

‘See one, do one, teach one’: finding your mentor in academic medicine

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“the changing demographic of academia has led to a loss of effective mentors”

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‘See one, do one, teach one’ is an adage passed down through generations of physicians and surgeons, perceived as a central tenet for achieving clinical competency in medicine. Attributed to William Halsted, the first professor of surgery at John Hopkins Hospital, it follows the premise that the replication of good clinical practice under the supervision of experts will provide sufficient training for future generations of clinicians [1]. Singled out as a visionary in 1890, Halsted advocated that mentored training “. . . will not only produce surgeons, but surgeons of the highest type. . . who will stimulate the first youths of our country to study surgery and devote their energy and lives to raising the standard of surgical science” [2]. As one of the first proponents of the ‘clinician–scientist,’ his model of training laid the foundations for the establishment of academic centers of excellence in large university hospitals across the USA. So substantial was his contribution to mentoring and sustaining talent that his obituary described him as ‘one of the few men who really count’ – a most fitting accolade for any mentor. Almost a century has passed since his death and his model of deliberate repetition remains an important part of skill acquisition. The popularized concept of 10,000 hours that now encapsulates the length of most training programs has often been considered to be the mandatory minimum requirement to make an expert in fields outside of medicine [3]. However, in an era of rapid technological evolution that has provided innovative approaches to the integration of medical diagnostics and therapeutic interventions through the use of evidence-based medicine, is the apprenticeship model still fit for purpose? [4]. Medical practice appears to evolve at an exponential rate where job opportunities today are almost unrecognizable from the careers of those a decade ago. In this evolving landscape, is there still a role for an academic mentor to guide a young investigator’s career path? And if so, what attributes are necessary to make a good one?

Our advice to individuals at the beginning of their journey in academic medicine is to focus on what sort of support and help is needed to take their career forward. Clearly not everyone in clinical research requires a mentor for guidance at the start of their career, as many young investigators who engage in research will have the self-motivation and drive to achieve their goals without investment from third parties. But even intelligent and ambitious researchers will require help in professional problem solving at some point in their career and this is where a mentor can play a valuable role. One of the major interventions that young investigators require assistance with is in securing grant funding where, of note, inadequate mentorship is cited as a major reason for rejection [5]. Unfortunately, the changing demographic of academia has led to a loss of effective mentors resulting in a significant decrease in external funding for young investigators that subsequently deters them from pursuing long-term academic careers [6]. Surprisingly, despite numerous publications on the critical importance of mentoring in academic medicine, few studies have demonstrated whether mentoring actually makes a difference and even fewer have been conducted on how to choose a suitable mentor [7–9]. Fundamentally, the choice of a mentor is a personal one often influenced by a young investigator’s professional relationship with senior colleagues. To provide some guidance for aspiring young investigators, we have highlighted some of the important attributes demonstrated by mentors who have helped develop our own careers.

Effective communication is a vital and often overlooked skill needed for all academics to submit successful grant proposals or scientific publications. Scientific communication involves conveying a complex message in a form that is both relevant and comprehensible to the target audience. Often to the surprise of many young investigators, this requires the ability to deliver effective written and oral communication using appropriate language relevant to both expert members of the scientific community and also the wider lay public. The ability to connect your message with different audiences is an important building block in achieving fruitful interpersonal relationships which lead to the establishment larger academic collaborations. In our experience, academics who have undertaken and published collaborative projects (often on an international scale) have passed the litmus test in demonstrating strong and effective communication skills.

Testing hypotheses that have the potential to improve patient's lives is a good barometer as to whether a potential mentor's inspiration is centered on problems that matter to other people. Although 'saving patient's lives' is an often cited as a *raison d'être* for most clinical academics, few ever go on to publish research that significantly influences clinical practice. Addressing 'big' questions can often be a daunting prospect given the potential risk of failure, but this is often what separates the good investigators from the great. Interestingly, funding bodies have turned their attention to focusing on the 'big' questions in clinical science in an effort to make a more meaningful impact on disease [10].

The integrity of a potential mentor is of paramount importance, as it embodies the ethics underpinning their work, their academic group and their institution [11]. Academic medicine can encourage investigators to inflate the importance of their work in order to achieve high-impact publications that are necessary for further career progression. However, an overstated or dishonest finding which cannot be replicated or is later found to be false does significant damage to one's reputation within the scientific community. Talented young investigators should aspire to maintain integrity and probity at all stages of their career and the example of their mentors can have a profound effect in this regard. Another mitigating factor to consider is whether a mentor is under significant influence from external parties and thus unable to remain impartial to new ideas in the face of conflicting evidence.

People who share an interest in your development will often celebrate your successes and take pride when you achieve your goals. If a young investigator's success is married with their mentor's research, understandably they will have a vested interest to see their protégé succeed. However, the sign of someone who genuinely wishes for you to succeed comes when they are prepared to provide counsel and support during your failures. Good mentors do not shy away from adversity and will often relish the challenge on offer by sharing advice and potential solutions. Clinical trial research is well known for the production of neutral findings, but in our experience enthusiastic mentors can use these perceived negative results as a platform for a novel line of inquiry.

Finding a mentor who can help to support the career of a young investigator is a multifaceted challenge. The specific needs of the young investigator need to be taken into account before approaching potential candidates. Most long-term mentorships undergo a period of transition from professional supervision to someone who has more involvement in the development of future career opportunities alongside you. Ultimately mentorship, as with most interpersonal relationships, reflects a balance of interests between two parties and in clinical academia, there is certainly something to be said from working alongside someone who has 'been there, done that'. However, not all mentorships are destined for success and you may not always get it right the first time. Remember, your first mentor is not always your last!

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