Where to Draw the Line: The Balance Between Research and Medicine

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A challenging issue facing most graduates from MD/PhD programs is what to do after residency and fellowship training. As the fields of medicine and research become more and more specialized, it is near impossible to engage in both avenues. A fair number of MD/PhD graduates decide to focus on either medicine or research but a few decide that it is still worthwhile to pursue both fields. After all, the purpose of the dual degree program is to train leaders who will bridge the gap of combining research and medical practice. This dilemma deals with the pressing question: how is research to be translated into medical practice and who are the leaders that will emerge to make it happen? Are MD/PhD graduates utilizing their training to bridge this gap and to take the appropriate roles necessary to influence beneficial changes? This paper will address why people choose an MD/PhD degree, how current MD/PhD training fits the Leader-Role theory, and finally how transformational leadership might be the better framework.

People choose an MD/PhD path for many reasons but below are descriptions of typical incentives and measures of prestige. According to the Yale Journal of Medicine and Law, the charge given by the National Institutes of Health to MD/PhD Programs is “to train physician scientists who spend time conducting research and caring for patients”

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(Tomorrow’s physician-scientists, 2011). MD/PhD programs are designed for exceptional students with very well rounded backgrounds. According to University of Cincinnati Physician Scientist Training Program Website, MD/PhD graduates make up the top 2.5% of all physicians and hold an unprecedented number of leadership positions in the medical community (University of Cincinnati).

It is typical for programs to receive 200-1,000 applications for 2-5 spots per year. The benefits of the programs include full funding for medical school and graduate school as well as a yearly stipend. Those that complete the programs can pursue any path in medical care or research. Graduates from MD/PhD programs typically pursue residency training at highly prestigious universities in competitive specialties. Most end up as faculty at well-known research institutions. Some MD/PhD graduates go straight to post-doc upon graduation and pursue careers of focused research.

Those students who choose to pursue MD/PhD training are dedicated to leadership in the medical community and to the notion of fulfilling the charge given by the Association of American Medical Colleges to translate biomedical work into practical patient care. Though the field is richly rewarding, many challenges face students. Primarily, their friends from medical school will graduate from residency programs by the time most MD/PhD students are finishing their dual degree. Another challenge is that MD/PhD graduates typically pursue research faculty positions at Educational Medical Centers where they receive less pay than they would in private practice. This evokes a sense of frustration for medical scientists since they have more training than their cohorts.
in private practice but receive less reimbursement for their work. Medical scientists are also required to pursue extensive training beyond residency such as fellowship or a post-doc before beginning their careers. Thus students starting the program between the ages of twenty-two to twenty-five won’t begin their first faculty positions until almost forty years of age.

Despite the difficulties, there are currently 4,500 students pursuing MD/PhD training around the nation and many thousands of medical scientist graduates are practicing at Medical Centers (Association of American Medical Colleges, 2011). The students in these programs were accepted based on their research background, grades and MCAT scores, and on leadership potential. Strong leadership is a necessary requirement to make the difference in bench to bedside research (University of Cincinnati, 2011). The style of leadership for this group at Cincinnati is based around the Leader-Role theory. Medical work is hierarchical and only a few people emerge to rise to the top of the profession. The task is hard to accomplish due to problems facing medical scientists after completing the education. First, it is becoming increasingly difficult to receive funding for research. More scientists are entering the field while national budget cuts have reduced the number of available grants. Second, medical scientists need to balance time between the laboratory and seeing patients. Most medical scientists prefer to have 70% of their time spent in the laboratory and 30% spent in the clinic. This ideal hardly ever happens. Hospitals make money when physicians work at the clinic not when they do research. Without a Dean who understands the significance of research, it is
colleagues who focus only on medicine or research alone. It is difficult to be an expert at extremely hard to maintain the necessary amount of time in the laboratory to be successful. Finally, many medical scientists feel disadvantaged when observing two fields, especially two fields as challenging as research and medicine. For most medical scientists it stretches them past comfort zones.

