Career Talk

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Edited by
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Introduction

Angela C. C. Wang, MD

The strength of any organization, especially a volunteer-based organization such as the American Thoracic Society, lies in its membership. This book represents ATS' investment in its future and its commitment to its most junior members. On a personal level, belonging to the ATS has given me the opportunity to meet some incredible people, many of whom have contributed to this book. Putting this book together is one way for me to give back to the organization and also introduce you to a dynamic community of individuals who care deeply about making a difference. These are individuals who are passionate about medicine and science, about life and humanity. Their commitment and compassion is reflected in this book.

My goal, then, was to put together a collection of essays that was informative and yet reflected the diverse personalities and talents in ATS. In fact, the one word that comes to mind that describes what I felt as this book started coming together is “delight.” I hope you share this feeling as you peruse the various contributions. If, at the end of this book, you have more questions than answers, then we will have done our job. One common theme you will read throughout this book is that many of us have gone through life not knowing all the answers ahead of time. We must all deal with uncertainty and change as our personal and professional needs evolve. Professional development does not end with fellowship. The key is knowing what questions to ask of ourselves and our mentors and not being afraid to ask them.

To trainees and junior faculty, you will be faced with making major life and career decisions, but whatever career choice you make, don't let the system make you feel like a failure. One of the strengths of pulmonary, critical care, and sleep medicine is the range of opportunities available to you. Whatever you choose to do, it will be for yourself and the people important in your life. So, Believe in Yourself. And whatever you do, stay involved. Be an advocate. It is too easy to play victim and forget to focus on the good you can do. This book is meant to be “A Primer of Possibilities,” a guide to the opportunities that lie ahead. We supply the notes, but you must make the music.

Acknowledgments

I am supremely thankful to all the authors for their enthusiasm. I'm not sure that being an editor can be called an inspiring task, but the wit and intelligence of your contributions have truly been an inspiration in getting the job done!

Some special mentions, *Lynn Schnapp* who got me started writing CareerTalk, and after a lot of hemming and hawing on my part, finally pushed me to put in an application for this assembly project! To *Dean Schraufnagel* who, as past ATS Website Editor, supported my column for the last 5 years. To *Augustine Choi, David Ingbar, Sharon Rounds, and Jo Rae Wright* who have demonstrated the meaning of compassionate leadership and helped make the ideals of the ATS very real for me. To *Alice Boylan, Charles Daley, and Douglas Conrad*, hard to believe that 20 years have gone by since we first met in that tiny room on the 5th floor of SFGH.

And special thanks to the ATS staff who collated, edited, and completed this project on time! Another bonus of belonging to ATS has been the opportunity to work with the dedicated staff. They are the ones who make things happen!

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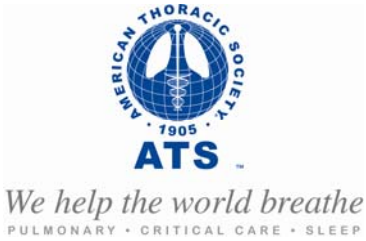

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Industry-sponsored grants (received or pending) including contracted research	Centocor, Amgen

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Table of Contents

Building and Protecting Your Reputation

Angela C.C. Wang, MD

You can't build a reputation on what you are going to do.

Henry Ford (1863 - 1947), Car Maker

When I first wrote about “Establishing a Professional Identity” (http://www.thoracic.org/sections/career-development/career-talk/articles/community-building/February-2005.html), I focused on developing a clinical or research niche. However, over the last few years, as I have sat on committees, developed conferences, and looked for a new job, I’ve realized that one of the most important aspects about developing a professional identity is building your reputation. How many times have I heard “Well, s/he’s a good person”? Everyone will nod their heads in perfect understanding – we expect excellence, but being known for honesty, fairness, and the ability to work with others goes a long way in determining whether or not someone gets recommended for a job or position. What is an “old-boys’ network” but a bunch of guys who pass each other’s names around?

Be honest. Reputations are usually built over months to years, based largely on our actions but sometimes our words as well. And yet, how many of us think about how we are perceived by others as we go about our daily personal and professional lives, e.g., honesty and integrity. We learn to tell “white” lies or half-truths in order to make the process of getting along with others easier. Similarly, we learn not to confront others on every minor transgression, e.g., littering or throwing a cigarette butt on the road. We excuse these acts in the name of socialization and reassure ourselves that we would speak up in the case of something really egregious. But would we? Those of us who bemoan the long and laborious process of institutional review boards (IRBs) and human subject research need only to remember the Tuskegee Institute and syphilis experiments. This extends to people and companies with whom you associate. Is all business just business? Or is it the money that really matters?

Keep Your Promises. One thing you quickly find out when you're trying to organize an activity or run a committee is who you can count on to follow through on their commitments. People expect you to know what you can or cannot handle in terms of workload. Learn to say no gracefully, or at least ask to get back to that person after you've had a chance to look at your schedule or talk with your advisor. It is much, much worse to volunteer or agree to participate on a project and then find yourself overextended. You either don't complete your assignment or do a bad job. Sometimes, unexpected obstacles arise. In that case, be sure to communicate your difficulties with the planner as soon as possible so that other arrangements can be made, if necessary.

Reputations are fragile. Although reputations should be based on the quality of your work, your thinking and your integrity, recent events involving the governor of New York illustrate how quickly a reputation can be destroyed. Unfortunately, even an unfounded accusation can indelibly stain a career. Recently, I was accused of poor practice and sloppiness in managing my patients. Even though I had worked hard over the last 2 years to establish my practice, the shadow this accusation cast on my reputation for delivering good healthcare and my commitment to my job was very real and threatening. What troubled me especially was how this accusation was presented without a thorough investigation of the facts. But it didn't matter; the damage was done.

Communicate professionally. The question for me was how to be aggressive in responding to these questions without seeming overly defensive or dismissive. I was angry, but realized that how I handled the situation was an essential part of the damage control. While I was not going to tolerate unsubstantiated attacks, I needed to carefully listen to determine if there indeed was anything that I needed to improve upon. This also brings up the issue of gossip. Use your judgment; be very careful of how you speak of others. It's one thing to share a juicy story with a close friend, another to develop a reputation as someone who lacks discretion or is unreliable.

The matter turned out to be a misunderstanding and not reflective of my standard of care. But it took me several days to track down the parties involved and to get the facts.

Luckily, people were prepared to hear me out before passing judgment. I like to think that my reputation helped buy me time and understanding while I investigated matters.

Be fair. Reputations can also trap you. Even if you consistently favor one viewpoint or another, you need to stop and make yourself think of the other side. Fairly or unfairly, word-of-mouth can stereotype you as a naysayer or nitpicker. Worst case scenario? Marginalization. People stop listening to what you have to say or don't even bother asking for your opinion because they think they already know what you will say. Instead, if you take the time to listen and respectfully address the concerns of those on the opposite side, others will have confidence in your ability to think and to lead.

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Hiring Good Help

Angela C.C. Wang, MD

Look around at the people you consider to be successful and you will usually find excellent support staff close by. Setting goals is only part of achieving success. You also have to choose the right people to help you accomplish your goals. Whether it is a nurse manager, lab technician, or nanny, these are the people who help you get things done and who free you to think and move forward. A reliable, trustworthy employee who has the ability to troubleshoot small problems can simplify your life, enabling you to focus on the "big picture." In contrast, someone who cannot get along with the rest of your team members or who is unable to listen and follow directions may make your life miserable.

Building a team requires thought and effort. Ironically, many of us are more comfortable with, and spend more time, choosing a computer or the latest PDA than in hiring/screening employees. We may complain about the amount of time it takes to hire a new employee, but the consequences of hiring a bad employee may be worse than having no employee at all. Think about the time spent resolving conflicts in the lab or office because of personality issues or the lost productivity resulting from the loss of a highly functional employee whom you have spent many hours training. Minimizing the risk of these situations occurring requires that you invest time and energy in the selection process to find employees who are not only technically proficient, but who are also loyal and compatible with their lab or office mates.

The hiring process usually consists of placing an ad, reviewing written applications, and conducting a personal interview. Here, we will discuss the overall hiring process with a special emphasis on hiring technical or office help.

Before beginning, ask yourself the following questions:

1. What are your goals and performance expectations for this position? For instance, what hours is the person expected to work? If you are looking for a lab technician, what sort of skills will this person need? Cell culture? Molecular biology skills? Will this person

be expected to have any supervisory or managerial duties? Keep a budget? Be available via beeper and/or work weekends?

Think about what is essential. Are you willing to train a recent graduate or are you looking for someone with experience? Keep in mind that technical skills can be taught, but that character traits come well established. It is best to know ahead of time whether you can't stand someone being late or who keeps a messy desk. Perhaps you are willing to compromise on certain traits in exchange for honesty or good humor. You must also consider the personalities and needs of the other people on your team. People do not have to socialize with each other, but they have to be able to work together. Having a team of highly skilled individuals who are constantly bickering detracts from the overall team mission. In contrast, the intellectual and emotional synergy that results when a group of people work together and encourage each other's efforts not only facilitates success but also produces results that exceed expectations.

2. What questions will you be asking? Your questions should enable you to screen individuals for the qualifications and attributes needed to successfully fill your position. Hence, it is also important to know what answers you are looking for.

3. Where you are going to conduct the interview? This is especially important for junior faculty who may be sharing office space. The personal interview may be the most important part of the entire process, and in some cases may be the only opportunity you have to find out information about the potential employee before you make your decision (or mistake!). Make sure you have access to someplace quiet that will enable you to conduct the interview uninterrupted.

The Hiring Process

View the job ad as an initial screening procedure. In some cases, such as when seeking to hire for a position through a university or other large organization, there may be a template available or an online job board. The ad should be concise, but include information that is essential for the job and enable the potential hiree to decide whether s/he even wants to answer the ad. For instance, if the person will be expected to work weekends or nights on a

regular basis or if specific technical skills are absolutely necessary for the position or salary information, this will save both of you valuable time.

Determine your organization's hiring policies. For instance, there may be different tracks for people performing research at large academic institutions, e.g., research technician versus research scientist, union versus non-union. Are there any requirements for preferentially evaluating applications, such as recent layoffs, for a new position? Will there be a probation period involved? This may be important when determining what kind of fringe benefits you will be able to offer the applicant.

When you receive the written applications, prioritize them in terms of suitability. For instance, when hiring a lab technician, I look for past experience to give me an idea of technical skills as well as stability. Someone who has been changing positions frequently raises a red flag in my mind. Next, I have found it useful to conduct an initial short telephone interview to go over other essential information to help further weed out inappropriate applicants and avoid unnecessary interviews. For example, availability may be an issue; a person may not be able to start within the timeframe needed.

Conducting the Interview

The interview allows you to evaluate the person for certain character traits. It is important to understand and avoid your own biases so that you can conduct the interview in an objective manner. In other words, do not let that nose ring distract you from fairly evaluating the candidate's character traits.

The interview also gives you an opportunity to sell the position to the candidate. Again, it is important that you understand your institution's hiring policies so that you do not mislead candidates in terms of fringe benefits, retirement benefits, etc. It is important to clearly define the work environment and your expectations. For instance, the candidate may be a very quiet person who may not function well in a large bustling lab or group.

Things you may want to know—is the person:

- Stable?

- Reliable?
- Hard working?
- Determined?
- Loyal?
- Able to learn new skills?
- Able to troubleshoot?
- Able to work independently?
- A team-player?
- Leadership potential?

If technical skills are important for the job, be sure to ask specific questions that will enable you to evaluate the candidate's expertise in that area. However, open-ended questions will be more valuable in helping you to determine whether the candidate is a good fit for the job you have to offer. You need to understand the candidate's expectations and whether they synch with yours. The answers to these questions should enable you to get an idea of what a candidate's strengths and weaknesses are. Ask questions in a positive manner. It is important to make the applicant feel at ease. A relaxed person is more likely to open up and let you learn more about him/herself. While a certain amount of small talk may be helpful in accomplishing this, remember the purpose of the interview is to enable both you and the candidate to learn more about each other and the position.

Some good open-ended questions: Tell me about your current job. What do you like/dislike about it? Salary aside, describe your perfect job. What is the most important thing about being a lab technician or respiratory therapist? What is the most difficult situation you have faced in the workplace and how did you handle it?

Red Flags

Use your intuition. Clues such as a candidate not showing up on time, defensiveness during the interview, inappropriately focused on what you or the company can do for her/him rather than what s/he brings to the position, appears very uncomfortable during the interview, dominates the conversation or cannot provide references, should raise doubts in your mind that will require investigation.

When the interview is completed, be sure to tell the candidate when to expect a decision from you. There is no absolute rule as to how long to keep a person waiting, but be aware that these are people's lives with which you are dealing. Also, the longer it takes, the more likely the applicant will have a chance to find another offer.

Other Things to Consider

If the employee will be working with other people in your group, consider inviting the top candidates back for a second interview with other members of the group. This will give you an opportunity to directly observe group dynamics and to get feedback from the people who will be interacting with the new employee on a daily basis.

Checking References

This is imperative!!! Make sure you call *everyone*. Written references are often bland and unrevealing. People are often more willing to be more direct on the telephone. This is your chance to find out how the candidate actually functioned in a work environment. Did they get along with everyone? Were they reliable? Punctual? Careful? If you are hiring a lab technician, how involved were they in carrying out the experiments? How independent were they? Listen for silences and what people don't say. And always ask if the former employer would be willing to hire the person again and why or why not?

Ready to Hire

Before you call to offer someone a job, check with your human resources department to make sure you have fulfilled all the requirements and have completed the necessary documentation in terms of evaluating applications. Make sure you understand clearly what you are able to offer the candidate in terms of salary and benefits. Research salaries often come from multiple sources which may affect fringe and retirement benefits. Will there be a probationary period? What does this entail? Is there any orientation required? If so, who will provide it? The goal is to avoid misunderstandings that can result in feelings of resentment—you want to be able to start off on a good foot!

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On Negotiation

Angela C. C. Wang, MD

Negotiation skills are important at every stage of your career. However, this is often obscured by the inability to recognize the opportunity. For instance, are you being assigned a new task or responsibility? Is your division chief asking you to attend another week or two on service? How does this fit in with your current salary or administrative support? Or perhaps you need a key piece of equipment. How about negotiating an exchange for helping out?

Many people dismiss negotiating as a lowly skill that, like networking, is an unnecessary form of self-promotion. But you cannot assume that just because you are “junior” that you know less than your chief about what is needed for success, or that your chief will give you what is needed just because you are a hard-working team-player. Your chief must juggle the overall needs of a busy division or department and may very well give up resources to buy the time or cooperation of someone who is less accommodating than you!

Furthermore, most young faculty are used to a chain of command that rewards obedience, given that they have trained in a hierarchy whose rigidity rivals that of the military. This is particularly a problem for women and minorities who, because of cultural, gender, and societal issues not only have different expectations during the negotiation process but also must deal with being perceived differently and held to different standards of behavior.

Negotiations are also fear-inducing. We are afraid of being rejected, of being taken advantage of, or of looking stupid (greedy, aggressive, not cooperative). In other words, we are afraid of dealing with someone who is either more powerful or more informed than we are, or both. Fear doesn’t have to be negative, however. You can use fear as an incentive to be diligent, methodical, and determined in equalizing the balance of power and information. Yes, it takes work. But think of it as time and effort that you are investing in building your career infrastructure.

There are several excellent guides written about negotiations listed on the American Association of Medical Colleges (AAMC) website. My own top ten list of negotiating tips follows:

1. Be Prepared: Power and information are closely linked. For women, in particular, being prepared often correlates with confidence. So, do your homework. You need to know the priorities of your chief, division, and department. Academic medical centers are complex bureaucracies and you may feel like just a cog. The best way to counteract this is to understand the quality of your performance and the value of what you bring to helping the division and the institution achieve its goal. Then, you can objectively assess your assets (skills, resources) and needs (geographic location, job for spouse, QPCR machine) that either strengthen or weaken your bargaining position.

This will not be easy. It helps to understand your institutional culture—another disadvantage for women and minorities not already savvy with the unspoken rules of behavior that govern every hierarchy. Obviously, having a mentor can be immensely helpful in navigating all of this. But don't forget your peers, senior faculty in and outside of your division, even colleagues at other institutions. Don't be afraid to ask! Many things, such as division and department finances, are typically viewed as "insider" information. But you may be surprised at the amount of information you can accrue just by asking or looking on the Internet. For instance, the AAMC publishes salary ranges for faculty. Or, ask your division's administrator what the salary range is for faculty of your rank and step.

2. Be Patient: The initial phases of negotiation may seem excruciating! The counterparty may try to pressure you into making an untimely decision or turn it into a "take-it-or-leave-it" situation. Don't take the bait! Stay focused on the common goal. Ask for or offer an alternative for consideration.

3. Arguing ≠ Negotiating: Know the difference. This is not a winner-take-all situation. Realize that part of what you are doing is building consensus in achieving a mutually advantageous goal. Stay calm and avoid personalizing the issues. There is a fine and not always recognizable line between being assertive and aggressive, and between sounding strident

versus forceful. Sometimes, it helps to practice with someone. Just like public speaking, actually saying your presentation out loud can improve your delivery and thus, confidence.

4. Be Flexible: Be data-driven, but realize that there are at least two points of view involved—yours and that of the person sitting across the table from you. While there will be issues that you cannot compromise on, be careful of boxing yourself or the other party in by delivering ultimatums or reducing negotiations to a single issue. All issues stay on the table until negotiations are concluded since they may need to be re-addressed if some new obstacle arises.

5. See the Big Picture: Do you have a 1-year plan? A 5-year plan? How does the current situation fit in with and help you achieve your goals? For instance, one common mistake that junior people make when starting out is to focus on salary. Salary is only one of the "Big 3," the other two being space and time. Most would argue that the latter two are far more critical for success. Be prepared to deal with "what-if's." For instance, giving up some salary support may be well-worth a half or fulltime technician or administrative assistant.

6. Be Positive: When emphasizing how you bring (or will bring) value to the organization, be respectful of the other party's needs.

7. Listen: What are they telling you? What are they **not** telling you? It's sometimes helpful to have a checklist of questions you need answered, e.g., the program's success rate in getting K08 awards, their junior faculty tenured or transitioned to R01's, etc.

Listening also forces you to pay attention to the person sitting across the table from you. What is his/her style? How does it compare with your own? For instance, are you someone who tends to be accommodating? a problem solver who will go out of your way to resolve conflict but neglect your own needs? Are you dealing with someone who, in contrast, is competitive, argumentative, and likes to be in control? Recognizing these differences can enable you to proactively develop negotiation tactics that will increase your confidence and success.

8. Be Honest: Successful negotiations depend on a certain amount of trust and sincerity. **But** this doesn't mean that you should let it all hang out. You are not trying to be friends.

9. Get It In Writing: Verbal assurances are not enough. This is not an issue about trust. No one's memory is perfect. Take notes, write letters or emails reviewing recent conversations or important details. While having a letter is not the same as a legal contract, it may provide you with some protection in case of leadership changes.

