Hospital Medicine Fellowships: Works in Progress

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ABSTRACT

The field of hospital medicine continues to grow rapidly, and with this growth has come the realization that residency alone may not provide the full complement of skills required of a successful hospitalist. As a result, several institutions have started hospitalist fellowships, new programs with the specific goal of training clinicians to improve hospital care. These fellowships offer diverse approaches to preparation for a hospitalist career, with opportunities for advanced training in clinical care, teaching, research, and quality improvement. This article provides an overview of the programs, explores the choices for trainees in selecting a fellowship, and the challenges for institutions in developing a new fellowship. Although hospitalist fellowships are still in evolution, they will play an important role in the development of hospital medicine. © 2006 Elsevier Inc. All rights reserved.

KEYWORDS: Hospitalist; Education; Fellowship

The rapid growth of hospital medicine coincides with a reappraisal of the nature of internal medicine training. As more residents pursue hospitalist careers, the need to define appropriate training for future hospitalists has become acute. Hospital medicine encompasses much more than clinical care of inpatients. At academic institutions, hospitalists increasingly are visible as educators and clinical researchers; in academia and private practice, hospitalists are becoming leaders in quality improvement and related research. Although traditional internal medicine or pediatrics residency training provides excellent preparation for a hospitalist’s clinical duties, residency provides little exposure to research or quality improvement, and training as an educator is usually not structured.

Those interested in an academic general internal medicine career may opt to pursue general medicine fellowship training, either through an institution-specific fellowship or the Robert Wood Johnson Clinical Scholars Program. Such fellowships are excellent options but may not provide the full complement of skills required of hospitalists; also, those interested in a career in private practice may not need this type of training. This realization has led several institutions to develop hospitalist fellowships, designed to prepare graduating residents for a career in hospital medicine. The purpose of this article is to explain the rationale for hospitalist fellowships, provide an overview of existing programs, and forecast future trends. We will also attempt to delineate for whom a hospitalist fellowship is appropriate and explore the challenges faced by institutions in establishing and maintaining such programs.

RATIONALE FOR FORMAL TRAINING IN HOSPITAL MEDICINE

Over the past several decades, care of the hospitalized patient has become more complex. As we try to manage a health care system with increasingly advanced diagnostic instruments and pharmaceutical agents, quality improvement initiatives have begun to sprout, and some have taken root. But until now, no medical specialty has aimed its professional sights at improving the manner in which hospitalized patients receive care. Traditional internal medicine or pediatrics training prepares clinicians to diagnose and...
treat people, but not systems. The latest core competencies of the Accreditation Council for Graduate Medical Education (ACGME) acknowledge the importance of these skills by including sections on “practice-based learning” and “systems improvement.” However, beyond the “learn-by-doing” experience of most residencies, there typically is little formal training about hospitals, how they work, or how their function might be optimized. Hospital medicine is the first clinical domain to claim, as a fundamental part of its constitution, a focus on the systems responsible for the delivery of healthcare. This emphasis on quality improvement accompanies the view that hospitalization itself is a process to be studied and improved upon and that improvement in medical outcomes will follow.

The goal of hospital medicine fellowship training is to produce clinicians who are trained explicitly in studying and optimizing medical care of the hospitalized patient and in disseminating that knowledge for the advancement of patient care. Toward that end, hospitalist fellowships have 4 training domains: clinical (advanced training in inpatient patient care skills), educational (learning strategies for effective inpatient teaching), research (developing skills for studying hospital care), and quality improvement and leadership (translating research into practice and coordinating interprofessional teams).

**OVERVIEW OF HOSPITALIST FELLOWSHIPS**

At this writing, there are 16 active hospitalist fellowships in the United States, of which 10 are intended for graduates of internal medicine residencies, 4 for pediatrics, and 2 for family practice or internal medicine graduates (Table). Internal medicine-based fellowships have the longest track record and will form the basis of our discussion. Each fellowship is “homegrown,” and emphasizes different aspects of training depending on local interests and expertise.

