Developing a Culture of Mentorship to Strengthen Academic Medical Centers
Augustine M.K. Choi, MD, Jennifer E. Moon, PhD, Ann Steinecke, PhD, and John E. Prescott, MD

Abstract
Mentorship is central to academic medicine and its missions, and it has long played a critical role in the training and career development of physicians and scientists. A growing body of literature has documented the positive impact of mentorship on various outcomes, including research productivity, academic promotion, faculty retention, and career satisfaction. These benefits span academic medical centers’ missions and have the potential to enhance biomedical research, patient care, education, and faculty diversity and leadership.

In this Invited Commentary, the authors argue that a dynamic culture of mentorship is essential to the success of academic medical centers and should be elevated to the level of a major strategic priority. This culture of mentorship would capitalize on an institution’s intellectual resources and seek to develop leaders in biomedical discovery, patient care, and education. The bidirectional transmission of knowledge between mentors and mentees, through both formal programs and informal relationships, can foster the growth of faculty members needed to meet the complex challenges currently confronting medical schools and teaching hospitals.

Developing a culture of mentorship requires a strong commitment by leaders at all levels to nurture the next generation of physicians and scientists as well as grassroots efforts by trainees and faculty to seek out and create mentorship opportunities. The authors conclude by outlining possible mechanisms and incentives for elevating mentorship to the level of a strategic priority to strengthen academic medical centers across their missions.

Mentorship plays a critical role in the training and career development of physicians and scientists. The term is derived from the name of the teacher, Mentor, whom Odysseus trusted more than his own family to raise his son while he was away at war, and, in its ideal form, it describes a selfless relationship guided by a wiser, more experienced person. Mentoring has focused primarily on the career development of someone less experienced in fields such as business and academia.1,2

Within medicine, it has long been an obligation for more established physicians, a central component of training, and a key process for reinforcing ethics and professionalism. Medical students, residents, and fellows gain valuable clinical skills by observing senior practitioners, discussing cases with supervisors, and honing techniques under their guidance. Early-career researchers acquire expertise by working in the labs of more established investigators. In addition, a growing body of literature has documented the benefits of mentorship, which include increased research productivity, faster academic promotion, and greater faculty retention and career satisfaction.3–8

In this Invited Commentary, we propose that a dynamic culture of mentorship is essential to the success of academic medical centers and should be elevated to the level of a major strategic priority. This culture of mentorship would encompass a variety of activities, including advising, teaching, coaching, advocacy, sponsorship, and role modeling, as well as assistance with personal development and achieving a work–life balance.4 What would distinguish it from existing models of mentorship would be its focus on producing leaders in biomedical discovery, patient care, and education who are able to address the multiple challenges confronting academic medical centers. As medical schools and teaching hospitals face reductions in government funding for research and increased competition for resources, we believe that mentorship is a key strategy for developing the next generation of faculty leaders and promoting sustainability within institutions, in addition to having positive effects on individual faculty members. This new culture of mentorship would seek to leverage an institution’s most valuable resource—namely, its people—to maintain, if not accelerate, growth across all missions. Mentorship is especially important in today’s rapidly changing environment, which has extended the period of learning and training across the career span of physicians and scientists. Crucially, coordinated support from leaders at all levels is critical to creating and perpetuating this culture, which would consist of both formal programs and informal relationships.

In this Invited Commentary, we outline some of the challenges facing academic medical centers that we believe can be addressed by fostering a vigorous and pervasive culture of mentorship at all levels. We then present key actions that institutions can take to inculcate this culture of mentorship, which could be both cost-effective and impactful.

Mentorship Across Missions
As institutions of higher learning, medical schools and teaching hospitals
have an obligation to support faculty, residents, fellows, and students so that they achieve success within academic medicine and can lead the way for others. One of the first systematic reviews on mentorship found it to be a crucial factor in the career success of academic physicians, especially those pursuing research. Guidance is invaluable in helping faculty to balance competing priorities and advance through the academic ranks, especially when many clinicians are being asked to derive more of their income from seeing patients, often to the detriment of their research. According to a report from the National Institutes of Health (NIH), the nation’s supply of physicians engaged in research is dropping, early-career physician–scientists are struggling to find mentors, and the proportion of NIH-funded principal investigators over the age of 60 is increasing. The NIH has implemented several mechanisms to support the transition to research independence for early-career investigators, including KL2 Mentored Career Development Award programs at Clinical and Translational Science Award institutions. Academic medical centers also need to invest in the research pipeline through mentorship to facilitate the seamless transfer of knowledge as the investigator population ages.