10. Know When to Walk: This, perhaps, is the hardest of all. Don't be so intent on "winning" that last 10 or 20% that you jeopardize your hard-won gains and good will. Even if things don't work out, you may need to negotiate with this person again.

You need to know when to walk away not only from the negotiating table but also from your career track or even institution. No one wants to be or feel like a failure. Ultimately, your career success is theirs as well. But does their vision of your success coincide with your own? The surest way to bitterness is to find yourself a victim of someone else's decision making that forces you into a job or lifestyle that you don't want.

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Ten Rules to Giving an Effective Talk

Sally E. Wenzel, MD

Every academic career is filled with presentations. In fact, giving a good presentation is one of the more important tasks of our careers. Talks/presentations are how we inform our peers and students about recent developments in science/medicine, our research, new techniques, etc. They are how we inform colleagues (who might also be reviewers) of our work before they see it in grants or papers. And, they can and should be fun to give. How many other situations can you be in when you can basically talk "non-stop" about yourself for 30 to 40 minutes! While many educational specialists might argue that talks/presentations are a thing of the past, in academic medicine they will likely be around for years to come. Therefore, to ensure that you get your message across and do not completely bore or overwhelm your audience, I would suggest following these "Ten Rules."

***1. Tell them what you are going to tell them, tell them, and then tell them what you told them*.** This particular rule does not require a great degree of explanation. However, it can be easily forgotten. Remember the introductory slide, follow the order of that slide, and conclude with a slide that generally lists, at a minimum, the most important points you were trying to make.

***2. Keep it short and simple*.** While some of this is dictated by the people asking you to give a talk, shorter really can be better. Most studies have suggested that 30 minutes is the limit for most people's attention span, with the best attention early and some pickup at the end. If you are asked to give a longer talk, consider giving the "less important information" between one-half to two-thirds of the way through, and finish with the most important data. In general, don't try to cover too many topics during your talk, especially if your audience is relatively new to the area. Finally, as a general rule of thumb, plan on one minute per slide. For example, if your talk is 30 minutes, 30 slides would be ideal.

***3. Know your audience and environment*.** Unless you are giving a talk at your local institution, check with the organizer to determine who is attending. It can be uncomfortable to give a very simplistic talk to a well-educated/knowledgeable audience and vice versa. In addition, it is helpful to know the venue that you are talking in. If this is rather early in your career, it is even helpful to see the room and its setup before you speak. While computer/projection systems have become much better over the last few years, there are still occasions when they don't work. Make sure you arrive in plenty of time to fix any glitches that arise.

As a small caveat to Rule 3, it is very important if you are going to tell a joke, that you know your audience and tell it well. A word to the wise—do not attempt to tell a joke in a country in which the language is not your own. Trust me, it will never translate. Having said this, humor is still a wonderful aspect to giving a talk, but make certain that it is not offensive to any segment of your audience.

***4. Look at your audience*.** All too often, presenters are so busy looking at their slides or their notes that they forget to interact with their audience. Focus on individual faces, but change your focus frequently. Find a few that appear to be engaged. It not only makes the listeners believe that you are interacting with them, it also allows you to better gauge the response of your audience. Check for the number of people nodding off! If you see that, try to change something (cadence in your voice, speed of your talk, etc.) so that you regain their attention.

***5. Use effective slides*.** While many segments of society give talks without slides, we almost always interact with them in some manner. In fact, the content/format of slides can easily make or break your talk. Good slides require the right amount of data. Do not try to put too many points in a single slide, and never put in a large data table with unreadable fonts. Rather, create your own summary table to highlight your key points. In addition, pay some attention to the title of the slide. The title should be a "mini-summary" of that slide, giving the most important point.

When you are first putting together slide presentations you can be overwhelmed by the number of PowerPoint options available. However, like the talk itself, keep the slide format simple. Do not have additional background graphics, as these are usually distracting. Make certain the color scheme is appropriate and do not put red on blue background, green on red background, etc. In general, white on blue or black, or black on white yield the most readable slides. If you are using some other combination, project your slide format once before using it so that you are certain the slides are readable and somewhat appealing to the eye. In this regard, it is also important to remember font size. Do not use much/any text that is less than 24 point. While many default presentations still use Times or Times New Roman, simpler fonts such as Arial and Helvetica generally are more readable.

With the advent of computer-assisted presentations, many new techniques have become available. One of the simplest and most helpful is the build-up slide. This slide can be used throughout your talk to emphasize the particular point you are at. However, in addition, it can be used to help transition from one point to the next on a single slide. There are numerous options for these slides, from fading in and out, to flying in and out, to graying in and out. In any case, make certain that you are aware when a build-up slide is occurring, have the order of the build-up correct, and practice that particular slide if it is more complicated. In a similar vein, many presentations now include video clips. These can have a definite "WOW" factor. However, as for any newer technology, make certain that you are comfortable that your video will work with the computer and projection system that you are using. Again, if at all possible, run through that part of your talk on the system that you will be using before you give the actual presentation.

***6. Know and interact with your slides*.** As boring as it ca be, practice, practice, practice. Practice "talking your talk" in front of an audience at least once, if at all possible. Reviewing your slides silently is just not the same thing. However, it **is** important to know what is on each slide and to be able to anticipate the next slide. As part of interacting with your slides, learn to use the pointer. The pointer is not a weapon to be brandished wildly around the room! It should only be used when it helps to emphasize your point and should specifically interact with the portion of the slide you are attempting to highlight.

***7. Have a logical progression*.** This obviously refers back to both Rules 1 and 2. You can set the stage for this with your introductory slide and then build your story from the ground up. Try your best not to "jump" from point to point or area to area, as this can be more difficult to follow. And, again, remember to end with your most important data or point, as this is when attention may be picking up again.

***8. Work on segues*.** This, of course, also refers to Rule 6—knowing and interacting with your slides. If at all possible, try to begin to *introduce* your next slide before you actually *show* it. Obviously, this is easier if the two slides are related to each other. However, in transition areas of talk, this may require an actual "mini-introduction" which serves to begin the discussions on the next topic.

***9. Quote at least one other person's data*.** Believe it or not, this point is often not observed by seasoned presenters. Yet, to me, quoting other people's work makes you look more knowledgeable. And, it can be very stimulating to point out differences between your work and others. In general, we all learn from the differences and the similarities of our work with others. Believe it or not, **most** of what we do is a "model" of disease with its own inherent limitations.

10. Deliver with passion and a sense of humor. If you have the option, give talks primarily on topics you can have some general sense of excitement about. If you are **not** excited about *giving* your talk, then no one will be excited to *listen* to that talk. Some of the hardest talks to give are those when your data did not work out as you had hoped (i.e., the experiments failed). But in that case, remember to refer back to Rule 9. There probably was some reason/experiment that led you down this path. Perhaps even the negative experiment can teach us something, including some concern that the original studies may have some "issues" surrounding them that could not be repeated or built upon. Finally, **do** throw in some humor. Personal and humorous anecdotes are almost never offensive and generally can help you connect with your audience. This can be particularly helpful when you are talking about negative results... a situation we **all** have been in at some point or other.

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On Writing

John M. Luce, MD

Speaking preceded writing, and some oral languages never added a written form. The first known writing is the cuneiform script the Sumerians used around 4000 BC to record increasingly complex business transactions after mere memory proved inadequate. Written literature followed shortly thereafter, so that by 3000 BC, *The Epic of Gilgamesh* was inscribed on clay tablets and did not have to be handed down orally. Thus, although writing may have been invented primarily as for bookkeeping purposes, it has been used through human history to tell stories.

Not all good writers are accomplished speakers, presumably because speaking requires an ability to perform in public, while writing can be done privately. Nevertheless, the two forms of communication have so much in common that writers generally write as they speak and vice versa. Both speaking and writing are ways to organize your thoughts, and you can learn much about how you and other people think by hearing or reading how you and they communicate. The clarity of the language you use mirrors the clarity of your thoughts.

Above all else, writers must understand their readership to communicate effectively. Such understanding begins with an appreciation of what readers expect to read. Poets take it for granted that their readers expect poetry and don't give them prose. Most of you reading this document are fellows in training, and I assume that you expect to learn something from it about scientific writing, in particular how to prepare original scientific articles. You would be disappointed if I failed to cover that subject, although my other objectives are to discuss writing in general and to convince you that scientific and non-scientific writing are the same.

In addition to understanding what you expect to learn from reading this article, I have to communicate in a language you are familiar with. That means not only that I have to write in English but also that I have to use a comprehensible vocabulary. Some fiction writers may want to send their readers to a dictionary occasionally, but they will lose many readers if every sentence contains a strange word. Similarly, scientific jargon may be appropriate, even

necessary in some circumstances, but it will be meaningless to a general audience and in a research consent form.

Understanding your readers also requires that you provide the structure through which they expect to be informed. Readers like you might tolerate a rambling style in an essay such as this, provided it is short enough and so limited in scope that you don't need to know early in the essay where it is going. But you would consider a scientific article suspect if it deviated from the conventional sequence of title, abstract, introduction, materials and methods, results, discussion, summary, and references, perhaps with tables and figures along the way.

To meet common expectations, the structure into which writing is organized, and every subunit of that structure, should have a beginning, a middle, and an end just as a story does. When you open a book, you probably expect to find chapters that allow you to put the book down momentarily after you finish one or more of them. Within those chapters, you expect to find paragraphs that also let you pause from time to time if you need to. And when you finish the book, you expect that its ending and its beginning will be related through the narrative they encompass. The same is true of a scientific article, wherein the summary is foreshadowed by the introduction and supported by the material in between.

As standard subunits of composition, paragraphs generally should contain one topic apiece. They also should be introduced by a sentence that suggests the topic in the context of the preceding paragraph, and they should end either with a reference to how the paragraph began or with a transition to the paragraph that follows. Short paragraphs, including those used for writing dialogue, stand out because they do not demand sustained attention, but they have a staccato effect that can be irritating. Long paragraphs, on the other hand, look intimidating to readers and usually should be divided into smaller ones.

Paragraphs are more interesting if the sentences within them vary. For example, interspersing short sentences with longer ones pleases the eye because it changes the reading's pace. In contrast, a series of sentences containing clauses of similar length separated by "and," "but," or other conjunctions is monotonous. Better to break up two clauses

with a semicolon occasionally, to throw in dashes or parentheses to set off certain clauses, or to link three clauses together, as I have just done.

However you compose your paragraphs therein, they should be so closely related that readers are compelled to continue reading even though the paragraphs provide a pausing point. I started this document during a ski trip at Snowbird, Utah. During a powder ski lesson there, I was told by my instructor that intermediate skiers complete a turn and then look for a place to stop. Advanced skiers, on the other hand, make one turn after another and try to maintain their motion. I recommend that you think of successful paragraphs as a series of deep powder turns that carry the reader along with you.

Sentences, the subunits of paragraphs, are groups of words that convey a complete thought by means of at least a subject and verb, either or both of which may be understood. Because sentences are read in English from left to right, the subject usually comes before the verb, and confusion may result if the subject and verb—any related words, for that matter—are separated by phrases or clauses. Similarly, “this,” “they,” or “it” are confusing if readers cannot identify what they (the pronouns, not the readers) refer to in a given sentence or in a sentence that precedes it.

The Elements of Style (1) is my favorite primer on word usage and writing style. In it, William Strunk and those who updated his 1918 work emphasize that clarity, boldness, and brevity should be the goals of every sentence. These goals are best achieved by using specific, concrete, and assertive language. According to Strunk et al., good writers and good speakers use the active voice whenever possible; they say “I write” rather than “it is written by me.” They also emphasize the positive and not the negative, preferring “I forget” over “I do not remember.”

Good writers also avoid using “essentially” and other qualifiers (as in “the radiograph was essentially negative”) and use strong verbs rather than weak ones that are defined by adverbs. In this regard, they would rather say “I shout” than “I speak forcefully.” Finally, good

writers and speakers avoid unnecessary words (they state, for example, that “studies suggest,” not “there are studies suggesting”), and they constantly revise their work to keep it lean.

The Elements of Style covers punctuation briefly; a more detailed reference is Lynne Truss’s *Eats, Shoots and Leaves* (2). The title of the latter book underscores how the placement of a comma can change the meaning of a sentence. Thus, a hunter “eats, shoots and leaves” (Strunk and his updaters would put a comma after “shoots,” but Truss prefers otherwise, perhaps because she’s British) in that order. On the other hand, a koala either “eats shoots and leaves” (that is, the koala eats both shoots and leaves) or “eats shoots, and leaves” after finishing its meal.

Punctuation was introduced into written language to signify on paper how people frame and modulate their spoken thoughts. As a result, when you question how to punctuate a sentence, imagine how you might recite it. Commas provide short pauses between words, phrases, and clauses and can be used to set them apart but maintain the flow of a sentence. Semicolons bring the reader almost to a stop and are useful in joining two related clauses that otherwise could exist as separate sentences. Periods are a full stop, indicating that the sentence is complete.

Whatever their style and however they use words, some novelists work from an outline and do not begin a sentence until they have mapped out every plot detail. Others simply set about writing and see where their characters take them. Similarly, some scientific writers complete their abstract before they begin the body of the article, while others start somewhere in the middle and work forward and backward. The first approach risks premature closure; the second promotes false starts. But whichever approach you use, remember that the final article and the abstract should tell the same story.

The reason to bear storytelling in mind is that you are competing with other writers for the attention of potential readers, unless your work is so important that everyone has to read it. Assuming that it is not, you should realize that many people decide whether to read an entire article only if they are intrigued by the title and abstract, so make them as inviting as possible.

The same applies to the introduction, which can put readers off if it is longer than three paragraphs. Use it to explain what problem you are addressing, why the problem is important, what is known and not known about it, and how your study has filled a knowledge gap.

The methods and results sections are the heart of your story. For this reason, because readers will judge the quality of your study on the basis of its experimental design, and because they may want to reproduce the design in their own studies, you should insure that these sections are complete and understandable. Don't spare details in the methods and results sections. Explain your findings in words, reinforcing them with tables and figures that do not duplicate the text.

The discussion section of a scientific article is useful in recapitulating its results, reconciling them with those of other studies, and speculating about their significance. But this section should be brief and should amplify the introduction without repeating it. Brevity is important both because most writing is improved by being spared of superfluities and because most scientific journals have limited space. In fact, many journals either impose word limits or ask peer reviewers to designate what percentage of a submitted article can be cut without spoiling it. In my experience, the discussion section usually is the best place to make cuts.

In summary, structure, clarity, boldness, and brevity are the hallmarks of good writing, be it scientific or nonscientific. Although some writers may forsake these hallmarks in the name of innovation, they will dash most readers' expectations in doing so. If you would be good writers, be good speakers. Read your writing out loud or under your breath, and revise it until you can understand what you have written. Then give it to your colleagues, especially if they are co-authors, to make sure they understand everything you have tried to say.

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Professional Skills: Leadership

Sharon I.S. Rounds, MD

Trainees may question why they should consider seeking leadership roles. There are a number of motivations, including frustration regarding current leadership, the personal need for ego satisfaction or power, financial considerations, and altruism. Most importantly, leadership offers a sense of personal satisfaction from developing new and better processes and systems, problem solving, and helping others.

When one considers “leadership” in biomedicine, the usual thought is academic administrators, such as department chairs and deans, or business leaders, such as hospital CEOs. However, there are numerous other fulfilling opportunities for leadership in practice and academic medicine (1). Practice groups are typically led by physicians with financial and office management skills. Hospitals offer leadership opportunities for clinician administrators in areas such as staff privileging, quality improvement, utilization review, and patient safety. Leadership skills are critically important for educational leaders, such as course leaders, training program directors, and university or hospital committee chairs. Finally, professional organizations, such as the American Thoracic Society, provide important opportunities for leadership and leadership skill development. Since highly educated, creative professionals frequently hold strong opinions about management issues; biomedical leadership is often likened to “herding cats,” requiring exceptional people-management skills.

Successful leaders at all levels possess important skills. Professional expertise and knowledge of the organization are clearly necessary in order to engender trust and respect. Leaders have the ability to both develop a vision and communicate the vision to the group. Team building is especially important in order to enable all members of the group to contribute to the goal in a meaningful manner. Skills in conflict resolution and negotiation are necessary in leading any group. Finally, depending upon the circumstances, skills in strategic planning and financial management may be needed.

The business management literature provides interesting insights into the characteristics of successful leaders (2). **Emotional Intelligence** is a term used to describe the ability to manage ourselves and our relationships effectively. Studies have shown that the most effective business leaders are those with high scores on the four components of Emotional Intelligence: **Self-Awareness** is understanding of one's own emotions and their impact, the ability to realistically evaluate one's strengths and weaknesses, and self-confidence. **Self-Management** consists of self-control, honesty and integrity, conscientiousness, adaptability, achievement orientation, and initiative to seize opportunities. **Social Awareness** is empathy, organizational awareness, and service orientation to recognize the needs of others. **Social Skill** includes visionary leadership, ability to influence others, propensity to develop skills in others, communication skills, ability to lead others in new directions ("Change Catalyst"), building of interpersonal bonds, and promotion of cooperation and teamwork.

Business management research has also identified management styles that are effective in different settings (2). The most successful leaders use combinations of these styles, depending upon the settings. The **Coercive** leader demands immediate compliance and is most effective in a crisis. An example of appropriate coercive leadership would be the captain of a ship in a storm or the leader of a "Code" team. However, coercive leadership has long-term negative consequences in most settings. **Authoritative** leaders are capable of mobilizing people toward a vision and are most positive when a change in direction is needed. **Affiliative** leadership creates harmony and builds emotional bonds, heals rifts, and gains loyalty. However, exclusive use of this style can lead to tolerance of mediocrity. **Democratic** leadership forges consensus through participation of others in decision making. This style is effective in developing consensus, but takes time and can inhibit forceful decision making. The **Pacesetting** leadership style sets high standards for performance and works best when there is a motivated team. Successful leaders of research teams frequently use the Pacesetting style effectively to achieve results in a timely fashion. However, feedback to team members may falter if this style is used exclusively. The **Coaching** leadership style is very successful in educational settings since it promotes performance in others and builds for the

future. This style works best when the team members believe that they can benefit from improvement!

Leadership training should begin in the early stages of training. Residents and clinical fellows have the opportunity to serve as leaders of complex, multidisciplinary health care teams. Work hour regulations necessitate frequent “hand-offs,” requiring important communication skills. Similarly, postdoctoral fellows in research laboratories can acquire valuable research team leadership skills. Both clinical and research training programs increasingly offer career development training that includes leadership and communication skills.

Career development workshops developed by professional organizations, such as this one offered by the ATS, provide discipline-specific training. Many institutions offer leadership academies (3) that provide training in leadership, communication, and management skills. These academies are in part motivated by the need to develop new leaders who will be needed as the “baby boom” generation retires. Other sources of leadership training are formal, degree-granting programs, such as those offering MBA or MPH degrees. Finally, a number of institutions, such as the Harvard-Macy Institute, offer intensive non-degree courses in management.

