A Review of Mentoring in Academic Medicine

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ABSTRACT

Many believe that mentoring is essential for new and developing faculty physicians to achieve their professional and personal goals, yet there are both positive and potential negative aspects of mentoring. Research reports on the process have few quantifiable objective outcomes, use mostly single-center study populations, lack controls and use mostly qualitative techniques. Absence of a standardized definition of mentorship has allowed widespread application of the term to other forms of protégé support. Several models have been developed, with other generalized descriptors used to differentiate the important qualities of mentoring relationships. Published evidence suggests some characteristic attitudes and personal qualities, knowledge, skills and behaviors are common among successful mentors. Identification and validation of better efficacy metrics, and use of these to design new programs to train effective mentors, are needed.

Key Indexing Terms: Mentoring; Academic medicine; Academic physicians; Qualities; Attitudes and behaviors. **[Am J Med Sci 2017;353(2):151–157.]**

INTRODUCTION

Is mentoring a net positive or net negative influence on young academic physicians, medical students and those in graduate education programs? At this time, most would argue for the *perceived* value of mentoring for these groups. Benefits have been suggested to the mentee, mentor and institution.[1-7] Almost universally, faculty members who have received high-quality mentoring cite it as a critical contributor to their career satisfaction and achievement, while those who failed to receive such support see this deficiency as having an important negative impact on their professional success and growth.[3,7-10]

Yet, there are both positive and negative aspects of mentoring. Specialty choices and selection of academic careers positively correlate with receipt of mentoring,[11-13] as does faculty retention[11,14,15] and, in some studies, scholarly productivity.[3,11,16-19] Mentees may also experience greater career satisfaction[3] and better balance between professional and personal lives.[10] Conversely, adverse outcomes can occur from mentoring, typically from negative interactions with the mentor.[2] Examples include mentor conflict of interest (i.e., advice to benefit the career of the mentor rather than that of the mentee), violations of confidentiality,[5,20] mentor's abuse of power,[20] misunderstandings in areas such as intellectual property (especially authorship on mentee's publications) and individual responsibilities,[8,10,21] inexperienced or incompetent mentors (i.e., absence of mentor training)[13,16,22] and neglect of or inadequate commitment to the relationship by either mentor or mentee.[2,5,8,16,20,22]

Surveys suggest that fewer than half of academic physicians identify themselves as having received mentoring during their careers.[2,9,11] Yet, the preponderance of the evidence suggests that if mentors are selected well and trained in the necessary skills (see below), and if meticulous attention is paid to mutual understanding and communication, mentoring appears to provide a net and fairly consistent benefit to young academicians.[5,6,22]

Mentoring approaches, systems and metrics have been better described for mentees building research careers (i.e., physician scientists, clinical investigators)[8,23-26] than for those focused on careers as clinician teachers and educators,[13,27-29] putting the latter group at higher risk for inadequate mentoring and complicating the application of most research findings to this large segment of medical school faculty. Data from other fields, including law,[30-32] business[33,34] and other academic disciplines,[25,35] lend useful information to medical academia on aspects and outcomes of successful mentoring.

MENTORING RESEARCH

Published data on the various aspects of mentoring have included primarily qualitative and cross-sectional studies,[3,8,11,12,16,20,23,36-38] mostly used subjects from a single[6,10-12,15,36,39] or very small number[8,16,40] of centers, and employed surveys,[6,12,20,24,37,41,42] interviews[8,27,38,43] and focus groups[5,28,43] as sources of information. Cumulative and systematic reviews frustrated reviewers due to data subjectivity, survey-related bias (particularly selection, acquiescence and halo biases[17,20,28,44]), inability to assign cause to effect,[3,12,13,45] absence of adequate controls[18,36] and great inconsistency in terminology and definitions of dependent and independent variables.[9,11,17,38,43,44]

