Supporting the Transition from Medical Researcher to Medical Educator

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Within forward-thinking medical schools in the USA, there exists a growing divergence away from the “traditional” medical school faculty member. The idea of the educator-scholar as well as recent advancements in educational pedagogy and scholarship has led to the accelerated evolution of the distribution of effort applied to the three-pillars of the medical school academician: service, scholarship, and teaching. A 2011 report by Coleman and Richard, in which 76 % ($n=98$) of US medical schools responded (79 of those had clearly defined career tracks), indicated that 34 of the schools (43 %) offered an education track and 41 % of those were tenure tracks [1]. This is a recognition of the need for individuals dedicated to teaching to keep up with social media, asynchronous communication, and presentation technologies; individuals that exhibit little or no need for extramural support for scholarship, it is also driven by the continued increasing reliance on clinical revenue to fund school operations [2]. Overall, this trend has been advantageous, in that, it frees up more traditional (research-oriented) faculty members to pursue increasingly limited funding while also providing the best teaching for students. It can be concluded that trained, inspired, and dedicated education-scholars should be doing the bulk of a university’s teaching, freeing highly specialized bench researchers to pursue their interests conducting science and seeking extramural funds.

A growing population of faculty members from traditional, research-focused faculty positions is beginning to gravitate towards more education-oriented careers. Causes for this are varied, going beyond the common scenario regarding the depletion of grant funding, although this issue remains a

serious one. Budget cuts that affect the National Institutes of Health (NIH) and other extramural funders have been devastating to the careers of many. It is well-reported that the NIH’s diminished budget for the 2013 fiscal year will halt many research efforts. The loss of \$1.7 billion, mandated by the Budget Control Act of 2011, came on top of several years of flat funding for the NIH. Data from the NIH, compiled by the Federation of American Societies for Experimental Biology [3], demonstrate the full effect of these cuts:

- The inflation-adjusted NIH budget in 2013 is 22 % (4.7 billion) less than it was in 2003 and is currently at its lowest level since 2000.
- The NIH estimates that it will make 2110 (20.3 %) less competing research project grants in 2013 alone than it did in 2003.
- The annually awarded number of competing R01 equivalent grants fell by 27 % between 2003 and 2012.

As such, some of these individuals are choosing to refocus their careers, transferring to a teaching-focused position rather than one with a research-base. Tenure eligible education-focused tracks are typically hard salary positions which are pegged to American Association of Medical Colleges salary scales; often, this is in contrast when compared to the necessity of individuals “bringing in” a percentage of their salary from extramural sources. Accordingly, it would be beneficial for schools to initiate various preparatory measures for these individuals so that they may excel in their new careers and better serve their respective institutions and students.

Reasons Why Researchers Transition to Academia

It is important to appreciate the possible reasons why biomedical science faculty may seek to leave the lab and enter the

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classroom, as to do so marks a sharp divergence from the conventions of most doctoral biomedical science programs. Deviations from this explicit track—pursuing teaching instead of bench research, and for more than minimal, compulsory instruction—are rare and, in some cases, unaccepted by the transitioner’s institution and colleagues. “Just” teaching, as opposed to devotion to bench research, is viewed as a demotion, or worse, an outright failure as a faculty member. A postdoctoral graduate looking to teach out of their own volition is often met with discouragement, disapproval, or dismissal from their colleagues and other faculty members [4].

Aside from the traditional “your grant funding has lapsed, so you need to teach more” justification, personal economics is a culprit in this defection. Moving from the lab into the classroom means moving from a partly or entirely “soft” salary to “hard” salary, an education-based position offers more stability than does the current dubious salary of most bench positions. The continued lack of financial support from the NIH and private supporters will be a driving force in propelling researchers into the classroom.

Biomedical science faculty who take their careers into the classroom do so because they have harbored, possibly in secret amongst their Petri dishes and white-coated colleagues, a lifelong desire to contribute more directly to the education of others. This is not to say that postdoctoral, graduate, and rotating medical student mentoring by research faculty members is not teaching, as it certainly is. It does nevertheless differ from the more traditional focus of classroom teaching, which places an emphasis on pedagogical advancement, education theory, presentation skills and techniques, and classroom management; while there exist countless excellent researchers that teach, lab-based teaching lacks the more broad-based understanding and application of content that classroom teaching requires. The strong possibility exists that researchers gravitate towards education not because they feel they have to, but because they want to. In short, they want teaching to be the main focus of their work. This influential motive tends to be overlooked in the shuffling of other, possibly more anticipated, reasons for faculty leaving an initial career choice and entering academic teaching. Typical reasons include, but are not limited to

1. Increased job/salary stability, as discussed above
2. A more attractive work-life balance
3. Increased and/or more beneficial camaraderie and interaction with colleagues
4. Increased opportunities for career development/advancement
5. Decreased personal risks, there is not enough time or funds to expend upon “getting it wrong”

Faculty members choosing to investigate the educational arena are typically seeking varied intellectual stimulation,

whether it be through interactions with students and colleagues or simply the diversified routine and subject matter that teaching can provide. Research done by Schenkein and Best surveyed new medical faculty members who had less than 4 years of academic experience [5]. The study reported that factors relating to intellectual and scientific challenges and stimulation, lifestyle of academicians, and interest in teaching were the most positive influences on deciding to choose medical academics as a career. Other important considerations for those entering academia were mentorship, role models, and research/research training opportunities.