Though the dilemma facing MD/PhD graduates is daunting, many outstanding leaders have risen to meet the challenge and emerged according to principles found in the Leadership-Role theory. According to the Changing Minds Institution, people who practice Leadership-Role theory choose roles for themselves based on learning status or place in the system (Role Theory 2011). This leadership framework fits well with the hierarchy seen in medicine and research. Changing Minds Institution notes that people take certain roles according to their learning position and leave others for the leader. In medicine this can be seen throughout training in that the medical student, resident, and the fellow each have certain tasks to do while leaving the most complicated for those higher up in the hierarchy. Modeling is a big part of this theory. The leader models a task and expects the next person in the hierarchy to copy what was done. In medicine the philosophy is to see one, do one, and then teach one. Role conflict is often a problem in this theory as well. If roles are not clearly defined, people might act inappropriately. Normally this results in the resident or fellow getting reprimanded by the attending and reproached during Mortality & Morbidity conferences. The Leadership-Role theory is the best fit model for the current state of medical leadership since it clearly defines positions.
of control. Within the field of medicine, it is important for leadership to be taken instantly in cases of life or death for the patients.

Leadership Examples:

Case 1 Dr. Reynolds:

In the following pages, the leadership framework of many successful MD/PhD graduates will be highlighted and analyzed in light of the Leadership-Role theory. This analysis is intended to provide insight on ways to deal with the problem at hand and look at different leadership characteristics that are necessary for varying circumstances. The first leader is Dr. Susan Reynolds. She used her MD/PhD training to lead a medical trauma ward and become CEO of an emergency medical center. She recently began the Physician Leadership Training Institute after serving on the White House Health Professionals Review Group (BigSpeak professional, 2011). Dr. Reynolds saw a need in the medical community and used her training to find a solution. She found a role in coaching physicians and helping them maximize their leadership potential.

The need that she saw was that physicians are not at the forefront of changing health care reform. She noticed that the forum for research and the balance of medical practice was being cut short by local and national policies. Using her own experience and characteristics, she began an initiative to change the way physicians view healthcare. She emerged as a leader and her inspiring presentations have compelled physicians around the nation to change the way they practice medicine. Physicians are starting to become the leaders and take the roles that they were trained to take. Hospitals are
reshaping the structure of business and focusing on patient and physician directed medical care. The MD/PhD training equipped Dr. Reynolds to achieve many accomplishments because it opened up avenues of communication and networking. The MD allowed her to become the leader of an Emergency Medical Center, but her PhD allowed her access to publish ideas in a scientific manner. Her prestige as a scientist made her a well credited source in the medical community and eventually obtained her a position in the White House. It was because of her credibility that she was able to begin the Physician Leadership Training Institute.

The important lessons seen in Dr. Reynolds life work provide hope for MD/PhD graduates. First, Dr. Reynolds was successful because of how she networked. Communication through writing and speech is extremely important for emerging as a leader and even more so for transmitting ideas to patients. Second, Dr. Reynolds took small but substantial steps to reach her goal and seize roles as they were presented to her. She started out leading a trauma unit and then became the CEO. She eventually was able to start her own leadership initiative because of the credibility she developed as a leader early on in her career. Finally, Dr. Reynolds worked extremely hard to capitalize on opportunities. She pursued leadership in every organization that she took part. By putting her name forward through small leadership roles, she was becoming equipped to be extremely successful in her new business and larger leadership positions. Her life shows that dreams must begin small, but if they progress steadily big changes and initiatives can be developed. Her framework was based around aspiration based leadership.
Case 2: Dr. Shock

Another MD/PhD graduate who is changing the world of medicine is Dr. Shock. He directs an online blog which discusses issues of leadership development for physicians (Shock, 2011). After serving as a director for his Psychiatry Department he developed a list of ten items that define physician leadership according to the Leader-Role Theory. The first is that leadership is more about vision, culture, and values than delegating tasks. The second is that a title does not make a person a leader. The third is creating an atmosphere that fosters motivation. The fourth is that leadership is difficult. The fifth is that highly educated people are not necessarily good leaders. The sixth is that leaders have to make unpopular decisions. The seventh is that leadership is lonely. The eighth is that leaders must deal with people effectively. The ninth is that leadership is not purely about making money. The tenth is the fact that not everyone can be a leader and leadership is a lifelong process.

These principles were based on his own personal experience and a long lineage of advice from other leaders practicing the Leader-Role theory. Physicians have used Dr. Shock’s blog to offer encouragement and advice about leadership. The blog sponsored the development of a journal called the Healthcare Executive. Physician leaders from around the world are sharing similar difficulties and providing insights about handling difficult situations. They are emerging in roles suitable to their characteristics. Since physicians are dealing with life and death on a constant basis, it is absolutely critical that wise and experienced leaders direct the field. Having an avenue such as a blog allows
physicians to unite and express concerns. It opens an avenue of communication without
the challenges of malpractice lawsuits or disrupting the hierarchy of the hospital.