Studies have also attempted to assess mentor effectiveness.[35,46-48] Some studies have included objective metrics such as faculty retention rates, meeting attendance, professional society and committee involvement and nominations, publications of original research, and successful grant applications as both evidence of

benefit to the protégé and overall success of their program,[17,22,33,35,36,41,44,49,50] but these products come only after years of mentoring, preventing their use at earlier points in the relationship. Moreover, such assessments may identify associations but cannot establish causality between mentoring behaviors or quality and outcomes[3,11-13,44] and are unable to control for other important variables (such as inherent personal motivation and capabilities of the mentee, or personality factors of the pair),[8,12,36] or assess the effect of the availability of necessary resources (such as protected time and institutional funds) on the findings.[26] Others have recommended markers of adherence to a prespecified process (e.g., frequency of meetings, mentor response times),[11,17,35] or completion of mentoring checklists,[51,52] though no evidence exists showing any aspect(s) of processes directly leading to better outcomes.[11,44]

Competency assessment tools[18,44,48] have been developed which largely focus on mentoring in biomedical (clinical and bench) research.[25,35,48] These are often specific to a single center[9,17,35,44] and are rarely applicable to mentors serving the largest medical school faculty cohort—clinician teachers and educators.[13] Surveys of and interviews with mentees and mentors add qualitative information for effectiveness assessment,[3,17,20] but cannot be quantified or standardized between studies.[4,9] Systematic reviews have pooled some of the published reports on mentoring efficacy metrics[9,11,13,43] but have identified deficiencies and weaknesses in most or all of the studies analyzed; this severely limits the value of their findings and prevents conclusions regarding value (benefit:cost),[5,17,44] efficacy[36,45] or effect size.[9,11]

As such, conclusions as to methods and efficacy of mentoring are largely subjective and experiential; consensus on some aspects (such as characteristics of successful mentors), however, are supported by a preponderance of the available evidence (see below).

MENTORING: DEFINITIONS AND DISTINCTIONS

A notable deficiency in the field is the lack of a standardized, fully operationalized definition[18] of "mentoring,"[1,12,18,25,31,32,44,53] though some have suggested their own unique definitions.[4,20,31,50,53] This has resulted in the inappropriately liberal application of the term, often to other forms of protégé support[5,26,27,31,53] that can be confused with mentoring.[18,31,54-56] Most of these forms of support are, in fact, components of effective mentoring.[1,4] *Coaching* is employed to impart a specific skill or reach a particular goal and is fully directed by the task-oriented coach who concentrates exclusively on this single goal[36,55,56]; other definitions are sometimes used.[57] *Advising* is typically time-limited and focused on a specific domain of professional development, such as class selection or program identification for further training.[26,58,59] *Teaching* is the purposeful, active

conveyance of knowledge and skills to a colleague or trainee within a limited topic area or discipline.[49] *Tutoring* provides intensive one-on-one teaching in a narrow academic topic area to achieve a standard competency.[18,53,54] *Advocacy* involves support of a protégé through communication with institutional leadership, nominations for specific roles needed for career advancement, and networking to expand the advisee's professional visibility.[16] *Sponsorship* is the provision of material assets to a junior colleague, including (but not limited to) research supplies and equipment, office and laboratory space, administrative support and professional travel funds.[31] *Role modeling* is the demonstration of how to be (for example) a successful, high-quality academic physician through example alone and may be passive on the part of the senior academician.[31,60] The ideal mentor incorporates all these roles to varying degrees[4,12,52,53] but establishes a more complex, deeper and (usually) longer relationship with the protégé,[7,28] assisting in the additional areas of work-life balance and personal development[16] while providing emotional support and encouragement.[46,53]