Some leaders begin their careers with a plan to attain leadership. Others evolve into leadership positions. Steps to attaining a leadership position include: hard work leading to recognized expertise, setting a leadership goal, developing a plan to attain the goal, focus on achieving the goal, effective mentoring, and reassessment of goals (4). Sometimes it is necessary to change institutions in order to achieve a leadership goal. Good luck helps too….

Women and minorities have special issues in attaining leadership positions. For women, traditional gender roles and different time courses for careers can present problems (5). Minorities and women may also have fewer role models and mentors. For these reasons, professional organizations, such as the ATS, provide valuable opportunities for long-distance mentoring and networking.

In summary, there are myriad opportunities for leadership in the biomedical professions. A variety of leadership skills are needed for successful leadership, and opportunities exist for training in these skills. The rewards of leadership are numerous, but the most important is the sense of "doing good" that brought us into the field at the beginning. The key elements to attaining a leadership position are the desire to do so and effective coaching along the way!

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Getting the Most out of Mentoring

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Choosing a mentor is one of the most critical decisions you will make during your career. The mentor's role is often described as that of a trusted counselor. For instance, a mentor can:

- Clearly explain the expectations and criteria for promotion whether it be from fellow to junior faculty, or from assistant to associate professor.
- Identify and facilitate the acquisition of resources to meet these expectations.
- Provide frequent and honest feedback.
- Warn you of potential obstacles to progress.

This essay is written from the point of view of the potential mentee. To that end, we discuss how to find and choose mentors. We also discuss what a mentee needs to do in order to maximize and promote a long-term, productive relationship with his/her mentor. The responsibilities of the mentor are only briefly touched upon. For more information regarding this topic, the reader is referred to http://faculty.washington.edu/olmstd/research/Mentoring.html

What is a Mentor? In its broadest sense, a mentor is someone who is concerned about you and helping you to succeed. Importantly, the responsibility of a mentor is also to “give,” and that his/her advice and actions only benefit the mentee and not the mentor. In this way, mentoring is quite distinct from “training” and being a “trainer.” Although the trainer is also concerned about you and helping you to succeed, the trainer also benefits from his/her actions.

As cited by Morris Zelditch, 1990: "Mentors are advisors, people with career experience willing to share their knowledge; supporters, people who give emotional and moral encouragement; tutors, people who give specific feedback on one's performance; masters, in the sense of employers to whom one is apprenticed; sponsors, sources of information about

and aid in obtaining opportunities; models, of identity, of the kind of person one should be to be an academic."

Advantages and Disadvantages: A mentor can play a critical role in the formulation of your career plan. For instance, s/he can help you to understand your institution's culture by explaining its formal and informal norms, values, and expectations. A mentor can also facilitate the development of a supportive and productive colleague network. It is critical that both the mentor and mentee recognize their responsibilities and be able to communicate effectively. A poor mentor, or a mentor-mentee relationship filled with conflict, leads to failed expectations and results in the trainee or junior faculty member feeling like a failure and isolated.

What is a good mentor? A good mentor should be a good, objective listener. S/he should try not to project his/her preconceptions/biases onto the mentee's problems or goals, but instead, demonstrate sensitivity and empathy. Ideally, s/he will be aware of cultural, gender, and disability diversity issues. A good mentor should serve as a professional and personal role model in terms of integrity, compassion, and enthusiasm for the job. Above all, a good mentor should be approachable and patient. A good mentor always thinks what is best for the mentee and often sacrifices himself/herself to provide a more nurturing and giving environment for the mentee.

Choosing a Mentor: While accomplishments in teaching and research are important, also consider the following:

- Enthusiasm for advising students.
- Experience in directing postdoctoral fellows and junior faculty.
- Management and organization of his or her research group.
- Reputation for setting high standards in a congenial atmosphere.
- Funding sources and how long they will last.
- Successful track record of mentoring trainees to next phases of academic career development.
- Fairness.
- Successful record of promoting trainees.

- Be sure to talk to present and former advisees and to gain personal impressions through face-to-face interviews. A key question is whether a particular mentor's style is compatible with your personality.

Multiple Mentors: In addition to a primary adviser, we strongly recommend having one or two secondary advisers who have an interest in your research/career and are prepared to offer counsel. It's rare that a single person is able to adequately deal with all of the personal and professional issues that come up as a part of professional development. In other words, people have different strengths. What one adviser is lacking in experience and temperament can usually be found in the others. Don't forget to look outside your division or even department. It can be very helpful to get an outside perspective on issues such as grant applications or even local politics. Often, an advisor outside the institution can also provide a balanced view of any conflicts or decisions a mentee needs to make for continued successful career development. For instance, the decision to move out of the mentor's laboratory is always a difficult one, and an outside perspective can be very helpful. Be careful—don't choose a mentor the same gender as you and expect the person to be especially sympathetic regarding gender-specific concerns. This is not always true.

Getting Ready: How to Get the Most Out of Your Mentoring Relationship(s):

- **What is your vision of life**? The clearer you are on what you want to achieve in your life and work, the better you and your mentor(s) will be able to focus on constructive ways to help you attain your objectives. What type of research do you want to pursue? What are you good at? What skills do you need to develop? On a broader scale, Senge defines vision as what you want to create of yourself and the world around you. In addition to work-related goals, what does your vision include? Raising happy, well-adjusted children? Living on a beach? Being very fit and healthy? Visiting every continent? Helping others with their spiritual development? What do you love to do? Communicating these tenets and beliefs of your life with your mentor can be both enriching and effective.

- **Have realistic expectations**. Remember, advisors are only human; no one is perfect. It may be impossible for a person to single-handedly fulfill and address all the professional and personal issues involved in career development. Your advisor can at least help you find others who may be better prepared to deal with the issue at hand.

- **Optimize communication**. Make appointments. This way you will have your mentor's full attention. Be efficient and organized. Be on time. Be prepared. It is a good idea to have an "agenda" or list of topics/questions you want to discuss. After the meeting, summarize any agreements. ***Tip*:** If you need to cancel a meeting, make sure your mentor gets the message. Don't rely on email alone. Err on direct communication in person if you cannot decide to use either electronic or direct communication. When discussing conflicts or even mild disagreements, a one-dimensional email communication is sometimes ineffective and can be counterproductive. Periodically reassess your needs and goals. Keep your advisor/mentor updated on your progress and struggles.

- **Evaluation of creative work**. Do not submit "rough drafts" for input. Be sure the manuscript (or proposal) is presentable and free of typos. After re-writing, highlight the changed sections so that s/he does not have to re-read the entire paper. Accept criticism gracefully. It is the mentor's job to objectively evaluate your work and progress. While you may disagree, at least demonstrate that you are willing to consider your advisor's opinions. If, after thinking about it, you still disagree, it is crucial to demonstrate that you can rationally and reasonably defend your own position.

- **Requesting recommendations**. Have an updated CV on hand. Provide a short description of the grant (fellowship, program) to which you are applying. If you are requesting a letter of support for a grant, provide a copy of your objective and specific aims.

- **Respect boundaries**. Although friendship between mentor and mentee may develop, it is not necessary. An advisor may feel that friendship may interfere with his/her ability to

honestly appraise and deliver criticism.

How to handle disagreements: Conflicts are a part of life. The key is to remember that it's **your** life and career in the long run, and you have choices about how to respond. *But*, *respond with respect* for the other person's opinion. Something like: "Thanks for your excellent ideas. Let me take them into consideration and get back to you with my plan (thoughts, suggestions)." Most people will appreciate this type of positive, direct response. If you have multiple advisors, they may disagree on how to deal with a particular issue. Open and direct communication is the best way to handle disagreements regardless of how painful or uncomfortable they can be—email communication should be avoided.

When Does Mentoring Stop? "Mentoring is a lifelong activity—like parenthood." Professional Development neither begins nor ends with fellowship. While there are times when mentoring may be more important or needed, e.g., during formative years of career building or during times of transition, mentoring can be valuable at any stage. However, this does not mean that you will necessarily have the same mentor throughout your career. It is a good idea to periodically assess your relationship with your mentor. As you progress through your career, your needs will change and your mentors may change as well. As we discussed, personality issues, gender/cultural, or other conflicts may arise that negatively affect your relationship with your mentor. In that case, it is vital that you be able to discuss them before they impair the relationship to the point where your productivity and self-esteem are jeopardized. If necessary, find a trusted person to help mediate. As I mentioned in the previous paragraph, conflicts are inevitable in any relationship. The key is to deal with them in a positive, open manner. If you and your advisor feel that these differences are irreconcilable, work on finding a way to amicably find and move on to another mentor.

Once a mentor for a mentee, always a mentor!

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- Stanford University School of Medicine http://facultymentoring.stanford.edu/ – link to their faculty mentoring program
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On Teaching

Joshua Benditt, MD

I am a clinician-educator in Seattle. I spend about 60 to 70 percent of my time either doing clinical work where I am teaching or in more formal teaching settings like the medical school classroom or in resident teaching sessions. The rest of my time I work on scholarly activity doing limited clinical research and writing. I chose this path because I very much enjoy taking care of patients and find great satisfaction in stimulating curiosity in others about health and disease. I find that whenever I am working with students, the “aha” moment is worth all of the work of preparing cases, talks, or small group activities.

The most important thing that I have learned about teaching of any kind is that you must know the knowledge level of the students you are working with and aim at that level. I have seen miscalculations in this area on many occasions that have led to confusion, frustration, and a definite lack of learning. I will push students to move ahead, but we must start together at a level congruent with their knowledge base.

As far as possible, whether in lecture situations or small groups, I always try to use cases and clinical examples. For instance, when I give the pulmonary mechanics lectures to our second-year students, I constantly intersperse clinical examples and radiographs to explain what compliance and airflow resistance really are and how they are affected in disease processes. A radiograph of a complete pneumothorax does a great deal for the student to understand pressure volume curves of the chest wall and lung.

In the ICU, I have presentations, if at all possible, made at the bedside. Being near to and touching the patients while their history is told establishes a human connection even if they are comatose. Modeling compassion at the bedside is very important to me, equal to the physiologic facts that I teach my team.

"Pimping" of the classic variety by asking minutiae is, in my view, counter- productive. Embarrassing the students will often lead to a lesser likelihood that they will ask questions in the future. Asking questions about clinical scenarios that are more open-ended and allow the student to develop hypotheses are more effective, in my view. It can allow others to join in the discussion more readily so that there is a "team" development of knowledge.

I often give feedback during the rotation as well as at the end, especially if the performance is not up to par. I think it is important to see if development can be achieved during the rotation with some guidance. I always start feedback sessions by asking the students how they feel they are doing. I then emphasize the positive aspects of their care that I have witnessed, finally arriving at areas that need work, and try to establish specific goals and suggest resources that might be helpful. Also, when giving feedback to the housestaff, I include the pulmonary and critical care fellow both to observe and to give his/her input.

Lastly, and perhaps most importantly, I try to share with the trainees experiences that I had at their level to let them know that I was once exactly where they are now, struggled with the same issues, and yet survived to have an academic career based in teaching that has been deeply satisfying.

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ROADMAP FOR PHYSICIAN-SCIENTISTS IN PULMONARY BIOLOGY

Rita M. Ryan, MD

Step #1: Choosing a Fellowship

If you know you want an academic research career prior to fellowship, follow these steps.

- Calculate the number of weeks you would be conducting research with no daytime clinical commitments. This should be at least 50% of the total fellowship time, not counting vacation (i.e., 72 of 144 weeks for 3-year fellowship).
- Ask the program director about the track record of graduating fellows: Do they publish during and after fellowship? What percent moved on to academic positions in the last 5 years?
- Assess the levels of extramural funding (NIH CRISP database) and publications of faculty (Medline, PubMed, etc.).
- Is there an opportunity to do a fourth and/or fifth year of fellowship and, if so, what are the requirements? How many prior fellows who have wanted an additional research year have been able to do this? How many have not?
- Consider combined fellowship–MPH programs for clinical researchers.
- Consider combined fellowship-PhD programs for basic researchers.

Step #2: Targeting Your Fellowship

Organize your steps for developing a research project and follow a timeline relative to the start of the first research month.

Targets	Minimum	Good	Excellent
Identify research mentor	2 months	1 month	prior to starting
Develop written plan with hypothesis and specific aims (e.g., 1 page concept proposal)	3 months	2 months	1 month
Present detailed research plan seminar to division/external advisors and present a first draft of a grant proposal	6 months	4 months	3 months

Submit starter grant(s) (ALA fellowship; NRSA = F32)	12 months	6 months	3 months
Submit abstract to national meeting	fall 2nd year	spring or summer 1st year	fall 1st year (with luck)
Present work at national meeting	spring 2nd research year		spring 1st research year
Analyze data, write manuscript, present research seminar	fall 3rd year	fall 2nd year	spring 1st year
Consider starting small second project		spring 2nd year	fall 2nd year

Step #3: Positioning Yourself for a Faculty Position

Most experienced senior faculty believe it will require a minimum of 4 years of research time before you may be able to function and be competitive as an independent investigator. Hence it is very likely that you will need either an extended fellowship or an intermediate-step position (research associate, acting instructor, or instructor). Note that this is still less research training time than most PhDs who typically have two postdoctoral experiences following their thesis research. Different institutions have different titles with associated rules and implications for these intermediate steps.

During this period of time, it is very important that you achieve the following skill sets:

- Acquire a sufficiently broad set of technical skills so that you are not too limited by techniques.
- Refresh your basic science background in your area of focus.
- Expose yourself to at least several different mentors (all possibly relevant to a single project).
- Acquire formal instruction in grant and manuscript writing.
- Become comfortable with presenting your work and getting critical feedback.
- Submit several grants of increasing complexity.
- Write, submit, and revise as many manuscripts as possible.

Often it is wise to have two related projects ongoing – one more long-range and/or riskier, and another that is more certain to be productive (no matter the experimental result).

Do not get trapped into doing only long range, high-risk science. (But stay focused—that's why the projects are "related.")

It is highly recommended that you work with your mentors to plan for and submit a career development award that will help you transition to faculty status with protected time (NIH K08, NIH K23, ALA Clinician Scientist Award, Parker B. Francis Award, etc). This is an essential ticket to obtaining job offers from many top-of-the-line institutions. However, since some of these are mentored awards and are funded based as much or more upon the institution and mentor than upon you, do not assume that they are freely movable immediately after funding.

In some areas, such as pediatric pulmonology, there may be a sufficient dearth of academic investigators such that you are able to obtain a faculty position directly out of fellowship. Although this is attractive in terms of title, salary, and prestige, it does not obviate the needs listed above which require mentored training time and the considerations below. You will need to negotiate this with your new division chief.

Attend national meetings and have your mentors introduce you to other investigators in your field. Participate actively and appropriately in poster sessions and other forums. Remember, these may be your life-long colleagues and peers.

Step #4: Seeking a Faculty Position

If you are in a <u>productive research situation</u> as a fellow (good project, mentor, environment), do not rush into a faculty position and do not rush to move (i.e., try to do an extra year or two of fellowship). Consider the following:

- If finances are an issue, look at the NIH Loan Repayment Program. Also consider small amounts of moonlighting to supplement income rather than taking a full faculty position for more money.

- Many places are willing to negotiate a creative “Senior Instructor” type of position with a salary level between fellow and faculty in exchange for some clinical duties. Be careful in this process not to hurt your ultimate goals of research productivity and achieving grant support that will protect your time.

- Depending on the institution, the structure of its academic rank, and promotion and tenure policies, it usually is not wise to start the “tenure clock” ticking when you are not a funded, at least partially independent, investigator.

- Consider expanding your research project to involve a second principal mentor. This will help your research knowledge and skill set, giving you a more unique position, and in addition, enhance your perceived and actual independence. An ideal way to accomplish this is to develop a project that bridges interests of a faculty member in your primary department and a faculty member in a basic science department, but is a project that is slightly different from each of their primary foci of interest.

- With the present dearth of new physician-scientists interested in an academic career, many places, even without a position available, will consider creating a position for one of their own fellows who has excellent potential for a research career.

Should you stay where you are? If you are in a productive research situation and are relatively happy, you should think twice before changing locations at this early stage of your career. In addition to the obvious uncertainties of moving to a new location and the “down time” associated with creating a new productive research situation, you will also have to acclimate to a new clinical service.

If your preference is to move (due to family/spouse considerations, no position available, not a good research situation, etc.), what should you look for in an academic position?

- No more than 8 weeks on a time-intensive service (e.g., ICU) or no more than 12 weeks on a less time-intensive service for the first 3 years. In some circumstances, you can

volunteer to take a little less money for less service time/call nights.

- **Do not accept the position until you have a mentor.** This person should be well-funded, have a proven track record in mentoring junior faculty, and, if not in your division, have a good relationship with your division chief or department chair.

- Most places will offer a 3year start-up package. This will include technician's salary and $20,000-$25,000 per year in supplies in addition to the major equipment you will need. It is suggested that you obtain this commitment in writing, specifying a minimum of 75% time for research, protected from clinical, teaching, and administrative work. Also, you should define what the expectations are after the 3-year "honeymoon" is over–what percentage of external salary and research support is expected of you and how much protected time will you have? To obtain this type of job offer, it typically requires your bringing a significant percentage of research support, including salary support, to your new position. In some disciplines, this may not be essential—but at the present, this is the exception.

- Obtain your job description and promises in writing with sign-off by the division chief and department chair. Remember that even written promises sometimes are altered of necessity due to changing circumstances, but then you will be in a much better bargaining position. Also, try for an agreement that any start-up dollars that are not needed early on can be rolled forward for up to 5 years (but be warned this may be difficult to get as a promise or in fact).

If you move to a faculty position at a new institution without completing the additional research training years, then you are "at risk." Therefore, you should try to negotiate a period of protected time longer than 3 years. Mentorship then becomes even more critical. It may be wise to work in the lab of a senior established investigator, but remember that you will need to establish independence and a promotion/tenure clock may be ticking. In this case, you may want to delay your "start-up package" for 1 to 2 years. During that time you will be getting the "lay of the land," continuing to work "hands-on" in the lab, be working with your mentor who will

provide the modest dollars needed for your own project which is intertwined initially with your mentor's, and be thinking about developing your own project after about 12 months on faculty.

Step #5: Serving Your Faculty Position

Years 1-3

Establish your lab and area of focus (e.g., identity) quickly. Meet relevant investigators and potential collaborators. Find ways to gain a local reputation in your area.
In the first year, meet with an experienced member of the medical school promotion and tenure committee in order to understand the local system and criteria for moving up.

Write your papers and remain focused on your research.

Stay away from clinical administrative tasks unless they are directly related to your primary area of interest.

Learn to say "no" nicely, emphasizing that your principal value to colleagues will come from your research success so that the institutional investment pays off. However, you need to be a reasonable team player and help out when unforeseen/unavoidable circumstances arise. If these have a significant negative short-term impact on your research, try to secure a quid pro quo (increased protected time in the future, etc). Be a good team player, but not a pushover who sacrifices your time too readily.

