Report on Master Teachers and Clinician Educators

AAIM Education Redesign Task Force 2

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ABSTRACT

Clinical medical education initially took place on the wards of hospitals, where attending physicians traditionally spent part of their time teaching about patient problems while providing little supervision of care. Even with expansion of teaching venues to ambulatory sites, the role of the teaching physician did not change for many decades. Now the environment in which clinical medical education occurs is very different and demands a redefined role for clinical faculty. These individuals must spend more time in supervision and direct patient care to adequately prepare learners to become effective physicians. Those individuals who succeed in these endeavors have been referred to as "Master Teachers."

Recognizing that these Master Teachers need support and clarity of purpose in any teaching program, the Alliance for Academic Internal Medicine developed a task force to define clearly the role of the Master Teacher, define the skill set they will need, identify training sources for their development, examine options for their financial support, propose how they may become full members in academic medical centers through recognition of their contributions, and identify tools to document their accomplishments. This paper is the comprehensive report of that work.

INTRODUCTION

The Alliance for Academic Internal Medicine (AAIM), a collaborative oversight organization, is composed of key internal medicine-based professional bodies committed to the preservation, growth, and refinement of the specialty. Member organizations include the Association of Professors of Medicine, Association of Specialty Professors, Association of Program Directors in Internal Medicine, Clerkship Directors in Internal Medicine, and Administrators in Internal Medicine. (1) A primary mission of AAIM is to foster change in medical education to best meet the needs of future practitioners, academicians, and leaders in internal medicine. To this end, in 2006 AAIM chartered the Education Redesign Task Force (ERTF), comprised of physician representatives from the member organizations and invited experts from the American College of Physicians (ACP) and American Board of Internal Medicine (ABIM), to address several topics critical to the mission of internal medicine education. (2) The ERTF 2 was similarly chartered in 2008 and charged to examine and make recommendations on three additional issues: defining the essence of internal medicine; formulating a pathway toward competency-based medical education; and describing and examining issues related to clinical medical educators, specifically the Master Teacher (MT). A condensed version of this report has been published. (3-7) This white paper comprises the complete report of the work regarding the MT.

The roles of the clinician educator (CE) have grown in sophistication, complexity, and importance as the scope of responsibilities and skills needed for teaching and evaluation has expanded. The concept of the "Master Teacher" was created to identify those educators highly trained, competent and experienced in the broad skill set required by today's standards. Some designs separate "educator" from "teacher" (8) while others suggest a tiered model of clinical educators, from the traditional CE to the more specialized MT. (9) Regardless, these individuals are viewed as spending most of their professional time teaching students, residents and fellows in patient care settings, with the remainder of their efforts devoted to classroom instruction, honing their clinical and teaching skills, performing formal educational research, providing educational administrative leadership (e.g., as program and course directors), mentoring physicians-in-training, and helping impart their special abilities upon more junior faculty who seek to become MTs themselves. (10-16)

Yet, many issues require resolution if the MT is to become the new standard for clinical medical educators. What roles will MTs fill and why are they needed? What specific skills, abilities and characteristics must they have to meet both present and future educational demands? How best should MTs be trained and mentored for this role? How can they be adequately supported to allow them the time to dedicate to educational activities? And what will be their positions among research and other faculty of medical schools and academic medical centers?

This paper examines these questions using multiple informational sources: published literature (narrative and systematic reviews, multi-institutional surveys, single institution case studies/reports, and expert opinions); web-based resources from both medical educational organizations and individual medical schools; and direct communication with lead educators of several US medical schools and colleges. Some sources address internal medicine departments specifically; others focus on different medical school departments or health care disciplines and non-medical fields, but describe important concepts and observations applicable to internal medicine educators.

This report will attempt to define and substantiate the need for this new educator, describe the proposed characteristics and abilities of the MT; and review available options for their training, mentoring and development. It will examine resourcing and models to support both MTs and the larger group of CEs; suggest academic pathways for their inclusion as full contributing faculty members; identify tools available to assist MTs and CEs track and present their accomplishments for academic promotion; and address issues related to tenure.

This report was reviewed by the chair and members of the Education Redesign Task Force 2 for content accuracy and the AAIM Board of Directors for appropriateness of opinions and recommendations.

THE MASTER TEACHER: DEFINING THE INDIVIDUAL AND THE NEED

From a practical standpoint, MTs will be physicians who make lifelong commitments to educating young and future physicians. They will spend the majority of their time teaching while simultaneously providing direct patient care – identifying their primary work venues as teaching clinics, inpatients services, and special care settings such as clinical laboratories, telemedicine centers, and extended care facilities. They will teach effectively all aspects of physician development to a broad range of learners depending upon their seniority. They will employ all available teaching and evaluation modalities, from the traditional to most cutting-edge, embracing innovative methods as opportunities to teach more effectively. They will also support learners through advising and mentoring, filling these less well-defined but critical roles in physician development.

Master Teachers will also have objective value to other stakeholders involved in health care. As role models, they will consistently demonstrate the physician behaviors now identified as essential, including psychosocial awareness, respect for health care economics, patient-centered paradigms, and excellence in clinical sciences. They will constantly provide work products which meet the needs of patients, learners, colleagues, fellow health care providers, administrators, institutions and government by the consistent delivery of high quality education and clinical care, the breadth of their abilities, and the depth of their understanding of the systems which dominate modern-day health care.

Their commitment will extend beyond their immediate professional environments. As leaders, their vision will provide guidance to others as rapid change on all fronts complicates the path to effective physician development. As scholars, they will study the health care settings in which they work, identifying solutions to old and new problems and disseminating their knowledge broadly. As educators, they will hold key roles in organizations which support, monitor, and define physician education throughout the continuum of learning.

Finally, MTs will embrace constant improvement of their own abilities and those of their colleagues. As lifelong learners, they will share their observations and findings, growing the entire field of medical education They will engage in refining their skills and those of their peers, and add both quantity and detail to our understanding of how young physicians learn, what

they need to learn, and how best to use precious resources to accomplish this ever-expanding task.

It is also helpful to acknowledge how MTs will differ from more traditional teaching physicians. The MTs will not be clinicians who occasionally teach while primarily functioning as direct care providers in nonteaching settings. They will be unlike clinician scientists, whose primary career commitments are to clinical investigation and who devote little time to education outside the realm of their research. They will be distinct from professional educators who teach and perform educational research but participate minimally in clinical care. They will be dissimilar from the majority of today's (generic) CEs who may teach part-time (e.g., a weekly clinic or a month or two annually on a teaching inpatient service) but who have not devoted the time and effort to achieve excellence in the broad array of educational skills characteristic of MTs.

Similarly, MTs will not be defined by rigid time-effort formulae, any specific medical specialty or subspecialty, or career stage. In fact, the breadth of needs will likely dictate that MTs have diverse professional specialty backgrounds, spend considerable but variable percentages of their time in specific settings, and as a group span all career levels.

This description itself may justify the need for the MT, noting that such individuals will need to commit so much of their professional time and effort to the role that significant involvement in other aspects of medicine would be difficult if not impossible. Recent and ongoing trends in the health care environment and medical education make each of these tasks even more demanding, and less possible for physicians with lesser time-effort commitment to the role. Landmark reports (17,18) laid out new expectations regarding patient safety and quality, including greater expectations for more direct supervision of physicians-in-training. Studies of chronic disease management provide momentum for patient-centered care models (19) and impetus for the development of multidisciplinary teams that include physicians. (20) Finally, the unsustainable cost of care and disparate levels of access have spurred legislative debate about comprehensive health care and insurance reform, with considerable focus on efficiency of care, resource utilization, and regulatory tools (such as pay-for-performance and public reports of hospital and physician quality measures) to better perform in these areas.

These tectonic shifts have been accompanied by other changes that challenge the traditional learning environment. (21) These include high inpatient turnover due to shortened length of stay, compression of teaching time by duty hours reform (22,23) and a "shift from a pathophysiology-based model to an evidence-based model". (21) Also, the elucidation of general competencies by the ACGME (24) and the strong support of a competency-based training system by accrediting organizations such as the ABIM (25) have exposed major gaps in our ability to rigorously teach and assess many competencies.

Thus, no present model of clinical medical teacher appears able to accomplish the goals of present and future education, necessitating the total career-long commitment which will define the MT. Physicians in other teacher categories will remain vital contributors to the educational process, and their importance should not be understated. Yet, MTs will need to fill essential roles which others cannot, and to do so through a constantly renewed and supported commitment.

SKILLS AND ABILITIES OF MASTER TEACHERS

The confluence of these forces supports the need to create a novel model of the MT to address complex training needs. They will possess a skill set that overlaps with, but significantly exceeds that of, current CEs: a highly diverse group in terms of career stage and medical content knowledge and specialty expertise, but with a common set of skills and aptitudes that transcend the traditional areas of competence. The broad domains of skills required of MTs include:

Direct Teaching and Supervision

Master Teachers will play a dominant role in teaching clinical skills, including interviewing, physical examination, and complex reasoning. Much of this teaching will continue to occur at the patient's side because of the central importance of the physician-patient interaction. They will incorporate routinely scientific evidence (including best practice principles) into the teaching of clinical skills (e.g., through use of "The Rational Clinical Examination" (26), evidence-based guidelines, and decision-support technology).

They will also incorporate core competencies into all teaching interactions to complement curricular content from non-clinical settings (e.g., directed teaching about cost of care and resource utilization as an essential component of competence in system-based practice). Consideration of the continuum of care, differing venues of care, and care transitions are additional critical content. Explicit discussion of the physician-patient relationship will inculcate the importance of communication skills. Quality of care, patient safety, and continuous improvement will be part of their delivered education through exercises in practice-based learning. (27,28)

Finally, MTs will carry out these teaching activities in the context of the new work environment. With increasing calls for learner supervision to assure patient safety (29), they will need to establish a delicate balance of graduated and skill-appropriate autonomy for their charges. Compressed duty hours dictate that efficiency (amount of education delivered per unit time) will be yet another necessary MT skill. (22,30) The business and human resource development literature provides invaluable lessons which the MT will apply at the intersection of health care delivery and training. (31-33)

Role Modeling

Role modeling is an explicit responsibility of "masters" in workplace learning directed toward work acculturation. In medicine, Wright and others have published important work describing the impact and characteristics of successful role models. (34-36) These studies suggest that learners greatly value non-cognitive "physicianship" qualities such as compassion, effective communication, and professionalism. Excellent role models were identified as spending more time on teaching and patient care responsibilities. (36) All of these observations suggest a central role for MTs in this arena.

With the shift toward patient-centered care, MTs will set a tone of compassionate, ethical, high quality care that places the needs of patients first. These faculty members will have a comprehensive view of the internist's role, but also the perspective to understand how physicians

must interact with other members of the health care delivery system. They will model working effectively with colleagues in other disciplines to provide the highest possible quality of care, promoting inter-professional collaboration and communication. Professionalism will be modeled, with emphasis on ownership of, and devotion to, patients.

Master Teachers will model continuous learning for professional development, demonstrating that there need be no dichotomy between service and education. They will model service to their patients and to the broader health care system by active participation in continuous quality improvement within their particular environment, demonstrating reflective practice in their daily work and teaching.

Finally, MTs will model scholarship through the principle of lifelong knowledge acquisition, constantly applying the scientific method to patient care and medical education. (37) They will embrace innovation, participate in developing new paradigms of teaching and medical care, and disseminate information that improves the health of individuals or populations through traditional (peer reviewed publications and national organization meetings) and newer (web, blog) vehicles.