**CLINICAL TRAINING**

Virtually all hospital medicine fellows have completed inpatient-intensive residencies, leading to the development of strong core clinical skills. Advanced clinical training in hospitalist fellowships thus focuses on areas not adequately covered in many residencies (eg, palliative care, medical consultation, and invasive procedures) or new collaborative models of care. Fellows at the University of California San Francisco (UCSF) may serve on the Palliative Care Service, gaining mentored experience in complex end-of-life care issues. Mayo Clinic fellows become part of a co-management team comprised of the hospital medicine and orthopedic surgery services, contributing to a new model of collaborative inpatient care. At the University of Pittsburgh, fellows gain a broader experience by rotating in the intensive care unit and on subspecialty services. In the University of Chicago’s Hospitalist Scholars Training Program, trainees have junior faculty status and work with a nurse practitioner on a non-teaching inpatient service—a model of care that may become more prominent at academic institutions. Core competencies in hospital medicine, which are currently being developed by the Society of hospital medicine, will formalize the clinical skills expected of hospitalists and likely serve as a guide for fellowship curricula.

**RESEARCH TRAINING**

Most fellowships provide coursework in epidemiology, biostatistics, and research methodology similar to that offered in research-oriented general medicine fellowships. The Emory University, Mayo Clinic, UCSF, and University of Pittsburgh programs offer the opportunity to earn a Master of Science in Clinical Research through the National Insti-
<table>
<thead>
<tr>
<th>Program</th>
<th>Director</th>
<th>Size</th>
<th>Duration</th>
<th>Clinical duties</th>
<th>Research training</th>
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<tbody>
<tr>
<td><strong>Internal medicine-based fellowships</strong></td>
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<tr>
<td>Baystate Medical Center, Tufts University</td>
<td>Evan Benjamin, MD David Rose, MD</td>
<td>1 fellow/year</td>
<td>1 year</td>
<td>3 months/year</td>
<td>Formal training in quality improvement methodology, patient safety, and clinical epidemiology offered. Master's degree possible.</td>
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<tr>
<td>Cleveland Clinic Foundation</td>
<td>Christopher Whinney, MD Sunil Kripalani, MD, MSc</td>
<td>1 fellow/year</td>
<td>1-2 years</td>
<td>3 months/year + 1-2 days/week in clinic</td>
<td>Course work in research methods and biostatistics required.</td>
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<tr>
<td>Emory University School of Medicine</td>
<td>Jerome Siy, MD</td>
<td>1-2 fellows/year</td>
<td>1 year</td>
<td>6 months/year</td>
<td>Master of Science in Clinical Research through NIH-funded Clinical Research Curriculum Award.</td>
</tr>
<tr>
<td>HealthPartners Medical Group Minneapolis, Minn</td>
<td>Jeanne Huddleston, MD</td>
<td>2 fellows/year</td>
<td>1-2 years</td>
<td>3-5 months/year</td>
<td>Available, but not primarily a research fellowship.</td>
</tr>
<tr>
<td>Mayo Clinic Rochester, Minn</td>
<td>Robert Wachter, MD</td>
<td>2 fellows/year</td>
<td>2 years</td>
<td>3-4 months/year</td>
<td>Certificate or Master's Degree in Clinical Research through the NIH-funded Clinical Research Training Program. Opportunities for other advanced degrees also are available.</td>
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<tr>
<td>University of California San Francisco</td>
<td>Deborah Burnet, MD, MA</td>
<td>2 fellows/year</td>
<td>2 years</td>
<td>½ day/week outpatient clinic; option for medical consult and ward attending</td>
<td>Advanced degree (Master's degree in Public Policy or Health Studies) available through University of Chicago graduate schools.</td>
</tr>
<tr>
<td>University of Chicago Hospitals General Internal Medicine Fellowship – Hospitalist Track</td>
<td>Chad Whelan, MD</td>
<td>2 fellows/year</td>
<td>2 years</td>
<td>6 months/year as attending on nonteaching ward service</td>
<td>Course work required, advanced degree possible through University of Chicago graduate schools.</td>
</tr>
<tr>
<td>University of Pittsburgh</td>
<td>Michael Peterson, MD David McAdams, MD, MS</td>
<td>1 fellow/year</td>
<td>1 year</td>
<td>5 months</td>
<td>Available, but not required.</td>
</tr>
<tr>
<td>UCSF Fresno University of Pittsburgh</td>
<td></td>
<td>2 fellows/year</td>
<td>1-2 years</td>
<td>7-8 months for 1-year program; 5-6 months/year for 2-year program</td>
<td>Certificate or Master's Degree in Clinical Research through the NIH-funded Clinical Research Training Program.</td>
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<td><strong>Family practice or internal medicine fellowships</strong></td>
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<tr>
<td>Christus Spohn Memorial Hospital Corpus Christi, Tex Grant Medical Center Columbus, Ohio</td>
<td>Robert E. Caro, MD</td>
<td>2 fellows/year</td>
<td>1 year</td>
<td>Full-time</td>
<td>None.</td>
</tr>
<tr>
<td>To be announced</td>
<td></td>
<td>1 fellow/year</td>
<td>1 year</td>
<td>Full-time</td>
<td>None.</td>
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<td><strong>Pediatric fellowships</strong></td>
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<tr>
<td>Children's Hospital Boston, Mass</td>
<td>Christopher Landrigan, MD, MPH</td>
<td>1 fellow/year</td>
<td>2-3 years</td>
<td>6 months during 1st year, 3 months during 2nd year</td>
<td>Course work (Harvard School of Public Health Clinical Effectiveness Program) required, advanced degree (MPH) possible.</td>
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tutes of Health (NIH)-funded Clinical Research Training Program; similar training leads to a Master of Public Health degree at the pediatric programs at Children’s Hospital in Boston, Children’s National Medical Center, and Children’s Specialists of San Diego. This training requires an intensive time commitment, with fellows spending 60%-70% of their time on class work and related projects. The University of Chicago general internal medicine fellowship offers a “hospitalist track,” providing research fellows the opportunity to work closely with hospitalist researchers and earn a Masters degree in Public Policy or Health Studies; fellows in the separate Hospitalist Scholars Training Program also complete course work and have protected time for mentored research. Research opportunities and mentorship may not be restricted to hospitalists; at UCSF, emerging affiliations with the Institute for Health Policy Studies and the UCSF Division of Geriatrics allow fellows a wide range of opportunities for research projects and collaboration. The combination of research training with concentrated exposure to inpatient issues prepares fellows for an academic hospitalist or general medicine research career and poises them to address the growing research agenda in hospital medicine.9

