

BRIEF REPORT: Completing a Scholarly Project During Residency Training

Perspectives of Residents Who Have Been Successful

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BACKGROUND: Resident research has potential benefits and scholarly activity is an internal medicine residency training requirement. This study sought to learn about the resources needed and the barriers to performing scholarly work during residency from residents who had been successful.

METHODS: A questionnaire was delivered to 138 internal medicine residents presenting their work at the 2002 American College of Physicians-American Society of Internal Medicine annual session. Residents were asked to comment on why they had participated in a scholarly project, the skills and resources needed to complete the project, as well as the barriers. Comparisons were made between residents who presented a research abstract and those who exhibited a clinical vignette.

RESULTS: Seventy-three residents (53%) completed the questionnaire. Thirty-nine residents presented a clinical vignette and 34 displayed a research abstract. Residents participated in research for a variety of reasons, including intellectual curiosity (73%), career development (60%), and to fulfill a mandatory scholarly activity requirement at their residency program (32%). The most common barriers were insufficient time (79%), inadequate research skills (45%), and lack of a research curriculum (44%). Residents who had presented research abstracts devoted more time (median, 200 vs 50 hours; $P < .05$) to their project than those who exhibited clinical vignettes. Sixty-nine percent of residents thought research should be a residency requirement.

CONCLUSIONS: The majority of respondents reported that their scholarly project was a worthwhile experience despite considerable barriers. Teaching research skills more explicitly with a focused curriculum and providing adequate protected time may enable residents to be successful.

KEY WORDS: resident research; ACGME; graduate medical education.

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Internal medicine resident alumni have viewed research experiences as worthwhile and influential in their career choices.¹ Resident research has other benefits, such as fostering skills relevant to clinical practice and promoting lifelong learning.² Recognizing scholarly activity as an important part of residency training, the Residency Review Committee for Internal Medicine (RRC-IM) established a requirement in 1994 that residents must complete "original research, comprehensive case reports, or review of clinical and research topics."³ Previous studies have surveyed program directors about resident research and scholarly activity.^{4,5} Residents may provide more valuable insight into which types of projects are worth-

while, and how residency programs can best allocate time and resources to successfully support their scholarly efforts.

We surveyed residents to determine 1) their reasons for participating in a scholarly project, 2) the skills and resources needed to complete a successful project during residency, and 3) the barriers they experienced.

METHODS

Survey Administration

We specifically wanted to survey residents who had completed a successful scholarly project. Therefore, we sampled residents who had been selected to present their work at a national meeting, the 2002 American College of Physicians-American Society of Internal Medicine (ACP-ASIM) annual session. This included residents who won first-place awards for either original research or clinical vignettes at a regional ACP-ASIM associates meeting. All 138 house officers who were presenting their work at the national meeting were approached to participate and given a questionnaire with a stamped return envelope. To maximize participation, several follow-up mailings were sent to presenters before they graduated from their residency training. Data were kept confidential. The study was approved by the Johns Hopkins Bayview Institutional Review Board.

Survey Content

The survey instrument was developed through review of the literature and discussions with both house staff and several internal medicine residency program directors. The 4-page questionnaire was organized into 4 topic areas: 1) previous research experience and career plans, 2) factors related to the resident's involvement in their project, 3) program resources to support resident research, and 4) resident's opinions on scholarly work. In exploring the level of institutional support for scholarly activity, residents were asked about factors such as the presence of a research curriculum, the ability to use elective time to work on the project, and the availability of funding.^{6,7}

Data Analysis

Descriptive statistics summarized responses to all questions. Comparisons were made between residents who submitted research abstracts and those who submitted clinical vignettes. We chose to make these comparisons because both types of projects are acceptable scholarly activities as described in the RRC-IM requirement. We hypothesized that research projects would require significantly greater research skills, mentor involvement, and time to complete. Furthermore, residents who completed research projects might be more interested in

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conducting research as part of their careers and deem the research requirement to be more worthwhile.

Responses to 5-point Likert scales were dichotomized and analyzed as proportions. Data were categorized by abstract type, research abstract versus clinical vignette, for bivariate analysis. *t* tests, χ^2 , and Wilcoxon rank sum tests were used to compare the categories. Data were analyzed using Stata 8.0 (Stata Corporation, College Station, TX).

RESULTS

Surveys were returned by 73 of the 138 participants (53%). Fifty-three percent of respondents exhibited a clinical vignette and 47% presented original research abstracts. Two thirds of respondents (66%) were postgraduate year (PGY) 2 or 3 residents when the project was initiated and 69% had participated in research prior to residency. One fifth of respondents (21%) expected to have careers as clinician-investigators. There were no significant differences in response rates, past research experience, or fellowship and career plans between residents who presented research abstracts and those who presented clinical vignettes (all $P > .05$). Residents who presented research abstracts were more likely to respond that their research experience had positively influenced their desire to pursue a research career (56% vs 33%; $P = .05$).