Robust, multifaceted role modeling will set the MT apart from other CEs due to the breadth and depth of behaviors demonstrated.

Evaluator

The shift to competency-based evaluation requires a major investment of faculty time and training not available to the average CE. At the accreditation level, the Internal Medicine Review Committee has acknowledged its importance by emphasizing the evaluative role that core faculty play in the 2009 Program Requirements. (38) Therefore, MTs will necessarily fill a "master evaluator" role in future clinical training programs because of their deep understanding and sophisticated ability to identify competence, and its absence, in the clinical training venue. (39)

A broad range of evaluation techniques – those validated or being tested in clinical settings – will need to be employed effectively by the MT. (40,41) These tools include:

1. Direct observation in a variety of settings, including patient interactions, medical procedures, and multidisciplinary conferences (assessing medical knowledge, clinical skills, communication effectiveness, and professionalism);
2. Assuring performance and determining adequacy of reflection and self-critique (assessing professionalism, practice-based learning, and system-based practice);
3. Facilitation of multi-source evaluations by patients, ancillary staff, peers and subordinates (assessing communication, professionalism, system-based practice, and practice-based learning);
4. Review of medical records (assessing medical knowledge, communication, and practice-based learning).

Mentor and Advisor

Because of their extensive contact with learners, MTs will often be sought out for formal or informal advice. For a subset of learners, particularly those envisioning an academic educator career, MTs will be obvious choices for mentorship. Specific mentoring topics include setting interim and long-term career goals and timelines; choosing projects and professional opportunities which support academic advancement; recording and organizing accomplishments into presentable formats (i.e., portfolios, see below); managing professional demands and their impact on family and extra-medical life; selecting and securing membership in appropriate intra-mural groups and national professional organizations; assessing costs and benefits of additional training and credentials relative to their career objectives; resolving difficult interpersonal issues with learners, colleagues and supervisors; establishing a national reputation; and other aspects of successful career development.

Educational Administrator and Leader

Although distinct from the above teaching/advisor roles, many formal educational leadership and administrative positions will most likely be filled by MTs. Training program and associate program directors, clerkship and rotation directors, course directors, and many assistant and associate dean positions might be best filled by those with this career-long commitment to education. Other MTs will serve as important advisors to educational directors by helping to identify resource needs, providing a credible liaison with leaders of clinical programs, and participating in or leading ongoing program evaluation.

FACULTY DEVELOPMENT FOR MASTER TEACHERS

Future MTs will be expected to achieve the same high competency level as other faculty (42). Since newly recruited CEs rarely have expertise in the broad and deep MT skill set at the time of initial appointment, they will require additional training and dedicated formal mentorship. (43-45)

Training Programs for MTs and CEs

Formal faculty development programs include a range of activities which impart or renew faculty skills in teaching, research, administration, career planning and decision-making. (46,47) Focused programs are often necessary for institutions to effect curricular change and the improvements in instructional and evaluative methods obligatory to maintaining educational quality. (48,49) Acknowledging the numerous and often conflicting time demands on CEs and MTs, they will need access to a broad range of development activities. Fortunately, available options are many and range from one-hour sessions to multi-year programs. (50) Depending upon the program objectives, learner needs and time availability, the topics of faculty development activities typically include: (42)

- Orientation to the profession, the institution and its culture
- Teaching skills – clinical teaching, large and small group teaching, lectures and Socratic method
- Networking and mentoring
- Educational leadership and administration

- Adult learning theory
- Curriculum design
- Program evaluation
- Educational research and scholarship
- Learner assessment
- Career advancement

Most programs are designed to enhance teaching skills over the educational continuum (undergraduate, graduate and continuing medical education) and broadly foster academic success (techniques and opportunities to conduct educational research and network with other medical educators). Some may target specific faculty subpopulations; be offered at local, regional or national levels; and/or employ a broad array of teaching methods (small group discussion, role playing, video play-back, on-line discussions, written reflection and self-critique, and sample project development and evaluation). There are several common formats:

1. *Workshops and seminars* are generally 1-3 hours in duration, address one narrow topic, and often involve audience and facilitator interaction. When conducted locally they may be presented by that institution's faculty or by invited extramural experts. Similar faculty development workshops are often included in large regional or national meetings of professional organizations.
2. *Certificate programs* are primarily for individuals who cannot commit to the time and expense of a master's degree program, but have learning needs broader than those satisfied through workshops and seminars. Typical target audiences are chief residents, fellows, course directors and others who might also desire formal credentials in education.
3. *Educational fellowships* are longitudinal programs that provide training to a cohort of individuals without requiring them to be off-site for extended periods of time. They are typically 1-2 years long, and usually require enrollees have protected time to participate and complete an educational project. Most are sponsored by medical schools themselves, intended to develop educational leaders for the institution. A few fellowships offer enrollment to CEs and MTs from outside schools and AMCs. (51)
4. *Master's degree programs* offer formal, credit-accruing course work, provide a broad foundation in educational theory and practice, and confer an academic degree upon successful completion. Master's degrees in health professions fields are increasingly viewed as necessary to attain the depth and breadth of knowledge and skills needed for medical education leadership, including candidates for positions as education or curriculum deans. Programs offering national enrollment use primarily web-based formats to limit in-residence requirements.

In addition to these educator-specific programs, national courses also focus on general leadership development, strategic planning, conflict resolution, budget analysis, and other relevant topics specifically beneficial for the MT (see above).

Table 1 presents examples of certificate programs, educational fellowships, degree programs in medical education, and general leadership training offerings.

Faculty development programs have increased in scope and number in recent years. As of 2008, 48% of North American medical schools (64 institutions) had active medical education

fellowships (52) while 36 had established Academies of Educators. (53) Reviews of the effectiveness of faculty development initiatives found that participants self-report high satisfaction, felt them useful and relevant to their objectives, and experienced greater motivation and enthusiasm for teaching – with enhanced awareness of personal strengths and weaknesses. (47,54) In addition, they perceived to have increased their knowledge of educational principles, reported improved teaching and assessment skills, described positive changes in their teaching behaviors, and noted an enhanced sense of efficacy as educators. Faculty development initiatives may also lead to more peer reviewed publications by participants (16), and positively affect faculty recruitment and retention. (55) In general, programs that include experiential learning, emphasize feedback and self-reflection, foster collegial peer relationships, employ multiple instructional methods, and satisfy the needs of a particular defined faculty group are more likely to be successful. (47,54,56) Medical schools reap rewards from faculty development programs, since graduates frequently assume educational leadership positions at their institutions and earn notoriety and extramural recognition by serving on national education committees. (16,57)

Mentorship

A crucial factor for the success of MTs will be effective mentoring. (45,58) Some development programs offer CEs the opportunity to learn about desirable attributes in a mentor and mentee, master practical skills needed for advancement (e.g., *curriculum vitae* preparation, understanding promotion and tenure procedures, and developing efficient time management strategies) and network with potential mentors. Even so, surveyed CEs are less likely to consider themselves "mentored" than are clinician scientists. (14) This may in part be related to historical mentoring relationships centered on research, emphasizing how mentors can assist in developing an investigator (rather than an educator) career. For developing scientists, mentoring is fully integrated into their career paths through programs such as post-doctoral fellowships.

A parallel culture does not exist for future MTs. (45,59) Instead, junior CEs often find themselves seeking and exploring potential mentors with little structured guidance, at institutions with limited supportive infrastructure. Although the numbers are small, medical school-based mentoring programs have increased in recent years. A table listing established mentoring programs at 22 schools has been published by the Association of American Medical Colleges (AAMC) and describes several formal mentoring approaches. (60) These programs match junior faculty with pre-selected mentors, deliver customized mentoring workshops to departments and divisions, facilitate professional development/mentoring contracts, provide on-line mentoring resources, and encourage peer and group mentoring sessions. Several programs emphasize mentoring of junior women faculty.

Predictably, mentorship is highly regarded by faculty who receive this support. Mentored faculty members report positive influences in career and specialty choices, scholarly productivity, personal growth and professional advancement. (61,62) Medical educators identify these relationships as essential contributors to their career satisfaction (63) and cite having a mentor as one of the most positive influences on their professional development. (64)

Information about the benefits of CE mentorship is largely self-reported. Objective data are lacking, in part because efficacy metrics are imprecise, nonspecific and confounded by uncontrolled variables. As a result, a recent review of mentoring at medical schools concluded

data supporting its effectiveness were insufficient to make a substantive statement of its value. (61)

Though formal development programs may address the topic of mentorship, most focus on how the CE should choose a mentor who will promote their success. The few published works which offer guidance to potential mentors advocate fostering a non-threatening environment and providing accurate and timely constructive feedback; creating and identifying career opportunities; honoring promises; being explicit regarding assignment of credit for work; and explaining how the mentor/mentee relationship will evolve over time. (65,66)

Thus, even the well-trained CE is often ill-equipped to fulfill the essential responsibility of being a competent mentor. (67) Such skills require development and must continue to be honed even at later career stages. (68) Yet, most who mentor their junior colleagues do so with neither formal training nor ongoing feedback, relying on their own experiences and observations to guide their support of more junior colleagues. Among the novel skills which MTs must both practice and convey will be mentoring future MT mentors – expected to be critically important but thus far insufficiently described.

Successful mentees bring recognition to their mentor and their institution, often representing a dependable source of future high-quality senior faculty. Despite this, successful mentors rarely receive professional acknowledgement, financial support or academic credit for their accomplishments. To promote mentorship, the value of faculty mentors should be recognized through granting of protected time, salary compensation and academic recognition for this essential service. (69) Mentorship support may have one of the best returns-on-investment available to AMCs and medical schools today through enhanced retention and productivity. (70)

Research is sorely needed on the entire realm of formal mentorship for medical educators – including how mentors should be trained and their skills refined for continuous improvement, how mentees should select a mentor, and what metrics can best assess the effectiveness and value of mentorship. Although research in non-medical fields shows that an individual's personality characteristics influence the likelihood of their receiving mentoring, similar research in medical fields, particularly regarding career educators, is lacking. (61,71,72) These and other aspects of effective mentoring will benefit from formal, disciplined investigation, particularly as the MT role develops with time.

FINANCIAL SUPPORT FOR THE MASTER TEACHER AND CLINICIAN EDUCATOR

Funding Sources

Support for CE (and future MT) tracks derive from various sources, depending upon specifics of the academic institution and types of activities in which individual faculty engage. Traditional sources include clinical professional and technical fee collections and hospital revenues, grants and contracts, philanthropy, and institutional funds; medical schools may additionally have tuition, dean's office and departmental funds (from taxes), and indirect and overhead charges from research as potential sources within this final category. Unfortunately, as clinical and/or

research missions often prioritize higher than the educational mission at many AMCs (73), commitment, direction and certainty of funds flow for their support are less established.

According to Association of American Medical College (AAMC) data, clinical revenue generated by medical school faculty and affiliated teaching hospitals has supported scholarly activities for more than thirty years. (74) This source is particularly important today because faculty professional fees alone cannot adequately support the cost of clinical care and teaching activities together. Hospitals receive both indirect and direct medical education funds and facility fee revenues which contribute to the financial margin of AMCs. Hospitals acknowledge the benefit of strong clinical educational programs which attract top residents and fellows – who both provide high quality care and often remain on staff at the training institution or its affiliates after graduation. (73) The CE is usually among the best-qualified physicians to support the hospital operating plan for patient satisfaction, safety, and quality metrics. (75) Typically, many CEs are recognized as the outstanding clinicians to whom colleagues and hospital officials refer their family members for care. (76) The MTs will likely generally parallel the CE in this regard, but require more support for personal training and their somewhat smaller percentage of billable work.