QUALITY IMPROVEMENT AND LEADERSHIP TRAINING

Because trainees receive little exposure to quality improvement activities during residency,11 training through hospital medicine fellowship curricula aims to give hospitalists the skills to translate research into practice and bring about institutional changes. Currently, fellowship programs can include practical experience in leading committees and quality improvement projects and preparation for establishing and maintaining cultures of interprofessional cooperation; these projects may be linked to research efforts. A new fellowship at Baystate Medical Center offers formal training in quality improvement methodology, quality management, and patient safety, using a combination of didactics and practical experiences.

Training in leadership skills can be incorporated into fellowship curricula or provided through continuing education courses. The Society of Hospital Medicine Education Committee has created a curriculum on leadership skills for hospitalists, which has since been expanded into a popular 4-day leadership academy.12 In the future, such leadership training may comprise an essential component of hospital medicine fellowships.

WHO SHOULD PURSUE A HOSPITALIST FELLOWSHIP?

Most current hospitalist fellowships aim to prepare trainees for a career in academic medicine. For prospective hospitalist researchers, completion of a fellowship with comprehensive research training is a must. Thus, the question becomes whether to pursue a hospitalist fellowship or a more traditional general medicine training program. From a strictly utilitarian standpoint, either option should provide
adequate research training. Physicians who have inpatient-specific research interests or desire a more clinically oriented fellowship experience may prefer a hospitalist fellowship. The small size (1-2 fellows per year) of hospitalist fellowships affords trainees a great deal of latitude in tailoring the curriculum to best suit their interests. Although this flexibility can be a great benefit, those considering a hospitalist fellowship should carefully assess the research training and mentorship opportunities available at each institution, because many hospitalist programs may not yet have a “critical mass” of researchers in their own department. Those who desire a broader exposure to general medicine research opportunities, or feel they would benefit from a more structured and established program, should consider the Robert Wood Johnson Clinical Scholars Program or similar institution-specific fellowships. As hospitalist programs and their curricula mature, hospitalist fellowships may provide a concrete skill set mandatory for prospective inpatient clinician-researchers. However, at present, factors specific to individual programs (ie, location, specific training supplied, availability of research mentorship, and ability to earn an advanced degree) may be more important than whether the training is dubbed a “hospitalist fellowship.”