Dr. Shock’s MD/PhD training prepared him to be a leader in several ways. First,
the MD training equipped him to be a successful Psychiatrist. His success on the wards
prompted others to notice his work and allowed him to climb the ladder of leadership. The
PhD training equipped him to be an effective writer. It is from his PhD background that he
was able to organize and implement both a journal and a blog. Dr. Shock saw a need in
his community: physicians didn't have an avenue to communicate about leadership
challenges. He fixed the situation by taking a proactive approach and assuming his role. It
is from his networking ability that the blog became a success. Once the blog started to
flourish, it enabled the group to form a journal and express further ideas. In light of their
work, physicians from around the world now have a means to encourage each other to be
better leaders. A new wave of better patient care will result from this united front of better
physician leadership and accountability.

Case 3: Dr. Chaudhary

Another successful leader with MD/PhD training is Preet Chaudhary. He is the
Associate Director for Translational Research and the Co-Leader of the Leukemia and
Lymphoma Program at USC Norris Comprehensive Cancer Center (USC Norris, 2011).
Dr. Chaudhary has become a very successful leader in research and medicine. He has
obtained substantial funding through grants from the National Institutes of Health (NIH).
His publications have earned him many awards and he was recently elected to the

Journal for Service-Learning, Leadership, and Social Change  Fall 2011
American Society of Clinical Investigations. The research institution where he works has said that he provides the translational bridge between the basic, clinical, and population-based research initiatives at the cancer center. Many scientists have predicted that Dr. Chaudhary is on his way to winning a Noble Prize. He already has six patents in his repertoire of accomplishments.

Much can be gleaned from Dr. Chaudhary’s leadership and success. The first important insight is to never be satisfied with the accomplishments already obtained and to keep trying to emerge in different roles. Most people would have stopped or slowed down after receiving one grant. Dr. Chaudhary continued and kept applying for more grants until he received four from the NIH and many others from sources of outside funding. He is conducting research on AIDS-Associated Cancers and Cancer Drug Resistance. His work has been directly translated towards better treatment options for patients. Another lesson to be learned from Dr. Chaudhary is the importance of a leadership team. He has surrounded himself with many outstanding researchers and successful physicians. It is due to his team that he was able to obtain so much funding and emerge in his currently role. Medicine and science is progressively becoming more and more collaborative. Those researchers that refuse to collaborate are no longer being funded by the NIH. Matching characteristics to appropriate roles is the sign of a good team. A final reason for his success is due to his emphasis on translational research. His research directly correlates to patient care. It is this focused approach that allows Dr. Chaudhary to be successful at research and medicine. Both of his fields deal with a single avenue of expertise.
If the research did not correlate with his clinical practice, it would have been near impossible to continue to work in both fields.

Case 4: Dr. Andrews

Another avenue of leadership open to MD/PhD graduates is to become a Medical Center Administrator. Dr. Nancy Andrews became the appointed vice chancellor for academic affairs and Dean of the Duke University School of Medicine (Andrews, 2011). Her pathway was similar to Dr. Chaudhary’s in that she became a very successful researcher and was even named a Howard Hughes Independent Investigator. After publishing over a hundred research papers and fourteen book chapters, she was named the director of the MD/PhD program at Harvard. She excelled in this role and was then elevated to her current position at Duke. Though Deans rarely conduct research due to limited time, it is absolutely crucial that Deans support research and translational work. Dr. Andrews is responsible for recruiting the best faculty and students for Duke. She directs a strong cohort of scientists and physicians and encourages them to take appropriate roles in the hierarchy. It is her responsibility to keep the business affairs running smoothly and effectively while providing adequate avenues for the Principal Investigators to excel and advance the ranks.

Her journey shows a very important progression for MD/PhD graduates. She first advanced through the MD ranks and reached a position of authority as the distinguished physician of the Dana-Farber Cancer Institute at Harvard. She then returned to research and began to publish profusely. She combined the research with medical practice in
research and medicine consistently to become diversified. After progressing through the
ranks at Harvard, she saw that it was necessary to switch to Duke. Leadership involves
knowing when to take opportunities to advance and when to switch avenues of influence.
Dr. Andrews is one of the most successful MD/PhD graduates because she seized
opportunity when it was available. Having the foresight to seize opportunities is what
distinguishes excellent leaders from good leaders. Excellent leaders receive the top roles
in the hierarchy.

