

# Personalized Health

An Interview with Karina Davidson, Ph.D.,  
Professor, Senior Vice President of Research, and Head, Center for Personalized Health, Feinstein Institutes for Medical Research

**EDITORS' NOTE** For more than 25 years, Dr. Davidson has served in leadership roles with diverse stakeholder teams focused on advancing scientific and educational missions through the generation and utilization of research-based evidence. In addition to her roles with Feinstein Institutes for Medical Research, she serves as Professor, Behavioral Medicine, at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell. She previously served as the vice-dean for organizational effectiveness and executive director of the Center for Behavioral Cardiovascular Health at Columbia University and as the chief academic officer for NewYork-Presbyterian Hospital. Dr. Davidson earned her Master of Applied Science degree in industrial/organizational psychology as well as her Ph.D. in clinical psychology from the University of Waterloo (Canada).



Karina Davidson

## Will you provide an overview of Feinstein Institutes for Medical Research at Northwell Health?

Feinstein Institutes is the home of research at Northwell Health and is comprised of Institutes in oncology, health innovations and outcomes, bioelectronic medicine, behavioral science, and molecular medicine. Together, they form a unified force to make new discoveries to forge better health for our patients.

## What made you feel that Northwell was the right place to pursue your research work?

One of the things that drew me to the Feinstein Institutes was a passion to do something disruptive and innovative in the research world. I tried doing it when I was an intern and had absolutely no traction, and again when I was an assistant professor, as I was absolutely convinced it was the right thing to do for every patient. I had the opportunity to speak to Northwell leadership about personalized trials – which is running a trial for one single patient who has relapsing remitting symptoms, conditions, diseases or behavioral problems, and finding the right treatment with the lowest dose and the best effect with the fewest side effects – and Northwell was open to giving its patients access to my research. This is what my

sole program of research and practice is focused on right now.

## How have you developed the Center for Personalized Health and how critical has it been to attract the best talent?

It has taken a team to do this. We started with great statisticians. Everything in statistics is based on traditional statistics and averages taken from other people. It really takes intellectual horsepower to think about how you're going to base estimates from the person you're working with, not on other people.

We wanted to partner with patients and clinicians to study how we were going to bring this into clinical practice. We did multiple surveys of 500 patients across the nation who had chronic disease. We asked them what symptoms or conditions they had for which they would be willing to try to find the treatment that works best for them individually. We also did focus groups with a number of different primary care clinicians to understand their concerns and we worked with economists to figure out the business case.

## This type of research requires a long-term focus and long-term investment. How important is it to have metrics to track impact and do you need to set short-term goals when you're addressing these types of long-term issues?

It is critical to have metrics and clear objectives, and funding – you can't make impactful research without those items. We proposed to the National Institutes of Health (NIH) a transformative R01, which is one of the NIH Director awards for transforming or disrupting an entire area. We set the short-term goal in this grant of building the digital platform for providing this kind of care and picking three use cases, so that we could work out the kinks and understand what worked well and what didn't, and learn from it. In the final part of the grant, we're comparing it in a trial to usual care, because in each case, if we roll this out, say in the area of lower back pain, or in the area of sleep management, or in the area of blood pressure management, or the area of depression, we want to make sure that we're actually doing better than what you get with current care. Armed with the results from this and other grants, we will be ready to offer excellent, personalized, evidence-based care.

## How important was it for you to join an institution that has a medical school?

I think it's critical to encourage the next generation of physicians to think about evolving patient care. Patient care should be convenient, should involve digital or virtual innovations, and should focus on a patients' wellness, not just removing their disease.

I am impressed with the Zucker School of Medicine students I've interacted with. I'm thankful to them because they are supporting our research by participating in it. We recently completed focus groups of students and will likely offer them a personalized trial focused on different stress management techniques so that they can figure out what works best for them while they're studying. Their participation has the potential to help many people.

## Did you know early on that you were attracted to the field of medicine?

It is actually a funny story. I trained as a clinical psychologist in Canada, and I was very close to where evidence-based medicine was born at McMaster University in the 1980s – I used to go there and listen to the lectures. They had personalized trials at the top of the evidence-based pyramid, but when you tried to do a personalized trial at that time, you were only really asking patients to write down their blood pressure every day, then come into the clinic and ask a nurse to take their blood pressure, and then ask the patient to write that down for the next four weeks. You were asking a pharmacist to hand compound the drugs and the placebo, and you were asking the physician to type that data into a computer, or worse, punch it onto cards, and then wait for overnight analysis to run to get an answer. Even though everybody tried really hard, multiple times, nobody could manage to figure out how to bring this into clinical care.

I believed that the epitome of evidence-based care was when you bring science and precision to the single patient, but at the time, there just was not the technology, devices, analytics or AI to make this a reality. We now have all of those things, specific and accurate sleep monitors, and actigraphs, and pain ratings obtained by text. It's been a long journey to get here, but I think the time is right and I am excited about the future. ●