MENTORING MODELS

Several different models[9,60] have been employed by healthcare institutions of higher learning (medical schools, academic departments and divisions and academic health centers) to provide mentoring to their faculty.[9,22] It should be noted here that a single person is highly unlikely to meet all the mentoring needs of a young protégé, emphasizing the need for different mentors for different academic needs and at different times in a career.[8,23,25,26,28,37,42,61] The traditional *dyadic* (one-on-one) model is the most commonly used and is an example of vertical mentoring.[4,9,19,22,53] *Multiple dyadic relationships* employ simultaneously contributing mentors supporting different areas of advancement and growth.[8,22,23,26] *Team* or *network mentoring* formalizes the multiple mentor concept into an organized body (a committee) with each member bringing different expertise and experiences to the process, but adds interaction between the mentors to coordinate recommendations.[5,8,23,25,59] *Peer mentoring* uses groups of colleagues at approximately equivalent seniority and expertise to provide each other with advice and counsel,[19,22] whereas *facilitated peer mentoring* has a senior faculty member overseeing a peer mentor group.[2,23] *Distance* and *web-based mentoring* is an important option for those at small centers, or when specific expertise is needed that is not available at the home institution.[8,22,50,53] *Functional mentoring* is aimed at helping complete a specific project or reach a well-defined goal (such as academic promotion) where the mentor is chosen based upon his or her particular abilities to support this specific goal; the mentor here also provides advice and support for the interactions of this academic goal with other segments of the protégé's

career and personal development.[4] *Speed mentoring* is a novel approach fashioned upon "speed dating," where several potential mentees briefly meet one-on-one with a series of available mentors in a single session.[62] Some institutions have combined one or more of these approaches into a hybrid or mosaic mentoring model.[28,37]

Other comparators of approaches are also used. *Formal mentoring*[2,17,22] employs dyadic- or committee-mentee pairs most often assigned by institutional leadership, and incorporates contracts or other written agreements, a specified curriculum[9] explicitly defining characteristics of the relationship, detailed deliverables for both parties, scheduled relationship reviews and acceptable termination dates, and prescribed processes and procedures[9,15,52,63,64]; formal mentoring often requires reporting of plans and progress to institutional leadership.[59] Conversely, *informal mentoring* is typically initiated by the mentee and focused exclusively on mentee-identified needs with no formal institutional oversight or prespecified processes[1,64]; this latter model appears strongly preferred by mentees[5,8,22] and may be more effective[2,9,54] than formal mentoring.

Another distinction separates *assigned mentoring* (pairing assigned by institutional leadership)[65] from *unassigned* or *voluntary mentoring* (a mutually agreed-to relationship[5,59] independent of any institutional assignments).[9]

Some studies and reviews have sought to identify the needs and optimal mentoring techniques for women[3,11,36,37,42] or underrepresented minorities[3,11,12,39,66] and proposed or reported on new systems to support these cohorts. Detailed descriptions of models for specific subgroups of academic physicians have yet to be standardized.

Many have attempted to provide evidence-supported opinions on model structure or to make their models broadly available for public review. Entire volumes have been published on the topic of mentoring by national and international scholarly institutions and agencies, including (but not limited to) the American College of Physicians,[60] the Center for Health Leadership & Practice[63] and the consortium of the National Academy of Sciences/National Academy of Engineering/Institute of Medicine.[25] These and other publications[9,67] have provided extensive foundational discussions, comprehensive role descriptions, details of process and sometimes proposed methods for quality assessment of mentor effectiveness.[9] Many departments and colleges have placed descriptions of and materials from their mentoring programs on the web, with varying degrees of detail but all highly specific to their individual institutions.[33,41,51,52,56,58,59,65,68-70]

Each approach is intended, to varying degrees, to meet a number of junior faculty needs. These include guidance through the promotion and tenure process, selection of the best available projects, provision of a secure and confidential setting for the mentee to express concerns and perceived difficulties, and facilitation for other aspects of professional and personal growth. Although no single model is considered superior to the others,[54] the particulars of a mentor-mentee relationship are largely driven by the self-identified needs of the mentee and perhaps the requirements of the institutions to which they belong.[5,31,52,54,61]

