On the determinants of academic success as a clinician-scientist

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Introduction

I believe that the determinants of academic success as a clinician-scientist (defined in terms of principal investigatorship, lead authorship, promotion, tenure, career awards, honours, power and reputation) are not "academic" (defined in terms of intelligence, theoretical understanding, mastery of a body of knowledge and teaching skills). Although some academics fail because they are crazy and others because they lack minds that are "prepared" to generate important questions based on their clinical observations, the range of their intelligence is so compressed at the top of the scale that even if it were an important determinant, attempts to correlate it with success are doomed. Furthermore, the prevalence of academic failure among those who understand the theory, know the facts, and can out-teach their colleagues, coupled to the frequency with which they are left in the academic dust by those with much smaller supplies of these attributes, are just too great to sustain that argument. While it may be that the ability to generate novel, imaginative hypotheses plays a role in the academic success of basic researchers (a field I abandoned 35 years ago), this rarely applies to the burgeoning field of patient-based and clinical-practice[1] research (where the hypotheses usually are common knowledge and often originate with patients). Finally, I assume that no reader will seriously posit that being a nice person is a prerequisite for academic success.

What, then, are the determinants of academic success? I've concluded that they are 3: mentoring, creating periodic priority lists, and time management. Before describing them I must point out that my conclusions are based for the most part on personal observations of young academics I've mentored and to whom I've taught priority lists and time management, observations of individuals who did and didn't receive mentoring or employ time management, or clearly were and were not successful, and personal experiences of being mentored by some simply wonderful and quite awful mentors. I've augmented these personal observations with the results of a PubMed search on the MeSH terms "mentors" (510 hits) and "time management" (901 hits), and the evidence I encountered there,[2-10] which includes important evidence on the experiences and perceptions of women in medicine,[11,12] supports my thesis. Finally, most of the clinician-scientists I've mentored and observed in the United States, Canada and the United Kingdom have been hospital-based internists, and I'd encourage mentors from other health disciplines to identify where the recommendations in this essay do and do not apply to those they mentor.

Mentoring

Effective mentoring is of 2 sorts, depending on whether the person being mentored is a newcomer or an established academic. When the person is a graduate student or new faculty member, I define their mentoring as the provision, by an already successful and secure academic, of *resources* (but not obligations), *opportunities* (but not demands), *advice* (but

logical research question to be asked about this problem and honing that question into a form that that will provide a valid, useful answer to it. These 3 skills are central to the development of all independent investigators, and without them all they can do for the rest of their careers is look for a series of less important nails to pound with the same old hammer.

Mentors should provide opportunities to observe, model and discuss teaching strategies and tactics in both clinical and classroom situations. When the mentored are invited to join a clinical team they can study how their mentors employ different teaching strategies and tactics as they move from the post-take/morning report to the daily review round to the clinical skills session to grand rounds. With time, those being mentored can take over these sessions and receive feedback about their performance. The same sequence can be applied to teaching courses and leading seminars in research methods.

As junior colleagues advance toward independence, their *opportunities mature* and incorporate 2 additional areas. The first comprises nominations to the scientific committees (e.g., grant review committees), task forces (e.g., for the development of methodological standards), symposia (especially those that result in first-authored publications) and scientific organizations that will increase their academic experience, network and recognition. The second consists of writing letters of support for their promotion and tenure and nominating them for the academic posts that will launch the next phase of their academic and career development, followed by comprehensive letters of support and continuing mentoring during the process of negotiation and recruitment.

By *advice* I mean providing frequent, unhurried and safe opportunities for junior colleagues being mentored to think their own way through their choices of graduate courses and areas of concentration, the scientific and methodological challenges in their individual projects, the pros and cons of embarking on a particular program of research with a particular set of collaborators, and their development as social beings (some mentors refuse to discuss academic issues at such sessions until they have gone through a check list of items encompassing personal and family health, relationships, finances, and the like). This advice should take the form of

"active listening," should focus on their development as independent thinkers, and should eschew commands and authoritarian pronouncements.

As long as gender-based inequalities exist in running households and raising children, mentors must be knowledgeable and effective in addressing and advising around the special problems that face women in academic careers. Although only 20% of female academics in one study stated that it was important to have a mentor of the same gender,[12] it is imperative that all women pursuing academic careers have easy access to discussing and receiving informed, empathic advice about issues such as timing their pregnancies, parental leave, time-out, part-time appointments, sharing and delegating household tasks, and the like. When the principal mentor is a man, these needs are often best met by specific additional mentoring around these issues from a woman.

When listening to individuals being mentored sort through job offers, it is important for the mentor to help them recognize the difference between "wanting to be wanted" for a prestigious academic post (they'd be crazy not to feel this way) and actually "wanting to do" the work involved in that post (which, on reflection, the individual might recognize as ill-matched to her or his interests, priorities, career stage, competencies or temperament).

