From Patient to Problem-Solver: How Michael Kattan Became a Medical Informatics Pioneer

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Michael Kattan, chairman of the department of quantitative health sciences at Cleveland Clinic's Lerner Research Institute, was a PhD student studying financial prediction when he was diagnosed with Hodgkin's lymphoma.

His expertise in measuring risk attuned him to the fact that his doctors were unable to predict with any sophistication how various treatment options might play out. It was an experience that would send him in a new career direction—toward becoming an innovator in predictive healthcare analytics.

Seeking Better Solutions

After receiving 16 chemotherapy treatments, Kattan had to decide whether to receive additional radiation therapy. Some tests showed him to be cancer-free, but a bone scan indicated the possibility of cancerous cells remaining in his chest.

Doctors told him the radiation could seriously damage his heart, but were unable to tell him much about the relative risks of the cancer cells versus the heart problem. Kattan quickly realized that the standard predictive procedures physicians used to advise patients were inadequate.

With cancer, patients are divided into groupings that are supposed to indicate the seriousness of the condition. But this method looks only at the activity of the disease, ignoring the context in which the disease is operating. It lumps young and otherwise healthy patients in with those who are elderly, in poor health, or have multiple complicating factors.

“You’re in this group of people who don’t look much like you,” he explains. “And that’s kind of dumb. If you’re trying to be accurate about this, that isn’t the way you would do it.”

How would you do it? he wondered. Despite remaining a PhD student in the business school, he began asking his cancer center for data sets with which he could experiment as a volunteer. “I became more interested in medical prediction problems and less so about financial prediction problems,” he recalls.

Diving into Medicine

Soon enough, Kattan’s interest pulled him into the fledgling field of medical informatics, where his skill with predictive modeling could be put to life-saving use.

While teaching at University of Houston and working to finish his PhD, Kattan met Dr. Peter Scardino, a urologist at Baylor College of Medicine with a particular interest in predictive informatics. Kattan and Scardino began collaborating to develop new directions in the field, focusing on predictions within cancer treatment.

When Kattan reported that he had a job offer for an assistant professorship in business at Iowa State University, Scardino immediately offered him a position at Baylor, making up the title of assistant professor of medical informatics on the spot.

“I said, ‘do you have an opening?’” Kattan recalls. “He said, ‘I just made it.’ I said, ‘wouldn’t I need to interview?’ He said, ‘you got the job, you start Monday.’”

Since then, he has dedicated himself tirelessly to developing predictive medical informatics, working to push the field beyond its rudimentary approach to estimating outcomes.

From Baylor he moved with Scardino to Memorial Sloan Kettering Cancer Center in New York in 1998, where he created increasingly sophisticated statistical models and began publishing his predictive calculators on a website (http://rcalc.ccf.org). He moved to Cleveland Clinic in 2004 to push his work beyond cancer, taking on analysis of clinical conditions like coronary artery disease, Type 2 diabetes, and joint replacements.

The opportunity he has had to focus on the mathematical side of medicine is unusual. “There’s not a whole lot of people doing a whole lot of prediction,” says Kattan. “I was lucky enough to have this carved out with protected time and could concentrate on that.”

Supporting Complex Decision-making

Kattan’s tools are most useful in situations where patients need help assessing the likely outcomes of each choice, such as when he had to compare the risks of radiation with the risk of his cancer resurging without radiation.

“It ought to be applied in settings where the decision-making is complex, where there’s a tradeoff involved,” he says. “If there are two treatment options, and the chances of benefit versus harm is a tradeoff, that’s where you’d benefit the most.”

In Kattan’s case, he made the right choice despite not having an analytic to advise him. He chose to do the radiation, and is now cancer-free with a healthy heart.

That’s a blessing for others who find themselves in situations similar to the one he faced—some of the tools he has designed since then predict prostate cancer recurrence. An example is an algorithm that can tell a man recently diagnosed with prostate cancer how likely is it for the cancer to return if he gets surgery. The analysis is crafted using data from a biopsy blood test, a Gleason grade test that assesses the microscopic appearance of the cancer cells, and a rectal exam.

Such tools shed needed light on difficult, life-and-death decisions. And now, almost all of Kattan’s best analytics are available in the Apervita Market to bring his innovations to a much wider network of practitioners and institutions.

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Manager at Apervita, focused on empowering Authors by sourcing high-value Analytics and Data.

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