CHARACTERISTICS OF EFFECTIVE MENTORS

There are some characteristics of successful mentors that appear consistent regardless of the discipline or career path of the mentee. First, in general the mentor should not be in the supervisory hierarchy of the protégé owing to potential conflicts of interest[26]; the supervisor must be responsive to other needs, such as clinical and teaching responsibilities within his or her realm of authority (division, department, college or university) which could bias their advice.[5,8] There are of course department chairs and division directors with long histories of effective, almost legendary mentoring of their subordinates and trainees[1]; yet, this potential conflict is likely to be perceived by the mentee and subsequently discourage honest, open communication with the supervisor-mentor on many important issues.[5,21] Second, the mentor must have sufficient seniority, reputation and experience to bring the wealth of knowledge, abilities and resources needed for the association to be productive.[35,46,66] Finally, the mentor and mentee should have compatibility on many levels, assuring that the "right chemistry"[14,20] is present; this may take the form of alignment of values,[14,16,26] equivalent long-term goals in academic medicine,[7] similar personalities[5,54] or parallel career paths[26] and perhaps other factors not yet identified.[14,54] Such mentor-mentee matching is generally thought to be an important feature of effective mentoring relationships,[20] but is not universally believed to be essential.[38,50]

Despite the data issues described earlier, much of the published literature (original research, reviews, books and commentaries) identifies a number of consistent themes regarding the personal qualities and attitudes, knowledge and skills and behaviors of effective mentors. Some authors have suggested specific organizational models or domains to categorize these attributes, though no two are very similar.[6,10,43,47,48,53] Mentee satisfaction has been correlated with these characteristics in many studies.[5,8,20,22,38] Senior faculty members should consider performing a personal "inventory" of the following characteristics before accepting the role of mentor.[8,63,71]

Possesses selflessness and commitment to mentee's success.[48,58] Effective mentors always place the needs of the mentee above any personal considerations.[26] Altruism[8,16] in avoiding competing interests is essential.[26,50] Appropriately managing the power issues in the relationship and treating the protégé as a colleague can be challenging but is a *sine qua non* for

a productive association.[20,21,26] Being generous with one's time and displaying patience are often the factors that most strongly influence a protégé's opinion of the value of a mentoring relationship.[8,10,16,21]

Consistently demonstrates character: integrity, honesty, trustworthiness, ethics and morality. Mentoring is a complex relationship. To be effective, the mentor must exhibit the qualities that earn the mentee's trust— engendering respect as an individual and academician by being a person of quality.[1,16,22,25,63] The protégé must believe that the opinions and feedback received are honest and meant only to further his or her own development.[21,26] Demonstrating a passion for truth, ultimate respect and concern for others and high personal ethical standards[68] can cement this trustworthy image in the mentee's mind.[55,70,72]

Respects the mentee and mentoring relationship. The mentor must assure absolute confidentiality of all communications unless otherwise explicitly agreed to by the mentee.[8,55,65] The effective mentor acknowledges the protégé's contribution to joint projects and celebrates his or her accomplishments.[46] He or she protects the time of scheduled meetings[10,16] and manages any disagreements or conflicts with open discussion and compromise.[74] Being open-minded and nonjudgmental,[18,21,72] as well as embracing individual differences in beliefs and attitudes, are manifestations of this respect.[8,23,46,54,70,73,74]

Engages in self-reflection and demonstrates personal openness. The effective mentor is facile at self-reflection,[68] understands his or her values,[19] limitations, biases and deficiencies,[25,55] and thus possesses humility[10,55] as a product of this understanding.[74] The mentor should be willing to share personal experiences[54,58] that highlight potential pitfalls[16] and help the mentee avoid future mistakes.[63] Such communication helps the protégé develop a broader perspective and engage in his or her own reflection to facilitate self-improvement.[5,26,43,63]

Provides emotional support. An essential duty of the mentor is to create a safe, nonthreatening environment[14,26] so that the mentee will feel free to express his or her inner feelings, concerns and opinions.[73] Such communication may help the mentee learn how to deal with stressors and conflicts[16] that might otherwise fester and impede progress. The mentor should be easily approachable (regardless of the topic the mentee wishes to discuss)[16] and accessible,[8] display empathy, and encourage growth and change while remaining encouraging and empowering.[46,50] The mentor's role includes instilling confidence in the protégé.[16,22,36,43,63,70]

