

FELLOWS' FOCUS

CONDUCTING IMPACTFUL RESEARCH AS A RETINA FELLOW



A look at how clinical, translational, and basic research fits into a clinical fellowship.

BY ASAD F. DURRANI, MD; SAAGAR PANDIT, MD, MPH; ANAND GOPAL, MD; AND LINNET RODRIGUEZ, MD

As we move beyond the midpoint of the academic year, first-year fellows have adjusted to the clinical demands of fellowship and are beginning to conduct research, while second-year fellows are finishing projects and deciding how their research will fit into their ongoing careers.

In this article, prominent retina specialists discuss how research fits into a busy retina fellowship.

—Asad F. Durrani, MD

DR. DURRANI: WHY DID YOU CHOOSE TO MAKE RESEARCH A COMPONENT OF YOUR CAREER?

Mark W. Johnson, MD: During my residency and fellowship, I enjoyed the thrill of discovering new clinically relevant knowledge and the rewarding feeling of sharing that knowledge with colleagues through presentations and publication.

I also loved attending scientific meetings and participating in the scientific and social exchange there. Those early experiences convinced me that clinical and translational research should be an important part of my career.

David N. Zacks, MD, PhD: Ever since I was an undergraduate, I have been interested in sensory biology and exploring the frontiers of science. That is what compelled me to do the MD/PhD program. I never saw myself as doing only research because I wanted to have a mechanism through which to apply my learnings—a thought that solidified in residency and fellowship. Seeing patients for whom there were limited treatment options motivated me to understand disease processes more deeply and seek the development of new therapies.

Jason Hsu, MD: For me, it stemmed from a desire to have a larger impact on our field. There's also something exciting about expanding our understanding of a disease or treatment and discovering better ways to care for our patients. Sometimes, the best part about research is the results of the analysis, especially when it changes our understanding of a disease or treatment algorithm.

Finally, I think it may help extend my career and perhaps help avoid burnout because it gives me a greater sense of purpose beyond the day-to-day clinical duties.

Jose S. Pulido, MD, MS, MBA, MPH: I was so impressed by my residency mentors that I couldn't think of doing anything else. It's fun to be at the cutting edge and know that you are not only helping the patient next to you but also a patient 5,000 miles away. It has kept me young, and every day I learn something new.

DR. DURRANI: WHY SHOULD FELLOWS BE INVOLVED IN RESEARCH?

Ajay E. Kuriyan, MD, MS: Research opportunities as a fellow can provide a foundation for learning how to formulate research questions, conduct literature reviews, choose study designs, collaborate within and outside of your institution, write in a scientific manner, effectively convey data, present posters and presentations, submit manuscripts and respond to reviewer comments, and, if applicable, think of the next steps for a research project.

Dr. Johnson: I strongly recommend that fellows get involved in research during their fellowship for several

reasons. First, fellows are in an excellent position to ask and help answer meaningful clinical questions—and thereby benefit patients.

Second, engaging in the research process allows fellows to determine their interest level in pursuing research throughout their careers.

Third, most fellows find that presenting the results of their research is a highly rewarding, interesting, and entertaining experience (and a good way to connect).

Fourth, involvement in research adds a layer of enrichment to patient care activities, changing the way we view our patients' conditions and helping us avoid burnout in our professional lives.

DR. DURRANI: WHAT ARE THE BEST TYPES OF RESEARCH TO CONDUCT DURING A FELLOWSHIP?

Dr. Zacks: The best type of research to do is on a topic that interests you. Still, time constraints will put some limitations on the work that can be done. For example, bench research is often only doable if you are part of a larger team (eg, the fellow does the surgical manipulation and tissue harvesting with the technician running the western blots or other bench assays).

Carl D. Regillo, MD: The best type is original, independent studies (retrospective or prospective) designed to address an unanswered clinical question. Ideally, the fellow should be the lead in all aspects of a study—from design to data acquisition and analysis and then to presenting and/or publishing the work. There is also value in being an investigator in multicenter trials to understand good clinical practices in large-scale clinical research and gain experience in this type of research. This will make it easier to continue such investigative work in practice.