Case 5: Dr. Chien

A leader who is also seizing the opportunities around him is Dr. Kenneth Chien. Dr.
Chien has trained at Harvard, UCSD, University of Texas Southwestern, and Temple
University. He currently serves as the Cardiovascular Research Center director at Mass
General in Boston (Chien, 2011). Dr. Chien has used his MD/PhD training to advance in
the ranks of medical hierarchy. He has also started two very intriguing initiatives. Recently
he began an Institute of Molecular Medicine at Peking University in China. This initiative
has gained world-wide recognition and is fostering international collaboration in research.
He also recently began a new pharmaceutical company that is working with a stem cell
therapy that was created in his laboratory. This company is the complete advancement of
integrative medicine. Dr. Chien conducts the research, designs the therapies, creates the
drugs to sale, and finally uses the drugs and therapies in the clinic. Dr. Chien is truly a
Jack of all trades.

Dr. Chien’s work highlights the future of the MD/PhD career. As funding from the

Journal for Service-Learning, Leadership, and Social Change  Fall 2011
NIH dries up, it is more important now than ever to find novel sources of revenue. Research that leads to the start of a company will be the research that will continue into the future. Dr. Chien partnered with two other MD/PhD graduates to start his business. He maintains his position at Harvard but runs his business on the sideline. It is therefore necessary for MD/PhD students to begin investigating business practices since this is the new role they will have to take. Several students have already started to work on MBA degrees after residency and post-doc. Another training direction that will be necessary for MD/PhD graduates to pursue is the field of Public Health. A Master's in Public Health might be necessary in order for medical scientists to understand the basis of preventative care and community based medicine. These added characteristics would equip emerging leaders to seize new roles in the hierarchy. Understanding the public health needs will be the key factor for MD/PhD graduates to succeed at business initiatives in pharmacy and research.

Case 6: Dr. Perlmutter and Dr. Martin

MD/PhD graduates similar to Dr. Chien are moving from the world of academia into business. Dr. Roger Perlmutter is the executive vice president of research at Amgen (Amgen, 2011). He advanced in positions at UCSF and University of Washington. He later was elected as President for the American Association of Immunology. After advancing in academia, he decided to switch to the world of business. He worked up the ranks of Merck and Co. to become Executive Vice President. He later switched to the same position at Amgen where he currently works. While at Amgen he has founded his own non-profit stem cell research center. Dr. Perlmutter has achieved great success in...
business and research since his graduation from the Washington University MD/PhD program in 1979. Another MD/PhD graduate in private business is Dr. Joseph Martin. He is the director of Baxter research cooperation. After becoming Dean and then Chancellor of UCSF, he transferred to Harvard where he continues to work. He is a professor of neurobiology and also directs Baxter and Cytyc Corporation (Baxter, 2011).

Several lessons can be learned from these two MD/PhD graduates. It is important for MD/PhD students to realize that several pathways are open to successful medical scientists. These pathways only open up after working up the ladder of academia. The top academic scientists eventually get recruited to work in business. The advantages of business include a higher income, more international training, and the ability to start private research centers. These perks are highly appealing for most MD/PhD graduates. It is important to note that medical scientists recruited to business from academia must also work up the ladder in business as well. For those select few that do make it to the top, the prestige and opportunities available are the best in the career field. Many of these scientists still keep positions at local medical centers and also hold leadership positions in national medical societies. As these companies expand internationally, many MD/PhD graduates will probably begin to work around the world. The best and brightest will be drawn to the companies who are offering the most money and the most travel opportunities. This is often in conflict with the ideas of social justice and helping patients.

Unfortunately, the above leaders are the exception not the rule. Emerging to take
the higher roles requires incredible dedication, hard work, and exceptional people skills in order to be promoted. Many MD/PhD graduates get stuck at various subordinate positions along the way. The question then remains: How can MD/PhD students prepare for success during their training years to become the future leaders of the field? According to the American Physician Scientist Association, many options are available to MD/PhD students (APSA, 2011). The first is to get appropriate funding. Most programs offer a stipend for the entire training period that is paid through the NIH, state funding, or the hospital. This stipend is a worthwhile investment for tax payers because MD/PhD graduates provide over 50% of all translational research being done in the world. This means that very few advances in medicine would occur without medical scientists conducting research. Although stipends are paid, there is little funding for the actual research. For MD/PhD students it is crucial to get a F30 or F31 grant while in graduate school. F30 and F31 grants are offered by the NIH for MD/PhD students only. The students that go on to become successful scientists are the ones that received grants during graduate school.

