

## Death of Hospitalist Investigators in Academic Medicine: A Call to Action

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In their report celebrating the increase in the number of hospitalists from a few hundred in the 1990s to more than 50,000 in 2016, Drs Robert Wachter and Lee Goldman also noted the stunted growth of productive hospital medicine research programs, which presents a challenge to academic credibility in hospital medicine.<sup>1</sup> Given the substantial increase in the number of hospitalists over the past two decades, we surveyed adult academic hospital medicine groups to quantify the number of hospitalist clinician investigators and identify gaps in resources for researchers. The number of clinician investigators supported at academic medical centers (AMCs) remains disturbingly low despite the rapid growth of our specialty. Some programs also reported a lack of access to fundamental research services. We report selected results from our survey and provide recommendations to support and facilitate the development of clinician investigators in hospital medicine.

### DEARTH OF CLINICIAN INVESTIGATORS IN HOSPITAL MEDICINE

We performed a survey of hospital medicine programs at AMCs in the United States through the Hospital Medicine Reengineering Network (HOMERuN), a hospital medicine research collaborative that facilitates and conducts multisite research studies.<sup>2</sup> The purpose of this survey was to obtain a profile of adult academic hospital medicine groups. Surveys were distributed via email to directors and/or senior leaders of each hospital medicine group between January and August 2019. In the survey, a clinician investigator was defined as "faculty whose primary nonclinical focus is scientific papers and grant writing."

We received responses from 43 of the 86 invitees (50%), each of whom represented a unique hospital medicine group; 41 of the representatives responded to the questions concerning available research services. Collectively, these 43 programs represented 2,503 hospitalists. There were 79 clinician investigators reported among all surveyed hospital medicine groups (3.1% of all hospitalists). The median number of clinician investigators per hospital medicine group was 0 (range 0-12) (Appendix Figure 1), and 22 of 43 (51.2%) hospital medicine groups reported having no clinician investigators. Two of the hospital medicine groups, however, reported having 12 clinician investigators at their respective institutions, comprising nearly one third of the total number of clinician investigators reported in the survey.

Many of the programs reported lack of access to resources such as research assistants (56.1%) and dedicated research fellowships (53.7%) (Appendix Figure 2). A number of groups reported a need for more support for various junior faculty development activities, including research mentoring (53.5%), networking with other researchers (60.5%), and access to clinical data from multiple sites (62.8%).

One of the limitations of this survey was the manner in which the participating hospital medicine groups were chosen. Selection was based on groups affiliated with HOMERuN; among those chosen were highly visible US AMCs, including 70% of the top 20 AMCs based on National Institutes of Health (NIH) funding.<sup>3</sup> Therefore, our results likely overestimate the research presence of hospital medicine across all AMCs in the United States.

### LACK OF GROWTH OVER TIME: CONTEXTUALIZATION AND IMPLICATIONS

Despite the substantial growth of hospital medicine over the past 2 decades, there has been no proportional increase in the number of hospitalist clinician investigators, with earlier surveys also demonstrating low numbers.<sup>4,5</sup> Along with the survey by Chopra and colleagues published in 2019,<sup>6</sup> our survey provides an additional contemporary appraisal of research activities for adult academic hospital medicine groups. In the survey

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by Chopra et al, only 54% (15 of 28) of responding programs reported having any faculty with research as their major activity (ie, >50% effort), and 3% of total faculty reported having funding for >50% effort toward research.<sup>6</sup> Our study expands upon these findings by providing more detailed data on the number of clinician investigators per hospital medicine group. Results of our survey showed a concentration of hospitalists within a small number of programs, which may have contributed to the observed lack of growth. We also expand on prior work by identifying a lack of resources and services to support hospitalist researchers.

The findings of our survey have important implications for the field of hospital medicine. Without a critical mass of hospitalist clinician investigators, the quality of research that addresses important questions in our field will suffer. It will also limit academic credibility of the field, as well as individual academic achievement; previous studies have consistently demonstrated that few hospitalists at AMCs achieve the rank of associate or full professor.<sup>5-9</sup>

## POTENTIAL EXPLANATIONS FOR LACK OF RESEARCH GROWTH

The results of our study additionally offer possible explanations for the dearth of clinician investigators in hospital medicine. The limited access to research resources and fellowship training identified in our survey are critical domains that must be addressed in order to develop successful academic hospital medicine programs.<sup>4,6,8,10</sup>

Regarding dedicated hospital medicine research fellowships, there are only a handful across the country. The small number of existing research fellowships only have one or two fellows per year, and these positions often go unfilled because of a lack of applicants and lower salaries compared to full-time clinical positions.<sup>11</sup> The lack of applicants for adult hospital medicine fellowship positions is also integrally linked to board certification requirements. Unlike pediatric hospital medicine where additional fellowship training is required to become board-certified, no such fellowship is required in adult hospital medicine. In pediatrics, this requirement has led to a rapid increase in the number of fellowships with scholarly work requirements (more than 60 fellowships, plus additional programs in development) and greater standardization among training experiences.<sup>12,13</sup>

The lack of fellowship applicants may also stem from the fact that many trainees are not aware of a potential career as a hospitalist clinician investigator due to limited exposure to this career at most AMCs. Our results revealed that nearly half of sites in our survey had zero clinician investigators, depriving trainees at these programs of role models and thus perpetuating a negative feedback loop. Lastly, although unfilled fellowship positions may indicate that demand is a larger problem than supply, it is also true that fellowship programs generate their own demand through recruitment efforts and the gradual establishment of a positive reputation.