Transition Considerations

The various challenges faced by transitioning researchers can be itemized according to the emphasis that may be placed upon each:

1. Teaching roles and expectations
2. Scholarly demands
3. Overall lack of training to become an educator
4. Promotion and tenure issues

Each of these challenges presents its own unique stressors and issues for transitioning faculty which may lead to disillusionment and frustration. It is critical that biomedical science programs place more emphasis on these individuals’ career development and offer guidance when they enter educational academics. Lack of training in educational scholarship and theory, classroom management, presentation skills, and pedagogical “know how” are all liabilities for the researcher seeking to make the switch to education-focused academia. Such issues can be expected and more easily adjusted through deliberate and structured training.

An earnest desire to teach is of obvious importance, but it is seldom a solid enough foundation upon which to build an individual’s success in the field. Common perceptions that academics are “anointed” educators upon the receipt of their diplomas are prolific but inaccurate, as low levels of experience in the educational field are not appropriate to success within it. Research faculty bring their own unique foundation to the classroom via detailed knowledge of research practices and methodologies. However, though these experiences may provide informative and beneficial subject material, they do not automatically imply that the researcher will be able to successfully use them in the classroom. That is, researchers may know what they know, but do they know how to teach it?

In order for the transferring researcher to begin a successful teaching career, it is necessary to evaluate the relative focus on the three career “pillars” that apply to all academicians (service, teaching, and research/

scholarship), and in some cases rebalance the emphasis given to one “pillar” in favor of another. Such a task may prove to be difficult for some, if not most, biomedical science faculty due to the distinct differences in emphasis on the “pillars”. To the researcher, research and scholarship may seem second nature, as this has been the focus of their workload. Service responsibilities may not be initially considered challenging, as researchers are experienced in service through the management of their laboratories in addition to holding a variety of leadership and committee positions.

Scholarship in medical education is not necessarily the data-driven enterprise to which researchers have grown accustomed. Research in medical education often differs significantly from those methods used in scientific (or clinical) research. Qualitative rather than quantitative techniques tend to predominate [6], which present an entirely different set of challenges. With that said, the area that will prove to be the most challenging for researchers to adapt to will be the actual classroom teaching, which diverges most strongly from the emphases held by the other “pillars.” The narrow focus of research-based content-knowledge will have to be expanded into a broader, wide-ranging understanding of entire disciplines and their integration and context in the curriculum.

From both the school perspective and student perspective, it is important that transitioning researchers are supported as they learn to navigate the complex systems inherent in medical education so that they may be of the most benefit to their students and institution. Researchers may have experienced little reason, reward, or recognition for the procurement of skills related to effective teaching methods; office hours and student interaction; defining course hours and curricular placement; education and curriculum committees; establishment of learning objectives and coursework; assembly and delivery of interactive

lectures/supplemental instructional materials; and team-based learning, problem-based learning, and the use/development of objective structured clinical examination-style assessments.

Emphasis should be placed upon restructuring the differing perceptions researchers have of educational research and scholarship. Isolated, scientific methodology, and concrete output as a result of systemic input is highly favored in bench work for its quantitative and measurable value. As Regher points out, “The resulting emphasis on an imperative proof in our dominant research approaches has translated poorly to the domain of education, with a resulting denigration of the domain as soft and unscientific and a devaluing of knowledge acquired to date” [7]. What must be engendered in transitioning medical research faculty is the value of the less-empirical/more qualitative and subjective nature of educational research.

The paradigm shift from research to education involves a host of important acclimation factors that culminate in vast differences between a research-focused vs. an education-focused career. The process of reconciling these differences and coming to a middle ground between them starts with analyzing the nature of the various methods of scholarship themselves (Table 1):

Research is more narrowly focused and relatively isolated from outside interruption or general opinion (with the exception of those which are solicited), while education is regularly scrutinized from a variety of angles and often altered accordingly. It is unlikely, given the nature of the mediums in general, that the facts regarding both surroundings will change. However, the perceptions and understandings of each can be altered to better acclimate the incoming researcher, so that they will be better equipped to handle the “culture shock” they will experience. A successful transition can be made possible via the support of a dedicated source, namely a mentor or

Table 1 Examples of paradigm shift from a research focus to an educational focus

Research/lab-based scholarship	Education-based scholarship
Researcher is the final, unquestioned authority. The lab is the centralized focus of faculty scholarship.	Academic decisions are questioned/evaluated. The classroom/student, not the faculty, is the focus of scholarship.
Researcher is the “boss” of self and others within an enclosed, systemic setting.	Academics are accountable to peers and students within an open, interactive setting.
Methodic/systemic decisions and routines are made.	Decisions are slow and often by committee; routine can fluctuate depending upon schedule and responsibilities.
Efforts go largely unchecked/unquestioned.	Efforts are judged by students, peers, and superiors in a more ongoing/regular/routine basis.
Interpersonal chemistry between researcher and assistants is the primary work-relationship in play.	Organizational chemistry is widespread between various faculty members and staff; work-relationships exist on a larger and possibly impersonal level.
Full responsibility is taken for decisions and actions.	Responsibility for decisions and actions is shared.

coordinator whose task it will be to assist the researcher(s) in making a successful and effective transition.