Another important job for MD/PhD students is to make it into a top-notch residency program. Residency programs look for excellent Step 1 and 2 scores, good grades, and significant clinical experience. It is important for students to work at volunteer clinics, to shadow physicians in the clinic and hospital, and to get involved in student organizations. Many organizations offer national conferences with student stipends. Conferences are a great way to network and meet residency directors. Networking is one of the most
important skills for success in the MD/PhD career. Students must learn how to network with residency directors, research mentors, and directors at the NIH in order to receive roles in the hierarchy. Those that produce the best work are often the same ones who are best at networking. Networking is frightening for most students because it involves talking to people that have a large list of accomplishments and a broad range of influence.

The Pisacano Leadership Foundation offers excellent training resources for MD/PhD students who seek to use the principles of the Leadership-Role theory to navigate through the hierarchy of medicine (Pisacano, 2011). The Foundation offers a maximum of five scholarships to the most outstanding graduating medical students each year. The students that are accepted receive a $28,000 scholarship and personal mentorship regarding negotiating skills, journal writing techniques, professional presentations, and advocacy and lobbying skills. These scholars automatically have a step-up on their peers because the directors of the program personally help them network throughout the residency training period. Many such programs exist but the spots are extremely limited. Only the best and brightest students will be selected, but the students that are selected are the ones that receive superior roles in the hierarchy. The remainder of the MD/PhD graduates get stuck somewhere along the line. Advancement is still possible for these lower ranking students but without grants or one of the scholarships it will be impossible to climb to the top of the hierarchy.

The problem facing graduating MD/PhD students is daunting. The few leaders
who successfully maneuvered the ranks constantly took roles that advanced their
careers. They all had the characteristics of tenacity, foresight, competitiveness, vision,
and perseverance. The hierarchy began in medicine, transitioned to research, and
culminated gratification and long periods of careful experiments. Along the journey of
progression, the skills of networking and effective communication were the two most
important determinants of future success. Students entering the program must choose
the right research mentor, excel in schoolwork, and receive funding for the research (MD
PhDs.org, 2011). Those that have made it into the programs are already the best and
brightest college students. The shaping process continues further during medical school,
residency, and fellowship. Tomorrow’s leaders are being trained today. They occupy the
lowest roles but through careful advancement they will eventually become the Dean’s,
Executive Vice Presidents of Companies, and future Noble Prize Winners. Regardless of
the chosen end goal, social minded MD/PhD leaders can and will make a difference in the
world.

In order to be socially minded, it is critical that a paradigm shift be present in the
medical community. The transformational service leadership approach according to
Bennis (1993) is where leaders and followers encourage each other to live with higher
levels of morality and motivation. It is based on the principles of alignment, creation, and
empowerment. Leaders foster an environment for free expression of ideas and alignment
of individuals toward a common goal of service. A leader with the transformational
mindset is a person that lives with integrity and does what is right.

As I enter into a career as a medical scientist, I have become aware of the
challenges that lie before me. I will use my leadership potential to rise through the hierarchy and use my position of power to change the power-driven model towards a model of service leadership. In choosing a school, I looked for a place that I could align, create, and more importantly empower those around me. I knew that I would have several schools to choose from, but I wanted a place where I could encourage fellow students and the faculty over me to succeed. Ultimately, I chose to go to West Virginia University because I will have the opportunity to serve frequently in the homeless clinic, participate in the design and implementation of the MD/PhD curriculum, and publish articles about better patient care. The focus of the school is on rural medicine with a patient driven focus. Though I plan to specialize, I completely agree with and adopt the patient-centered approach to medicine. My vision is to start a research institute and medical center that will train the next generation of international scientists. I hope to recruit bright students from poor living situations around the world who would otherwise not be able to attend a university. I will bring them to the United States and pay to train them in the skills of biomedical research. In addition, I will offer a stipend and free living expenses. A part of the required curriculum will be service driven leadership and community health. These students will hopefully go back to their home countries and transform medical care in their local communities. I also plan to use my skills as a medical professional to provide free care to poverty stricken societies in Africa. Each summer I plan to lead a team to Liberia, Africa. In the United States, I will continue to volunteer at homeless clinics.

Though plans change and life throws unexpected curve balls, it is important to dream big and find the best opportunities for success. The leaders mentioned in this
paper were not afraid to push the odds and risk it all. I too will leave my mark on this world but through a transformational driven leadership model. The patients I treat will know that I offered them the utmost of my services and more importantly cared for them as people. My research will translate into creative solutions for diseases and illnesses and I will align people to accomplish great goals. Through my experiences abroad, I will touch the lives of others while seeking to understand their culture and society. Too many people try to change the world, I simply want to find my role and leave my mark. Change will come naturally if passion drives the work.

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