Sunir J. Garg, MD: I encourage our fellows to explore original research ideas. These can be ideas that the fellow comes up with or, often, ideas that the attending has been thinking about but needs help to bring to fruition. Fellows should also complete a project themselves during fellowship. This is important not only for the intellectual pursuit, but also to ensure that the fellow remains the lead author on the project they spent so much time working on.

DR. DURRANI: HOW SHOULD FELLOWS GO ABOUT DEVELOPING A PARTICULAR RESEARCH INTEREST?

Dr. Zacks: I recommend fellows develop their research focus based on their interests. There is no shortage of topics to study—just look around your clinic and you will see lots of unsolved problems.

Dr. Kuriyan: If you're a fellow who doesn't already have a specific research interest, I recommend using

your fellowship to learn research skills and gain as much exposure to research topics as possible to figure out what you want to focus on.

Dr. Pulido: At different points in my life, I concentrated on different areas but I am always open to going beyond my area of concentration. Keep learning, be open to new, but biologically valid, ideas, and move the boundaries.

Dr. Johnson: I have enjoyed writing about a wide variety of topics during my career. That said, if a

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fellow finds their interest drawn to a particular area of investigation, there can be advantages to concentrating their energies and expertise in one direction.

Dr. Regillo: My advice is to start with a general category of interest (eg, medical vs surgical, diagnostic vs therapeutic, big data, etc.) and then ask questions that need to be answered to come up with potential studies to pursue.

Dr. Garg: Retina is such an amazing field; there are a million and one questions to pursue. From an academic perspective, it is helpful to have some specific focus. It helps when people think that you are the expert in a disease. During fellowship itself, however, there isn't much time or need to concentrate your efforts on one particular research area.

Dr. Hsu: While it's great to have a predetermined niche, it's not essential. As a clinical researcher, the great thing is that there are always questions and ideas that are coming up on a regular basis both from my clinical and surgical experiences. Sometimes, a single idea generates a sequence of inquiries that becomes of interest and leads to multiple publications.

DR. DURRANI: HOW CAN FELLOWS TAKE ADVANTAGE OF CLINICAL TRIALS?

Dr. Zacks: As a fellow, it is hard to get involved in clinical trials directly beyond just being a subinvestigator. The big clinical trials all take years to develop. That said, fellows can approach their mentors and get involved in data analysis. A fellow can also consider starting a smaller investigator-initiated trial to answer a focused question. This can provide good experiences in the design and implementation of these trials.

Dr. Regillo: At the fellowship level, fellows need to rely on the attendings and clinical research staff to get involved as a coinvestigator. It is a valuable experience to be able to go to an investigator meeting of a new clinical trial and then be involved in both patient recruitment and clinical care.

Dr. Hsu: If you are interested in either of these routes, the first step is to establish yourself as a site principal investigator once in practice and recruit well for the studies in which you are involved. It's also important to get noticed by actively participating in investigator meetings.

Also, if there is a specific drug you are interested in using in a novel way, you can work with a mentor to propose an investigator-initiated trial to a pharmaceutical company. This way, you have the opportunity to design a study on a smaller scale and essentially apply for funding from the company.

DR. DURRANI: ANY LAST PEARLS FOR RETINA FELLOWS REGARDING RESEARCH?

Dr. Garg: Even if you don't think you want to pursue research as part of your day-to-day career, having some research exposure will help you critically evaluate the literature and improve your skills as a thoughtful journal reviewer.

I'm always amazed at how much work goes into even a simple project and what you learn from the peer review process. There is a great satisfaction in taking something from an idea to a finished project.

Finally, many papers will get rejected on their first submission. Do not let the paper you spent so much time on die because you did not keep submitting it to a journal. Almost all research projects find a home; you just have to figure out where that home is going to be.

Dr. Zacks: Regardless of your practice environment, it is possible to be active in research and contribute to the profession. By staying curious, asking questions, and seeking answers, you will have a much higher level of satisfaction with your career. I wish all the fellows good luck, and I look forward to hearing their presentations at future meetings! ■

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