By *protection* I mean insulating the individual being mentored from needless academic buffeting and from the bad behaviour of other academics. Because science advances though the vigorous debate of ideas, designs, data and conclusions, junior colleagues should get used to having theirs subjected to keen and critical scrutiny. By the same token, they needn't be tossed in at the deep end. Thus, for example, they should be invited to rehearse their presentations in front of their mentor so that every statement and slide can be challenged in a relaxed and supportive setting where presentations can be revised and responses rehearsed. The objective here would be for the toughest, most critical question about the work to have been raised for the first time during its rehearsal, not after its final presentation. Similarly, critical letters to the editor following their first publication can be recognized for what they almost always are: an attempt to show off and win at rhetoric rather than to promote understanding. Mentors can help them learn

ing one's schedule for the past weeks or months and List 1a from recalled messages and conversations with bosses or colleagues who were attempting to make their problems your problems. List 2 is derived from multiple sources: the logical next research question suggested by the answer to the last one; ideas that pop up in patient encounters, while reading or during conversations or trips to meetings and other research centres; long-held aspirations that are now within reach; changes in personal goals or personal relationships, etc. Reviewing the length and content of List 3 enables self-diagnosis and insight. If long, is it comfortable but complacent, stifling further growth? Worse yet, is it the list of an expert, comprising the tasks required to protect and extend personal "turf" in ways that lead to the "sins of expertness?"[15]

It then becomes necessary to titrate Lists 2 and 3 versus List 1. The failure to stop doing enough old things in order to free up time for doing new things is a recipe for both academic and personal disaster. Not only does the time-imbalanced academic risk acquiring the deadly label of a "non-finisher," clinician-scientists experience increasing dissatisfaction with both their professional and personal lives. The ultimate objective here is to construct lists that, if realized, would lead to a set of research, teaching and clinical activities that would make it fun to go to work.

All the foregoing leads to List 4, identifying the strategies and tactics for achieving the next phase in career development. It adds greatly to one's academic reputation when this list promotes change through evolution (giving 6-months' notice and helping find a successor) rather than revolution (resigning and running away). Furthermore, one can gain administrative skills by sorting out which tasks can be delegated to assistants, with what degrees of supervision.

Just as troubled families are said to achieve 80% of the benefits of family therapy (acknowledging problems, becoming ready to explore and adopt solutions, and the like) before they sit down with a therapist, the majority of the benefit derived from the periodic priority list occurs before it is presented and discussed with one's mentor. Nonetheless, additional insights come with presenting these lists to someone else, and suggestions of additional strategies for change (e.g., learning how to say "no" nicely) usually arise following this presentation. As before, the ability to discuss

gender-specific issues in balancing priorities with an informed, empathic mentor is essential. Moreover, because the period of greatest academic dependency for many aspiring clinician-scientists coincides with the period of greatest physical and emotional dependency of their children and partners, the discussion of lists with the former must incorporate the needs of the latter. The suggestions that emerge from these discussions often focus on the effective and efficient use of time, which leads us to the third determinant of academic success: time management.

Time management

The most important element of time management for academic success is setting aside and ruthlessly protecting time that is spent *writing for publication*. I've encountered several successful academics whose only control over their schedule has been protected writing time. Conversely, I've met very few academics who succeeded without protecting their writing time, regardless of how well they controlled the other elements of their schedules. For some academics this protected writing time occurs outside "normal" working hours, but the price of such nocturnal and weekend toil is often paid for by family, friends and fun. Prototypically successful academics set aside 1 day a week (except during periods of intensive clinical responsibilities; *vide infra*) for this activity, and clearly mean it by telling everyone that they aren't available for chats, phone calls, committees, classes or departmental meetings that day.

I've never admired the publications of any academic who told me writing was easy for her or him; those whose work I admire tell me they find it very difficult to write (although many find it nonetheless enormously enjoyable and gratifying). Given the difficulty of writing well, no wonder so many academics find other things to do when they should be writing for publication. The great enemy here is procrastination, and rigorous self-imposed rules are needed for this protected writing time: it is not for writing grants, not for refereeing manuscripts from other academics (aren't they already ahead of you with their writing?), not for answering electronic or snail mail, not for keeping up with the literature, not for responding to non-emergencies that can wait

lowing 2 to 3 days chasing down "lab" results, talking with referring clinicians and dictating notes. I submit that this pattern of practice by academic clinicians who are (and should be) frequently out of town as visiting professors, presenters and grant reviewers risks lowering the quality of their outpatient care; what happens when they are 1000 km away from one of their outpatients who gets sick during a work-up or has an adverse reaction after starting a new treatment regimen? Moreover, the aforementioned interruptions of other academic activities in the 2 to 3 days following an outpatient session threaten both research productivity and peace of mind. A solution worth considering is to stop holding outpatient sessions every week and concentrate them into back-to-back-to-back clinics just once a month. By staying in town for the few days following this outpatient "blitz," a month of clinics' loose ends get tied up all at once (especially if chasing down lab results can be delegated) and the remainder of the month is free for academic activities.

My final remarks concern spending time going to annual scientific and clinical meetings. Such meetings usually are fun and relaxing, often are educational (especially, as noted above, when attended in a group of mentors and mentored) and sometimes offer the chance to meet or at least observe the ephemeral experts in the field. But the opportunity costs of attending meetings are measured in time away from teaching, patients and especially writing, and I know lots of academically successful clinician-scientists who seldom or never go to meetings (which shows us that attending them is not a prerequisite for academic success). As with the other elements of time management, self-discipline is required, and the adoption of rules such as the following may be useful:

1. Never go to an annual meeting for the first time unless you have submitted an abstract that will get published in a journal (thus inaugurating your curriculum vitae).
2. Never go to that meeting a second time until you have a full paper based on that abstract in print or in press (thus making a major contribution to your curriculum vitae and academic recognition).
3. Thereafter, only go to that meeting if *both* Rule 2 has been met *and* this year's abstract has been selected for oral presentation (or you have been invited to give the keynote lecture).

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