In the past ten years, one major threat to transferring funds from teaching hospitals to medical schools has been the Stark Law and anti-kickback statutes. Enacted in 1993, they have caused much confusion among AMCs. Interpreting these laws requires legal expertise regarding self-referrals, kickback principles, and various financial relationships among providers. Fortunately, exceptions permit AMCs to receive financial support legally from their teaching hospitals. (77)

General categories of funding sources for the MT/CE include:

Clinical Sources
Revenues from professional and technical/facility fees are typically the largest funding components for CEs who usually receive a set percentage of their collections, generally through a practice plan. With their expected heavy clinical loads, these revenues will be a major component of future MT compensation.
In addition the department or division may accrue additional funds to support CE salaries through:

1. Taxes on clinical care collections generated by all faculty, advocating the position that educational costs are intrinsic to the business of the aggregate faculty and should be supported by all;
2. Directed support from the AMC or practice plan to weight clinical care in the teaching setting above standard collection- or clinical relative value unit (RVU)-based rates (e.g., providing the CE who devotes 50% time/effort to direct patient care on teaching services or clinics with 60-70% equivalent salary, with the expectation that teaching and scholarship will add value to the overall services of the hospital or practice);
3. An indirect medical education (IME) allocation for the number of residents and fellows in the department or division, including salary support to meet ACGME/Residency Review Committee (RRC)-required time-effort commitment for program directors and core faculty;
4. Hospital contracts assigning specific administrative tasks necessary for hospital operations and accreditation (laboratory, clinic or service directorships, quality and

patient safety goal work groups, chairmanship of key hospital committees, medical staff leadership, etc.).

Grants and Contracts
Although extramural grant and contract resources for medical education are neither as prevalent nor as well-funded as are those for research, specific foundations and agencies support time-limited, directed grants for medical education projects and initiatives, usually via a competitive application process. Examples include the Henry J. Kaiser Family Foundation, the Robert Wood Johnson Foundation, the Rockefeller Foundation and some governmental agencies. Rush University Medical Center has compiled a reference of funding agencies for medical education for the public to access through their web page (78). Salary support is often included in these awards. (**Appendix 1**)

Education-directed intramural funding may also be available at some institutions. The Mayo Clinic has developed the Clinician-Educator Award, providing 10% protected time and $10,000 for expenses to support educational innovation and scholarship initiatives. (79) Such programs require considerable institutional endowments, or governmental funds which may be unrestricted educational awards or 'fenced' allocations supporting specific initiatives (e.g., health care disparities, minority education and diversity, specific clinical services [e.g., burn centers] otherwise unavailable to the citizens, etc.); general or focused educational initiatives may be supported as part of these allocations.

Philanthropy
"Development" has risen in importance as funding from other sources progressively declines. Donations may be sought from broad-based groups (e.g., via a specific drive among local citizens and AMC employees), or from individuals, businesses, or foundations. Considerable time and effort is typically needed to educate donors to secure sizeable contributions. Individuals may want to support education focused upon certain disease entities or identified populations, overall improvement of physician education, or a specific initiative such as ethics training. There also may be interest in supporting individual residents or fellows to engage in clinical scholarship, such as biomedical research, health care policy and economics, or epidemiology. Businesses and foundations may also have focused interests in specific charitable purposes, related to their fundamental missions or high profile community needs.

Endowed chairs can be created and named for an individual (e.g., a particular donor/family) or narrow discipline (e.g., ethics and humanity education) and once capitalized, can be an ongoing source of support for an appointed MT. In the present economy, approximately $5 million endowment is needed for an annual $150,000 in perpetual salary support.

Publicizing unique and/or successful programs, with media presentations appropriate for lay persons, is an essential step in marketing educational programs as ventures deserving of investment. An example is The Center of Education at Beth Israel Deaconess Medical Center, which received a ten-year pledge from a major donor who was encouraged by the progress and future direction of the Center. (73)

Institutional Sources
Institutional funds are most often allocated as tenure guarantees, with annual budgets determined using historical methodologies. Faculty members with tenured salaried positions are usually

physician-scientists and/or those in senior leadership positions (department chair, division chief, associate dean) and not CEs. Present tenure guarantees rarely constitute a significant salary percentage for the busy CE. It is anticipated that tenure-guaranteed salary stipends will be an ever shrinking percentage of all physician faculty salaries in the future, hence their importance to future MT support is not predictable (see below).

Time-Effort and Value Assessment

Faculty Effort
To justify financial support for non-income generating MT activities, it will be necessary to fully describe their time-effort and develop a method which consistently qualifies and quantifies educational and scholarly contributions. One study suggested the average CE work week is 58.7 hours, with only 7.6 hours (13%) devoted to scholarship – an amount viewed as wholly insufficient for "academic success" by the study subjects. (13) Many CE activities contribute materially to the ongoing success of AMCs and medical schools; it is therefore fully defendable to consider fair compensation for these activities, which may include:

- Administrative functions
  - Program director for residency/fellowship program
  - Associate program director
  - Medical student clerkship director
  - Medical student course director (e.g., Introduction to Clinical Medicine)
  - Medical director of training clinic
  - Medical director of inpatient teaching service
- Patient care in an educational environment
  - Attending for residents and fellows in clinic
  - Inpatient attending/supervising physician
  - Clinical care for special populations
- All other educational and scholarly activity
  - Committee work
  - Grand rounds, lectures, case discussions, morning report
  - Scholarly publications
  - Journal club
  - Projects and programs to meet regulatory and compliance requirements

Effort-Based Compensation
Once the work products of CEs are defined, consistent value assessment – linkage of work products and their quality to salary dollars – is the final step in establishing a compensation model. Administration of the educational programs and its support could be assigned from the school, department/division, or hospital. Directors and associate directors of residency and fellowship programs must have paid protected time (as a percentage of effort or hours per week depending upon the size of the program) as mandated by the RRC for continued training program accreditation. (80) Medical student teaching support from the school or department may be appropriated as a dollar amount or full-time equivalent (FTE) fraction, and some departments have adopted an education value unit (EVU)/teaching value unit (TVU) to associate an educational activity with a specific quantity of value to the institution, paralleling clinical relative value units (RVUs). (81,82)

Table 2 presents three models to support the clinical/scholarly effort of a CE and the calculations required to implement them. The first step establishes a defined amount of scholarly time as a necessary component of each primary activity. After the size of the effort is determined (assumed to be 20% for this example), scholarly time is next embedded into each effort. Thus, the 40% outpatient clinic time is increased by 20% to 48% (rounded to 50% time) for the purpose of financing this effort. The final step is to reduce total effort and compensation by the direct FTE support; this example includes 20% of clinical administration and 10% of medical student teaching. The three options to support clinical/scholarly effort presented in Table 2 include:

Defined Clinical FTE (CFTE): Although many departments and hospitals have fully incorporated them into present compensation plans, others are currently in the process of defining a CFTE. This is a challenge, as typical hospital goals are based on direct patient care (diagnosis and management of individual patients), while department goals incorporate a multiplier for education and scholarship. Clinical teaching program costs are generally 30-40% higher than similar non-teaching programs. (83) Australian medical colleges agreed to a 30% FTE for clinical teaching and scholarship (84), while the University of Washington assigns 20% time-effort as scholarship for the CE, where teaching time is not defined. (13) In this example, for a faculty member who is 63% CFTE, approximately 13% time is for teaching and scholarly activities and 50% for direct patient care. The clinical performance expectation (RVU target) is based on 50% effort, while the financial support from the hospital is 63%.

Clinical RVU: The RVUs generated by CEs are easy to measure on the basis of professional fee billing, and most institutions presently track this information. With the agreement to pay a set dollar amount per RVU, the RVU target for the teaching clinics and inpatient services would be reduced to account for teaching efforts. This example for funding of 63% support uses 50% as the RVU target: if 2,800 RVU equals 100% effort, then the CE target would be 2800 x 0.50 or 1400 RVUs. The discussions for the dollars/RVU will be at minimum based on the compensation/RVU target (e.g., $93,750/1400) or $67 per RVU.

Clinical Funds Flow: This method has an established clinical funds flow (cash, less practice-plan and clinical overhead expenses, dean's tax, departmental and divisional taxes, and associated faculty salary and benefit) that is projected to be a deficit, with the teaching hospital supporting the difference. The key principle of this method is similar to that of the CFTE, in that faculty salary and benefits include the FTE fraction dedicated to educational/scholarly activities.

Formal Financial Structuring of Medical Education Programs: Examples

A number of institutions across the country have developed and implemented formal programs to support the educational time and effort of the CE/MT. Examples include:

University of Washington School of Medicine (UW)
From 1998 to 2001, UW undertook a comprehensive curriculum review that identified the need for increased emphasis on basic clinical skills and more personalized education for students in the context of a large medical school class. These identified needs resulted in the establishment of a curricular structure called the College System. The College System comprises six colleges with six faculty (primarily CEs) in each, one of whom is a college head. Each college faculty

member is responsible for mentoring approximately six students per medical school class. College faculty are involved in monitoring the students' academic progress and remediation as needed and are very involved in helping students with career counseling and residency applications. The school financially supports 25-75% time for 37 faculty in the colleges, depending on the extent of the college member's role (regular faculty mentor, college head, and faculty mentor, or college director, college head, and faculty mentor), who are selected through a competitive process for renewable 5-year terms. (85) Future MTs will most likely be well represented among these positions.

University of Kansas School of Medicine's Department of Internal Medicine (KU)
In 2005, KU designed and implemented an EVU system along the recommendations of the AAMC Mission-Based Management Program. For this department the EVU system aligns educational activities with compensation and accountability. It recognizes and financially supports key administrative positions in the medical education programs, and for other faculty provides a dollar value for each 0.1 EVU. This system is time-based, prospective, and provides compensation for bedside teaching, formal lectures, and program administration. Intended to encourage faculty to continue their excellent clinical teaching of residents and medical students, the EVU became an adjunct to the clinical RVU. This provided supplemental support to the CE's patient care revenues. (82)

Harvard Medical School (HMS) and Beth Israel Deaconess Medical Center (BIDMC)
In 2003, BIDMC conducted an institutional strategic review of its education mission. Based on the recommendations of the review, significant changes in infrastructure, programs, and financing and resource allocations were made. The BIDMC developed a Center for Education and created the position of Vice President for Education/ Faculty Associate Dean for Education, reporting to both the hospital and medical school. The Center for Education is funded by philanthropy, HMC, and BIDMC. The medical center justifies this expense by linking the educational programs with the medical center's annual operating plan, notably its patient safety initiatives. The formal structure has also increased philanthropic support for the educational program. (73)

Financial support for future MTs may include any of these sources/models. New systems and hybrid structures may well be developed as the value and potential of MTs become more obvious with growth in their numbers.

FACULTY ROLE OF THE MASTER TEACHER/CLINICIAN EDUCATOR

The importance of the MT/CE to modern medical schools cannot be overstated and has been well documented. (75,76,86,87) As discussed above, these individuals are not likely to be 'triple threat' faculty – accomplished in biomedical research, teaching, and clinical care – because the skills now demanded by highly regulated educational and clinical programs cannot be mastered by faculty who must spend their time performing scientific research, competing for grants, and navigating the increasingly complex paths of research safety and regulation. (88-90) Hence, MTs will be, of necessity, a distinguishable subgroup of the faculty.

