency medicine faculty and students, and rapid growth of student-led initiatives such as committees. Committees require no paid staff time but enhance members' professional development experience through leadership opportunities and career guidance resources that foster camaraderie as evidenced by program alumni and their ongoing engagement with the program through mentorship of current participants.

For institutions seeking to develop a similar program, we encourage opening program participation to both undergraduate and postbaccalaureate students to promote exploration of careers in medicine and research by students of diverse backgrounds. We additionally recommend allocating a small amount of departmental funds annually for program-related costs (eg, catering for general meetings, graduation cords for senior members, and gift cards for member-recognition kudos). Because the program is often student volunteers' first exposure to an academic clinical setting, we strongly suggest that institutions establish and stress the importance of strict adherence to hospital

HIPAA compliance policies and professionalism guidelines during the volunteer onboarding process. We also caution institutions to follow hospital-specific volunteer regulations and avoid misuse of student volunteers to perform duties traditionally conducted by paid research staff.

We acknowledge that the number of program participants at any given time will vary depending on the academic center's hospital infrastructure, amount of faculty support, and access to resources. Despite these expected variations, we advise institutions to aim for an active volunteer cohort size that ensures ample shift coverage accounting for necessary staffing adjustments (eg, participant graduation, unforeseen volunteer leave of absences from extenuating circumstances) while providing all participants with consistent opportunities for meaningful clinical exposure and research education that continue to attract ambitious students to the program.

Although our program is affiliated with a large academic institution at UCLA, the program's structure is widely adaptable across various academic ED settings including those affiliated with major universities, smaller community colleges, and diversity pipeline premedical organizations. Although the creation of effective research programs at the undergraduate level remains challenging, the benefits of such an investment to researchers and student participants are pivotal to increasing prospective ED clinical research output that will inform future emergency medicine practice standards and foster informed career decisions for students interested in pursuing healthcare and research.

ACKNOWLEDGMENTS

Dr. Richelle J. Cooper receives grant funding from Patient-Centered Outcomes Research Institute (PLC-1609-36306). However, no financial support was provided for the development of this concept piece manuscript.

CONFLICTS OF INTEREST

The authors claim no conflicts of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Park JD, Li KD, Lee J, et al. Implementation and value of a student-run volunteer clinical research program at an academic medical center. *JACEP Open*. 2022;3:e12775. https://doi.org/10.1002/emp2.12775