Resident Involvement in Their Scholarly Project

The top reasons that residents worked on their scholarly projects were intellectual curiosity (73%), career development (60%), and to fulfill a mandatory research or scholarly activity requirement (32%). More than half of residents (59%) were responsible for initiating their project. Residents who completed clinical vignettes were more likely to initiate the project on

their own than those who had presented a research abstract (78% vs 28%; $P < .001$).

While 77% of residents worked with a mentor, those who presented clinical vignettes were less likely to have a mentor than those conducting research (64% vs 91%; $P = .006$). Residents who performed research were more satisfied overall with their mentor compared to those presenting clinical vignettes (94% vs 72%; $P = .03$). Most residents planned to write up their project as a manuscript for publication (68%), and expected to be first author (69%).

Residents performing original research spent more total time (median, 200 vs 50 hours), elective time (median, 24 vs 0 hours), and personal time (median, 65 vs 35 hours) than those presenting clinical vignettes (all $P < .001$ by Wilcoxon rank sum test). Most residents (54%) did not have funding for their project.

Residents commented on barriers to completing their scholarly project. The most common barriers cited by residents were the lack of time (79%), lack of research skills (45%), and the lack of a research curriculum (44%) (Fig. 1). There were no significant differences in responses between the residents presenting the two types of scholarly projects.

Residency Program Support of Scholarly Activity

Most residents agreed or strongly agreed that their residency program is very supportive of resident research (68%), with no difference between abstract type ($P > .05$). Sixty-eight percent reported that their residency program had a mandatory research requirement.

Thirty-four percent reported that their program has a curriculum for teaching research skills. Although most residents rated highly the importance of various research skills for the successful completion of their project, only 19% to 38% felt these skills are thoroughly taught at their residency program (Table 1). Fifty-one percent reported that their institution has a

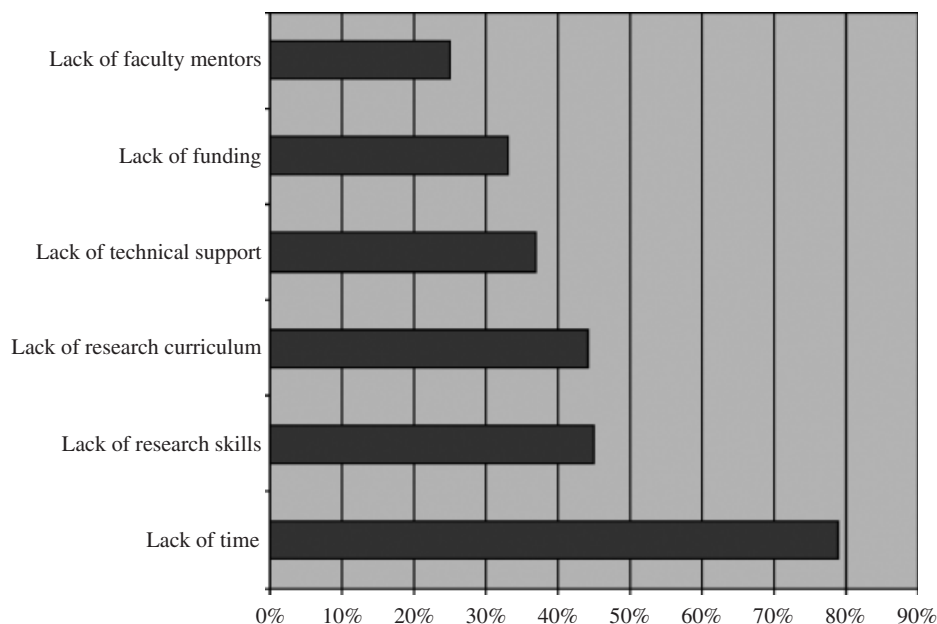


FIGURE 1. Percentage of residents who rated the following barriers to completion of their research project as important or very important. *There were no statistically significant differences in responses between residents who presented research abstracts and those who presented clinical vignettes. †Five-point Likert scale: 1=very important, 2=important, 3=neutral, 4=not important, 5=not very important.

Table 1. Frequency with Which Residents Rated the Following Skills as Important or Very Important for Completion of Their Research Project and How Well They Believe These Skills Are Taught at Their Residency Programs*

	Importance, [†] %	Thoroughly Taught, [‡] %
Literature searching	96	38
Abstract preparation	93	13
Critical appraisal	80	35
Medical writing	79	3
Data analysis	73	13
Research design	69	19

*There were no statistically significant differences in responses between residents who presented research abstracts and those who presented clinical vignettes.

[†]Five-point Likert scale: 1 = very important, 2 = important, 3 = neutral, 4 = not important, 5 = not very important.

[‡]Three-point Likert scale: 1 = not taught, 2 = taught somewhat, 3 = thoroughly taught.

designated resident research director, and 17% have a process at their program by which all residents are matched with a research mentor.