Most medical schools have struggled with how to integrate MT/CE's into their faculty model. (87,91,92) The most obvious challenge relates to those achievements of MT/CEs which define academic success justifying promotion, tenure, and full university faculty membership on par with investigators. (76,93,94) For research faculty, metrics to measure scholarly success are well-established, generally standardized, and allow for portability between institutions: (87) grant awards, research publications and journal impact, named lectureships, and extramural acknowledgement of scientific reputation through NIH study group participation and invited authorships. (91,94) As would be expected, CEs fall short on such measures (12,91,95) as their positions were created and individuals recruited to provide far different services to their institutions. Teaching, direct patient care, and clinical/educational administration rarely result in a body of work leading to peer-reviewed publication. (96,97) The work of MT/CEs is far less likely to result in extramural reputations of expertise, as their impact is mostly local, rather than on the academic community at-large. (12,91,92,96-98) As a consequence, traditional metrics employed by promotion and tenure committees fail to provide meaningful assessment of CE accomplishments. (12,99)

To recruit, retain, and support MTs, their positions will need assured longevity consistent with that of other faculty groups. (76,86,92,100) Academic success must be defined by sufficiently objective measures to make the path to academic promotion and retention consistent and transparent, acceptable to non-CE university faculty, and aligned with the organizations' needs and expectations when initially creating the positions (91,99,101) This will require alternative definitions of scholarship, acknowledgement of the value of the essential services relevant to the MT/CE role, and alignment of scholarly expectations with their job descriptions. (16,101) Goals must be clearly communicated to young CEs, and reviewed periodically through the pre-promotion period to assure progress. (10,86,92) Finally, the institutions' value of their contribution should be reflected in reasonable opportunities for acknowledgement through tenure awards (see below). (88)

Academic Promotion

Several papers have described existing CE tracks and promotion models. (91,94,99,101,102) Most employ criteria which recognize their important contributions, yet suffer from significant subjectivity, imprecision, and varying relative value to other metrics. (91,98,102) Although many different schema have been used with varying degrees of success (103), employed criteria can be categorized into two broad primary categories (Scholarship and Service) with some consideration given to the softer measure of Personal Attributes.

Scholarship

Two major positions (one built upon the foundation of the other) have been proposed and frequently cited relevant to a redefinition of scholarship for MT/CEs. The Ernest L. Boyer Project described four domains of scholarship: discovery (acquisition of new knowledge consistent with traditional hypothesis-driven research); integration (drawing together knowledge from discovery and disseminating its best applicability to practice); application (the practice of high-quality medicine), and teaching (conveying knowledge, skills and wisdom to other practitioners and learners). (104) Boyer described three essential components of scholarly work: public access/dissemination, subjection to peer review, and transferability for other scholars to build upon its substance. (105) Simpson and Fincher applied Glassick's six qualities of scholarship to medical education: 1) clear goals and objectives of the work; 2) adequate

preparation (implying thorough understanding of previous work in the field); 3) application of rigorous scientific method; 4) results which meet the parameters of significance; 5) effective presentation of the work to the scholarly community; and 6) thoughtful reflection upon the work, its place in the greater body of associated knowledge, and its applicability to the ultimate goals of the field. (8,106)

Although the fully-committed MT is unlikely to have the time-effort, expertise or interest in pursuing projects which would meet all the above scholarship categories (11), most will perform activities meeting some or many of these criteria. Particularly if the need for an extramural reputation were reduced or excluded (76,91,97), activities directly related to their practice and teaching could qualify as scholarship under these definitions. (107,108) **Table 3** lists sample activities by Boyer domain; modification and adaptation will likely be necessary to assure organization-specific mission alignment for the MT.

Service

Both clinical and educational services are additional contributions of CEs which deserve credit toward promotion, as without such services medical schools and their affiliated medical centers could not function. (96,101,109) CEs are typically the most involved, knowledgeable, experienced, and qualified to provide guidance, leadership, and participation across a range of committees, clinical programs, working groups and administrative roles essential to these missions. (75,107) **Table 4** provides examples of types of services by mission. As with scholarship, this organizational scheme is but one possible approach; each institution would likely customize any general structure based upon their particular needs.

Personal Attributes

Mentorship and role modeling will be essential responsibilities of the MT (see above). (10,14) As such, many schools have included some measure of desirable personal attributes which they wish modeled to their learners. (99) Both the promotion of patient-centered health care, and the Accreditation Council on Graduate Medical Education (ACGME) core competency of Professionalism, support this position. (110) Yet, aside from testimony of professional colleagues, objective measures of such qualities are largely absent. (102) All health care organizations profess commitment to these behaviors for their employed providers and learners, and as such this third category may become an important determinant of meaningful contribution of MT/CEs to their supporting organizations.

Measurement of Scholarship and Service

Many of the most important accomplishments of CE are those most lacking in objective metrics. While many services and some scholarship activities do lend to standardized measure (e.g., institutional review board membership, years of work as hospital service chief, etc.), quality of clinical practice, quality of education and others are largely assessed by learners, peers and colleagues, and are subject to considerable systematic bias. (91,99) A 1997 survey of US medical schools determined that achievements deemed most important by clinical department chairs and promotion committees were those assessed by the least reliable metrics. (99,102) Clinical benchmarks can be employed to select aspects of care in some settings, but are at best rudimentary assessments of overall practice quality and certainly insufficient metrics alone. Although a review of options for reducing bias and standardizing measures of clinical and

educational performance is beyond the scope of this discussion, the area is ripe for formal research toward developing robust, validated evaluation tools.

TOOLS FOR TRACKING AND ORGANIZING CE ACTIVITIES

As promotion criteria vary, so too do the tools MTs and CEs can use to track their accomplishments. A traditional *curriculum vitae* underestimates the contributions that CEs make to their institutions by limiting examples of excellence in teaching and clinical care, and accomplishments outside classically defined academic scholarship. The CE portfolio was therefore developed to accompany a *curriculum vitae*, providing more complete documentation and explanations for review by peers, chairs and promotions committees. (111) Supporting data are essential: information needs to demonstrate merit (achievement) as well as worth (accomplishment that meets institutional missions and faculty career goals) (112); be organized in a consistent fashion; and be accompanied by sufficiently detailed explanations to facilitate fair and accurate interpretation.

Portfolio tools differ by the achievement categories employed, reflecting specific institutional missions and individual faculty members' job expectations. Their use has grown by more than 400% over 10 years, with 76 schools employing some type of portfolio system in 2003. (113)

The AAMC Group on Educational Affairs' consensus statement on portfolios addressed three areas: 1) categories of educator activities to be considered; 2) types of evidence to be included for the academic promotion process; and 3) presentation of the activities and associated supporting evidence. The Group created an organizational template with five categories: teaching, curriculum development, advising and mentoring, educational administration and leadership, and learners' assessments (**Table 5**). (114)

Some portfolio content models beyond the teacher-educator to the clinician role as well, categorizing and documenting outstanding patient care. The Society of General Internal Medicine Education Committee's "Guidelines for Promotion of Clinician-Educators" suggest documentation in three scholarship areas: (1) educational methods and teaching, (2) clinical practice application, and (3) integration. (115) They recommended separate activity records and portfolios for each of these three categories, with use of electronic medical records to provide quality/outcome data (**Figure 1**). (115)

University of Virginia

University of Virginia recommends that the following clinical measures be included in submissions for promotion of CEs (116):

- General recognition and appreciation of the candidate as a truly outstanding physician among faculty colleagues, with documentation provided by letters from faculty within or outside the department;
- Solicited opinions from physicians referring to the candidate's clinical practice;
- Documentation of the candidate's reputation for superior accomplishment within a clinical specialty, as evidenced by membership or fellowship in prestigious professional societies or other clinical recognition or awards;

- Documentation of the candidate's clinical leadership role in a department or medical center;
- Specialty and subspecialty board certification and recertification;
- Analysis of outcomes data (when available), including morbidity data, hospital length of stay (controlled for severity of illness), resource utilization, and patient satisfaction.

Many programs and institutions have examples of portfolios available for viewing through websites (**Table 6**). Electronic portfolios, easily updated and transparent, are gaining in popularity. Web-based tools may also standardize and simplify the promotion process, allowing for consistency in presentation, detail sufficient to permit full understanding and appreciation by non-CE promotion committee members, and on occasion relative weighting of activities based on institutional preferences.

University of Chicago

The University of Chicago tracking tool asks specific questions which guide faculty through the documentation process and explain the rationale for requested data. (92) The chair and promotions committee then provide feedback through comments on the same form, making this one tool simultaneously instructional, documentary and evaluative. (**Figure 2***)*

University of California, Davis

University of California, Davis, School of Medicine piloted a mission-based reporting system in which faculty members provide responses to specific questions about their activities for each of the four missions (investigative/creative work, teaching, clinical work, and administration/community service). (117) Faculty identified the need to re-enter the same data every year negatively, leading to the development of InfoVault. This web-based data repository generates three different reports from a single entered data set: (1) a faculty advancement packet formatted for promotion evaluation (PacketOnline); (2) a *curriculum vitae*; and (3) a National Institutes of Health biosketch (**Figure 3**). (118) Being able to review the information online appears more effective and efficient than using paper documentation, though data entry is time-intensive. Though a work in progress, this tool serves an additional development role by educating faculty about the promotion process. (118)

TENURE

From its inception, tenure provided the fundamental salary protection needed to pursue scholarship with academic freedom, independent of need for competitive external support. The model was most appropriate for the investigator or non-medical school faculty member who could experience large fluctuations in measurable productivity, and resultant financial support, simply due to the intrinsic nature of their work. (88,90,119,120) Medical schools, as part of their parent universities, initially adopted the model and criteria used to award tenure – reasonable perhaps for the physician scientist but not so for the predominantly clinically active physician. (13,95) This issue became acute with the advent of CEs (95), whose activity profiles were largely clinical in nature; for whom recruitment and retention mandated significantly higher salaries than their non-CE colleagues; whose salaries were increasingly directly dependent upon

the clinical care dollars generated by the individual and aggregate faculty; and whose lifelong tenure guarantees could place the school at an untenable financial risk. (88,121,122) As the number of CEs, and their percentage of the total faculty, grew, so did the magnitude of the issue.