Additionally, mentorship in the research arena entails meeting regularly with mentees to provide assistance with activities including attracting grant funding and publishing in high-impact journals. Given the intensely competitive atmosphere surrounding federal grants, mentorship also should involve advising mentees on alternative means of funding, such as research alliances with industry and venture capital, and providing guidance on navigating the drug development process and launching clinical trials. Emphasizing mentorship with an eye toward increasing research productivity could result in the more rapid development of clinical innovations to improve patient care, while enriching the learning experience of trainees.

The need for mentorship in the clinical realm now extends far beyond medical school and residency training. The fast pace of clinical, scientific, and technological change today is transforming the teaching and practice of medicine, demanding that students, residents, fellows, and established physicians alike become lifelong learners. The mentorship model offers a way to transmit new clinical knowledge and skills to peers and colleagues of all ages. Although it cannot replace formal learning opportunities, mentoring can help individuals pinpoint specific topics for further study among the vast realms of information or to refine clinical skills through interaction with more experienced practitioners, either in person or through virtual networks. Mentorship has been incorporated into novel quality improvement initiatives, while a combination of structured and informal mentorship opportunities within interprofessional teams has the potential to improve coordination of care, the patient experience, and clinical outcomes.

Mentoring, which is central to the teacher–student relationship, is indispensable for the relatively small group of faculty dedicated to medical education. Sharing pedagogical techniques with colleagues enriches the learning experience for students, who can also contribute to the education of their mentors, particularly in areas such as the strategic use of social media, crowdsourcing, and digital technologies. Mentoring is ideally nonhierarchical and has a bidirectional flow, with mentees often infusing the relationship with vitality and inquisitiveness and inspiring mentors to challenge assumptions and shift perspectives. Mentors can model professionalism and ethical behavior to mentees, while mentees can inspire mentors to remain true to their ideals and remind them of their original calling to practice medicine. When mentors and mentees are from dissimilar generations and skill sets differ from those generally taught in medical school and can be enhanced through programs designed to foster leadership, many of which include a significant mentoring component and are targeted toward women and members of underrepresented minorities, as well as through one-on-one mentoring relationships.

**Toward a Culture of Mentorship**

We believe that creating a culture of mentorship at academic medical centers will generate a diverse body of leaders and strengthen organizations across their missions. Various institutions have implemented schoolwide programs that support mentoring through awards, innovation grants, training programs, workshops, and a variety of online resources. Others have programs that focus on specific activities, such as grant writing, or target a subset of the population, such as translational investigators. The National Research Mentoring Network, launched as part of an NIH initiative to increase diversity in biomedical research, represents another innovative approach.

Mentorship is not often included as a major strategic priority, but it must be to achieve a culture of mentorship. Raising mentorship to this level would require the identification of site-specific goals and metrics. Institutions must first pinpoint areas of need—such as a more robust research enterprise, a stronger culture of safety, or improved faculty retention—and then focus mentorship efforts on developing a cadre of leaders in these areas. Existing mentoring programs; rates of faculty productivity;
promotion and tenure criteria; and the financial impact of new initiatives, including possible savings in recruitment costs, need to be evaluated. Assessing mentoring programs and relationships, using outcomes such as research grants, publications, mentorship evaluations and awards, quality improvement measures, academic advancement, and career satisfaction, arguably would provide an indication of whether institutions are eliciting optimal contributions from their faculty, and these outcomes can be used to quantify the success of new initiatives. Less tangible benefits, such as stronger collegial relationships, enhanced learning opportunities, and greater interprofessional engagement and awareness, also should be considered.

