Western Faculty Profile: Dr. Neil Klar

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Background

Dr. Neil Klar is an Associate Professor and Undergraduate Chair in the Department of Epidemiology and Biostatistics at Western University. His main research focuses on clustered randomized trials. Dr. Klar teaches both undergraduate and graduate level courses in Epidemiology and Biostatistics. He also supervises theses at the undergraduate, MSc and PhD level. Vivian Tan, a member of the Editorial Review Board for WURJHNS, had the pleasure to interview Dr. Neil Klar to learn more about his career in Epidemiology and Biostatistics.

Tell us about yourself and your career path.

I started off my undergraduate degree at McGill in Environmental Biology and Ecology in 1979. Towards the end of my undergraduate degree, I realized that I didn't enjoy working in a lab but I did enjoy data analysis. When I was doing research with a group at an institute in parasitology at McGill's agricultural campus, McDonald College, I met a woman who worked on an epidemiological clinical trial looking at a screening and treatment program with new immigrants from Vietnam after

the war, many of whom had parasitic infections. The question that she was investigating was "was it necessary to treat the Vietnamese immigrants for their infections or was moving to a place where the disease was no longer endemic sufficient." Through my contact with her, I learned about epidemiology.

I interviewed at McGill's Department of Epidemiology where I did a master's degree in cancer epidemiology. Through my studies, I developed more of an interest in statistics and so I did a second master's degree in statistics at Waterloo. After my time at Waterloo, I worked for a year in Ottawa as a data analyst at Health Canada in cancer epidemiology. Then I came to Western in 1987 and started my PhD in the Department of Epidemiology working with Dr. Allen Donner. In fact, the parasitology clinical trial that I mentioned before became part of my thesis because it was what's known as a cluster randomized trial where the unit of random assignment was a family. Outcomes for parasitological infection for people from the same family are likely to be correlated. My thesis looked at accounting for that correlation in study design and data analysis. I was

quite fortunate that I had met this parasite epidemiologist because that led to actually access to her data when I was doing my PhD.

After my PhD, I stayed on at Western for a couple of years as a post-doc under the supervision of Dr. Allen Donner before being offered a position at the Dana Farner Cancer Institute in Boston which had an academic appointment with the Department of Statistics at Harvard School of Public Health in 1996. This was my first academic job as an assistant professor. It was an overwhelming position as I was coming from a place where there were 2-3 statisticians with an interest in healthcare moving to a locale where there were hundreds of biostatisticians. In fact, many of my bosses were fairly legendary in my discipline.

It was a very exciting but I decided to relocate back to Canada. I moved to Toronto and took up a position with Cancer Care Ontario working as a biostatistician helping them move their research forward from a methodical perspective. My academic appointment there, initially as an assistant professor and then as an associate professor was in the Department of Biostatistics in the School of Public Health. I was there until 2005, when a position opened up here at Western for my current position as an associate professor. I have been here ever since and it was a tremendous opportunity what led me to work with people like yourself.

What does biostatistics mean to you? What does the role of a biostatistician entail?

Biostatistics is the application of statistical methods to the design and analysis of research studies most often applied in the health sciences. Biostatisticians help in refining questions that are asked and making sure they are focused enough so that they can be answerable. We help in the design of the study to optimize cost and efficiency. We are also involved in forums used to col-

lect the data, planning of the data analysis, its implementation and the final writing of the publication that comes from the research. Biostatisticians have the great opportunity of seeing projects from start to finish and work on a variety of different types of projects. You could be a collaborator on a dozen different projects at a time if that is your full time focus and you really do learn a lot about a scientific discipline.

Why did you choose biostatistics? What sparked your interest in this field?

Everyone has a different approach to find what interests them in a discipline. I find that a career is a little bit like a sculpture. You don't really know what it's going to be until you remove all the bits you don't like. For me, I wasn't interested in being the person who came up with a research question in epidemiology. I enjoyed doing data analysis and I also enjoyed teaching. So my interest in biostatistics was sparked by how methods work. I was using methods in data analysis but I wanted to see what was behind them, what assumptions they were based on and how well they would work when those assumptions didn't necessarily hold. Also, I always had an interest in mathematics even though my undergraduate degree was in biology. So because of that I started gravitating more and more to things that were methodological rather than subject matter questions. For example, I'm interested not in what causes cancer but how we study it. By the time I came to Western, I was doing a fair degree of biostatistical research and knew I had found my niche.

What is your main research focus?

My main research focus is on experimental trials where the unit of random assignment is within the group. We call these cluster randomized trials. These trials arise when you want to randomize families as was the case in the screening trial for Vietnamese immigrants. Or if you randomize schools to prevent teenagers from taking up smoking. Or you might randomize doctor practices to

compare interventions they are going to offer to all their patients. Even in Southwestern Ontario in the 1950s, some of the first studies examining the effect of water fluoridation had communities either assigned to have their water fluoridated or not and then looked at the amount of cavities in the population. This type of clinical trial plus randomization is a ubiquitously used technique and I had the good fortune to work with Dr. Allen Donner on a book called “Design and Analysis of Clustered Randomization Trials in Health Research.”

What kind of research have you done and are you working on now?

As a biostatistician, part of our job is to work on the development and comparison of methods, but we tend to also collaborate because the most interesting and important problems are suggested in real studies. So I have worked on clinical trials in areas such as eye care for diabetic patients, as diabetics are at a higher risk for blindness and other eye issues. I am working on a cluster randomized trial with a group in India where the question is “can children be provided with treatment to prevent low iron deficiency for children and their caregivers”. Over the years, I have also worked with surgeons to make predictive models for chest injuries. As a result, as a biostatistician you tend to play in many different backyards.

In your opinion, what qualities would make one an excellent researcher?

The best researchers I’ve seen are fearless. They have an idea of what they want to study, they believe in themselves, they believe the work they are doing is important and they have a passion for it. They focus on their problem and that seems to be really important for success. I think it is the combination of drive, passion, curiosity, and not giving up.

What qualities do you look for in a potential graduate student?

I certainly look for passion and excitement about the work they are going to do. It’s not typical for someone starting a master’s degree to necessarily know what area they want to work in. In fact, I tell graduate students that it almost doesn’t matter what their first project is because the techniques and methods they are learning can then be applied to a variety of areas. What you do for your two years of a masters degree does not necessarily determine what you are going to do with the rest of your life but it is a great way to get started. The students that are the most successful are those who have the curiosity, excitement and passion for the discipline. That’s what sets them apart from others.