Shrinking revenues from state lines, philanthropy, and government and third-party payers (87,120) drove a number of accommodations to the above dilemma. Schools which initially employed a single promotion and tenure process by simply applying existing criteria to CEs discovered few of these faculty members were promoted or awarded tenure. (92,100,119,122) Hence, CE faculty were terminated at the end of their pre-tenure period ("up or out"), precluding development of senior level CEs, losing the return on institutional investments in junior faculty development and the benefits of their more mature practices and referral lines, and identifying such positions as devoid of long-term security to future faculty recruits. (76,87,89,92,95,123)

The solutions adopted by most institutions created non-tenure tracks for CEs (11,87,88,92), with compensation packages determined on contractual bases. (101,120,123) Issues such as base salary, start-up guarantees, benefits, bonuses and productivity incentives were typically determined by departmental or divisional practice plans, school-wide practice agreements, and hybrids with college/university resources. (88,121) Institutional financial commitments were limited by contract duration, and to smaller fractions of total salary (typically at or lower than base salaries for non-physician faculty in other departments or colleges at equivalent academic rank). (121) Clinician educators could be offered more competitive salaries, a reasonable amount of security, and necessary benefits to start their careers with this approach. (120)

However, unresolved issues remained. In the absence of tenure, most CEs were unable to vote in or hold offices on the Faculty Senate of their parent institution. (89,94,109,121,123) Some medical schools limited academic leadership positions to tenured faculty – creating a 'glass ceiling' and a perceived second-class citizenship for CEs (86,95,109), sometimes awarding only modified academic titles or paying reduced benefits. (121,124) Tolerability of such status steadily declined as the percent of non-tenured faculty expanded, in many cases to over half of the total medical school faculty number, and as the financial support (through overhead and taxes) they provided to the university grew – often exceeding that from all other sources. (87)

To address these concerns, tenure tracks (88,95,119,124) (or tenure opportunities) (92) for CEs were eventually developed at some schools. (88,95,119,120) However, constantly shrinking funds for tenured positions resulted in a number of practical accommodations. These included reducing total funding (by rank) for full-time equivalent positions; dividing tenure positions among multiple individuals (the '1/4 faculty line'); limiting guaranteed salary to a nine-month academic year or 75% of an annual tenure salary; or combinations of these and other approaches. (788,120-122)

To date, some schools have totally divorced compensation from tenure (88,120), though virtually all have reduced the financial value (to the individual) and risk (to the institution) substantially (88,120,122), while others have no tenure for faculty in any academic category (88) or have eliminated tenure opportunities for new faculty. (87,120,122) Reasons cited for continuing some compensation/tenure relationship include tradition, failure to see value of compensation-independent tenure, as a governor to limit voting dominance of the CE contingent, or political roadblocks caused by existing bylaw limitations (i.e., no political mechanism to effect such a change). Yet, economic realities have consistently mandated accommodation.

By viewing these events as an historical evolution, acknowledging that the external forces driving these changes will continue and grow in influence, and accepting that most medical schools will require a large proportion of CEs and career MTs to meet their educational missions, there appears to be an inevitable outcome. With the erosion of salary dollars committed to tenure, most physicians would find a total salary limited to their tenure guarantee an unacceptable option, almost always having more financially lucrative employment alternatives available outside academia. (88,120,122) Yet, as their contributions to the function to the medical school are essential for mission success, the argument that their academic status should be on par with that of other faculty is fair. The medical school/university also has a strong position in avoiding financial risk of life-long salary guarantees to highly paid CEs. The final divorce of tenure from compensation – with tenure award identifying full faculty membership and acknowledged value to the institution, and salary addressed totally through contractual agreements – appears the logical, and perhaps inevitable, solution to the needs of both principals. (88,101,120,122)

The impact of such a change on other medical school/university faculty must also be addressed. Limits on faculty senate voting by the CE contingent may be needed (787,123) to assure acceptable representation of all university stakeholders – perhaps converting to some hybrid of the 'senate' and 'house' model – by incorporating defined influence of departments or other academic entities independent of their total faculty number. Contract-based compensation and benefits for all faculty would allow sufficient flexibility for financial guarantees to traditional non-CE faculty, but be modified for those who derive most of their salaries from clinical productivity. Contracts can also formalize deliverables, productivity and achievement benchmarks, and financial remedies with a transparency absent in present processes. Increased accountability, clarity of expectations, benefits of achievement and consequences of failure – all of which can be delineated in contracts and updated/amended upon contract renewal – could benefit both the institution and individual faculty members on a number of levels. (87,88,121)

SUMMARY

Master Teachers will soon become essential faculty members in institutions participating in clinical medical education. Their ranks will need to be composed of CE physicians at all career stages to provide both diversity of education and mentorship of future MTs. Obtaining expertise in teaching core competencies, measuring achievement of their learners, and becoming effective role models and mentors will require careful initial recruitment, formal and ongoing faculty development, and sufficient protected time to discharge these responsibilities. Their importance to the key educational mission of medical schools should be reflected in promotion and tenure pathways which offer opportunities for advancement and status consistent with other faculty designations. Although instruments exist to assist CE in tracking and documenting their achievements, objective and validated measurement tools are needed which can be broadly applied to MTs and CEs so other institutions can recognize their value and make their academic status transportable. National professional organizations such as AAIM could provide an invaluable service in this regard.

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Table 1: Examples of Local and National Educational Fellowships, Master's Programs and Certificate Programs*

EDUCATIONAL FELLOWSHIPS – INSTITUTION SPECIFIC				
Course	**Length**	**Fee/ Stipend**	**Target Audience**	**Comments**
Medical College of Wisconsin (**16**) Docere Fellowship Program	One half day per month per module. Entire curriculum takes two years In residence	Stipend Travel and supplies also funded	MCW clinical and basic science faculty	http://www.mcw.edu/display/docid596.htm Longitudinal curriculum, five learning modules Teaching Curriculum development Learner assessment Educational evaluation Educational leadership and scholarship Peer reviewed project pertinent to department
David Geffen School of Medicine at the University of California, Los Angeles (**125**) Fellowship in Medical Education	Two years In residence	20% Release time Rare stipend	UCLA clinical and basic science faculty, competitive	http://dgsom.healthsciences.ucla.edu/teaching/faculty-development/med-edu-fellowship/ Goals: 1. Prepare excellent teachers to serve as course and program directors 2. Strengthen dossiers for promotion Topics: Learning theory Expertise Curriculum design Problem based learning Clinical teaching Assessment Medical education research Two seminars and two projects
University of California, San Francisco (**55**) Teaching Scholars Program	One half-day per week for ten months In residence	Release time No stipend	UCSF clinical and basic science faculty, competitive	http://medschool.ucsf.edu/teachingscholars/ Topics: Learning theory Teaching methods Curriculum development and evaluation Assessment

				Educational research Leadership and career development Scholarly product
University of Iowa(**126**) Teaching Scholars Program	Monthly sessions for one year, then quarterly sessions for two years In residence	Stipend	University of Iowa clinical and basic science faculty, competitive	http://www.healthcare.uiowa.edu/ocrme/teach_train_sup/teach_sch_pro/purpose_desc.htm Goal: promote leadership in faculty development related to teaching skills in departments and throughout the college of medicine. Themes: Teaching skills Curriculum design Professional skills
McGill University, Montreal, Canada (**127**) Teaching Scholars Program	One day per week, 12-18 months In residence	Course work and travel funded by private donation Release time	McGill University clinical and basic science faculty, competitive	http://www.mcgill.ca/medicinefacdev/programs/tsp/ Themes: Curriculum design and innovation Teaching methods Evaluation strategies Program evaluation Research Educational leadership
University of Rochester School of Medicine and Dentistry Dean's Teaching Fellowship	20 three-hour sessions per year for two years	Stipend plus research and travel expenses provided 15% release time	Clinical and basic science faculty, competitive	http://www.urmc.rochester.edu/education/md/deans-fellowship/index.cfm Themes: Educational theory Research methods Teaching methods Educational technology Curriculum design Assessment of students Faculty development Leadership Career planning Educational project Must identify mentor
The Rabkin, Mount Auburn and Harvard Medical School Academy Fellowships	Weekly or monthly sessions for 10 months In residence	Stipend 20% release time	Clinical and basic science faculty; competitive	http://www.bidmc.org/MedicalEducation/CarlJ,-d-,ShapiroInstituteforEducationandResearch/RabkinFellowship.aspx Themes: Medical education funding Curriculum design and implementation

in Medical Education (**56**)				Program evaluation Adult learning principles Small and large group teaching Humanities relevance to education Medical education research Leadership Self-reflection, professional development Mentor Scholarly product
Other institutions with educational fellowships: University of North Carolina, Brody School of Medicine- East Carolina University, Johns Hopkins University, University of Michigan, Baylor University, University of Washington, University of California, Davis and more				
EDUCATIONAL FELLOWSHIPS -- NATIONAL				
Harvard Macy Program for Educators in Health Professions	11-day winter and 6-day spring sessions in residence at Harvard	$5300	Faculty All specialties	www.harvardmacy.org Themes: Learning and teaching Curriculum Evaluation Leadership Information technology Educational project
Stanford Program on Clinical Teaching	One month	$8,000	Faculty and Residents All specialties	http://sfdc.stanford.edu/ Focus is on training participants to teach educators at their home institutions Train the Teacher Curriculum Learning climate Control of Session Communication of Goals Promotion of Understanding and Retention Evaluation Feedback Promotion of self-directed learning
MASTER'S DEGREE PROGRAMS – ON LINE				
Master of Academic Medicine Keck School of Medicine University of	32 units of graduate level coursework required	$40,416 or $1263/unit	Faculty	http://www.usc.edu/schools/medicine/departments/medical_education/index.html Program Themes: Developing, leading and evaluating

Southern California	2-3 years Mostly on line; 7 days in residence required			programs Leading of self and others Designing curricula and assessing learners Addressing policy and accreditation issues and challenges Designing, implementing and studying innovations
Masters in Health Professions Education University of Illinois – Chicago College of Medicine	32 semester hours Mostly on-line 2 weeks in residence	$675/hr e-tuition $21,600	Faculty	http://www.uic.edu/gcat/MEMHPE.shtml Leadership in health professions education, scholarship methods, curriculum, instruction, competence assessment, program evaluation, quality assessment, primary care education, clinical decision making, and medical humanities and ethics. Thesis required
Master's in Education Southern Illinois University School of Medicine in collaboration with University of Illinois at Urbana-Champaign	36 credit hours On line	$16,344	Faculty and Residents	http://www.siumed.edu/dme/online_masters.html Designed for health professionals who have, or are preparing for, educational leadership positions in health professions schools Applied Research Design Organization Development Program Evaluation Adult Learning and Development History of Work and Educational Policy Instructional Design Curriculum in Medical Education Clinical Performance Assessment Leadership in Health Professional Education
Master's in Education Cincinnati Children's hospital in collaboration with the University of	45 credit hours On-line	$31,005 in-state (OH) $31,455 out-of-state	physicians and other health care providers	www.cincinnatichildrens.org/mastersineducation Focus is on three educational themes: adult learning, curriculum and instruction, and educational research and evaluation.