Elevating mentorship to a strategic priority requires a merging of top-down and grassroots approaches. Academic leaders must communicate to constituents, by example and through financial support, that mentoring is an institutional priority, an evidence-based investment in the organization’s future, and a noble endeavor. A good starting point for leaders is describing publicly their own experiences with a trusted mentor or the joy they feel witnessing a mentee’s accomplishments, to convey their passion for mentorship and inspire action in others. In addition, trainees and early-career faculty should be supported in launching mentorship programs to address specific needs and encouraged to seek out mentors and mentees of their own.

Fostering a deep and wide-ranging culture of mentorship will likely require a combination of approaches and innovations. For example, the Weill Department of Medicine at Weill Cornell Medicine significantly increased the number of NIH Research Career Development (“K”) Awards it received between 2013 and 2017 by introducing mentored “Pre-K” awards and seed grants, an annual research retreat, and a monthly junior faculty mentoring seminar. The department committed a total of $1.6 million in internal awards and grants, which in turn generated $4.2 million in external research awards. Over these five years, the department experienced a 217% increase in K Award funding (A.M.K.C., unpublished data, 2018). Other ways to encourage mentoring include a “mentoring academy” to facilitate the process of matching mentors and mentees, the creation of an institutional strategic plan for mentoring, and the engagement of alumni as mentors. Incentives for faculty and departments to support such efforts include relief from deans’ and other institutional taxes, awards for mentoring excellence, consideration of mentorship in faculty promotion criteria, and financial supplements for department and division heads who successfully develop tailored plans for the career advancement of faculty members. Providing evidence-based training for mentors is also essential. Although published data on the cost of mentorship programs are limited, expenses likely could be kept relatively low, and the return on investment could be substantial. Costs could be supported by philanthropy or spread across participating administrative and academic departments; additionally, depending on the number of participants and the existing infrastructure, the mentoring programs might pay for themselves through economic benefits to the institution.

Another important step in building a widespread culture of mentorship is establishing a stronger base of evidence validating the benefits of mentorship and identifying factors associated with successful programs, which would support making the necessary investments in time and money. Formal evaluations of mentoring programs, including their costs and impact on institutional-level outcomes, are especially needed. However, the full benefits of mentoring may not be apparent in a study of relatively short duration and may instead take decades to be realized as mentees mature.

In today’s constantly changing, hypercompetitive environment, academic medical centers that embrace a culture of mentorship and commit to sharing expert knowledge vertically between individuals at all stages of their careers can potentially reduce the learning curve and help revitalize the biomedical workforce. Successful mentorship programs would leave academic medical centers better equipped to advance their missions, extend the legacies of today’s senior faculty, and ensure the professional longevity of the next generation of physicians, scientists, and health care leaders.

### Funding/Support
None reported.

### Ethical approval
Reported as not applicable.

#### A.M.K. Choi
is Stephen and Suzanne Weiss Dean, Weill Cornell Medicine, and provost for medical affairs, Cornell University, New York, New York.

#### J.E. Moon
is director, Dean’s Office Initiatives, Weill Cornell Medicine, New York, New York.

#### A. Steinke
is senior director, Academic Affairs Programs and Engagement, Association of American Medical Colleges, Washington, DC.

#### J.E. Prescott
is chief academic officer, Association of American Medical Colleges, Washington, DC.

### References

1. Tjian AK. What the best mentors do. Harv Bus Rev. February 27, 2017. https://hbr.org/2017/02/what-the-best-mentors-do. Accessed October 9, 2018.

2. Chopra V, Arora VM, Saint S. Will you be my mentor?—Four archetypes to help mentees succeed in academic medicine. JAMA Intern Med. 2018;178:175–176.

3. Berk RA, Berg J, Mortimer R, Walton-Moss B, Yeo TP. Measuring the effectiveness of faculty mentoring relationships. Acad Med. 2005;80:66–71.

4. Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: A systematic review. JAMA. 2006;296:1103–1115.

5. Sambunjak D, Straus SE, Marusic A. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. J Gen Intern Med. 2010;25:72–78.

6. Straus SE, Sackett DL. Clinician–trialist rounds: 7. Mentoring: Why every clinician–trialist needs to get mentored. Clin Trials. 2011;8:765–767.