Keep doing your own hands-on work and be present in the research setting. Do not distance yourself by delegating your work.

Avoid working on a clinical project with a fellow during this time unless your role will be ancillary, well defined, related to your own laboratory/clinical research work, and the project has a high chance of resulting in a publication.

If you do not already have a starter-salary support grant (K08, K23, ALA, AHA, Parker B. Francis), obtaining this should be a very high priority. If you began a faculty position without

extra research time, your mentor should know when you are ready. You should have a developed project with some reasonable preliminary data and ideally at least one publication in the area of focus. If you don't already have one of these or more than 3 years of guaranteed protected time, then it is of critical importance to at least have submitted a salary support grant by 12-16 months into your faculty time. This will allow time for two review cycles within your first 3 years.

If you have starter career development support, do not rest on your laurels because time will go quickly. Use this precious time well. Expand your scientific knowledge base and interactions with basic scientists. Seek out supplementary research grants and other vehicles that will expand your operations and productivity (i.e., a second technician, joint mentorship of fellows).

If you take on long-range projects (transgenic production, epidemiologic outcome studies), be sure to balance them with some studies that are likely to have short-term productivity.

Obtain a graduate school appointment if it doesn't require devotion of too much teaching time.

Co-mentor junior trainees with a senior faculty member.

Years 3-5 and Beyond

Early-to-mid 4th year of a K award, you should submit an R01. This will allow time for two review cycles without necessitating a hiatus in funding. Consequently, you need to be productive prior to this time. However, don't put all your eggs in a single R01 basket. Apply for other grants that could help tide you and your research over if your R01 requires an additional cycle for funding.

Productivity during this time period is critical to continued funding and your career development. Write your manuscripts, begin studies likely to be published in more general scientific journals (e.g., *JBC, MCB, JCI, J Exp Med*).

Begin to take a more-active role in national and local professional organizations. Participate in a limited number of committees that are strategically related to your research interest.

Obtain a graduate school appointment if it doesn't require devotion of too much teaching time and if you haven't done so previously. Try to attract predoctoral students and postdoctoral PhDs to your lab.

If you are not happy with your institution, division, mentor, or living situation, this may be a reasonable time to consider changing institutions. Ideally you should have funding for at least 1 - 2 years that can be moved with you, as this will make you a much more attractive candidate. The best time to move is when you have a R01 grant. But be sure to understand the promotion and tenure system at any new institution before moving.

Once your principal research project is R01 funded:

- Begin to look for opportunities to fund a second project. Ideally this second funding would be offset 2-3 years so that the grants end at different times. Program Project and Specialized Clinical Center of Research grants are particularly good since they bring interactivity.
- Assume a greater mentoring role for trainees. Develop your portfolio in this area and transition from being a co-mentor to a solo mentor.
- Consider applying for a NIH K02 Award for additional protected time for training and expansion of your knowledge and skills.
- Investigate sabbaticals – these are underutilized.

Targeting Your Faculty Years 1-5

Target	Start Time
Write starter grant (K08, ALA, Parker B. Francis)	before faculty appointment or < 12-18 months
Obtain starter grant	before faculty appointment or <18-30 months
Work with your own mentor to	24-36 months

participate as a junior mentor to a fellow	
Write research project support grants (MOD, ALA RG, AHA RG)	12- 48 months
Submit RO01 grant	36-42 months
Submit multiple small “bridge” grants as R01 backup	36-60 months
Obtain R01 funding	60 months, but often delayed

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Academia - What Every Junior Faculty Needs to Know: An Overview

Sharon I.S. Rounds, MD

Those considering a career in academic medicine or research should understand the structure(s) of academic medical centers, which are very complex institutions. By understanding the administrative hierarchy, the faculty member has insight into the pressures on the laboratory, division, and department. The needs and demands of the institution(s) ultimately translate into the job descriptions and performance appraisals of the individual faculty member and employee.

There are a wide variety of institutional structures in academic medicine. In one model, the university owns the teaching hospital, and there may be congruence between the needs of the hospital and those of the medical school. Other affiliated hospitals may be distinct corporate entities, with separate boards of directors and frequently differing goals and needs. Economic competition among teaching hospitals can further complicate the academic structure.

Teaching hospitals, in turn, may be components of larger managed care systems. The hospitals of the Department of Veterans Affairs are examples of teaching hospitals embedded in a large managed care system that is distinct from both the university/medical school and other teaching hospitals. The priorities, goals, and needs of the managed care system may differ from the traditional academic goals of the university.

In another model of academic medicine the teaching hospitals are corporate entities totally distinct from the university and its medical and other professional schools. In this model, the goals and needs of the academic and clinical entities may differ drastically. Depending on the structure of the academic medical center and the job of the faculty member, the employer may be a teaching hospital, a practice plan, or the university/medical school.

When the priorities of the clinical entities and the university/medical school differ, this can be a source of frustration for deans, department chairs, division heads, and individual

faculty members. A classic example of conflicting needs can be in the allotment of time for teaching. If the faculty member is employed by a clinical entity, there may not be sufficient time allotted for preparation of teaching exercises. However, the university/medical school may require teaching as a prerequisite for the faculty appointment. In this case, the faculty member needs to have an understanding with his/her supervisor or division chief as to how this conflict is to be resolved. It is also critically important that the faculty member have a clear understanding of the identity of his/her supervisor. Obviously, the source of salary is an important clue, as is the person who did the hiring and performs performance evaluations.

Institutional culture and values are important. In considering an academic position, it is actually helpful to read the vision statement and strategic plan of the potential employer. This document gives a sense of the priorities and goals of the institution. Obviously, it is also important to note the date the document was approved! Plans more than 5 years old may not reflect the current priorities of the institution.

Institutional culture determines the relative value of clinical service in comparison with teaching and scholarly activity. Fellow faculty members of a similar rank provide insight through descriptions of their time allocations and monetary awards for performance. The institutional website and publicity also highlight employees whose performance is considered outstanding by the organization.

When considering an academic position, it is important to know how performance will be judged and by whom. This includes the frequency of appraisals, the criteria for performance appraisals, and the rewards for outstanding performance.

Institutional culture also determines opportunities for collaboration—particularly important when beginning a research career. Questions to consider are whether the hospital or university/medical school encourages or hinders multi-disciplinary collaborations, whether there are institutional barriers to collaboration across hospitals, and whether faculty actually publish together.

Institutional culture also can determine opportunities for advancement. Some considerations include the relative age of leadership. For example, a cadre of baby-boomer administrators is likely to turn over soon, making new opportunities for advancement. If the administrative structure does not include women or minorities, then this can be an important message…. Also, does the institution promote from within or does it tend to seek external candidates for administrative posts?

Academic promotion is important for job satisfaction in academic medicine by providing recognition of accomplishments and incentives for further growth. Academic promotion practices should be transparent, widely understood, and fairly applied. It is important that the prospective faculty member become familiar with the departmental academic promotion system and requirements, including expectations of timing (i.e., "up or out"). Progress toward promotion is enhanced by developing a system for keeping track of activities. For example, it's difficult, if not impossible, to recapitulate the teaching activities of the previous 5 years without an ongoing personal record! Faculty should have **at least** annual review by their supervisor or division chief/department chair in order to assess progress toward promotion.

Institutions vary greatly in their promotion requirements, but in general, the associate professor rank requires a national reputation plus scholarly activity plus teaching excellence. The professor rank usually requires an international reputation, significant professional service, in addition to scholarly activity and teaching excellence. Certainly involvement in the activities of the American Thoracic Society is valuable in the academic promotions process as evidence of national and international reputation.

Academic promotion to the associate professor level may be associated with attainment of tenure. Tenure is not frequently available to clinicians and varies greatly among universities. In some universities, tenure means a "job for life." In others, it guarantees a minimal, "base," salary. In some universities, it is only a title. It is obviously important to understand the meaning of and requirements for tenure—if it is an option.

Academic careers can be complex and demanding and are generally not as remunerative as private practice or corporate careers. However, the potential satisfactions are immense, including the excitement and fun of interactions with trainees and students, the satisfactions of teaching and research, and the sense of accomplishment that comes from enhancing knowledge. In my opinion, the most important element in academic career satisfaction is a challenging employment situation with both incentives and rewards for outstanding academic accomplishment.

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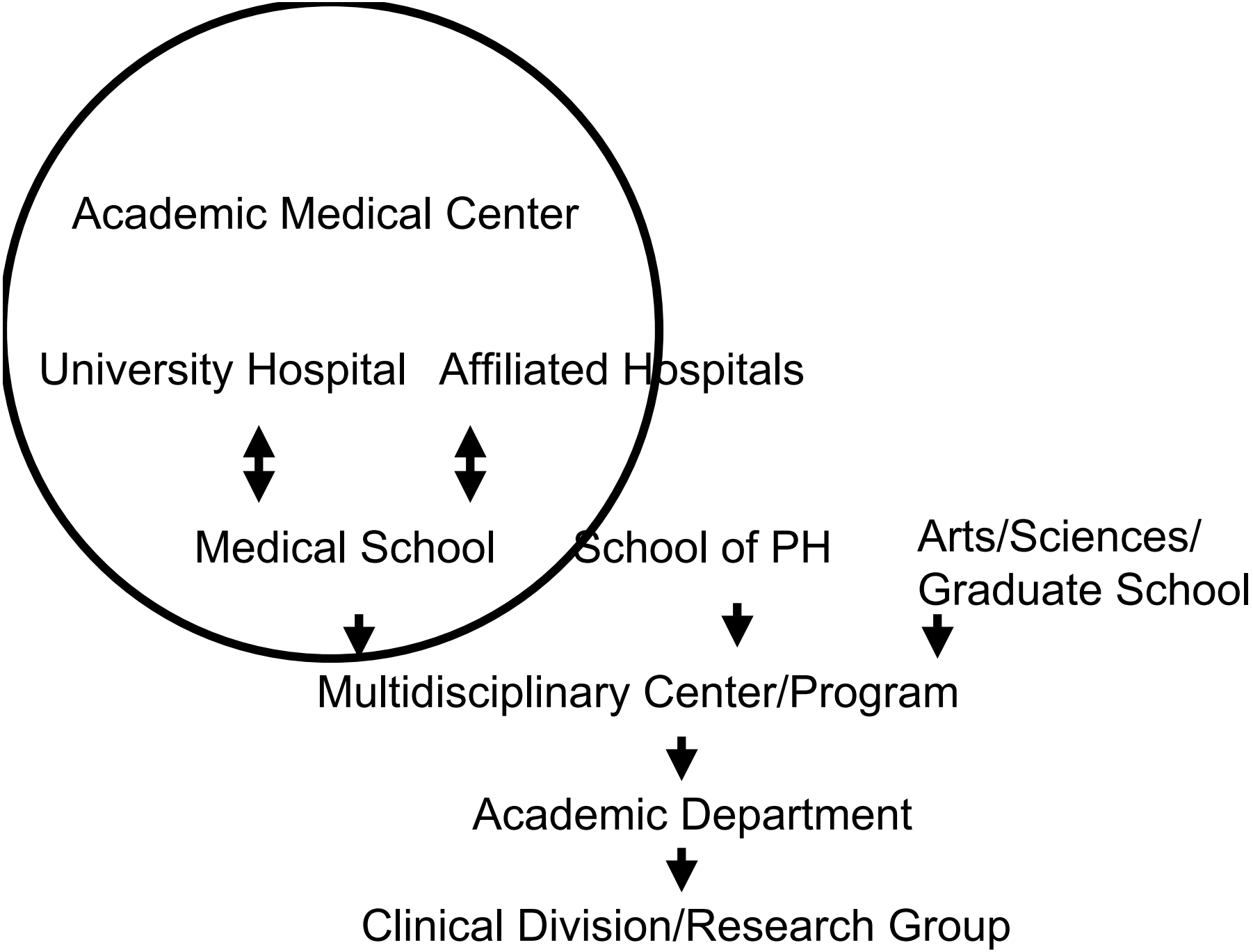
Academic Medical Center
University Hospital
Affiliated Hospitals
Medical School
School of PH
Arts/Sciences/
Graduate School
Multidisciplinary Center/Program
Academic Department
Clinical Division/Research Group

Academia - What Every Junior Faculty Needs to Know: A Quiz

Angela C. C. Wang, MD

Most newly minted junior faculty members are unaware of the fundamental entrepreneurial nature of academics. They take commodities such as salary, space, and time for granted, not realizing that each is a limited resource that must be negotiated. Just as in business, alliances and collaborations facilitate success in an academic institution. I've often interviewed fellow applicants who want to go into academics to be clinician-educators. Most of them have spent their careers thus far being taught by clinician-educators, and their concept of an academic career is based on this model. But they usually don't have a clue as to the economics involved in generating their salaries.

In many research-based medical teaching institutions, teaching is a voluntary or highly underpaid activity. Still, the teaching must be done and committees must be filled. It seems a fact of academic life that these responsibilities are usually assigned to junior faculty struggling to establish their careers and salary sources. Junior faculty often assume that they are joining a team of equals and as team-players cheerfully accept whatever division and department chiefs ask them to do. But, for division directors and section chiefs who are struggling to balance budgets and cover service obligations, the long-term success of a junior faculty member is often not an immediate priority. Thus, it is up to the faculty person to ask the right questions. The following quiz was adapted from an email sent to UCSD faculty in April 2005 by the University of California, San Diego, Health Sciences Faculty Rights and Welfare Committee.

1. What is your academic series? In other words, what are the criteria for promotion for your series? For instance, in the University of California system, there are *five* professorial tracks, each with their own restrictions and criteria regarding salary stability, ability to compete for grants and other future funding sources, space assignment, ability to have graduate students, and retirement benefits. Interpretation of the series differs from campus to campus (1).

2. What is your salary and what is your source of salary support? There are a vast number of salary sources available to academic physicians. You need to know where your salary comes from and how vulnerable it is. FTE (full-time equivalent)? Research grants? Departmental funds? Clinical collections? Clinical trials? VA funds? Hospital funds? Faculty start-up packages often include a salary guarantee. Do you have a salary guarantee, if so, for how many years? What will happen if you have a salary shortfall after your guarantee ends? Who assumes responsibility for your time? Remember, everyone who pays you expects a piece of you, and it is up to you to make sure that you are not pulled apart or in too many directions. Be careful with joint appointments, e.g., between the VA and university. How does splitting your time and salary support ability to accrue vacation, sick leave, and retirement benefits (see Question 4). For young faculty wishing to start families, what policies are in place regarding maternity leave? How will you be paid during leave? Does this leave come out of your assigned clinical or research time? How does this affect your tenure clock?

3. Do you have formally assigned space, or will you be working in space assigned to another faculty member? Where is it located and how many square feet is it? Is the space paid for by grants or by the department? In other words, who owns the space? How vulnerable are you? If you work in someone else's space, understand that you depend on their good graces and fortune. Their priorities may change. They may lose funding. In either of those cases, you may be asked to move.

4. What is your APU (Academic Program Unit) and how does this affect your future retirement benefits? Since medical school faculty are often paid on a different scale than their university counterparts, institutions have devised various ways to account for these differences in terms of accruing retirement benefits. Do you know what the requirements of your institution(s) are in terms of being able to participate in their retirement programs? For instance, If you have VA funding, what is your university percentage and how does this affect your future university/VA retirement benefits?

5. What *are* your teaching responsibilities? Do you belong to a specific graduate program? Do you need to recruit graduate students from other programs? Realize that time for

teaching often comes out of time that might otherwise be spent on revenue-generating activities such as patient care. Will your salary be docked? (Believe me, this happens.)

6. Are you a member of organized research units? Organized research units can provide infrastructure and critical access to core equipment, computer facilities, and expertise in clinical trial design/analysis. Sharing and availability may be be issues unless you are a member of the unit. What rights and duties are required for membership in these units? How easy is it to join?

7. What are your university service and committee requirements? This can be good or bad. Seek advice from senior faculty and/or your mentor to help you sort out requests and identify good committees for networking or facilitating your career development.

8. Who will be your mentor and advisor? For fellows and junior faculty, this is perhaps the most important decision you will make. As previously mentioned, you can't always depend on your division chief to make the most savvy decisions for you in terms advancing your career. In addition to a research advisor, it can be very useful to have one or more senior persons advise you on career development. Many institutions also have formal mentoring programs.

It can be traumatic and demoralizing to work hard for years doing what you think you ought to be doing, or doing what you are told to do, but then be informed that your salary and academic promotion are in jeopardy. To avoid this all-too-frequent scenario, you *must* understand how your job description matches (or doesn't match) your salary sources and, equally important, your criteria for promotion. Go over these questions at least once a year with your division director to strategize your career planning. Use the discussion to learn how you fit with his/her vision of where the division is going and to clarify your short- and long-term career goals.

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Negotiating for an Academic Job: Lessons from Reality TV

Lynn M. Schnapp, MD

Fear Factor

When is it time to move on? This is a difficult question for most, and fraught with fear for many. For the first time in many of our academic careers, there is no set guideline or time limit. It's often hard to envision yourself as starting your own independent program, but remember, you're being hired for your potential. There are many benefits to moving for an academic position. It facilitates independence from your mentor, provides new research directions, and, almost without fail, you'll get a much better start-up package. Academic job searches can take much longer than expected, so start thinking about it at least a year in advance. Ideally, you'd like to move with several more years of grant support, not after your grant has ended.

How To Get To Be "The Apprentice"

Advertisements in professional journals are a reasonable place to start, but remember that many jobs are not advertised, and many advertised jobs already have an inside candidate in mind. (Think about this when the ad says they are looking for an investigator with expertise in microfilaments of type II epithelial cells in patients with Tuberous Sclerosis, for example.) In addition, your mentor or division chief may have insight into programs that are recruiting. Send inquiries to division chiefs about possible positions.

The ATS meeting is a great networking opportunity for jobs. Become involved in your assembly. Once you've identified job opportunities, determine if the job description meshes with your professional and personal career objectives. Is the mix of clinical/research/teaching/administration responsibilities consistent with your career goals? Are the necessary resources present for your research to succeed? Is there a critical mass of researchers and mentors available? Do your homework ahead of time: check out divisional/departmental websites, perform PubMed searches on key faculty (http://www.ncbi.nlm.nih.gov/PubMed/); identify NIH-funded research grants through the NIH CRISP database (http://crisp.cit.nih.gov).

Define your needs and prioritize them: determine what's a deal breaker for you. For example, when I looked for my first faculty position, I wanted sufficient protected time (80%), adequate lab space, and adequate start-up funds to ensure that my research program would be successful. Remember, everything is negotiable—if you don't ask for it, you won't get it.

"You get what you negotiate, not what you deserve."
Chester Karass

The job offer is a package and each item should be weighted according to your own situation. Be prepared to ask for a specific salary—don't be ambushed by this question. An excellent resource for salary information is the AAMC website. Other questions to ask about salary are: What is the mechanism for salary increases? What is the source of salary- State line? Grant support? Clinical revenue?