Cincinnati				
MASTER'S DEGREE PROGRAMS – IN RESIDENCE				
Masters in Medical Education University of Iowa Carver College of Medicine	30 credit hours Mostly in residence	$14,562 in-state (IA) $40,326 out-of-state Certificate also offered for completion of four courses	University of Iowa students, competitive	http://www.healthcare.uiowa.edu/ocrme/masters/programoverview.htm Purpose: Develop a community of academic medical faculty with formal training in education who will create and sustain a culture of educational excellence within the College of Medicine, the university, and the medical education community at-large.
Master's Concentrat'n in Medical and Professional Education University of Michigan School of Education	30 credit hours In residence	$27,540 in state (MI) $54,000 out of state	Faculty and professional students including medical students	http://www.soe.umich.edu/highereducation/medicaleducation/ Physicians seeking advanced training in education to provide them with a conceptual and scholarly foundation for their educational responsibilities, and to enhance their leadership potential.
Master's in Education University of Pittsburgh	30 credit hours In residence	$21,400 in state (PA) $37,000 out of state	Fellows and faculty	http://www.icre.pitt.edu/ Course offerings include: Curriculum Design, Professional Development, Medical Education Research and Teaching Methods
CERTIFICATE PROGRAMS				
University of Illinois-Chicago College of Medicine Certificate Program for Clinical Program Directors	One week and one follow up weekend in residence	$2000	Program and Fellowship Directors	http://cores33webs.mede.uic.edu/dme/warp/certificate/ Course offering examples: Instructional design and technology, educational measurement, teaching methods, clinical teaching, assessment, educational research, faculty development Portfolio project
University of Iowa Carver College of	12 credit hours	$1500 (?)	Junior faculty, chief	http://registrar.uiowa.edu/registrar/catalog/medicine/medicaleducationprogram/

Medicine Certificate in Medical Education			residents, fellows	
University of Pittsburgh Certificate in Medical Education	15 credit hours	$10,775 in state (PA) $18,500 out of state	Individuals with a career interest in teaching and leadership positions in medical education	http://www.icre.pitt.edu/degrees/cert_meded.html Course offerings include: Curriculum Design, Professional Development, Medical Education Research and Teaching Methods
GENERAL LEADERSHIP PROGRAMS – NATIONAL				
AAIM Executive Leadership Program Collaboration with AAIM and The Crimson Group	Five days on site in Cambridge, MA	$4000 Includes accommodations and meals	Leaders and key decision makers within departments of internal medicine	http://dev.im.org/Meetings/Past/2009/Pages/2009AAIMExecutiveLeadershipProgram.aspx Curriculum topics: Strategic Analysis and Marketing Cost Analysis & Operations Management Organizational Design and Leadership Financial control systems and Change Implementation
Association of American Medical Colleges Mid-Career Women Faculty Development Seminar	Three days on site in New Mexico or Arizona	$1200	Women associate or recently promoted full professors with clear potential for advance-ment to a major administra-tive position such as section or department head	http://www.aamc.org/meetings/wim/start.htm Curriculum topics: Effective Scientific Writing Skills to enhance Teamwork Negotiating for Organizational change Paths to Academic Leadership Career Mapping Financing the Missions of Academic Medicine Maintaining Vitality as a Faculty member and as a Woman Communicating Effectively

*Excluded are degree programs not specifically related to education, such as master's programs in public health, epidemiology, business, and health policy, or those degree programs focused primarily on research.

Table 2: Clinician Educator Compensation Models

Sample Calculation of Clinician Educator Compensation				
Current compensation: $150,000				
Scholarly Time Factor: 20%				
Step 1: Convert effort to include scholarly time	**EFFORT**	**EFFORT & SCHOLARLY TIME**	**AMOUNT**	
Medical director of outpatient clinic	20%	25%	$	37,500
Outpatient clinic with resident/fellow	40%	50%	$	75,000
Inpatient services on teaching unit	10%	13%	$	18,750
Introduction to Clinical Medicine (course)	10%	13%	$	18,750
Scholarly time	20%			
Total	100%	100%	$	150,000
Step 2: Reduce clinical/scholarly effort by direct FTE support				
Total CE effort and compensation		100%	$	150,000
Medical director of outpatient clinic		25%	$	37,500
Introduction to Clinical Medicine (course)		13%	$	18,750
Balance – Clinical/scholarly effort		63%	$	93,750
Options for Support of Clinical Scholarly Effort				
Option 1. CFTE				
Outpatient clinic with resident/fellow	40%	50%	$	75,000
Inpatient services on teaching unit	10%	13%	$	18,750
	50%	63%	$	93,750
Option 2. Clinical RVU				
Full-time RVU target = 2,800				
50% RVU target = 1,400	**RVU**	**$/RVU**	**TOTAL**	
Rate of pay = $68/RVU	1,400	$ 68.00	$	95,200
CE generates (50%): $ 95,200				
Option 3. Clinical Funds Flow				
Clinical charges (1,400 x $80)		$ 112,000		
Clinical revenue (1,400 x $55)		$ 77,000		
Taxes (plan, 15%; dean, 10%; dept., 20%)		$ 34,650		
Balance			$	42,350
CE clinical compensation			$	93,750
Hospital/dean pays balance			$	(51,400)

All these options include financial support to provide the CE with protected time for scholarly and educational activities. Options 1 and 3 cover the actual compensation cost, while Option 2 has some risk associated with it. It could result in overfunding or underfunding, depending on the number of RVUs generated compared to the target.

Table 3: Scholarship for the Clinician Educator (104-106)

DOMAIN	ACHIEVEMENT	EXAMPLE
Discovery	Formal Educational Research	New teaching technology
	Grant for educational research	Robert Wood Johnson
	Clinical Trials	Industry or NIH-supported multicenter trials
	Database Research/Epidemiology	Chart review
	Advanced degree in research	Masters of Public Health
	Editorial board/manuscript reviewer	Refereed journal
	Educational grant reviewer	Institutional, national educational organizations
	Abstract reviewer (national organization)	Meetings of national/regional professional organizations
	Invited article/editorial	Education-related journals
Integration	Narrative review articles	Office Management articles
	Systematic review articles	Clinical areas where large randomized controlled trials unavailable
	Textbooks and chapters	Comprehensive review of clinical area
	Meta-analyses	Clinical areas lacking level 1 evidence
	Expert consensus statements	Government or professional organization
	Evidence-based guidelines	Government or professional organization
	State-of-the-art journal articles	Diagnosis or management; utility of specific technology
	Reviewer/editorial board of integration-specific journals	Bench to bedside
	Care paths for home institution	Diabetes care
	Science-to-practice projects	American Heart Association 'Get with the Guidelines'
Application	Case reports	Case from personal practice
	Publications in quality improvement literature	Practice-based learning
	Clinical quality measures	Inter-Qual, Joint Commission
	Customer/Patient satisfaction surveys	Press Ganey
	Clinical care awards/recognition	Physician-of-the-Year
	Peer faculty evaluations	Intra- and inter-departmental clinicians
	Learner evaluations	Student, resident, fellow teacher evaluations

	Referring physician evaluations	Extra-mural, community-based providers and network physicians
	Formal peer review history (hospital QM)	Percentage of level 1 reviews
	Resource management (utilization review)	Lengths of stay and readmissions
	Use of EBM in practice	Consultations
	Leadership/active participation in local/regional/national professional organizations	State medical association; committee chair; organizational educational product authorship
	Collaborative clinical care	Interdepartmental product lines, centers of excellence
	Local care path development/championship	Heart Failure Society of America heart failure disease management
	Extramural consulting	Individual or group consulting for systems improvement/feasibility
	Advanced degree	Masters of Business Administration
Teaching	Teaching awards	Teacher of the Year
	Classroom teaching quality	Learner and peer evaluations
	Clinical teaching quality	Learner and peer evaluations
	Curriculum development	Clerkship, elective or clinical rotation
	Educational innovations	New use of existing technology
	Formal mentorship (faculty advisor)	Faculty advisor, mentoring committee
	Question writing for extramural assessment organization	Am Col Phys In-Training Exam, National Board of Medical Examiners, American Board of Internal Medicine
	Special projects	Journal clubs, EBM courses
	Role modeling	Professionalism, evidence-based practice
	Faculty development	Faculty mentor, faculty program development
	CME course presentations/leadership	National or institutional
	Invited lectures	Grand Rounds, named lectureship
	Advanced degree	Master of Medical Education

Table 4: Institutional Service of Clinician Educators (13,75,101,109)

MISSION	ACHIEVEMENT	EXAMPLE
Education	Program directorship	Residency, fellowship
	Clerkship directorship	M3 internal medicine
	Course directorship	Preclinical undergraduate course
	Rotation directorship	Student or resident elective rotations
	GME committee	School or departmental
	Dean's office appointment	Assistant/Associate dean
	Medical school committee	IRB, promotion and tenure
	Teaching workload	Months on teaching service, learner clinics/week; educational RVU
Clinical	Service/section leadership	Medical Service chief, Chief of Staff
	Clinical directorship	Emergency Department, MICU, noninvasive lab
	Peer reviewer	Hospital/practice peer review committee
	Disease management program	Comprehensive diabetes care
	Hospital committees	Medical Staff, Critical Care
	Community/outreach/telemedicine clinical provider	Underserved/rural health care
	Health department	State epidemiology
	New line of care	Niche service; sleep medicine
	Financial	Work RVU; billings/collections

Table 5: AAMC Educator Portfolio (114)

TEACHING

• Description of the teaching role (with reflective critique)
• Narrative or tabular display of information, providing an easy-to-read summary concerning teaching activities (who, what, when, where, how much, and how many)
• Evidence of quantity and quality o Narrative or tabular summary of student evaluations and, if available, peer evaluations, including, if possible, change over time and normative data o Short excerpts from supporting letters (complete letters should be in an appendix or included with letters of recommendation for promotion) o Invitations to teach outside the department or school o Repeat invitations to teach to the same group or in the same course
• Evidence of engagement with the community of educators o Teaching awards, including the criteria for judgment by peers o Invited presentations (e.g., workshops and discussion groups) related to teaching expertise and focused on teaching methods or effective teaching strategies o Peer reviews of teaching or instructional material, including information about where and how the material was peer-reviewed o Samples, examples, summaries, or excerpts of materials
• Evidence of public dissemination and impact of information o List of presentations offered in a peer-reviewed or invited forum at regional or national meetings o Description of how materials were disseminated o Examples of adoption or adaptation of teaching strategies, methods, or instructional materials by others (e.g., citation in publications) o Evidence of inclusion in a national repository (data regarding number of "hits" or adoptions)

CURRICULUM DEVELOPMENT

• Name and description of each educational activity
• Educator's role and contributions (with mention of consultants and collaborators)
• Documentation of the context (description of the needs and changes)
• Demonstration that changes meet the criteria of value to the institution and scholarship o Clear goals o Appropriate methods o Effective presentation o Adequate preparation o Significant results o Reflective critique

• Evidence of impact (e.g., revenue, including grants)
• Evidence of dissemination of information

ADVISING AND MENTORING (to be reported in tabular form)

• Name of each learner
• Type and level of advising or mentoring relationship
• Purpose and specific goals of the relationship
• Dates and descriptions of mentoring or advising processes
• Current status of the advisee or mentee (e.g., job title or academic rank)
• Achievements (outcomes), including abstracts, presentations, publications, ongoing collaborations, and other evidence of impact or influence

EDUCATIONAL ADMINISTRATION AND LEADERSHIP

• Name, inclusive dates, and description of components of each educational leadership project or initiative
• Description of the need, problem, opportunity, or rationale for change
• Projects goals
• Leadership role and contribution
• Actions taken and connection to literature and best practices
• Resources garnered and utilized (human resources, internal budgets, and grants)
• Methods of evaluation (including external peer review,, if relevant)
• Evidence of impact
• Evidence of dissemination of information

LEARNER'S ASSESSMENT

• Context, including a brief description of the goal, format, and faculty role
• Quantity of assessment activities
• Evidence about quality and engagement with the educational community specific to:
o Methods (i.e., adherence to best practices, informed by the literature)
o Evidence about quality of results (i.e., measures of reliability and validity appropriate to the type of assessment)
o Evidence of contribution to the educational community, if applicable (i.e., dissemination of products, impact, etc.)

Table 6: Sample of Universities with Web-Based Educator Portfolios

University of Wisconsin:	https://www.mcw.edu/display/docid2546.htm.
University of Miami School of Medicine:	http://edo.med.miami.edu/x32.xml
Medical College of Georgia:	http://www.mcg.edu/SOM/PandT/educatorportfolio.htm
University of Chicago:	http://portfolio.bsd.uchicago.edu/
University of Texas at Austin:	www.utexas.edu/academic/diia/
University of Michigan:	http://www.med.umich.edu/medschool/faculty/portfolio.htm
Johns Hopkins School of Medicine:	http://deptmed.med.som.jhmi.edu/faculty/body11.html#6.
Northwestern University:	http://cms.medicine.northwestern.edu/internal/faculty/edu_portfolio.html
University of California, San Francisco:	http://medschool.ucsf.edu/academy/Educators_Portfolio/
Society of General Internal Medicine:	http://www.sgim.org/userfiles/file/SGIM%20Educator%20Portfolio.pdf
University of Tennessee at Chattanooga:	http://www.utc.edu/Units/WalkerTeachingResourceCenter/FacultyDevelopment/Portfolio s/index.html#what
University of Medicine and Dentistry of New Jersey	http://cte.umdnj.edu/career_development/career_portfolios.cfm.