7. Kashiwagi DT, Varkey P, Cook DA. Mentoring programs for physicians in academic medicine: A systematic review. Acad Med. 2013;88:1029–1037.

8. Geraci SA, Thigpen SC. A review of mentoring in academic medicine. Am J Med Sci. 2017;353:151–157.

9. National Institutes of Health. Physician–scientist workforce working group report. https://acd.od.nih.gov/reports/PSW_Report_ACD_06042014.pdf. Published June 2014. Accessed October 9, 2018.

10. Sweeney C, Schwartz LS, Toto R, Merchant C, Fair AS, Gabrilove JL; CTSA Mentored–to–Independent Investigator Transition Working Group. Transition to independence: Characteristics and outcomes of mentored career development (KL2) scholars at Clinical and Translational Science Award institutions. Acad Med. 2017;92:556–562.

11. Byington CL, Keenan H, Phillips JD, et al. A matrix mentoring model that effectively supports clinical and translational scientists and increases inclusion in biomedical research: Lessons from the University of Utah. Acad Med. 2016;91:497–502.

12. Freen SA, Smith PC, Burns EN, Downer JB, Brown AJ, Dewhirst MW. Multidisciplinary mentoring programs to enhance junior
faculty research grant success. Acad Med. 2017;92:1410–1415.
13 Biliç E, Turkdogan S, Watanabe Y, et al. Effectiveness of telementoring in surgery compared with on-site mentoring: A systematic review. Surg Innov. 2017;24:379–385.
14 Li J, Hinami K, Hansen LO, Maynard G, Budnitz T, Williams MV. The physician mentored implementation model: A promising quality improvement framework for health care change. Acad Med. 2015;90:303–310.
15 Berian JR, Thomas JM, Minami CA, et al. Evaluation of a novel mentor program to improve surgical care for US hospitals. Int J Qual Health Care. 2017;2:1–9.
16 Walle JF, Chopra V, Saint S. Mentoring millennials. JAMA. 2017;319:1547–1548.
17 Association of American Medical Colleges. Diversity in medical education: AAMC facts and figures 2016. http://www.aamcdiversityfactsandfigures2016.org. Accessed October 9, 2018.
18 Viets VL, Baca C, Verney SP, Venner K, Parker T, Wallerstein N. Reducing health disparities through a culturally centered mentorship program for minority faculty: The Southwest Addictions Research Group (SARG) experience. Acad Med. 2009;84:1118–1126.
19 Beech BM, Calles-Escandon J, Hairston KG, Langdon SE, Latham-Sadler BA, Bell RA. Mentoring programs for underrepresented minority faculty in academic medical centers: A systematic review of the literature. Acad Med. 2013;88:541–549.
20 Rich EC, Magrane D, Kirch DG. Qualities of the medical school dean: Insights from the literature. Acad Med. 2008;83:483–487.
21 Steiner T, Naismith L, Mann K. Faculty development initiatives designed to promote leadership in medical education. A BEME systematic review: BEME guide no. 19. Med Teach. 2012;34:483–503.
22 Helitzer DL, Newbill SL, Morahan PS, et al. Perceptions of skill development of participants in three national career development programs for women faculty in academic medicine. Acad Med. 2014;89:896–903.
23 Stanford Medicine Teaching and Mentoring Academy, Stanford Medicine. http://med.stanford.edu/academy.html. Accessed October 9, 2018.
24 Mentoring at Harvard Medical School. Harvard Medical School Office for Diversity Inclusion and Community Partnership. https://mfdp.med.harvard.edu/mentoring. Accessed October 9, 2018.
25 Mentor Training Program. University of California, San Francisco, School of Medicine. https://accelerate.ucsf.edu/training/mtp. Accessed October 12, 2018.
26 Sorkness CA, Pfund C, Ofili EO, et al; NRMN Team. A new approach to mentoring for research careers: The National Research Mentoring Network. BMC Proc. 2017;11(suppl 12):22.
27 Wasserstein AG, Quistberg DA, Shea J. Mentoring at the University of Pennsylvania: Results of a faculty survey. J Gen Intern Med. 2007;22:210–214.