What are the faculty tracks at your institution? **What are the criteria for promotion?** What title will you have—Instructor? Assistant Professor? Acting? Importantly, what is the divisional track record for mentoring junior faculty?

When you are negotiating a start-up package, it's important to justify your needs. Instead of saying "I need $100,000 start-up funds," it's much more powerful to say "I need $100,000 start-up funds to purchase a $50,000 laser capture microscope, a $25,000 freezer, and, a $25,000 digital imaging system that are essential for my research program." This exercise also forces you to take a good look at what you'll need and understand what the actual costs are. It can be sobering to realize how much money you may need to start your research program. Some of the costs may be mitigated by available shared or core resources, and is a reflection of an appropriate research environment.

What's your bottom line? Items to consider:

- Research environment
- Clinical responsibility
- Start-up money
- Technician
- Moving expenses
- Salary
- Lab set-up
- Computing needs
- Tenure clock
- Travel support

- Benefits
- Administrative support

General Principle: Get It In Writing: Keep a copy of all correspondence, and verify phone conversations related to the negotiations with a follow-up email. You'd like support and commitment from both the division and the department, if appropriate. Finally, make a decision. It's not (necessarily) a lifetime commitment.

"Never cut what you can untie."
Joseph Joubert

How To Be a "Survivor"

Tips to minimize downtime:

- Set up budget number prior to arrival.
- Purchase major equipment prior to arrival.
- Determine what you can bring with you from your current institution.
- Consider purchase of depreciated equipment.
- Minimize initial clinical or teaching responsibilities (i.e., for research positions).
- Finish manuscripts or grant submissions when you get there.

K Grant Transfers:

- Identify a mentor at your new institution.
- Discuss with your NIH program director **ahead** of time.
- Fill out Change of Grantee Institution.
- Consider applying for administrative supplements due to changes in indirect costs/fringe benefits.
- Discuss other grant transfers directly with appropriate funding agencies (ALA, AHA, etc.).

How To Get Renewed For Next Season

Use your time wisely: it's useful when you first arrive at a new institution to offer to give seminars/lectures in your research area. This will increase your visibility, increase potential collaborations, and help establish useful local contacts. At the same time, limit the amount of "volunteer" work not directly related to your career objectives. It's a good idea to establish

regular contact with the department chairman. Be proactive and set up annual reviews yourself. This is very helpful to make sure that you are on track for promotion and to identify any areas that need adjusting. **Negotiations are an ongoing process.** Therefore, it is essential that you keep track of all your activities, including lectures and presentations (locally and nationally), teaching responsibilities, committees, related community activities (i.e., service with local ALA). Share good news with your division chief and chair. Let them know when your manuscript was accepted, or your RO1 got funded, or about the amazing teaching evaluations that you received. These occasions are potential opportunities for further negotiations.

"Real success is finding your lifework in the work that you love."
David McCullough

"Never continue in a job you don't enjoy. If you're happy in what you're doing, you'll like yourself, you'll have inner peace. And if you have that, along with physical health, you will have had more success than you could possibly have imagined."
Johnny Carson

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Starting a Lab

Janet S. Lee, MD

My experience in starting a lab at a new institution is in no way universal, as the experience is dependent upon a number of factors: (1) the amount of funding one possesses at the time of transfer, (2) the stage of career development, (3) how much start-up funds were initially negotiated, and (4) the particulars of the new institution. I transferred to another institution with a K grant and foundation grant, and began to write an additional foundation grant as I was moving. So, my perspective is quite different from those who are at a later stage in their career, especially those who are bringing personnel with them to the new institution who can facilitate much of the day-to-day operations.

A few months before the actual move, I submitted Institutional Animal Care and Use Committee (IACUC) protocols, recombinant DNA forms, radiation safety application forms, and other paperwork to transfer grant funding over to the new institution. I did whatever I could before the actual move, as I felt it would only facilitate the process of getting started in a new place. Thankfully, the laboratory space had been secured for immediate occupancy just prior to my arrival. Although it was tempting to fill empty lab space as quickly as possible, I avoided purchasing a large-ticket item unless it was absolutely essential and no one else with whom I could share had it. While I projected a budget that enabled some opportunity to diversify my research profile, this was always balanced by circumspection regarding the timing of future funding and the desire to stretch out the dollars for as long as possible. So, I tried to focus on purchasing reagents needed to accomplish a particular project rather than furnishing the lab with an item that might have some use in the future.

Probably the most important aspect of budget projection I encountered was salary support for personnel. This needs to be negotiated as part of the start-up funds or as separate personnel salary support funds. It is best to clarify up front how many years of support that will be and for how much, and what would happen if those funds are not used by a certain time. This is best put in writing so as to avoid confusion in the future. As I began to project the

budget for the next several years, I thought about how personnel salary would be supported beyond those initial years. I gradually began to plan the potential timing of grant submissions in order to prevent lag periods in funding support, as well as protect a chunk of the start-up funds for that rainy day.

Understanding how grant funding is managed within the division and the department as a whole is valuable. I came to know my administrator well, and I highly recommend getting to know whoever manages the budgetary issues of the division. S/he will give you better insight into the various expenditures of starting and maintaining a lab. For example, what does the institution do with indirect costs? Does it return to the individual division and is it then allocated to pay "rent" of laboratory space, salaries of administrative staff, capital equipment, office supplies, departmental and institutional taxes? If you have vivarium costs, is that subsidized by the indirect costs or will your monthly charges reflect the actual operating fees? Vivarium charges at various institutions differ, and I was surprised by the significantly higher costs at my new institution. Maintenance expenditures of items like tissue culture hoods, annual fees for dry ice, liquid nitrogen, CO_2, oxygen, and annual service contracts of capital equipment are things to be aware of and for which you may have to budget. A lot of these items can be shared with the local community, i.e., your neighbors in surrounding laboratories.

For physician scientists, negotiate up front clinical obligation times. This is critical. I was and am currently quite fortunate enough to have my protected time organized in such a way that I avoid long periods away from the lab. In fact, I requested and received no clinical service time for the first 6 months. This allowed me to concentrate on getting the lab started, hiring and teaching personnel, organizing projects in terms of priority, doing a few experiments, submitting a grant, and working on getting a manuscript published, as I was becoming familiar with the institutional way of doing things…without interruption. This may not be the correct piece of advice for those whose research directly relates to their clinical work. I have no weekly clinic to attend, and my clinical time is focused upon inpatient services in the Medical Intensive Care Unit (MICU). It is very labor intensive during the weeks I am on service and, frankly, those weeks I accomplish little in terms of research. While I now have personnel who can continue to work on projects while I am on service, this was clearly not the case in the

beginning. Thus, my clinical time and how I organized it to maximize my research productivity was most important when I was starting out at a new place.

I think hiring the right personnel can be challenging. It is best to hire someone after interviewing at least several candidates, and weighing the pros and cons of hiring a particular individual. It is helpful to be able to articulate the specific job responsibilities of a position as it relates to ongoing or future projects. The expectations have to be realistic for that particular individual, or it will not work out. I also learned a lot about myself as I learned to deal with those who worked for me and the unique lives and personalities they presented. I learned that being present, accessible, courteous, showing excitement about good work, and leading by example are all very powerful motivating factors.

Focus on accomplishing tasks at different stages of development while getting the laboratory established. This is the best time to finish manuscripts in preparation and tying-up loose ends on prior projects. Time projects in such a way that most of the wet lab work is finished by the time of the actual move. This will enable you to focus upon the writing, analyzing, and formatting aspects of the manuscript as the lab is getting established and there is “down” time. I always wished (and still do) that projects could be completed faster, and so many details of organizing a lab seemed overwhelming at first. However, breaking up larger tasks into smaller ones and accomplishing the smaller tasks on a daily basis helped establish the sense of forward movement necessary to maintain a positive outlook on research goals. I think this is a key aspect to starting and maintaining a lab, as there can be many roadblocks along the way—but your own perspective should not be one of them.

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Academic Medicine at University and Veterans Affairs Medical Centers: Advice for Career Development

Brian W. Christman, MD

Introduction

The hospitals and clinics managed by the Department of Veterans Affairs constitute the largest integrated healthcare system in the United States. In addition to providing clinical care, the VA has served as a training site for more than 50% of the physicians trained in the United States. In the distant past, concerns were raised about the quality of care in the VA system. Beginning in the 1980s and continuing to the present, there has been a revolution in information management systems, electronic clinical patient records, and a continued emphasis on quality and discrete clinical performance measures. Recent articles in the *New England Journal of Medicine* and in the *Annals of Internal Medicine* indicate that the VA has surpassed the private sector in most outcome measures. An opinion article in the *New York Times* has suggested that the VA represents "the future of health care." Such developments potentially make the VA a more attractive venue for a beginning faculty member.

Considering the VA as a Junior Faculty Member

In considering a full- or part-time appointment at a VA Medical Center as part of one's academic portfolio, several issues should be considered. Many of these are specific to the stage of career and type of career planned. The VA has a number of opportunities that can be particularly helpful as one makes the transition from fellowship to junior faculty. For those interested in health services research, the VA Quality Scholars Fellowship Program is an excellent way to develop skills and contacts necessary to launch a career. The program guarantees substantial protected time for research and training, but does allow Fellows to intermittently serve as attending physicians in the medicine outpatient clinics and inpatient wards. This allows advanced trainees to both maintain cognitive clinical skills and an opportunity to develop teaching experience. Because of the flexibility afforded by part-time appointments at the VA, occasionally, trainees may elect to extend their fellowship by several years in order to more fully develop their research program. It is possible for an individual to

carry a fellowship appointment at the university and an instructor faculty staff appointment at the VA hospital. The greater reimbursement associated with the latter allows the division to raise the salary of the trainee during this important transition time. Careful time allocation can allow deferral of student loan repayments for another year or two.

The considerations are somewhat different for a *de novo* faculty appointment at a different institution. For faculty embarking on a career as a clinician-educator (i.e., predominantly involved in clinical care of patients), there are several advantages to having a substantial VA time commitment. Naturally, the patients tend to be very pleasant and generally have fascinating stories to tell. VA hospitals affiliated with major medical centers tend to be referral institutions, replete with the subspecialty and requisite technologies to provide *state-of-the-art* care. In general, the administrators at the facility in the region are highly supportive of the clinical services and attempts by the physicians to continuously improve the care rendered. The ability of the faculty member to, within reason, control his/her clinical time commitment can be a major advantage to faculty with young children. An environment with a *state-of-the-art* electronic medical record, opportunity for interaction with medicine residents and fellows, and a more regular work schedule can be very attractive. The recent increase in compensation for VA physicians has made salaries competitive with those provided by the University in the majority of specialty areas. One potential disadvantage for clinical faculty is the generally smaller size of the VA facility. Due to the somewhat smaller patient volume, it may be difficult to generate the same workload, if the faculty member's salary is based on RVUs. Since faculty often receive separate paychecks from both the University and from the VA, it is important to clarify how these revenue streams will be reconciled by your department and how splitting your time/pay between two institutions affects your retirement and pension benefits.

There are also potential advantages for faculty just beginning a career as a physician-scientist (i.e., devotes majority of time to research). As opposed to the university, clinical time at the VA can be a bit more modular, allowing for more time devoted specifically to research. Clinical services can be covered exclusively by your partner on service and will significantly limit interruptions in research effort. Also, recent increases in physician salary at the VA,

especially in non-procedure-based specialties, can ply an important role in a research faculty member's overall compensation plan. Another specific advantage of VA work is that it affords access to a non-NIH-funding research mechanism (see below). Many talented physician-scientists have spent their entire careers supported by the VA Research Service. Those desiring a University practice comprised of patients who have been financially successful in life probably should not devote large amounts of time at the VA. The number of wealthy CEOs in most VA clinics is small. There are a substantial number of computerized training modules that are required by the Department of Veterans Affairs, many of which duplicate required training at the university (e.g., Cyber Security, Patient Privacy). Finally, there are intermittent administrative urgencies, with a short time line, that can be distracting. These generally reflect pressures brought to bear on VA by congressional or executive branch oversight in response to current events. An example would be the renewed emphasis on documentation of information security in the wake of a theft of a VA investigator's laptop containing private health information from thousands of patients. These are mostly minor distractions for faculty, but new faculty considering employment at VA should assess their own tolerance, or "irritant threshold," for such things. Those who will be at risk for hypertensive stroke each time a policy is abruptly changed and 30 minutes is lost reviewing a training module should probably look elsewhere, remembering the university is hardly free of stressors.

Accounting for Physician Effort at VA Hospitals

Physician effort at the VA can be either full-time or part-time. Full-time physicians generally work at least 40 hours/week (standard tour), but are expected to provide appropriate clinical care for patients by intermittently covering weekends, holidays, and night call just like at the university. Although many informal calculations of physician effort still involve estimation of "8ths" of physician effort (i.e., full-time would be 8/8ths; half-time, 4/8ths), this schema has been replaced by agreements in which physicians agree to provide a certain number of hours each year (e.g., full-time equals 2080 hours/year). The fraction of a full salary is then divided into equal amounts and paid out over the bi-weekly pay period at the VA.

Efforts of part-time physicians can be arranged on either fixed or flexible tours-of-duty. Fixed tours-of-duty work well for physicians who will predictably perform VA clinical work within

a discrete time frame every week. Examples would include general internal medicine faculty who might cover two half-day clinics every week, or gastroenterology physicians providing a day of endoscopy each week. Physicians my also opt for a flexible tour arrangement. Under this agreement, faculty agree to work a certain number of hours per year (e.g., 1040 hours; 4/8ths under the old system), but do not have specific core hours where they are required to be present at the VA. This system works best for doctors with a variable, irregular clinical effort at the VA. Examples might include: (1) A pulmonary/critical care physician who, when on service, works an average of 60 hours/week for an entire month but might not be scheduled to work again at the VA for several more months, (2) a hepatologist who provides care to patients at both the university and VA hospitals during the same clinical block, and (3) a physician-scientist who devotes the majority of time to research, but has a half-day clinic each week and covers the inpatient consultations service 2 months a year. This system provides admirable flexibility and is more consonant with an academic physician's variable schedule, but will result in more careful scrutiny by VA administrators. To ensure that federal dollars are being appropriately spent, physicians on a flexible tour are required to enter the hours they work into an electronic spreadsheet that is submitted to the VA national payroll system every 2 weeks (i.e., each pay period). At the end of each year of employment under a flexible agreement, there is reconciliation of the hours. Physicians who have not fulfilled their time obligation could be asked to compensate the VA for work not done. Those who worked more hours than included in their initial agreement would receive additional compensation. Needless to say, it is easier to manage, for the individual and for their departments, if the agreement closely approximates the number of hours that will be worked in a given year.

The VA Research Service

Fellows moving into a career as a research-scientist or physician-scientist should seriously consider submitting a proposal to the VA Office of Research and Development's Career Development Program. The initial grant, the Career Development Award (CDA)-1, is intended for new faculty, both clinicians and nonclinicians, no more than 2 years out of training. This grant provides salary support for 2 years with the understanding that the applicant still will be in a nurturing research environment under the supervision of a strong mentor. No funds are provided for direct support of research, but acceptance of the award does obligate your facility

to protecting at least 75% of the faculty member's time for research. Successful completion of a CDA-1 paves the way for a CDA-2 application. During the tenure of this grant, possibly up to 5 years, the applicant receives both salary support and research support in the amount of $10,000-$50,000/year. Again, 75% of time must be devoted to research efforts. This grant is designed to move the investigator toward independence with anticipation of later submission of VA Merit Review and NIH RO-1 grant proposals. The combination of the CDA-1 and CDA-2, by providing support for up to 7 years, can move a faculty member from fellowship to within striking distance of tenure promotion. Anecdotal evidence of the success of this program is noted by the fact that about 40% of the division chiefs at our university were initially supported by an earlier version of the CDA Program, and many still have VA Merit Review support for their lab efforts. The VA Research Service website is an excellent source for more specific information (http://www.research.va.gov/funding/cdp.cfm).

The VA Merit Review Program is the counterpart of the NIH RO-1 funding mechanism. This review of grants is intended to support independent investigators with mature research programs. Applying for these grants requires the equivalent of 5/8ths effort (1300 hours/year) at the VA. A substantial amount of this time (2-3/8ths) can be devoted to research efforts, but the specifics need to be negotiated with the division chief, VA chief of medicine, and the VA chief of staff. The upper limit on budgets for VA Merit Review proposals has recently been increased to $150,000/year. Since the Principal Investigator's salary (and fringe benefits), are paid from another source it is not included in this amount. This equates to a budget not dissimilar from an NIH RO-1 grant of about $200,000. Since the fall 2005 submission date, funding success for these proposals has been between 23 and 25%, a rate that exceeds the current rate at the NIH. Extensive information about this program is also available on line (http://www.research.va.gov/programs/csrd/merit review.cfm).

For investigators who have either clinical or research effort at both the VA and the university, a special document (memorandum of understanding; MOU) that specifically outlines the faculty member's time allocation must be created and approved by the department chair and the VA associate chief of staff for research. These documents, which clarify both clinical and research time, can protect the faculty member from unusual problems like generating

clinical income by billing Medicare patients at the same time when they are supposed to be doing VA-sponsored research (i.e., double-billing the government for the same time increments). Since the VA work week is generally considered to be 40 hours for part-time physicians, and the university work week can be defined up to 65 hours/week, an appropriately crafted MOU can arrange for some grants, mostly from the NIH with attendant substantial indirect cost support, to be scheduled during university time.

Summary

For the appropriate faculty member, inclusion of a substantial component of VA time in the overall work plan can be a successful plan. There is a strong, patient-centered clinical focus and the patients tend to be delightful. For programs with a close VA-university affiliation, your consultants and referring physicians will be your faculty colleagues. The compensation is now competitive. On the research side, involvement at the VA opens access to an entire research program, parallel to NIH, which can provide both career development support and subsequent research funding for a sustained career. The drawbacks, mainly minor logistical issues and significant federal oversight, are few, but must be interpreted through the lens of the individual faculty member's personality.

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Getting Involved in ATS - The Basics

Lynn M. Schnapp, MD

Why Should I Get Involved in ATS?

ATS is a member-driven organization; all decisions are driven by members, i.e., you! By becoming an active member of ATS, you can have a direct impact on pulmonary medicine both nationally and internationally through the development of ATS statements, and guidelines, programs and meetings, and other resources. In addition, involvement in ATS provides an outstanding networking opportunity valuable for collaborations, job searches, and letters of recommendation. At first, the organization may seem impenetrable and the International Conference can certainly be overwhelming. However, once you start to understand how decisions are made and understand the structure, ATS suddenly becomes much more manageable and approachable. Our goal is to provide you with insight into how the society is structured and suggest some ways for you to become involved. Without the active input of its members, ATS won't continue to excel and improve.

ATS Leadership Structure

The Executive Committee (ATS Leadership) is a 5-year commitment, in which an individual starts as Secretary-Treasurer, then works his/her way up the ladder to President (Appendix 1). To begin the process, the Nominating Committee selects two candidates from solicited nominations. The membership votes, and the new Secretary-Treasurer is announced at the International Conference.