*provides links to 32 other sites demonstrating learning portfolios

Figure 1: Example of the Society of General Internal Medicine Activity Report (115)

Table 1. Items to Include in Teaching, Clinical, and Integration Portfolios

Item	Teaching Portfolio	Clinical Portfolio	Integration Portfolio
Scholarship	New courses New curricula Teaching materials Computer software Teaching videos Course syllabi Visiting professorships Invited lectures Published clinical reviews or observations Annotated bibliographies Lecture notes Topic reviews	Written or published reports of organizational innovations Consulting services to other institutions or government agencies Visiting professorships Invited lectures Published clinical reviews or observations Patient education materials	Books/chapters Editorials Review articles Computer software Teaching videos Book reviews Clinical reports Popular writings or lay press contributions Oral presentations World Wide Web site/pages Patient education materials
Written self-assessment	Strengths/weaknesses Journal of teaching experiences Learner and peer evaluations of teaching	Strengths/weaknesses Journal of clinical experiences Letters from patients, staff or peers Surveys of patient satisfaction or outcomes	Strengths/weaknesses Journal of integration experiences
Goals and objectives	Negotiated with department leader, including specific teaching and clinical assignments and productivity goals. Professional development contract could augment section.		
Other contributions	Committee assignments and leadership Chairing task forces, sections, divisions, or professional societies Important policy decisions, quality assurance criteria, or resource utilization guidelines Service to the community, institutions, or government (e.g., consultations, technical assistance, policy analysis, or program evaluation)		
Personal development plan	Periodic reassessment of learning or clinical goals, intended methods, achievement criteria, and timetable. May be represented by professional development contract.		

Sample of Teaching Activity Record

Please document your teaching activities in the following categories (for A–D include special materials prepared):

Course Title	Number	Years Taught	Hours/Year	Enrollment	Principal Responsibilities
A. Medical Students—Didactic					
Junior Student Ambulatory Block Rotation in Internal Medicine	M720	1991–95	24 48	15 juniors: 4 juniors:	Sports Medicine workshop Weekly 1 hour tutorial
*** Prepared teaching case manuals (3 cases) used by all course faculty					
Clinical therapeutics— a review before residency (for seniors)	M810	1993–1996	3 12	70 seniors: 15–18 seniors:	Lectures on GIM topics Ambulatory workshops (3)
***Prepared 5 ambulatory patient computer-based case-simulations used for teaching and evaluation					
B. Medical Students—Clinical					
Junior Student Ambulatory Block Rotation in Internal Medicine	M720	1991–95	144	4 juniors:	Weekly ambulatory teaching clinic
C. Residents/Fellows—Didactic					
Evidence-based medicine course		1993–96	144	90 residents:	Course director (1993–96) Weekly journal-based lecture/ discussion
***Prepared teaching manual that has been adopted by 3 other residency programs at our university, and 2 programs at University of Ohio.					
D. Residents/Fellows—Clinical					
General Medicine Ward rotation (Smith General Hospital)		1990–96	240–360	6 residents:	Attending and teaching physician Daily teaching rounds and patient care
General Medicine Clinic (Smith General Hospital)		1990–96	400	4 residents:	Attending and teaching physician Weekly case staffing, article reviews

Year	Number of lecture hours	Topics
E. Invited Lectures—Local		
1994	8	Various (see CV);
1995	10	Various (see CV); key note address at Medical Student Graduation
1996	12	Various (see CV); two at statewide CME programs
F. Invited Lectures—National		
1996	2	Improving patient compliance, at SGIM and Managed Care Conference (see CV)

G. Teaching publications

Various, as listed on CV

H. Evaluation of Teaching Effectiveness

See graph on next page, prepared by Department of Medicine Teaching Evaluation Committee

I. Teaching Awards

Year	Source	Title
1994	Department of Medicine	Outstanding Junior Teacher of the Year
1995	1995 Senior Medical Students	Oustanding Clinical Professor of Medicine
1996	1996 Senior Medical Students	Golden Apple Award
1996	1996 Senior Internal Medicine Residents	Outstanding Teacher Award

J. Additional Faculty Narrative Comments (1/2 page or less)

Figure 2: E-Form Sample (University of Chicago) (92)

Exemplary Portions of Electronic Forms (e-forms) Used in the Appointment and Promotion Process at the University of Chicago Department of the Biological Sciences Pritzker School of Medicine, Chicago, Illinois

Example 1: A mechanism for documentation and assessment of contribution to collaborative scholarship. In the actual e-form, the candidate's portions are rendered in blue, the department's portions are rendered in red, and the promotion and tenure committee's (COAP) portions are rendered in green. This provides consistent visual cues to those completing the forms.

CANDIDATE: EXEMPLARY ACHIEVEMENTS
For the foregoing listings of publications and products, please list no more than five (total) performed while at your present rank that you consider your most significant achievements.

For each:
a. Please enter the reference/citation. (If any are available online, it would be helpful to include their URLs.)
b. Please state the major finding in 1-2 sentences.
c. If you are not the sole author, please describe what each author (including yourself) contributed to the work.

Why?
a. Reviewers will want to scrutinize these in particular
b. Your statement of major finding will clarify the significance of the work
c. We cannot always tell from a list of authors what the role of each author has been. We are interested in giving full credit for YOUR contribution to collaborative efforts, but cannot do so unless we understand what the contribution has been.

Advice: Explain, for example, which author(s) originated the project, did the work, wrote the publication, made intellectual contributions, made technical contributions, provided reagents, provided grant support and nothing else, are included by courtesy, and/or had any other role that may be relevant. A recurrent issue is co-authorship with present or former mentors; we would be particularly interested in your assessment of such co-authorship.

If you have nothing to enter in some/all boxes, leave blank.
#1

Reference:
Major finding:
Roles of authors

#2

Reference:
Major finding:
Roles of authors:

#3

Reference:
Major finding:
Roles of authors:

DEPARTMENTAL COMMENT ON CANDIDATE'S ROLE IN COLLABORATIVE RESEARCH
Please comment on the above statement on "roles of authors." Is it substantially correct in your opinion?

Advice: This item is not asking for whether the scholarship is good/bad, creative, rigorous, important, etc. – other items will ask about this. It wants to know ONLY if the candidate has correctly described his/her role in collaborative scholarship. At issue is (a) correctly crediting the candidate for work done in collaboration with others; and (b) whether the candidate can function as a free-standing independent Principal Investigator, or can only be a subordinate investigator or follower rather than a leader.

Enter "Correct" or provide explanation/comment if needed.

COAP ASSESSMENT OF ROLE IN COLLABORATIVE RESEARCH
Please comment on the above statements by Candidate and Department on "roles of authors." Are they substantially correct in your opinion?

Advice: This item is not asking for whether the scholarship is good/bad, creative, rigorous, important, etc. – other items will ask about this. It wants to know ONLY if the candidate has correctly described his/her role in collaborative scholarship. At issue is (a) correctly crediting the candidate for work done in collaboration with others; and (b) whether the candidate can function as a free-standing independent Principal Investigator, or can only be a subordinate investigator or follower rather than a leader.

Enter "Correct" or provide explanation/comment if needed.

Example 2: Documentation and assessment of "internal impact" by clinician–educators. The example shown is for impact on clinical practice; counterpart items are for educational and administrative impact. This item has been modified from the format in the actual e-form as described in Example 1.

CANDIDATE: IMPACT ON CLINICAL PRACTICE
[You need respond to this item ONLY if internal impact on clinical practice at The University of Chicago is being proposed as a basis for promotion.] What impact on clinical practice (at any level or in any form) have you had? That is, how has clinical practice been changed due to any innovations you have developed or implemented? Has this impact been here, regional, and/or national?

Why? Impact on clinical practice is one way (but not the only way) to qualify for promotion on this track. If you have had an impact, we want to give you credit.

Advice: By impact we mean change. If you've had an impact, it would be best for you to describe the pre-existing condition, the present condition due to your impact, and how you caused this impact to occur.

Note: Candidates from outside the University who are seeking a first appointment here at the rank of Associate Professor need ordinarily not complete this item, as it is applicable mainly to internal promotions.

a. Pre-existing practice. Describe the situation before your impact.

b. Intervention/innovation. Describe what you did to change the pre-existing situation.

c. Outcome. Describe the impact of your intervention or innovation on the pre-existing situation

d. Evidence. Can you cite any data substantiating the impact? Were there, for example, changes in morbidity/mortality, length of stay, detection of disease? Or, can you provide the names of any faculty who could attest to the impact?

DEPARTMENT
What impact, if any, has the candidate had on clinical practice (beyond doing a good job)? Be certain to provide the basis for your evaluation.

Note: Impact is not necessarily required, but we would like to recognize any. Impact on clinical practice is one of the alternative bases for promotion in the C-E track.

Enter "Correct" or provide explanation/comment if needed.

COAP ASSESSMENT OF CLINICAL ACTIVITY
Please comment on the above statements by Candidate and Department. Are they substantially correct in your opinion? Has the candidate's clinical program in its entirety at his/her current rank been (a) quantitatively significant and (b) excellent? What is the basis for your conclusion? If clinical impact is cited as a basis for promotion, how substantial has this impact been?

Note: "Impact" in this area is one of multiple ways to satisfy the criteria for promotion, and its absence here does not necessarily jeopardize the case. If there is none, simply state so and move on.

Enter "Correct" or provide explanation/comment if needed.

Example 3: The "lay summary" item. This item has been modified from the format in the actual e-form as described in Example 1.

DEPARTMENT: LAY SUMMARY
Please provide, for the Provost, a paragraph describing the candidate's scholarly accomplishments, concluding with one sentence each on educational, administrative, and clinical roles.

Why? Reviewers in the Provost's Office are not physicians and often not scientists. They will be unable to understand narrative intended for Division of the Biological Sciences faculty.

Advice: Please use language comprehensible to a lay person (the Provost is not a physician). Please write in the third person. We really do mean "a paragraph", not a page or pages. Boxes on the next pages will capture the details.

Focus on describing [not evaluating] the published scholarship. State, for example, "Dr. Jones has made 3 major discoveries. First, he mapped and sequenced the gene for the protein Schnerzel. Second, he established that a mutation in the gene encoding Schnerzel is responsible for a major human disease, Jone's Syndrome. Third, he showed that Schnerzel is an important but previously unrecognized component of mechanism whereby signal external to the cell activate gene expression." One sentence each on teaching and clinical activity would be appropriate. As this is supposed to be descriptive rather than evaluative, you may consult with the candidate about what to enter here.

Suggested maximum length: a third of a page. Just describe; don't evaluate here.