For hospitalists planning an academic career as a clinician-educator, a research-oriented fellowship is probably not necessary. The decision then becomes whether to pursue a fellowship at all. General medicine clinician-educator fellowships or chief residency positions provide excellent training, but many clinician-educators find they are adequately prepared to begin a faculty position upon completion of residency. However, establishing a sustainable academic career may require development of additional skills in teaching, leadership, or a specific content area. Many clinician-educators opt to gain these skills through intramural or external faculty development programs such as the Stanford Faculty Development Clinical Teaching program. A hospitalist fellowship with a greater focus on educational skills or quality improvement training may provide excellent training for those interested in primarily clinical and administrative positions.

The role of hospitalist fellowships remains to be defined for those entering private practice. The nonclinical topics encountered by practicing hospitalists (such as systems-based quality improvement, practice management, and financial issues) may be addressed in quality improvement-oriented fellowship curricula; alternatively, these skills could be acquired through continuing education programs. The role of a fellowship for pediatric hospitalists also has yet to be defined, as their track record is shorter.

CAREERS OF FELLOWSHIP GRADUATES
The relatively brief track record of hospitalist fellowships makes it difficult to generalize about the experiences of fellows after training; only 5 internal medicine-based programs have had more than one graduate. Graduates of the research-oriented Mayo Clinic, UCSF, and Emory University fellowships have generally taken academic hospitalist positions: 11 of the 15 graduates of these 3 programs currently have faculty positions at academic medical centers. Four work in private practice (1 at a community teaching hospital.) The Cleveland Clinic fellowship, whose primary goal is training clinician-educators, has had 3 graduates, 2 of whom work at academic community hospitals and 1 who subsequently pursued subspecialty training. The 4 graduates of the HealthPartners Medical Group fellowship, a clinical and quality improvement-oriented program, all work in community hospitalist positions with significant teaching and leadership responsibilities. Nearly all hospitalist fellowship graduates are involved in implementation or evaluation of quality improvement activities at their institution.

CONSIDERATIONS IN ESTABLISHING A HOSPITALIST FELLOWSHIP
Improving the quality of care through the pursuit and application of high-quality research is a major goal of hospital medicine; as a result, there will continue to be a demand for trained hospitalist researchers. All of the leading academic medical centers have established hospitalist programs, and several centers that do not currently have a hospitalist fellowship are considering developing one. The major considerations involved in setting up a fellowship de novo involve funding to support the fellowship, providing structured training, providing mentoring for research and career development, recruiting fellows, and when to start a fellowship. The cumulative experience in these matters is limited; thus, what follows is a brief discussion of these issues and some recommendations.

Because hospital medicine fellowships are not yet accredited by the ACGME, obtaining funding is a major hurdle in establishing and sustaining a program. The UCSF fellowship was initially funded through a grant from the Josiah Macy, Jr Foundation, but most fellowships are funded through departmental funds, augmented by the fellows’ own clinical work (which is billed as an attending physician). This approach runs the risk of limiting the time available to develop research, quality improvement, and leadership skills. Funding the fellowship through grants from established investigators requires well-funded faculty with appropriate research interests, which is not an option for many programs. The NIH T32 Institutional Research Training Grant could provide an avenue for funding a new research-oriented fellowship, but as yet no defined funding stream is available for a clinical- or quality improvement-oriented fellowship.

Providing adequate research training for fellows is a necessity. From a training standpoint, it is advantageous for fellows to be able to participate in course work and projects with like-minded trainees. The adult medicine-based fellowships that provide comprehensive research training each had an existing general medicine fellowship or NIH-funded clinical research training program in place when...
its hospitalist fellowship was started. A research-oriented fellowship is probably not a viable option for a hospitalist program that does not have access to the resources of a major academic medical center with an established training model.