Year 1: Secretary-Treasurer

Year 2: Vice President

Year 3: President–Elect

Year 4: President

Year 5: Immediate Past President

Assemblies

The Assemblies are the working units for members of the ATS and are directly responsible for the majority of International Conference content. There are currently 13 Assemblies (Appendix 2 and http://www.thoracic.org/sections/about-ats/assemblies/index.html), based on clinical and research interests. Each member can have a primary assembly and up to two secondary assemblies. If you haven't already chosen your assembly, you can designate your primary and secondary assemblies during membership renewal or at any time by contacting membership@thoracic.org.

The Assembly Membership Meetings, held during the International Conference, are a good place to get your feet wet. The meetings are generally held on Sunday or Monday afternoon (check the Final Program for time and place). The Assembly Membership Meetings are open to **everyone**. At these meetings, the attendees vote for the Assembly Chair-Elect, Assembly Program Chair-Elect, and Assembly Nominating Committee members. Everyone who is present gets to vote. The Assembly Membership Meeting is also your chance to voice comments/questions directly to the Assembly leadership. There is usually some social time at these meetings, so it is also a good time to meet people in the Assembly.

There are several important Assembly Committees. The committee with arguably the biggest impact is the *Program Committee*. The Assembly Program Committee decides on all Assembly sessions at the International Conference—Symposia, Minisymposia, Sunrise Seminars, etc.—and chooses the topic areas, chairs, speakers, facilitators, etc. The Program Committee Chair is elected at the Assembly Membership Meeting. The Program Committee is appointed by the Program Committee Chair in Jan/Feb and is generally a 3-year commitment. The Program Committee is a great place to get directly involved in conference planning.

The Assembly *Planning Committee* reviews all submitted Assembly projects, including guidelines, and statements. The Assembly Chair appoints the Chair and committee. The Planning Committees of the clinical assemblies are particularly active. The *Nominating Committee* decides on the slate of nominees who are voted for during the Assembly Membership Meeting. The Assembly Chair appoints the Nominating Committee Chair; two

committee members are elected at the membership meetings. Many assemblies also have other committees such as International Affairs or Website committees.

How Do I Get Assigned to an Assembly Committee?

1. Go to the Membership Meeting.
2. Speak up and volunteer for tasks and follow through!
3. Contact appropriate Chair and let him/her know you're interested in a particular committee—*Key Point: committee appointments are made **before** the International Conference—therefore, you need to establish contact in Jan/Feb.*
4. Repeat Steps 1-3 as needed.

ATS Committees

In addition to the Assembly committees, there are a number of ATS Standing Committees. Description of committees can be found at http://www.thoracic.org/sections/about-ats/committees/index.html. *There is Fellow representation on all committees!!* Committee membership is appointed by the President-Elect in Jan/Feb **before** the International Conference. It may be helpful to email the President-Elect with requests, although it is important to understand that the President-Elect cannot act on all these requests.

How Can I Be More Involved During the International Conference?

One direct way is to submit your own symposium suggestion to the appropriate Assembly. To increase the chances of acceptance, speak with the Assembly Program Committee Chair/members for advice. Model your submission on successful prior submissions. Look at the Final Program for the correct format. It is important to come up with a creative, exciting program. It is also important to know the submission deadlines, which are posted on the ATS website. Each assembly is allotted a specific number of slots for each type of session. The Program Committee ranks the submissions to fill the slots. Don't be discouraged by rejection; assemblies often receive many submissions for only a few symposia slots. Get feedback and try again. Persistence pays off.

Another strategy is to contact the Program Committee chair in Nov/Dec when chairs and facilitators of sessions are assigned. A simple email stating, “I’m interested in chairing/facilitating a session. My areas of interest are new imaging modalities for COPD and nanoparticle technology,” with CV attached, can be effective.

Timing is important: Session/project proposals are due shortly after the International Conference.

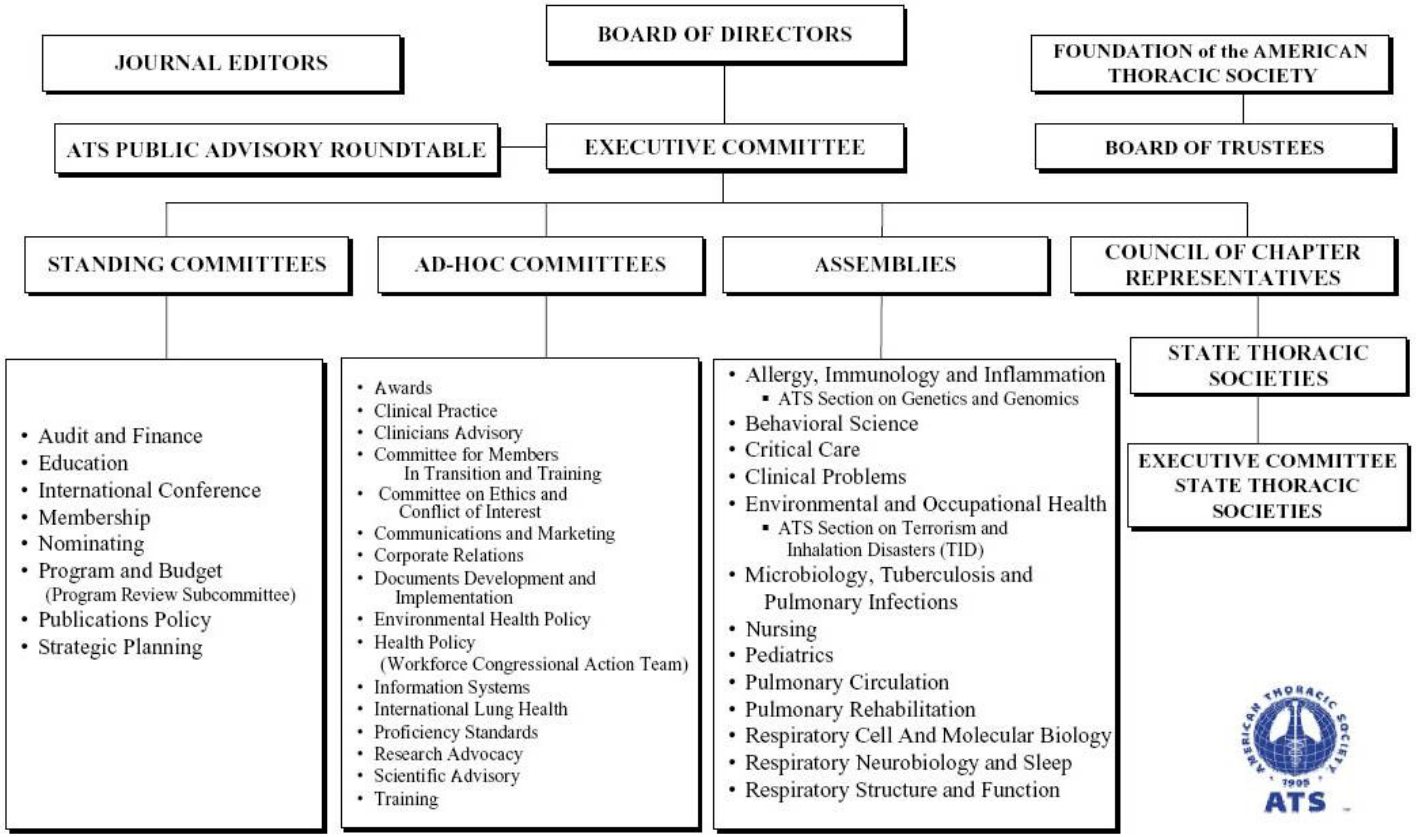
Perseverance is a great element of success, if you knock hard enough and long enough, you are sure to eventually wake someone.

Henry Wadsworth Longfellow (1807 – 1882)

Final Sales Pitch!

I’ve had the privilege to meet incredible people through ATS and learn firsthand from the leaders in our field. ATS leadership is very supportive of Fellows and very interested in encouraging involvement of junior members. There are **lots** of opportunities for involvement, particularly if one is proactive, persistent, and patient. It can be an incredibly satisfying experience, both personally and professionally. I look forward to seeing you at the next meeting!

AMERICAN THORACIC SOCIETY ORGANIZATIONAL CHART



Appendix 1

Appendix 2

ATS ASSEMBLIES

Allergy, Immunology and Inflammation (AII)

Goals:

1. To encourage communication among scientists and clinicians concerned with allergic and immunologic mechanisms affecting the respiratory system in health and disease.
2. To collect, interpret, and disseminate information concerning basic immunologic and inflammatory mechanisms in the lung and the effects of these mechanisms on respiratory disease.
3. To promote discussion and evaluation of studies of the relationships between allergic and immunological mechanisms and respiratory systems.
4. To identify unsolved problems relating to effects of allergic, immunologic, or inflammatory mechanisms on the respiratory system in health and disease.

Behavioral Science (BS)

Goals:

1. To facilitate and promote the role of the behavioral and social sciences in lung health.
2. To consider the broad scope of lung diseases and associated behavioral and social determinants, outcomes, and covariates.
3. To encourage rigorous approaches to research among behavioral and social scientists and among researchers from other disciplines who study behavioral aspects of lung disease.

Areas of Interest:

- Trends in behavioral epidemiology associated with lung disease (e.g., smoking, treatment adherence).
- Behavioral outcomes associated with lung disease (e.g., quality of life).
- The impact of lung health and behavioral and social science findings on health policy formation (e.g., smoking, provision of health care).

- The costs of prevention and treatment strategies relative to their benefits and effectiveness.
- The influence of behavioral, bio-behavioral, social, cultural, and developmental factors on: the etiology of lung disease (e.g., smoking, occupational and environmental exposures, drug abuse, socioeconomic factors, lifestyle); the prevention of lung disease (e.g., health education, risk perception, health-care seeking); the treatment of lung disease (e.g., health education, treatment adherence, culturally based beliefs).

Clinical Problems (CP)

Goals:

1. To provide forums for discussion and evaluation of studies concerned with clinical problems in respiratory disease.
2. To collect, interpret, and disseminate information concerning these problems and their proposed solutions.
3. To encourage communication among the various health professionals concerned with solving problems in clinical care of patients with respiratory diseases.

Areas of Interest:

- Clinical therapeutics, including pharmacological management, ventilators, physiotherapy, and others.
- Clinical diagnosis, including radiographic, physiologic, bacteriologic procedures, and others.
- Training methods, programs, and efficacy in clinical chest disease for health care personnel.
- Innovative methods for health care delivery, including clinical utilization of automated data processing techniques.
- Evaluation of current clinical practices.

Critical Care Assembly (CC)

Goal: To improve the care of the critically ill through education, research, and professional development.

Critical Care is the largest Assembly with 6,230 primary and secondary members. The membership consists of a diverse group of adult and pediatric intensivists and other allied health care professionals involved in the care of critically ill patients.

New Fellows and Investigators are welcome and actively supported. Check out the Journal Club and Case Histories on the website under the direction of the CC Web Director, David Kaufman, MD. Browse the pages of the website for further information about the other departments.

Environmental and Occupational Health (EOH)

Goals:

1. To promote discussion and evaluation studies concerned with the relation between environmental or occupational factors and respiratory health.
2. To collect, interpret, and disseminate information concerning the effects of the environment and occupation on the respiratory tract.
3. To idenitfy unsolved problems relating to the impact of the environment and occupation on respiratory health.
4. To encourage communication among persons concerned with the impact of the environment on respiratory health.
5. To develop workshops and symposia in environmental and occupational health.
6. To promote the teaching of these subjects to students of the health sciences.

Areas of Interest:

- Environmental lung disease related to air pollution, occupational exposure, tobacco smoke, and other environmental factors.
- Epidemiological and laboratory approaches.

Microbiology, Tuberculosis and Pulmonary Infections (MTPI)

Goal: To focus on all aspects of pulmonary infectious disease and host defense. Although ATPI is not one of the largest ATS Assemblies, its programming at the International Conference and Assembly projects make it one of the most visible. MTPI statements and guidelines continue to be highly cited, and are among the most accessed documents available on the ATS website.

The MTPI Assembly consists of a diverse and enthusiastic group of pulmonologists, infectious disease specialists, and public health and government officials. At present, there are approximately 700 primary and 1,800 secondary members, with about one-third of the membership from outside of North America. They have continued to strengthen their relationships with the CDC and with the IDSA, and have increased international representation on their committees.

Nursing (NUR)

Areas of Interest:

- Respiratory care practice in the prevention and management of lung disease.
- Nursing education and training programs related to the management of persons with lung disease.
- Education and training in the definition and evaluation of respiratory patient outcomes.
- Basic and clinical research related to the care of patients with respiratory diseases such as: disease prevention and treatment, symptom management, quality of life, functional status (e.g., in pulmonary rehabilitation) in both traditional as well as nontraditional treatments of lung disease.
- Health care service delivery to individuals with lung disease.
- Interdisciplinary collaboration in the practice, education, and research of individuals with lung disease.
- Clinical respiratory nursing care issues, clinical practice, patient education, and research, focusing on problems with a comprehensive biopsychosocial approach. Interdisciplinary collaboration is promoted and practiced in the development of projects and programs for practice, education, and research.

Pediatrics (PEDS)

Goal: To promote the respiratory health of children and adolescents and to improve the care of children with respiratory disease through research, education, patient care, and advocacy.

The Assembly has an international multidisciplinary membership that includes specialists in pulmonology, allergy-immunology, neonatology, and pediatric critical care (and related disciplines), nurses, respiratory therapists, and others. The Assembly serves as advisor to the ATS and ALA on child health issues and works together with other national and international organizations toward a common mission of improving the health of children.

Pulmonary Circulation (PC)

Areas of Interest:

- Hemodynamics of the pulmonary circulation and cor pulmonale.
- Pathology of the pulmonary circulation.
- Relation to vasoactive humoral agents.
- Pulmonary capillary physiology and edema.
- Vascular smooth muscle.
- Endothelial cells and lung metabolic functions.
- Thrombo-embolism, clinical and experimental.
- Relations between central nervous and autonomic nervous systems and the pulmonary circulation.
- Inter-relations between respiration and pulmonary circulation.

Respiratory Cell and Molecular Biology (RCMB)

Goals:

1. To promote the long-rang goal of the ATS to decrease morbidity and mortality from respiratory disorders and life-threatening acute illnesses through an improved understanding of the biological basis of lung disease.
2. To enhance our knowledge of the biological basis of lung disease.
3. To promote the attainment of fundamental new knowledge pertaining to the cellular and molecular functions of the normal lung and the pathogenesis of lung disease through high-quality biomedical research using state-of-the-art techniques.

The Assembly includes all scientists studying cell and molecular biology of the lung, including normal developing and pathologic processes and genetic determinants of lung disease. Programs that increase funding for research and training are encouraged.

Respiratory Neurobiology and Sleep (RNS)

Areas of Interest:

- Basic mechanisms of neural control of respiration in sleep.
- Control of upper airways.
- Cardiopulmonary interactions during sleep.
- Clinical aspects of sleep-disordered respiration.
- Control of breathing—neural mechanisms.
- Chemoreceptors—central and peripheral.
- Neurotransmitters/neuropharmacology of respiratory control.
- Neuromechanical interactions in respiratory control.
- Respiratory sensations and dyspnea.
- Alveolar hypoventilation syndromes and other disorders of control of respiration.

The RNS Long-Range Planning Committee has identified their top research priorities as follows:

- Neurobiological basis of cardiorespiratory integration during wakefulness and sleep: implications for disease.
- Developmental aspects of neural control of respiration during sleep in health and disease.
- The genetic basis for respiratory control during sleep and wakefulness.
- Epidemiological and clinical studies of sleep-disordered breathing.

Respiratory Structure and Function (RSF)

Areas of Interest:

- Mechanics of lungs and airways.
- Airway secretions.

- Bronchial circulation.
- Heart-lung interaction.
- Exercise sciences.
- Breathing in special environments.
- Respiratory muscle function.
- Plasticity of the respiratory system.
- Airway smooth muscle function.
- Pulmonary cellular mechanics.
- Pulmonary gas exchange.
- Mechanics of the chest wall.
- Control of ventilation.
- Innervation of the respiratory system.
- Respiratory system anatomy and pathology.

The RSF Assembly promotes scientific excellence in the fields of respiratory physiology, biochemistry, anatomy, and molecular and cellular biology, both in health and disease. To accomplish this, the Assembly promotes scholarly investigation and professional education in these fields, with an emphasis upon integrative approaches to acquiring new knowledge.

Assembly on Pulmonary Rehabilitation (PR)

Goals:

1. To evaluate the role of Pulmonary Rehabilitation in the context of the current health care environment.
2. To promote education for the public and other health care providers about the scientific rationale for, and clinical outcomes of, pulmonary rehabilitation.
3. To work collaboratively with other organizations such as the American Association for Cardiovascular and Pulmonary Rehabilitation, European Respiratory Society, American College of Chest Physicians, and the American Physical Therapy Association to promote optimal utilization of Pulmonary Rehabilitation worldwide.
4. To serve as an advocate for care options for Pulmonary Rehabilitation.

5. To promote continued investigation into the scientific rationale for, and clinical outcomes of, Pulmonary Rehabilitation.
6. To promote integrated chronic disease management.

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RVUs and RO1s
The Economic Realities of Pulmonary and Critical Care Medicine

Kenneth J. Serio, MD

During a career in academic pulmonary and critical care medicine, one has a crucial responsibility to counsel those who follow us through this process. Through conversations with pulmonary and critical care fellows, we can learn much about the economic, cultural, and intellectual pressures that uniquely entangle our evolving fellowship training environment. It is clear that we are facing a crisis in the retention of fellows and junior faculty as physician-scientists. The period from 1983 to 1998 alone saw a 22% decline in the number of academic physician-scientists (1). The reasons for this loss are myriad and have been attributed in many institutions to economic concerns. However, the reality is far more complex. With the troubling delay in fellows achieving an independently functioning research lab, and the average age of first RO1 grant recipients now being greater than 42 years old (2), a loss of employment security currently carries far more risks than in prior decades. Fellows fear the very real risk of academic failure (due to alarmingly low K award and RO1 success rates) at a point in their mid-thirties to mid-forties. At this crucial point in their careers, their non-medical colleagues are entering their peak earning years, and career instability can be devastating to the fellow's financial solvency and family support system. In fact, in my experience, it is commonly the fellow's spouse that will initially and cogently voice the greatest concerns over the stress that a career as a physician-scientist is placing on the stable economic functioning of the family as a whole.

How do we counsel fellows on the important decisions and potential pitfalls that professionally lie ahead? The difficult choice must be made between a "limited information strategy" versus a "full-disclosure strategy." Obviously, imparting a limited amount of information to a fellow might avoid an intimidating amount of potentially negative information, which could theoretically dissuade the fellow from continuing in this challenging pursuit. However, in the setting of resource-depleting fellowship training (typically occurring in urban areas with expensive housing markets), fellows clearly require more economic data than they typically have access to.