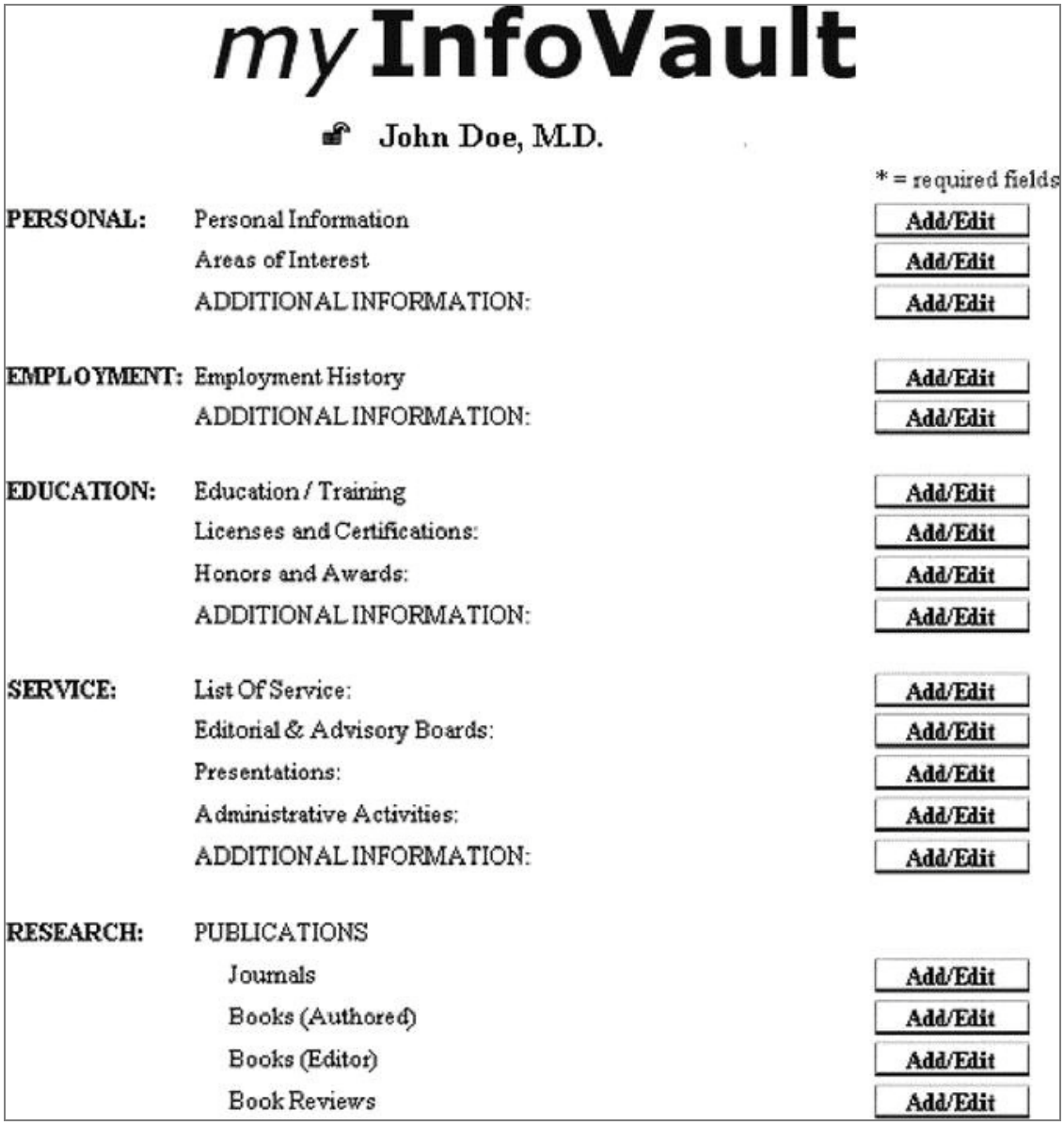
Example 4: The mentorship item: an example of incenting faculty activity via requesting its documentation. This item has been modified from the format in the actual e-form as described in Example 1.

CANDIDATE: FACULTY MENTORSHIP
If you have mentored any faculty junior to you, please describe this activity.

Why? We want to credit you with this activity if you've been a successful mentor.

If you have nothing to enter, leave blank.

Figure 3: MyInfoVault (University of California - Davis) (118)



MyInfoVault (MIV) data-entry screen. This screen directs the user to enter data into general sections. Data elements from any of these sections can be used for any of the MIV applications (PacketOnLine, CVOnLine, or NIH Biosketch). MIV was developed at the University of California-Davis School of Medicine.

Appendix 1: Funding Sources for Medical Education (78)*

AERA Grants Program
American Educational Research Association (AERA) is pleased to announce the AERA Grants Program, which provides small grants, fellowships and training for researchers who conduct studies of education policy and practice using quantitative methods, including the analysis of data from the large-scale data sets sponsored by National Center for Education Statistics (NCES) and the National Science Foundation (NSF). The goals of the program are to enhance the capability of the research community to use large-scale data sets to conduct studies that are relevant to education policy and practice, and to strengthen communications between the educational research community and government agencies.

AHRQ Grants Online Database (GOLD)
GOLD is a searchable database of grants funded by Agency for Health care Research and Quality **(**AHRQ). You can select grants by quality and outcomes; use; cost; access; or knowledge. Searches can be done across the entire database or can be limited to one of 40 subcategories.

Center of Federal Domestic Assistance (CFDA)
The online Catalog of Federal Domestic Assistance gives you access to a database of all federal programs, some of which are available to private nonprofit institutions, specialized groups and individuals. After you find the program you want, please contact the office that administers the program to learn how to apply.

Community of Science (COS) Homepage
This site offers funding and expertise profile databases. This is the most comprehensive source of funding information available on the Web, with more than 23,000 records, representing over 400,000 funding opportunities, worth over $33 billion. It also includes a suite of other research management and promotion products.

NBME Edward J. Stemmler Medical Education Research Fund
Established in 1995, this fund offers support for research or development of innovative assessment approaches that will enhance the evaluation of those preparing to or continuing to practice medicine. Expected outcomes include advances in the theory, knowledge or practice of assessment at any point along the continuum of medical education, from undergraduate and graduate education and training through practice. Pilot and more comprehensive projects are both of interest. Collaborative investigations within or among institutions are eligible, particularly as they strengthen the likelihood of the project's contribution and success.

One can request a maximum grant of $70,000 for a project period of up to two years. In August, the call for proposals is announced. The typical deadline for applications is in November. The National Board of Medical Examiners (NBME) Web site offers more information on this fund. [Notes: You may also find information of interest -- but not funding -- on the NBME's Center for Innovation Web site.]

The Foundation Center
The Foundation Center seeks to advance knowledge about US philanthropy. They collect, organize and communicate information on US philanthropy; conduct and facilitate research on trends in the field; provide education and training; and ensure public access to information and services through its Web site, print and electronic publications, five library/learning centers and a national network of over 200 Cooperating Collections**.** They also maintain a database on more than 2.3 million grants and more than 75,000 currently active grant makers**.** The Foundation Center's collection of resources is available at the Donors Forum of Chicago, 208 South LaSalle, Suite 735, Chicago, Ill. 60604, (312) 578-0175. The Web site also offers the *The Foundation Center's Guide to Proposal Writing*.

Fund for the Improvement of Post-Secondary Education
The annual competition for FIPSE grants from the US Department of Education is designed to support innovative reform projects that hold promise as models for the resolution of important issues and problems in postsecondary education. Those grants may be in support of any academic discipline, program or student support service. Although FIPSE will consider proposals to assess existing reforms, or to study the feasibility of reforms in the development stage, it does not ordinarily support basic research. The FIPSE Comprehensive Program supports a wide range of practical reform initiatives and assists grantees in assessing their results and disseminating what is learned to other institutions and agencies.

The site includes two resources of possible interest: "How to Get a FIPSE Grant" by Eulalia Cobb, Former FIPSE Program Officer, and "Funding Your Best Ideas: A 12-Step Program" by Joan Straumanis, Former FIPSE Program Officer. There is also a report from Columbia University on a FIPSE-funded project to put basic science curricular materials online to aid in efforts to reduce hours that students spent in lecture.

Grants.gov
This site allows organizations to electronically find and apply for competitive grant opportunities from all Federal grant-making agencies. Grants.gov is the single access point for over 900 grant programs offered by the 26 federal grant-making agencies. The US Department of Health and Human Services is the managing partner for Grants.gov. You can also register to receive all email notifications of new grant postings from FedGrants.gov.

GrantsNet
This Web-based application tool was created by the US Department of Health and Human Services Office of Grants Management and Policy (OGMP) for finding and exchanging information about 300 HHS and other Federal grant programs. GrantsNet serves the general public, the grantee community, and grant-makers (i.e. state and local governments, educational institutions, nonprofit organizations and commercial businesses). GrantsNet provides a variety of Department-wide grants policies governing the award and administration of grant activities, publishing these in grants policy directives, regulations and/or manuals.

Henry J. Kaiser Family Foundation
This is a nonprofit, private operating foundation focusing on the major health care issues facing the nation. The foundation is an independent voice and source of facts and analysis for policy makers, the media, the health care community and the general public.

The Foundation develops and runs its own research and communications programs, often through partnerships with outside organizations. It contracts with a wide range of outside individuals and organizations. Through their policy research and communications programs, they endeavor to provide reliable information on complex health care issues.

National Science Foundation Grants and Awards
The NSF funds research and education in science and engineering, through grants, contracts and cooperative agreements. The Foundation accounts for about 20 percent of federal support to academic institutions for basic research. The website directs visitors to available funding opportunities.

NIH Guide for Grants and Contracts
This is the official publication for NIH medical and behavioral research grant policies, guidelines and funding opportunities

PEW Charitable Trust
This nonprofit serves the public interest by providing information, policy solutions and support for civic life. Some of their current emphases under their Health and Human Services arm include alcohol marketing and youth, alcohol treatment policy, and genetics and public policy.

ResearchResearch
This is the world's leading publisher of news and information for the international research community. From offices in Washington, London, Brussels, Amsterdam and Sydney, their editorial team provides in-depth news coverage of research policy and politics, and comprehensive listings of funding opportunities and sponsors across all disciplines. Rush University has taken a trial subscription to ResearchResearch. Please contact the Office of Sponsored Research for an individual account.

Robert Wood Johnson Foundation
RWJF annually provides funding to improve health and to prevent disease.

Rockefeller Foundation
This is a knowledge-based global foundation with a commitment to enrich and sustain the lives and livelihoods of poor and excluded people throughout the world. They utilize four programming "themes" around which they organize their grant making: food security, more equitable health outcomes, opportunities for work, and opportunities for creative expression.

Science.gov
This is a gateway to authoritative selected science information provided by US Government agencies, including research and development results. You can also sign up for their weekly Science.gov ALERTS -- a service that will notify you of new Science.gov information in your specific areas of interest. You just simply register for the service and then sign up for topic(s) which will be matched automatically against each new update sent out each Monday.

(*This page compiled by Dr. David Barnett, Office of Medical Student Programs, Rush Medical College of Rush University, Chicago, IL 60612.
http://www.rushu.rush.edu/medcol/teaching/funding.htm)

ABBREVIATIONS

AAIM	Alliance for Academic Internal Medicine
AAMC	Association of American Medical Colleges
ABIM	American Board of Internal Medicine
ACGME	Accreditation Council for Graduate Medical Education
ACP	American College of Physicians
AMC	Academic Medical Center
CE	Clinician Educator
CFTE	Clinical Full-Time Equivalent
DME	Direct Medical Education
EVU	Educational Value Unit
FTE	Full-Time Equivalent
GME	Graduate Medical Education
IOM	Institute of Medicine
IME	Indirect Medical Education
IRB	Institutional Review Board
MT	Master Teacher
NIH	National Institutes of Health
RRC	Residency Review Committee
RVU	Relative Value Unit
TVU	Teaching Value Unit