Mentorship for fellows is critical for research training and career development. Most faculty hospitalists are still relatively junior and may be struggling to establish their own research agenda and portfolio. Even if a critical mass of hospitalist researchers is present, fellows will benefit most if established researchers in related fields (epidemiology, health services and outcomes research, health policy, and relevant subspecialties) are also available for mentorship and career advice. For educational and quality improvement-oriented fellowships, the need for mentoring is no less paramount. Appropriate mentors need not be hospitalists but should have the experience to advise fellows on projects, help focus their interests, and assist in finding jobs at the end of fellowships.

Hospital medicine is proving to be an attractive career option for residency graduates, but this “buyer’s market” can result in difficulty in recruiting fellows for clinical/quality improvement-oriented programs. Research-oriented programs may face competition from established general medicine fellowships. In both cases, fellowship directors should emphasize the unique objective of training physicians in systems-based practice; clearly defined curricula, availability of qualified mentors, and a track record of satisfied graduates will aid greatly in recruiting candidates.

For a hospitalist program contemplating a new fellowship, the main considerations will be obtaining funding and recruiting fellows. In order to provide fellows with optimal training, the goals of a fellowship should be clearly delineated and achievable. For a relatively new hospitalist program, a curriculum with an emphasis on quality improvement, leadership, and clinical skills may be more feasible. A research-oriented fellowship could evolve once faculty have developed research interests and acquired funding.

CONCLUSION

Challenges for Hospitalist Fellowships

The current hospitalist fellowships are chiefly research-oriented, and training in quality improvement and leadership skills is still evolving. A major opportunity for programs will be to develop formal curricula in quality improvement, going beyond simply participating in existing activities and committees. Defining the proper role for clinical training within a fellowship is another challenge, because many fellowships retain the “learn-by-doing” strategy of having fellows serve as a perioperative consult or hospital ward attending. Development of advanced teaching skills could be incorporated into leadership training. Research-oriented hospitalist fellowship directors must also build and maintain relationships with research leaders at their institution, allowing fellows to benefit from working with research mentors outside the hospitalist group itself. As programs develop, they will need to strike a balance between preserving the flexibility that attracts fellows and adding structure to maximize the experience.

Hospital Medicine Fellowships: The Future

Hospitalist programs continue to develop at leading academic medical centers. The impetus for academic hospitalist groups generally comes from clinical demands and the need to improve patient care efficiency. However, sustaining an academic hospitalist group requires adding broader capabilities than merely providing patient care; engaging in research allows hospitalists to broaden their impact on patient care, as well as gain academic credibility and funding. With a growing demand for inpatient-focused clinical researchers, more fellowship programs will be launched and the training will be refined. Depending on local expertise and interests, centers may develop fellowships specializing in specific aspects of inpatient research; others may draw on examples from nonmedical fields to develop innovative approaches to training in quality improvement, leadership, and interprofessional care.

As hospital medicine develops as a field, eventually it may be recognized as a separate subspecialty with requisite certification requirements. This raises the question of whether all hospitalists will need fellowship training. This seems unlikely in the foreseeable future—as outlined above, the current foci of fellowships are not necessarily relevant for primarily clinical hospitalists. For those interested in an academic hospitalist career, especially those with a research interest, some form of postgraduate fellowship training is advisable.

Hospital medicine fellowships are in their infancy, but their number and influence will continue to increase. For residents considering a career in hospital medicine, they provide a way to receive inpatient-specific training that provides a good pathway to an academic career. Continued development of hospitalist fellowships holds the promise of ensuring a supply of trained hospitalists with the skills to pursue important clinical, educational, research, and quality improvement work essential to the field of hospital medicine. To make good on this potential, major hurdles in funding fellowships must be overcome, and programs will need to define clearly their training emphasis and for whom they are best suited. As is the case with the hospitalist profession in general, hospital medicine fellowships remain works in progress. As they develop, these programs should contribute greatly to the formal study and improvement of medical care for the hospitalized patient.

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References