



American Healthcare Professionals and Friends for Medicine in Israel

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Dr. Yair Mina is a unique Israeli neuroinfectious diseases doctor. He runs the country's only clinic treating for neurological complications of infectious diseases, especially HIV. Soon, after a two-year National Institutes of Health (NIH) fellowship, he will be one of the country's most advanced physician/scientists in this growing crossover subspecialty.

"Since medical school I've always had a special interest in infectious diseases and the immune system," says the 2019-2020 APF Clinical and Research Neuroinfectious Diseases Fellow at the National Institute of Neurological Disorders and Stroke.

"And during my residency in neurology I was excited to discover the wide interaction between these fields and the emergence of neuroinfectious diseases as a subspecialty of neurology. That's when I opened my clinic and continued with it while serving as an attending physician in neurology at Tel Aviv Sourasky Medical Center.

He is eight months into his program in the Institute's Section of Infections of the nervous system. And there, with a colleague, Mina has already created a possible new diagnostic tool.

This year the Tel Aviv resident spends 75 percent of his time on research and 25 percent on clinical work. Next year will be the reverse.

Mina says he works in two main research arenas. "One is developing diagnostic tools to use on patients with suspected infections of the nervous system. The other is evaluating imaging characteristics of patients with brain or spinal cord infections.

"For example, some HIV patients have long term changes in the brain. They can have a variety of

neurological complications, including cognitive disorders and neurological syndromes caused by opportunistic infections (infections caused by pathogens that exploit the state of immunodeficiency that is induced by HIV).

"We go over scans, evaluating them to try to figure out differences between HIV patients and healthy patients.

Mina notes that Steven Jacobson, PhD, an NIH chief investigator and one of his mentors, has been guiding him through imaging research, dealing with HTLV and spinal cord atrophy.

"We also look at HTLV, a virus that mainly causes spinal disease, and evaluate the similar effects that multiple sclerosis (MS), an inflammatory disease, has on the spinal cord."

Some of the diagnostic tools scientists use at NIH aren't available elsewhere. And now, thanks to Mina, there may be one more, even though early in his fellowship he had to catch up on lab skills. "Most of my experience coming in was clinical."

With the guidance of another mentor Dr. Avindra Nath, a world-renowned specialist in neurological infectious diseases, the 39-year-old has created a new test analyzing spinal fluid for several antibodies at once.

"This is a first. There is not much data and experience on testing spinal fluid this way; so far it's been done mostly on blood. In addition, usually we test for each antibody individually. But this time we've tried to create a tool that scans at once for most of the pathogens known to cause infections of the central nervous system."

He's now working on two journal articles, one on MS spinal cord atrophy based on his experience

with HTLV patients and the other one on brain MRI features in HIV patients.

In the clinical arena Mina mainly sees patients who've come to NIH after long unsuccessful workups for inflammatory or infectious processes other medical centers. "We do testing including blood work, lumbar puncture and clinical evaluation," he says. "These are very challenging cases that we usually see after very good centers have already tried to figure them out."

"We try to find out if there's anything extra we can think of for the diagnosis. In many of these cases it is difficult to reach a specific diagnosis. We can, however, characterize the disease in a more refined fashion thanks to NIH's advanced diagnostic tools, some of which are still experimental. And then we try to set up a new treatment plan."

After high school Mina served in IDF intelligence. While in the military he decided that combining research and analytical tools with interpersonal skills pointed to medicine as a profession. "I also wanted the opportunity to diagnose and to heal, both in terms of acute as well as chronic care."

He could not point a significant person or moment in his life responsible for his choosing to become a doctor. "In fact, my whole family are lawyers. If anything at all, I was destined to be a lawyer!"

The Jerusalem native attended Sackler Faculty of Medicine at Tel Aviv University, where he developed a keen interest in neurology as well as the immune system and infectious diseases.

"As I was finishing medical school I decided on neurology because of the complexity of the nervous system and the feeling I had that there is a lot of area still to make progress and do research in the field, more than in others."

During his internship at Sourasky he opted for additional rotations in neurology.

Mina chose to continue at Sourasky for his residency. "It has the largest neurology department in Israel and it's leading in terms of both research

and clinical work. The head of the department, another mentor, is Professor Nir Giladi. He's a great director and was definitely part of my choice. Also, Dr. Giladi puts a lot of emphasis on research and fellowships and combining research and clinical work."

Giladi was instrumental in the creation of Mina's unique-in-Israel clinic for patients suffering neurological complications from infectious diseases.

"During my residency I noticed there were a lot of patients with complications from infectious diseases. They had no special place to go after the acute illness phase and discharge. Patients with MS, Parkinson's, epilepsy, etc., all have clinics to come to afterward for decisions about treatment. For this group there was no such. This was very interesting to me. I was interested in infectious diseases prior to residency, so it was very attractive to me to combine my interests with filling this need."

"Then I spoke to Dr. Giladi and he made it happen; that was the beginning."

By the time Mina left for the United States the clinic, where about half of the patients have HIV, was seeing 15 new patients monthly in addition to treating returning patients.

DID YOU HAVE TO LEAVE ISRAEL TO GET THE EXPERIENCE YOU'RE GETTING NOW?

"Yes. The research opportunities here are unavailable in Israel, as is training like this. Some of what's available at NIH is unavailable anywhere else."

"And the volume and variety of patients is much larger."

"You might say it's a matter of 'tools and time.' You are exposed to new tools and therefore gain new skills. Also, you have the time, uninterrupted by a hectic clinical schedule, really to pursue research."

"Almost everyone in my department back home has had a fellowship – in the U.S., Canada or Europe. In general, the ability to combine research and clinical is crucial to the career of a physician. And this

period is set aside to, among other things, let you learn how you will do it for the rest of your career.

“When you return and have less time for research, you will have learned how to better use that time.

“You can be a good physician without it, but the option of carrying on research with your clinical duties can make you a *better* physician and also help you lead your field forward.”

WHAT ARE YOUR WORK HOURS?

“From about 8 or 9 a.m. to about 5 or 6 p.m. I don’t work nights or weekends and I’m not on call. But this might change next year.”

HAS THE FELLOWSHIP HAD AN EFFECT ON FAMILY LIFE?

“Actually, we’re getting in more quality family time than usual because we’re on our own, and there are so many travel options around.”

HOW HAS THE APF MONEY BEEN USEFUL TO YOU?

“My wife Reut, an HR manager, and I have two daughters – Ella, 6 and Maya, 3. It was a challenge just moving here. Settling down was expensive. Our older daughter is in a Jewish school and our younger one is in a Jewish kindergarten. The money really helps us to deal with all of this. It’s not the best time financially, but we’re getting back a lot in many ways.

“We were especially happy and grateful to have met the couple that donated my scholarship, Wendy and Burton Katzen.”

WHAT ARE YOUR PLANS FOR USING YOUR FELLOWSHIP TRAINING BACK HOME?

“I plan to return to Israel more qualified to lead the development of this field both in terms of basic science and in terms of clinical management of patients with neurological complications of HIV and other neuroinfectious diseases, addressing the challenge of translating laboratory discoveries to the clinic. I also want to mentor others in this field or those thinking of pursuing it.”