Is adept at active listening. Mentors must be excellent communicators,[22] including perceiving body language and unspoken truths and emotions,[25] and assure both in the relationship have identical understandings of their joint decisions. Through this process, the mentor should identify common factors that support the relationship, identify and describe the mentee's strengths and weaknesses and be able to gain sufficient understanding of the protégé to articulate his or her needs, even when the mentee cannot do so himself or herself.[5,16,20,63,69,72]

Functions as a guide and facilitator rather than a director and dictator. The effective mentor uses careful questioning[46,63] to help the mentee come to his or her own conclusions, promoting critical thinking and reasoned, evidence-based decision-making.[54] He or she emphasizes self-sufficiency[25,36] and finds ways to provide support without removing responsibility.[50,69] The mentor also supplies information to the protégé to this end, such as presenting the costs and benefits of individual projects, or helping the mentee understand the long-term implications of his or her choices.[10,25,46]

Possesses knowledge of the institution, professional field and academic culture. This characteristic is often the most appreciated and sought after by mentees. Such information is not available from other sources, yet lacking this knowledge can be thwarting or even disastrous to the protégé. Understanding the local systems and politics, the institutional and other resources available, the extramural professional discipline, and the overall academic culture can help the mentee accept the need to achieve intermediate goals in order to reach long-term objectives and avoid highly political situations. This is a key factor in helping the protégé craft a pathway to success[58,65] by expertly "navigating the system."[8,16,20]

Is able to provide honest, constructive feedback in a supportive manner. This could apply to all mentored activities, most obviously to critiquing manuscripts, grant applications and presentations,[8,38,46,59] but also to providing feedback on teaching and clinical activities[35] if these domains are included in the mentoring agreement.[20,26,43,46,55,65,68,71] Excellent sources describe the effective delivery of feedback in great detail.[74]

Provides vision. Encouraging stretch goals and applying the mentor's knowledge of how others have achieved advancement, the mentor can guide the mentee in crafting and articulating objectives, setting short-term and long-term goals, and maintaining work-life balance along this long and complicated path. He or she can then coach the mentee to success in reaching each milestone as needed,[8,33,43,63] and share a long and broad view of the future.

Assists in reflection. Reflection can be a difficult skill to master, yet is considered essential to professional development. The mentor, through careful questioning and thoughtful listening, should help the mentee overcome psychological resistance to self-criticism, develop comfort with self-honesty, and use reflection as a tool to promote emotional intelligence[33] and constant growth and improvement.[5,16,26]

Keeps both parties accountable.[58] There are many facets to this ability. The mentor must be sure that all agreements and understandings, including details of the relationship, timelines and deliverables, are clearly articulated and mutually understood.[7,10,16,71,72] There

also should be a clear understanding of the handling of intellectual property within the association.[8,10,21] He or she should set boundaries[5,7,73] and assure they are not breached; continuously monitor the association for effectiveness, engaging in both scheduled and *ad hoc* reviews[7,43,50]; and help to decide whether change[52] in or termination of the relationship[21,53] is appropriate. The mentor should give[70] and *accept*[23,63,72] feedback,[26,73] including written evaluations if agreed to or required by the institution, in a gracious and supportive manner[48] while modifying his or her actions accordingly. Both parties should produce deliverables of adequate quality in a timely fashion.[16,70] Violations of accountability should be acknowledged and openly discussed and should lead to an agreed-upon approach to prevent repetition.

Identifies and creates opportunities for the mentee. Another widely appreciated behavior of seasoned mentors includes finding and passing on (or creating) opportunities for projects, committees, leadership positions and research collaborations that can "fast track" the mentee's development and accomplishment of goals. Networking with the protégé by introducing him or her to colleagues and collaborators will raise the professional profile of the mentee and further expand opportunities.[26,46] New funding options, authorship invitations, committee participation requests and opportunities to serve on working groups, task forces and writing teams can produce robust advancement of and (sometimes) unique opportunities to the mentee's career development.[8,16,20,26,43,72]

Advocates for the mentee. Mentors can represent the mentee in selected settings, provide recommendation letters, make nominations for awards and coordinate promotion and tenure activities. Publicizing mentee achievements can do much to raise the individual's visibility within the professional community[8,16] and strengthen the relationship.