Another potential explanation could relate to the development of hospital medicine in response to rising clinical demands

at hospitals: compared with other medical specialties, AMCs may regard hospitalists as being clinicians first and academicians second.<sup>1,7,10</sup> Also, hospitalists may be perceived as being beholden to hospitals and less engaged with their surrounding communities than other general medicine fields. With a small footprint in health equity research, academic hospital medicine may be less of a draw to generalists interested in pursuing this area of research. Further, there are very few underrepresented in medicine (URiM) hospital medicine research faculty.<sup>5</sup>

Another challenge to the career development of hospitalist researchers is the lack of available funding for the type of research typically conducted by hospitalists (eg, rigorous quality improvement implementation and evaluation, optimizing best evidence-based care delivery models, evaluation of patient safety in the hospital setting). As hospitalists tend to be system-level thinkers, this lack of funding may steer potential researchers away from externally funded research careers and into hospital operations and quality improvement positions. Also, unlike other medical specialties, there is no dedicated NIH funding source for hospital medicine research (eg, cardiology and the National Heart, Lung, and Blood Institute), placing hospitalists at a disadvantage in seeking funding compared to subspecialists.

## STRATEGIES TO ENHANCE RESEARCH PRESENCE

We recommend several approaches—ones that should be pursued simultaneously—to increase the number of clinician investigators in hospital medicine. First, hospital medicine groups and their respective divisions, departments, and hospitals should allocate funding to support research resources; this includes investing in research assistants, data analysts, statisticians, and administrative support. Through the funding of such research infrastructure programs, AMCs could incentivize hospitalists to research best approaches to improve the value of healthcare delivery, ultimately leading to cost savings.

With 60% of respondents identifying the need for improved access to data across multiple sites, our survey also emphasizes the requirement for further collaboration among hospital medicine groups. Such collaboration could lead to high-powered observational studies and the evaluation of interventions across multiple sites, thus improving the generalizability of study findings.

The Society of Hospital Medicine (SHM) and its research committee can continue to expand the research footprint of hospital medicine. To date, the committee has achieved this by highlighting hospitalist research activity at the SHM Annual Conference Scientific Abstract and Poster Competition and developing a visiting professorship exchange program. In addition to these efforts, SHM could foster collaboration and networking between institutions, as well as take advantage of the current political push for expanded Medicare access by lobbying for robust funding for the Agency for Healthcare Research and Quality, which could provide more opportunities for hospitalists to study the effects of healthcare policy reform on the delivery of inpatient care.

Another strategy to increase the number of hospitalist clinician investigators is to expand hospital medicine research fellowships and recruit trainees for these programs. Fellowships could be internally funded wherein a fellow's clinical productivity is used to offset the costs associated with obtaining advanced degrees. As an incentive to encourage applicants to temporarily forego a full-time clinical salary during fellowship, hospital medicine groups could offer expanded moonlighting opportunities and contribute to repayment of medical school loans. Hospital medicine groups should also advocate for NIH-funded T32 or K12 training grants for hospital medicine. (There are, however, challenges with this approach because the number of T32 spots per NIH institute is usually fixed). The success of academic emergency medicine offers a precedent for such efforts: After the development of a K12 research training program in emergency medicine, the number of NIH-sponsored principal investigators in this specialty increased by 40% in 6 years.<sup>14</sup> Additionally, now that fellowships are required for the pediatric hospital medicine clinician investigators, it would be revealing to track the growth of this workforce.<sup>12,13</sup>

Structured and formalized mentorship is an essential part of the development of clinician investigators in hospital medicine.<sup>4,7,8,10</sup> One successful strategy for mentorship has been the partnering of hospital medicine groups with faculty of general internal medicine and other subspecialty divisions with robust research programs.<sup>7,8,15</sup> In addition to developing sustainable mentorship programs, hospital medicine researchers must increase their visibility to trainees. Therefore, it is essential that the majority of academic hospital medicine groups not only hire clinician investigators but also invest in their development, rather than rely on the few programs that have several such faculty members. With this strategy, we could dramatically increase the number of hospitalist clinician investigators from a diverse background of training institutions.

SHM could also play a greater role in organizing events for

networking and mentoring for trainees and medical students interested in pursuing a career in hospital medicine research. It is also critically important that hospital medicine groups actively recruit, retain, and develop URiM hospital medicine research faculty in order to attract talented researchers and actively participate in the necessary effort to mitigate the inequities prevalent throughout our healthcare system.

## CONCLUSION

Despite the growth of hospital medicine over the past decade, there remains a dearth of hospitalist clinician investigators at major AMCs in the United States. This may be due in part to lack of research resources and mentorship within hospital medicine groups. We believe that investment in these resources, expanded funding opportunities, mentorship development, research fellowship programs, and greater exposure of trainees to hospitalist researchers are solutions that should be strongly considered to develop hospitalist clinician investigators.

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