NIH Data

As the NIH is the lifeblood of the academic physician-scientist, no fellow/junior faculty member can survive professionally without a keen knowledge of the historical machinations of this entity. In 1999, Congress mandated a doubling of the NIH budget over the next 5 years. This mandate was enacted, leading to an increase in budgetary outlays, although with adjustments for inflation, this increase was far less than expected. Furthermore, this mandate triggered a significant expansion in researcher hiring at academic institutions, leading to an increase in NIH applications from 24,151 in 1998 to 46,688 in 2006 (3). Concurrently, the size of grant awards grew by 40% between 1998 and 2006 (3), further constraining the number of grants that could be awarded. The net result of this constellation of factors was a dramatic increase in the burden of grant review within the NIH and a dramatic decrease in RO1 success rates. In fact, in 2006, the success rate for new RO1 grants dropped to a dismal 16.3% (4), and the number of grants awarded on the first attempt decreased to 12% (5). Coupled with an ongoing decrease in the relative percentage of MD researchers (6) and a decline in the percentage of MDs on NIH-specific review panels to 28% in 1995 (7), the prospects for MD physician-scientists continues to be extremely challenging. An insufficient amount of research funding additionally means that the NIH must choose between supporting older, seasoned researchers versus junior physician-scientists.

With respect to the training environment itself, the picture is no less daunting, with NHLBI K08 success rates decreasing to 35.2% and K23 success rates decreasing to 26.3% in 2007 (4). Furthermore, even in cases where the junior physician-scientist is fortunate enough to procure K funding, nearly 25-30% of K awards lead to no subsequent NIH grant application or funding (6), suggesting a significant amount of researcher attrition. One cannot help but believe that this attrition is tied closely to a stark realization of the economic factors that are entwined with this career choice.

Career Alternatives Outside of Academia

While the pressures of academia may seem complex, the transition to a career in private practice or in “industry”-affiliated research require uniquely different skill sets. Fellows

not only fear that the skills that they have acquired within the academic realm (clinical, research-related, and administrative) may not translate well to other career choices, but that during prolonged research training, they will begin to lose the pulmonary and critical care clinical skills they have already attained. The challenge of maintaining one's research and clinical skills becomes more difficult as the length of training extends. Furthermore, facing a real statistical possibility of academic "failure," the maintenance of a high level of clinical skills (particularly in terms of critical care medicine and procedural skills) becomes an essential part of maintaining one's external marketability. It is often said by fellows that "the private practice that will hire you cares very little about how many gels you have run." This statement speaks pointedly to the concerns over the limited "translatability" of research skills into nonacademic careers.

The professional structure of private practice pulmonary and critical care medicine is evolving rapidly, making the choice to leave academia an uncertain proposition. The traditional outpatient/inpatient private practice model is slowly giving way to practitioners who do almost exclusively outpatient pulmonary medicine. In conjunction, shift-working, salaried intensivists have increasingly subsumed the inpatient responsibilities in many urban regions of the country. In those regions that have a shortage of intensivists, electronic ICU (eICU) monitoring services have been growing slowly to provide intensivist monitoring of ICU patients from a remote location. In both the outpatient and inpatient world of private practice, the relative value unit (RVU) has become the universal yardstick of physician workload and worth. The RVU (initially developed by Medicare in 1992) is composed of a "physician work" component, a "practice expense" component, and a "liability insurance expense" component. However flawed, the RVU has been adopted by many medical groups as the basic measure of physician productivity. A clear understanding of billing practices, RVU structure, and collections is a crucial knowledge base that fellows entering private practice have traditionally not been educated in within academia and, therefore, must newly acquire when entering private practice.

Salary Issues

According to 2007 Medical Group Management Association (MGMA) data, the median salary for pulmonary medicine positions was $255,807, and the median salary for critical care positions was $275,000. Given the median starting academic salaries for assistant professors data from the American Association of Medical Colleges (AAMC)(8), a graduating fellow can expect an approximate $100,000 differential to join a private practice group, compared with accepting an academic position. Furthermore, since fellows are increasingly being required to engage in extended post-fellowship training, they are typically not offered assistant professor positions straight out of fellowship. Consequently, the salary differential from a clinical instructor position (where salaries are even lower) is even more dramatic. Given the lifestyle advantage of many intensivist positions (with inherent shift-work-driven limitations on daily and monthly hours), from a purely economic point of view, academic medicine appears to be at a significant disadvantage. The choice made by a fellow to remain in a multi-year clinical instructorship (at a low salary) with its associated 60-80-hour workweek, compared with an intensivist position with a 40-hour workweek can indeed be problematic.

Conclusions

Deciding among various career choices for the pulmonary and critical care fellow is a highly individualized process that crucially depends on being able to obtain adequate and accurate economic information together with an honest assessment of his/her needs to sustain personal and professional growth. It is clear that radical interventions must be implemented to address the salient cultural, economic, and personal factors and stem the flow of these crucial individuals from academia. Ideally, fellowship should represent a professional opportunity to explore one's strengths, weaknesses, and career options. By assisting the fellow to set and *achieve* goals that are realistic, relevant, and timely, both the institution and the profession gain from maintaining a pool of vital, productive individuals. The costs of the loss of fellow/junior faculty physician-scientist mindshare from our academic institutions may be obvious in some respects, but the true impact likely will not be known for a decade or more when the academic system is depleted of an entire generation of pulmonary and critical care physician-scientists.

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Family and Career: Finding That Sweet Spot in Life

Angela C.C. Wang, MD

In 2003, I wrote a CareerTalk column on “Having It All.” I was all gung ho about personal and professional strategies for sustaining the magic triumvirate of Marriage-Family-Career. What I failed to anticipate then was just *how much* the constant disruptions associated with being a parent and caregiver would limit my productivity and contribute to a loss in research momentum. Yes, I did find childcare—a wonderful woman who is still very much involved with our family today. But short of giving your child away for adoption, the simple fact is that there are some things in life you can’t outsource. Just do the math. Spend several hours every day or night taking care of a baby or infirm parent who requires 24/7 care. Mix in sleep deprivation and something has to give. Some people estimate that productivity drops by 20%. It’s probably closer to 33-50% for nursing mothers.

It didn’t help that my maternity leave came out of my research time. As it turned out, most of the time I gave to my family ended up coming out of what would have been research time. The bottom line, though, was that I wanted and chose to spend time with my children. As my girls grew to be toddlers and preschoolers, they no longer required 24/7 supervision, but they started to notice that I was gone a lot of the time. I remember my little one asking me why I had to always go to work and I told her that I took care of sick people. So, she started telling me that she was sick very matter of factly, like “I’m happy,” “I’m sad,” “I’m sick.” It was her way of telling me that she wanted me to stay with her, and I thought, now that is sad.

I discovered a new capacity to multi-task. There is something to be said about multi-tasking—it sometimes means you do a half-good job at everything. Mentally, I was not prepared for the concessions I was having to make, resulting in an constant sense of guilt and inadequacy. I read countless articles about "work-life balance." The problem was, balance wasn’t the problem—at least in my life. Balance implies a state of equilibrium…a sense of being centered. The problem was that I didn’t have enough hours in a day to do justice to any part of my life. I had a job, family, and marriage, all of which I loved. I didn’t want to be just

“balanced” or just tread water. I wanted to be excellent at all three. Trying to be balanced only made me feel worse as I struggled to achieve something that unattainable. Nothing was ever enough. I was always feeling guilty, whether I was leaving work or leaving home.

Dynamic equilibrium? Homeostasis? I’m not sure there is a phrase to describe the situation of trying to maintain stability while coping with the fluidity of day-to-day life of those of us trying to raise a family or care for aging parents. In reality, the demands change not only day-to-day, but year-to-year or semester-to-semester. In preschool, I could simply drop my children off in the mornings. Now that they are 8 and 10, they are busy with friends, homework, and extracurricular activities that demand a new kind of attention and even more of my time.

So, if life is always "off-balance," what do you do—Juggle? Another misnomer. Most people think of juggling as keeping a series of objects in the air by alternately tossing and catching them. In life, this means keeping two or more activities going at a time. Honestly, though, it’s like driving a car while talking on your cell phone. Your eyes are on the road, but you are not fully focused. Nor are you concentrating on the conversation. You’re focused on keeping things in the air, not on the task itself. Which brings me to another definition for juggling—“deception,” as in juggling numbers. Many of us fool ourselves into thinking that we can or ought to be “doing it all.” In reality, you can’t. At least, not all by yourself and not all at the same time. And so you learn to delegate, to triage, to go with the flow.

Still, something was not right. Two years ago, I made the decision to leave academics and take a part-time position at a local, tertiary care community hospital-based multi-specialty group located about one mile from my old institution. I left my old job in part because it was making me so unhappy that I was unhappy at home, too. Work had become oppressive and a place of constant conflict—conflict that I began internalizing and bringing home with me. I realized that in all those years of focusing on being a mother, physician-scientist, and wife (yes, in that order), I was personally stagnating. And I could not ignore the negative effects on my family. But, taking a part-time job was merely coincidence. A call came in from an old friend and I thought, why not?

When I first started my new job, I was afraid of turning into some kind of widget-counting doctor-robot churning out a constant stream of COPD and asthma patients. However, I've rediscovered how fascinating and demanding pulmonary medicine can be outside of the ICU. The job is intellectually challenging and emotionally fulfilling in ways I did not expect. I love my patients (well, most of them) and I think they like me, too. The other day, some of my favorites came in and I got a real kick out of their smiles. After 2 years, it's nice to be developing meaningful relationships with them. Yes, I have bad and sometimes very bad days at work, but at 50% time, there is enough time to recharge my psyche so that emotionally I have plenty to give to my family and my patients.

I sometimes miss the daily flexibility of academic life. When I'm in clinic, there is no way to leave or reschedule short of an "act of God." But the day-to-day flexibility of faculty life was deceptive. Taking time off meant decreased "face time," less interaction with colleagues, the kind of unscheduled contacts that help to generate those idea flashes needed to spark creativity. I was always thinking about the next grant, the next paper, even when I was with my children. Yes, I could work after the children were put to bed, but that meant less quality time with my spouse. I was just talking with someone else the other day about how another unanticipated consequence about going into part-time practice is how much more settled my family life has become since I started my new job. It is kind of a relief not to have to consciously schedule "quality time" with my children. Sometimes, we just hang out together! As a part-time out-patient doc, I try to get all my paperwork and calls done before I go home. When I hang up my coat at the end of the day, I am truly done. Sure, I carry my beeper and am available for calls and urgent lab results. But for the most part, when I am home, I am focused on the tasks at hand. I am more efficient and relaxed. Instead of always feeling like I am just treading water, I feel like I have a chance to do some real good in life—for my family, my patients, and, surprise, myself!

There are moments when I feel resentful or wistful. There was much that I loved about academics and still miss. I miss the lab and the fellows. It is sometimes grating that I was the one who "compromised" and left academics for a part-time job. I envy my husband who seemingly does not have the same existential struggle with fatherhood and working full-time.

But overall, life is good and I have no regrets. Perhaps the most amazing thing is that I actually have moments now when I am really happy. For me, it may be something as simple as those first few minutes when I pick up my girls from school and we walk hand-in-hand to the car as they chatter excitedly about their day. If I am happy, my family is happy…and if they are happy, that makes me happy, and so on and so forth. A positive feedback loop!!

In writing this essay, I spent a great deal of time trying to figure out some bit of wisdom or catchy quote that would trigger an epiphany for the reader, “So that’s how it’s done!” But, as you can see, my journey has not been an efficient one. There have been no “aha!” moments, except in retrospect. My other choice for a title for this essay was “Letting Go of the Guilt.” The hardest part has not been about making choices but the soul-searching honesty that led me to make those choices. I also am very aware that the journey is not over. My children are rapidly approaching adolescence (!!) and my parents are becoming more infirm. As life changes, my needs and those of my family and career will evolve as well. For now, I have found a certain sweet spot in life and am very grateful to have a job that has allowed me to maintain my sense of vitality and self. Life has become a sense of possibilities once more.

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The Physician-Scientist

Angela C. C. Wang, MD

"Physician-scientists are persons with medical training who spend most or all of their time performing basic, disease-oriented, or patient-oriented research" (1).

People often talk about physician-scientists as if they were freaks of nature, neither wholly physician nor scientist, but an unnatural combination of two breeds, as if the two could not possibly occupy the same being or mind at the same time. Some analogies depict the physician as the "engineer" who applies the principles of the "pure" scientist. Physicians are said to practice the *art* of medicine and to be focused on making people "feel better." Scientists, on the other hand, are detail-oriented, motivated by a desire to understand underlying mechanisms (2). As a result, the physician-scientist occupies a unique niche. They are not completely accepted by clinicians, who doubt that someone who practices part-time medicine could possess cutting-edge skills and who feel that the real medicine is practiced only at the bedside. Similarly, PhD scientists question the rigor of research performed by MDs who are distracted by the demands of administering to the sick.

In the Hawaiian language, the word for half-breed is "hapa," a word that is strictly defined as: portion, fragment, part, fraction, installment; *to be partial, less* (3). I would argue, however, that being a hybrid or physician-scientist offers the opportunity to combine the best of both worlds—to be *more*. When you think about it, the attributes of a good physician and a good scientist complement and even synergize in ways that neither camp can fully comprehend. For me, being a scientist was a natural extension of my innate curiosity about the basic mechanisms of disease. There is nothing more frustrating than treating a septic patient with vasopressors, realizing that we are using largely the same drugs as when I started internship two decades ago. Or reading another article about steroids in acute lung injury and wondering what is it about the (anti)-inflammatory process that we still don't understand? To paraphrase one of my professors, if it weren't for basic science, we'd still be investigating better ways of ventilating patients with the iron lung!

Similarly, I never thought of the time I spent in the lab as being totally divorced from clinical practice. Being a scientist forces you to think with brutal honesty. What is my hypothesis? How do I test this? What are the proper controls? Is there another explanation for my findings? Even now, one of the great services I perform as a pulmonary consultant is to think of alternative diagnoses and to determine the tests I need to prove/disprove them. “Show me the data,” my old nephrology-attending used to say.

I did my research fellowship at the Lung Biology Center at the University of California, San Francisco. I had spent a few summers as a student doing minor research projects, but this was my introduction to full-time, full-scale laboratory work. We were a mix of PhDs, MD-PhDs, and MDs. One of the labs focused on heat-shock proteins. Others on integrins. It was intense and it was fun. One didn’t think about “work-life balance.” The long days in the lab made for an easy camaraderie among fellow postdocs that transitioned easily into friendships and social activities (usually centered around eating!) during weekends and evenings. I never felt like I was giving up anything to be in the lab. We were all in it together.

It wasn’t the same for everyone. I noticed a few traits that seemed to distinguish between those who were likely to stay in the lab and those who ended up leaving. Being meticulous and patient helped. Waiting for a gel to develop can be enormously frustrating for someone used to hanging up a neosynephrine drip and expecting a response within minutes. Others felt frustrated at being so close to completing a subspecialty fellowship and having to start all over again in a lab where they did not even know how to pipet. Some fellows thought that the technical “dirty work” should be relegated to technicians. Others could not stand the grant-writing drill. The bottom line, though, was that you had to love science.

Being a physician-scientist had other benefits. After a bad day in the unit, I could retreat to the more controlled atmosphere of the laboratory where I consoled myself with the thought that I at least I was trying to make sense of what was going on biologically, even if it was only in a Petri dish or a mouse. Vice versa, after a frustrating day of another gel not working, it was often a relief to get back to the hospital, where I could slip into well-practiced routines. Moving between the two worlds came easily as the bridges were well established at our institution.

As a faculty member, the mix of research, clinical work, teaching, and administration made for constant variety and stimulation. Life and work were never boring. And yes, it is possible to do biomedical research, practice clinical medicine, and still have a life. You need support, to be sure, and even so, things can get rocky with family issues including very young children or sick parents. But babies eventually grow up and don't require 24/7 hands-on care. The second shift at home does get easier.

Still, a confluence of events led to my leaving my faculty position in 2006. Looking back, what do I wish that I had done differently? Early on, I underestimated the importance of and my need for mentoring. I also overestimated my own capacity to multi-task and never learned how to say no when I needed to. There are enough things that pull you away from the lab after you become a junior faculty person, without the distractions of medical directorships or committee positions. Physicians have a hard time asking for help, as if the act of asking is an admission of weakness or failure. It is also hard to ask for help when it seems that you are the only one who is struggling. But running a productive, independent lab requires lessons not provided during the usual medical and scientific training. Furthermore, the path of a physician-scientist has become much more difficult over the last decade. When I started my fellowship, I was single with little debt. And, as I mentioned, I was fortunate to have trained in an institution where there was a critical mass of like-minded physician-scientists in training. The greater challenge today is, of course, whether the medical and scientific communities can fix the bottleneck that threatens to choke off long-term career opportunities for aspiring academic physician-scientists (4).

But the journey has not been a waste. Do I regret the years I spent as a physician-scientist? Absolutely not!!! Perhaps the ultimate question is, however, "would I do it all over again"? Absolutely, without hesitation. It was a great job. Every time I describe a new drug therapy to a patient or explain the difference between, say, emphysema and asthma, I am reminded of my roots and what I have learned about basic principles regarding airway epithelial cells and inflammation. My scientific training adds a richness to my new life in practice, especially as I have been able to keep up with advances in genomics and molecular biology that are poised to revolutionize clinical practice. Furthermore, scientific training does

not limit one's opportunities. The ability to think critically is an asset. *It opens doors*. Academics is no longer the only professionally prestigious venue available for physician-scientists. Private institutions are increasingly interested in promoting research ventures as a means of enhancing their prestige. Other methods of funding laboratory work, including contracts, are becoming increasingly available. Collaborations or careers with bio-pharma provide a fascinating entree into the world of drug discovery and development. The path of a physician-scientist remains one of opportunity and reward.

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My Career in the Industry

June Lee, MD

Four years ago, I left the University of California at San Francisco to join Genentech. How I came to that transition was a long process but I will try to provide a synopsis here.

At the time, I was an Assistant Professor starting on my third year of the NIH-KO8 grant. I had another grant which allowed me to hire a fantastic lab technician to help me with my research. I had protected research time and I also had attending responsibilities in the ICU and on the pulmonary consult service. I also assumed the responsibility of being the Medical Director for the High Risk Asthma Clinic at San Francisco General Hospital. My academic career was going fine. I spent the better part of my fellowship focusing on my research so that I can get research funding. Although the research that I was doing was clinically relevant, it was not clinical in nature. Rather, it was very basic science and demanded that I focus my efforts to learn basic science and research techniques. During that time of intense focus, I had all but forgotten that I was a trained physician capable of taking care of very sick patients. Getting back to patient care, I felt re-invigorated by clinical medicine and it prompted me to reconsider how I might focus my research to that which is more directly patient relevant and allow me to use both my clinical training and basic science training.