Protects the mentee. Although many studies did not comment on this behavior,[8] the harsh political environment of academic institutions can discourage young faculty members who are left unsupported.[16,20] The mentor may speak with institutional leadership to help maintain the mentee's protected time and assure hiring agreements are honored. He or she may also become involved if the protégé is being treated unfairly by an immediate supervisor, such as always being assigned extra duties to fill unanticipated clinical and teaching needs. At times, conversations with leadership[26] may be needed if, for example, it has become apparent that the mentee will require more time or resources than originally anticipated.[5,31]

Advises the mentee. Above all else, mentees seek advice in decision-making. The mentor will usually act as a career guide, providing advice in a number of areas to facilitate progress. Advice may be given on project selection, hospital and institutional resources or achieving work-life balance[10,20] (including time

management[8,52,65] and self-care[46]). The protégé may request the mentor's advice in additional areas, such as contract renewal negotiations and investigation of a new job,[12,26] or on personal issues affecting his or her career development.[16]

Role models. The mentor can model important qualities that contribute to mentee development, including professional and ethical behaviors, appropriate handling of difficult situations and scientific integrity.[1,25] By modeling good mentoring behaviors, he or she may inspire the young protégé to become a dedicated mentor of younger colleagues and trainees.[10,16,22,26,43,60,73]

Provides sponsorship. Particularly for early career mentees, provision of basic material resources (office or laboratory space, secretarial support and travel funds or research materials) may have a significant effect on the mentee's initial progress, and alleviate stress stemming from a lack of these resources. When more significant funds are needed, the mentor may provide them if possible or through advocacy obtain them from division, department or college sources, or assist in securing external support.[12,18,31,44,73]

Possesses the knowledge and skills needed to meet the individual's professional needs.[10] Although most of these are generally applicable to all mentoring relationships, the mentor should have the requisite tools to guide the protégé in producing better platform and poster presentations, manuscripts, grant applications, manuscript reviews and research results.[8,32,46] Most senior faculty members have performed these activities themselves repeatedly throughout their careers, but the effective teaching of such skills requires the additional understanding of both the processes and the mentee as a learner.

FUTURE RESEARCH

The need for new information is fairly clear.[18] Our knowledge of the qualities and abilities required for effective mentorship must be expanded beyond perceptions and degrees of adherence to process. Objective, standardized metrics[9], including some that can be assessed early in a mentoring relationship, must be identified and validated.[9,13,18] After this, new mentor training and faculty development programs directed at achieving those defined outcomes should be developed.[2,13,18] Finally, quantitative determination of the value of mentoring must be fairly estimated to warrant the allocation of resources needed for an effective program, and to justify reasonable incentives to effective mentors (e.g., workload credit, compensation, protected time and resources for further professional growth) who provide this valuable service to their institutions.[7,15,17,18]

CONCLUSION

The preponderance of the evidence suggests that mentorship produces a significant, multifaceted benefit to both mentees and their institutions, although risks are

always present. Mentoring lacks a unified definition but can be viewed as the most comprehensive form of support for young academic physicians. Conclusive data are lacking on most components of the mentoring process. Virtually all trainees and junior faculty members require several mentors, each with a different expertise, to meet their needs over time. Several mentoring frameworks exist, with none being clearly superior across institutions or between different mentees. Before taking on the responsibility of mentorship, senior faculty members should engage in reflection and self-assessment to determine if in fact they have the attitudes, personal qualities, knowledge and skills and can regularly demonstrate the behaviors that are needed to maximize protégé success. Investigators will need to work collaboratively to develop better objective quality metrics for mentoring, applicable across professional roles, diverse organizations and the wide array of mentored faculty. An accurate estimation of the value of mentoring is needed to justify the operational resources and provide rewards for mentoring among the many financial demands pressing upon departments and colleges of medicine.

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