Managing Transitioning Faculty

Due to the host of disparate considerations, challenges, and needs amongst this growing source of education-based faculty, it is important that schools pay particular attention to these individuals in order to limit frustration and disillusionment and to ensure success. It is therefore recommended that some targeted supervision, training, and guidance be provided to ensure the success of those individuals inclined towards transitioning from research to teaching as an alternative career focus. Though the department chair is typically responsible for the development of their faculty, various circumstances within the department such as limited time or resources may not allow for the supervision necessary for the challenges affecting this growing population. A seasoned faculty member with administrative experience, who has also successfully made this transition from bench research to academia, would be well-suited to assist new faculty in navigating the initial years in the latter's reformulated role(s).

Ideally, the medical school should identify an individual to develop and implement a program of data-driven strategies that will help ensure the success of these newly focused academics. A coordinator will ensure consistency and be able to adapt to necessary triangulations that should affect all transitioning faculty members. Reported strategies that are instrumental to the success of the newly transitioning academic include the following:

1. Mentorship—Picher et al. [8] and Oakley and Vieira [9] indicate that faculty mentoring programs will be a necessary key component of easing the transition from research to education. The school should designate an overseer of the mentoring relationship in order to ensure consistent, institution-specific guidance [9].
2. Teaching issues—including the identification of educational resources at the school, room reservations, presentation techniques, educational faculty development opportunities, and course selection and management procedures—should be discussed and reviewed in full to ensure new faculty's familiarity and proficiency in each area.
3. Educational funding and support—including faculty development opportunities, resource identification and introduction/suggestions for collaborators—should be discussed and reviewed.
4. Establishing an appropriate work-life balance—a significant source of stress and disparity due to numerous/various academic obligations. The proliferated usage of electronic communication and social media by students and faculty has established the expectation of a semi-continuous

system of communication with professors 24 h a day, 7 days per week, and such an expectation may prove to be overwhelming and disruptive in unexpected ways.

5. Assisting as a guide through the often nebulous educational “political” landscape—no longer will the researcher have control of the environment as was the case in a lab setting. Due to the relinquishment of control that occurs when a researcher leaves the lab to enter the more public, impressionable nature of the classroom, the “politics” often become overwhelming.

Assisting researchers transitioning to the teaching faculty will also likely require that the school identify someone that can help deal with less routine challenges as they arise, such as

1. Student complaints: Researchers who have not had opportunities to work primarily with medical students may be unprepared for the variety of issues involved in classroom management and interactions.
2. Peer and student evaluations: Ongoing, copious and free-form feedback is not the norm in relatively isolated lab environments; researchers have relatively little opportunity to seek or receive others' impressions regarding their work on a daily basis.
3. Resource selection: Due to the broader scope of content explored within a classroom setting, transitioning researchers may have difficulty in resource selection and appropriate utilization.
4. Curricular triangulation: A main focus must be placed upon the new educator's familiarity with incorporating a variety of materials and subject matter into a continuous and engaging curriculum.
5. Department interaction: Various inter-department interactions such as increased committee service, mentoring for trainees learning to teach and other generally more ‘out of office’ activities, may be unfamiliar to the more independent, even solitary nature of lab research. Continual interactive support to the new faculty in such capacities will ease the transition and develop a more successful education-oriented faculty member overall.

Finally, due to the importance of ensuring successful retention of these transitioning biomedical science researchers as educators, ongoing monitoring for promotion and tenure considerations is critical. The establishment of education-focused goals and expectations—whereby faculty with heavy teaching and service-oriented workloads may have relatively less expectation of publication and external support—is one strategy currently being pursued at many institutions. Advancement committee members must be made aware of and accept this new distribution of effort and understand that it may still lead to promotion and tenure. Expectations must be well-defined and expressly communicated so that the new education-focused

academicians know by which subjective and varied metrics they will be evaluated.

Conclusions

If the transitioning researcher is to be an effective part of medical science education, it is critical for the medical school to give special attention to the bench researcher's challenging evolution into an educator and educational scholar. It is neither practical nor appropriate to expect transitioning faculty members to cope unassisted with all of the disparate factors that exist in education-focused academia. Likewise, it is not possible for each individual that may be asked to mentor a new faculty member to have broad-based knowledge in all areas. The medical school should have a set plan to ensure that researchers make a coordinated transition to education-based faculty positions; and if this system is not already in place, it must be implemented to ensure the development and success of these individuals. Medical schools capable of providing such a system will be more attractive to researchers interested in a career in educational academia.

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