During this time, I was also going through big transitions in my personal life. In my time as a pulmonary fellow and as junior attending, I had three children. With that, my perspective of my work and career was changing. It is not that it became less important, but I felt compelled to leave home and my kids only if my work was meaningful. Whereas before, I was willing and able to work to get to the next junction in my academic career, the demand on my time and the pull from my family really caused me to re-examine the value of the work that I was doing, and whether or not I was spending the time away from my family in the place where I can be most effective and impactful. I had also come to a realization that while I enjoyed the research that I was doing and the intellectual challenge that it offered, I am a social creature and the solitariness of my work was difficult.

So, I decided that I wanted my work to be more collaborative with regular interactions and learnings from my colleagues. I also decided that I wanted to do work that was less esoteric but more directly clinically relevant. I wanted to do translational asthma research. It seemed quite simple. I met with my division chief and department chair and a host of other people to discuss my intentions, and seek advice as well as support. One day while I was doing this due diligence, I went on a company website to look at job listings, and to my surprise, found a job posting that intrigued me. I submitted my CV online. I got a call from the company soon thereafter and 4 months and a dozen interviews later, I had an offer from the company.

Not having done much clinical research, the first year in the industry was a time of steep learning curve. I had to learn the A to Z of the drug development process as well as the day-to-day work of being a medical director. Also, working on multiple teams with team members representing many different functions with so many interdependencies was a very different process from what I had been used to in the world of basic science research. Figuring out how to work to ensure success of the program by working together with, relying on, and supporting other team members to do their job well was also a learning process. Learning how to apply science and knowledge of medicine sensibly to drug development while optimizing risk benefit balance for patients in a challenging regulatory environment was also important during that first year, and continues to be critical.

In the four years since joining Genentech, I have worked on programs spanning various phases of drug development including molecules which are still in the lab, Phase I, Phase II, Phase III, and also on drugs which have already been approved and marketed. In doing this work, I have found myself surrounded with a group of very experienced, capable, and fun colleagues. I have also found managers and mentors who have chosen to invest time and energy to help me develop and succeed. And I have found work that is challenging and fun. I have found a career that is fulfilling, developing new and better drugs to help patients. I did not anticipate that I would find the work and career that I was looking for outside of academics…but I did.

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The Physician-Administrator

Jess Mandel, MD

When I left for college, I expected that there would be a single person who simply was “The Dean” (probably a man in his sixties with male pattern baldness and an unnatural fondness for bowties). I had no idea that most institutions field a veritable platoon of deans, and no idea or plans that I would ever become one.

My decision to pursue a career in academic medicine was not a conscious one. By the time I graduated from medical school, I assumed that academic medicine was the place for me: it seemed to offer the most interesting patients, the most interesting colleagues, the most interesting trainees, and the most interesting mix of challenges and rewards. As a resident at Beth Israel Hospital in Boston, I was exposed to terrific mentors such as Steve Weinberger and Rich Schwartzstein, who played a major role in my selection of pulmonary/critical care medicine as a subspecialty.

I was later asked to serve as Chief Medical Resident at Beth Israel. Until I began in this position, I had never been comfortable speaking in front of groups, had little experience in teaching, and my only administrative experience was serving as Head Lifeguard at Rosewood Beach in Highland Park, IL before my junior year of college. As Chief Resident, I found that I loved the intellectual engagement that teaching fostered, and was somewhat surprised to find that I also enjoyed the challenges of building, improving, and helping to run an educational program, in this case the Internal Medicine residency at Beth Israel.

After I completed my Pulmonary/Critical Care fellowship at the Brigham and Women’s/ Beth Israel /Mass General program, I was asked to return to the recently merged Beth Israel Deaconess Medical Center to serve as Program Director of the Internal Medicine residency. With great mentorship from Steve Weinberger (who had shifted from Chief of the Pulmonary Division to Vice-Chair of Medicine for Education) as

well as Tony Hollenberg (the outgoing Program Director) and Bob Moellering (the Chief of Medicine), I was able to get my feet on the ground in this role. Running the residency program provided many opportunities for working directly with and helping trainees, as well as for making a positive impact on the clinical and educational environment of many residents and medical students. In addition to this position, I also remained active clinically and developed the pulmonary hypertension program at Beth Israel Deaconess. Finally, I also worked with Bud Rose and Steve Weinberger to help develop the pulmonary section of *UpToDate*. Because *UpToDate* was an official educational program of ATS, I ended up getting involved with the ATS Education Committee, which was chaired by Mike Peterson from the University of Iowa.

Several years later, Mike arranged for me to give a talk in Hanover, Germany along with him and several other Iowa faculty members. They then invited me to come to Iowa and give a talk, which I did with some reluctance, given that I was quite happy in Boston. However, it became clear that Iowa could offer a terrific combination of clinical opportunities and opportunities for leadership in medical education at the medical school level that was hard to resist. I accepted the position at Iowa, served as Director of the Pulmonary Hypertension Program, and was appointed Director of the Human Organ Systems course (an integrated Physiology and Histology block for first-year medical students.) Because of my involvement with students and medical education, shortly thereafter I was appointed Assistant Dean for Student Affairs and Curriculum. The transition from graduate medical education to undergraduate medical education was intentional, as I felt that there was less conflict between education and service responsibilities, and hence greater opportunities for creativity.

By this time, I had held a number of different posts at two different institutions. The common theme, however, was that I was doing what I liked doing: seeing patients and being involved in medical education in both a teaching and a program-building capacity. I made the decision that titles may come and go, but I wanted my career to continue to operate on the basic principle that I wanted to do the things that I like to do, and do them with people with whom I enjoy working.

I anticipated staying at Iowa for many years, but was made aware that UCSD was seeking a new Associate Dean of Curriculum in 2005. There were many appealing things about the position, not the least of which was that while Iowa was in a period of relative curricular stability, UCSD appeared to require more significant change. I had decided that at least once in my life, I wanted to take on the challenge of a major curriculum revision at a top medical school. Since my daughter was in 6th grade and my son in 2nd, it seemed that if I passed on this opportunity, I would not be willing to move for many more years, probably not until my son graduated from high school in 2016.

My current position as Associate Dean carries a number of responsibilities. These include coordination of the medical school curriculum and provision of central oversight and input for faculty members involved in this mission; coordination of residency planning, including the dean's letter process; academic advising, tutorial services, and assisting and dealing with students in academic and personal difficulty; program evaluation; standardized patients and other aspects of medical simulation; and oversight of the teaching laboratories and the willed body program. Currently, much of my time and energy is devoted to redesign of the medical school curriculum at UCSD, which is both rewarding and intimidating at times. This is only a partial list, and one of the things that makes the job fun is that no two days are alike in terms of the structure, the issues involved, or the individuals with whom I interact.

In preparing this essay, I was asked "what do you wish you had known in the beginning and what advice do you have for someone interested in a similar path?" One of the first things is that there is no clear "path." When I look at my fellow deans, a remarkable aspect is their diversity of training and interests, and no two pursued the same path before assuming their current posts. As opposed to the clear (but very challenging) grant ladder, opportunities for leadership in medical education are unpredictable and highly dictated by local circumstances. It is critical to be respected by one's peers for both clinical,teaching, and/or research abilities to be competitive for leadership positions. Like other pathways in academia, publications and national visibility on educational issues is also important.

It has now been approximately 18 months since I started at UCSD. Mixing my pulmonary duties with my Dean's Office position has been very enjoyable, and I look forward to many more years of this mix. Regardless of the exact titles and roles in the years to come, I will continue to organize my career around seeing patients and involvement in medical education.

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The Evolution of the Clinician - Educator

Leslie Zimmerman, MD

Before the 1950s, much of medical research was directly related to the examination of patients, so academic clinical investigators tended to be gifted clinicians and clinical teachers. In the second half of the twentieth century, research turned increasingly molecular, and researchers became immersed in their laboratories. Researchers found it more and more difficult to maintain clinical expertise or to have time to teach. On the other end of the spectrum, expert teachers had no opportunities for research grants and needed to take on more clinical activities to support their salaries. Out of this diverging academic community, new roles of “Clinician-Educator,” “Clinician-Teacher,” and “Clinician-Scholar” evolved.

In the current era, the definition of “Clinician-Educator” appears to be highly dependent on the institution. Some academic centers use this term to describe a non-tenure track Clinical Instructor appointment, typically populated by those just having finished training. Usually there are substantial clinical responsibilities, a requirement for resident/fellow teaching that often is in the form of being a ward, clinic, or consult attending, and little to no training in the pedagogy of medical education. In these settings, most Clinician-Teachers receive an academic title but are rarely granted tenure. Typically, the appointment contract will provide for a limited number of years of job security (typically about three years) with an opportunity to renew the contract. Reappointment is based on performance as a teacher, less commonly success as a researcher, but most importantly on the ability to generate one’s own salary in clinical income. It is a fine first appointment for those in a transitional time (e.g., between residency and fellowship) or as reflective time for career planning. But because little time is allocated for academic growth, it is difficult for those in this appointment to obtain funding for educational (or any) projects or to be trained in the art and science of teaching. Some are successful, but this is the exception. On the other end of the spectrum are institutions that have a Clinician-Educator/Scholar tenure track with entry points at multiple levels of appointment. These institutions recognize, promote, and reward teaching excellence, provide “buy-out” time for programmatic leadership, support curricular innovation, encourage scholarship in medical

education, and provide a community of like-minded Clinician-Educator Scholars for collaboration. Most institutions are somewhere in between.

All academic institutions value education, but value doesn't always translate into salary support for educational endeavors. In many institutions there has been a subordination of teaching to research, in which research has outstripped teaching in prominence, leadership roles, and resource allocation. Research productivity is the metric by which faculty accomplishment is judged. Payment for educational activities directed towards medical students (typically called "Undergraduate Medical Education") require dollars from tuition and fees and other money sent to the dean's office to flow through the system to the educators. In my case, I teach two of the required first-year courses for medical students, and yet my salary for this is paid by the Department of Medicine, not the School of Medicine or the Dean's Office. These courses cover cardiology, pulmonary, nephrology, GI, and endocrinology courses in which internal medicine is heavily represented. In this sense, there is a reasonable argument that the Department of Medicine has a stake in this teaching activity, but it means that some other member of the Department of Medicine has to earn extra clinical income to pay for my teaching effort for the Medical School. As for Graduate Medical Education or GME, institutions receive Medicare support for residency education. Despite this substantial support, teaching hospitals are struggling financially for a variety of reasons (decreased reimbursements for clinical services, increasing uncompensated care, reductions in federal GME payments, etc.). Department chairs and program directors typically must negotiate with hospital administration for dollars for resident and fellow training. Somehow in these incredibly complex, opaque, highly variable financial circumstances of different academic institutions, you need to convince your department chair that what you do merits salary support. It is not worth your time to try to understand how dollars flow through your medical center. *A better return on your effort is to demonstrate that you are the best investment for these limited educational dollars*.

The entry point is the hardest, i.e., getting that first funded educational project or position. The good news is that once you have proven your value in this first project or position, you tend to be in the loop to hear about other opportunities, and money seems easier to obtain. This is quite similar to traditional research tracks. Success identifies you. And

similar to traditional research tracks, it is useful to develop a focus. There are several classic domains of scholarship in medical education: Direct Teaching, Advising and Mentoring, Educational Administration or Leadership, Curriculum Development/Instruction Design, and Educational Research. The first four domains are judged by teaching awards (typically most valued by institutions as evidence of excellence), formal evaluations by trainees, evidence of career development of former trainees (via advising and mentoring), dissemination of enduring educational material outside of your institution, and your own summary of your innovation and leadership. The last domain of Educational Research is judged similarly to bench and clinical research, by publication and presentations of peer-reviewed work, and by the ability to obtain grants based on peer review of written proposals. Most successful Clinician-Educators excel in two domains. Attempting to excel in all these domains tends to spread your effort too thinly and does not allow time or energy for innovation.

Most of you reading this chapter are subspecialists in some stage of training, and the educational entry point for you might be as a small group facilitators for a medical school course. Bring enthusiasm for the material. Read your evaluations, but understand that just reading your evaluations rarely improves your teaching (though it beats ignoring the evaluations). More improvement occurs by attending a faculty development course or by having a peer directly observe your teaching. Those of you who are fellowship co-directors (or even directors), wear many hats—advising and mentoring, administration leadership, and hopefully curricular innovation. Collaborate with your learners, and seek advice from other fellowship directors at your institution as well as in your subspecialty at other institutions.

Clinician-Educators fill a relatively new academic role. Many medical schools lack experience in evaluating their Clinician-Educators for promotion. Your institution may not have very explicit criteria for success. The promotion subcommittee that evaluates your packet may not have many Clinician-Educators on it. Your CV needs to be very clear about your areas of accomplishment, how this is evaluated (i.e., how do others recognize your excellence), and how this information is disseminated. Dissemination of educational work is one of the more difficult areas for Clinician-Scholars to document, especially if the expertise is in Direct Teaching, Advising/Mentoring, or Leadership at your own institution. Evidence of

Direct Teaching that goes beyond your school may be via chapter writing and speaking at CME courses. An up-to-date list of the academic addresses of former advisees/mentees also demonstrates dissemination. If you have developed curriculum material that you think is particularly illustrative or unique, consider application to the peer-reviewed medical education site of The American Association of Medical Colleges (www.aamc.org/mededportal).

The Clinician-Educator is a relatively new role in academic medicine and one that is evolving and growing. With time, individual medical schools will clarify the role and develop expectations more explicitly. In the mean time, for your success, find good mentor educators at your institution, seek out faculty development opportunities that match your interests, and collaborate with your like-minded peers.

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Choosing a Private Practice: Things to Consider

Leland G. Dobbs, MD

Subspecialty medicine in the United States is practiced within a variety of different organizational structures. One can roughly categorize practice structures according to size and according to whether they consist of multiple specialties or are limited to the practice of pulmonary/critical care/and sleep medicine. The most familiar structure to individuals coming out of a training program is the large institutional model, such as clinical practice in a university setting, large HMOs such as Kaiser Permanente, and multi-specialty medical groups. Some of these groups may contract with larger healthcare organizations to provide subspecialty coverage to various hospitals and clinics within a given geographic area. Single specialty groups of 2 to 20 physicians limited to the practice of pulmonary/critical care/and sleep are common, although the relative proportion of pulmonary, critical care, and sleep may vary considerably from practice to practice. Although some subspecialties such as oncology, emergency medicine, and anesthesiology have organized into larger regional or national groups, this has not been a common organizational structure to date for pulmonary/critical care/sleep. Because of economic factors, the national trend has been towards larger groups over solo or dual practitioner structures. Depending on how health care evolves over the next decade, it is likely that medical practice organizational structures will change as well.

There is surprisingly little uniformity in how various practices, even with similar numbers of people, are structured and governed. Although the larger practice models tend to be more hierarchical in nature, with decisions made at the top, this is by no means absolute, because some large groups may function by democratic processes. Some groups operate with an elected or selected board, some by voting or consensus, others by executive fiat of the senior partner(s). It is important to understand the specifics of how a practice works. Within each type of structure, there are similarities, but there may be surprising differences, dependent on both the specifics of remuneration (i.e., the extent of managed care/capitation) and the "culture" of the group (i.e., how decisions are made and implemented).

Not all models or groups are good fits for everyone. What is important to you as an individual? Although geographic location and initial salary seem to be the prime reasons that individuals select a practice to join, this can be shortsighted. The first 1-3 years spent in practice are a continuation of the processes of accumulating knowledge and experience that one develops during postdoctoral training. Often the focus in this period of time is learning how to function within a specific community. However, when you and the practice group become comfortable with one another and you have become a full, functioning member of the group, the details of how the group functions will be important to you. There are many factors to consider that are ultimately more important than the initial salary. You should develop other criteria for you to help decide about choosing a group. Some questions to ask yourself in preparation for obtaining information about various practices include the following:

How important is it that you have input into decision-making? Do you want to have a say in most decisions regarding practice direction, management, and daily operations, or would you prefer to leave this type of decision to others and focus on your medical subspecialty? Whatever your preference, you should understand how the practice/group is governed, who makes decisions, and what will be the extent of your input, both initially and as you develop seniority in the practice. Administrative and business decisions are time consuming and often frustrating, but are important, because they influence important issues such as where, what hours, and how people work, as well as the formulas for remuneration.

What will your daily life be like? What mix of patients do you want to see? What type of patient mix does the practice see—inpatient/outpatient? What is the spectrum of patients within pulmonary/critical care/sleep legal cases? Does every physician in the group see the entire spectrum of patients and perform all procedures, or is there specialization and compartmentalization within the group? Is it important to you to have a say in the types of patients you will see? Will you have an opportunity to do work other than the practice of medicine, if you wish, such as teaching or participating in experimental drug trials?

What type of practice community is it? In some communities, house staff, hospitalists, internists, or family practitioners play a major role in both inpatient and outpatient medicine; in other communities, the subspecialists also function as primary care physicians. Do you have a preference?

How important is it to you to have flexibility in the time that you work, such as control over the hours you work during the week or the amount of time you spend out of the practice? How would your desires and wishes fit into the organization of the group? Would these easily be accommodated or would they be a source of friction?

Are you more comfortable in the type of practice where everyone makes the same (or similar) salaries and works similar or fixed hours, or would you prefer a more flexible working situation, based on either time spent in the practice or on productivity? If there is a component of remuneration linked to productivity, how is productivity measured? Some practices base productivity on amount billed or on RVUs, whereas others base productivity on income collected. Each method has its advantages and its drawbacks; it is important to understand what the formulas are in the practice you join. How are expenses allocated?

How is work allocated? Is there competition within the group? If not, how is this avoided?

How will your position evolve within the group? There is usually a trial period of 1-3 years and there may be different levels of partnership. You should fully understand both the timeline and the processes by which decisions about advancement are made.

Most importantly, can you work well within the group? Do you think you like the individuals currently in the group and can you get along with them? Do they seem to get along well with one another? Do they appear to function well as a group?

By the time you reach the point of signing a contract, you should have developed a clear understanding of what the group is like, and what your responsibilities will be to the group and vice versa. Therefore, the contract should contain no surprises. That said, it is most important that you understand what the agreement means in plain English. If you are signing a contract with a solo practitioner or with a very small group, some negotiation may be possible. However, with larger groups, there is often little flexibility. Groups have fixed ways of doing business, and there are issues of maintaining equity within the group with respect to both salaries and other job specifics; many contracts are "boilerplate." Issues such as job flexibility, vacation time, and salaries may have been fixed by the group's prior and current working arrangements; these may not be negotiable. If you have specific issues that are important to you, these should have been discussed and agreed upon before an attorney draws up a contract. There should be a good exit arrangement in the contract, so that if either party is dissatisfied, the working arrangement can be amicably terminated. Finally, it is critical that you have the contract reviewed by an independent attorney of your choosing and that you fully understand all of the terms of the contract before you agree to it. It may be tempting to avoid the expense and time involved in hiring an attorney to review the contract, but it is often a mistake to do so.

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