Residents' Opinions on Completing a Successful Scholarly Project

Most respondents (64%) believed that the completion of a scholarly project should be required during residency. When residents were asked to give advice to interns about completing a scholarly project during residency, the following themes emerged from their short answers: 1) start early, 2) set aside adequate time, 3) adhere to a timeline, 4) work with a strong mentor, 5) choose a research topic that genuinely interests you, and 6) keep the project simple yet innovative. Residents' suggestions about how their programs could more effectively facilitate scholarly activity were 1) provide adequate amounts of protected time, 2) improve the technical resources available to residents, 3) enhance or establish a research curriculum, 4) match trainees with appropriate mentors, 5) make funding available to those who need it, and 6) provide encouragement.

DISCUSSION

Our survey of residents who had completed a scholarly project during residency provides insight into the resources and skills needed to be successful. The majority of respondents describe their scholarly project as a worthwhile experience and believe that scholarly activity should be a residency training requirement. Many, however, report lack of time and insufficient research skills as significant barriers to the completion of their project.

Residents presenting both research and clinical vignettes reported spending a significant amount of personal time working on their project. Lack of time was the most commonly cited barrier. Prior studies confirm our findings.⁴⁻⁸ Duty hour restrictions may hinder house officers attempting to complete a successful scholarly project as residency programs struggle to allot appropriate amounts of time for clinical responsibilities and educational activities. While the RRC-IM requirement for scholarly activity includes both hypothesis-driven research and case reports as acceptable projects, this study confirms

our assumptions that clinical vignettes are less time intensive and require less mentorship than do research projects.

Effective mentorship is advantageous for any investigator, but it is particularly vital for house officers who may have limited research experience. The successful residents in this study acknowledged that their lack of research skills presented a major impediment to completing their projects. Qualified faculty members who are committed to mentoring is one avenue through which residents may learn the requisite skills to complete a scholarly project.⁵ A majority of residents were satisfied with the teaching ability, availability, and technical expertise of their mentor. Unfortunately, the presence of a cadre of suitable research mentors does not exist at all programs. Research skills can also be effectively taught in a dedicated curriculum. Only 34% of respondents stated their program had a research curriculum, despite the assertion of several studies that a research curriculum is critical in promoting resident scholarly activity.^{5,6,8,9}

Several limitations of this study should be considered. First, the sample consisted of residents who had successfully completed a scholarly project. The results may not reflect the perspectives of all residents. Residents who have had less successful experiences may have responded differently to our survey. Second, while a 53% response rate is not optimal, it is typical of other multi-institutional studies attempting to survey house officers.¹⁰⁻¹³ We were not able to determine whether there were significant differences between nonrespondents and respondents. Finally, participants were asked to describe resources available to residents conducting research. Respondents may not have been familiar with all of the support systems that exist at their residency program.

The perceived lack of resident interest in scholarly activity described in other studies may actually represent reluctance or fear due to lack of skills, resources, or time. Despite these challenges, the residents in this study valued the experience and thought that research should be a required component of residency training.

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Thursday, May 12 at 6:30 pm

Interest Groups

Fellows Forum

Friday, 7:30-8:30 AM

Coordinator: Emran Rouf

Student and Resident Interest Group

Friday, 12:00 pm-1:00 pm

Presenters: Jason Block, MD, Ivan Hanson

Workshops

Thursday, May 12

10:30 AM – 12:00 PM: Go Behind the AHRQ/NIH Study Section Door: A Mock Review

Session Coordinator: Ming Tai-Seale, PhD, MPH, Associate Professor, Department of Health Policy and Management, School of Rural Public Health, Texas A&M University Health Science Center

Additional Faculty: Francis Chesley, MD, Agency for Healthcare Research and Quality, Willard Manning, PhD, The Harris School, Eugene C. Rich, MD, Creighton University

1:30-2:30 pm: **Negotiating Contracts**

Presenter: Timothy J. Keogh PhD, Associate Professor in Health Systems Management, Tulane University School of Public Health

3:30-5:00 pm: SGIM 101: **How Volunteering Can Enhance Your Career**

Session Coordinator: Ellen Yee, MD, MPH, New Mexico VA HCS; Additional Faculty: Pamela Charney, MD, Albert Einstein College of Medicine, Susana Morales, MD, Cornell University; William M. Tierney, MD, FACP, Indiana University Purdue University Indianapolis; Ellen Yee, MD, MPH, New Mexico VA HCS

Friday, May 13

10:00-11:00 AM: **Finding Your First Job**

Presenter: Seth Landefeld, MD

1:00-2:00 pm: **Career Opportunities with the VA**

Session Coordinator: Jeffrey Whittle, MD, Kansas City VA Medical Center. Additional Faculty: Gary Rosenthal, MD, Iowa City VA Medical Center, Lisa Rubenstein, MD: VA Greater Los Angeles Health Care System, Ellen Yee, MD, Albuquerque VA Medical Center
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3:30-4:30 pm: **What Do I Do Next? Preparing for Careers in General Internal Medicine**

Presenters: Anthony Komaroff, MD, Donald Brady, MD, Nathan Spell, MD, Tejal Gandhi, MD