

Registry-Based Research – A Dream Come True

By Dr Kaavya Narasimhalu

The author, who is currently a third year SingHealth internal medicine resident, recalls her time at Karolinska Institute in Stockholm. She was there from September 2010 to September 2011.



Clockwise from top left

Kaavya (centre) all dressed up for her graduation ceremony in Stadshuset (Stockholm's city hall) in November 2012

Nailing her thesis up in September 2011 to announce that it would be examined in the following month

With fellow NUS students at her dissertation dinner in Berns Hotel, Stockholm in October 2011

Wintry landscape outside her office in Karolinska

IT WAS 3 pm on a Wednesday afternoon, but it wasn't as if I could tell the difference anyway. Deep in my office in the basement of my department's building, the only window I had was completely obscured by the three feet of snow on the ground.

I was attached to the Department of Medical Epidemiology and Biostatistics at Karolinska Institute, as part of my Swedish exposure while pursuing a PhD in Genetic and Molecular Epidemiology. This was a joint programme between the National University of Singapore (NUS) and Karolinska, and entailed coursework and projects in both Singapore and Sweden.

At that point I was technically on leave of absence from Duke-NUS Graduate Medical School, and formally a PhD student in both NUS and Karolinska. In reality, I still had to

complete all the requirements of the MD programme in time to graduate with my Duke-NUS cohort, including taking and passing the United States Medical Licensing Examination Step 1.

I was about six months into my Svenska experience, and the thrill of working 100 metres from where the Nobel Prize is announced was starting to wear off. Why? Because I was living through what I had been told was the harshest winter in the last 100 years.

By then, I had been through weeks of sub -30 degree Celsius weather, trudging to work in Gor-Tex boots, wrapped in so many layers that I lost count, and attempting not to fall while navigating the last steep icy ten metres to the door of my apartment building (I had already fallen twice!). While Swedish glogg (spiced wine that tasted like heaven in the

middle of winter) and endless Scandinavian salmon took some of the edge away, I had started to crave Singapore's sweltering heat. Sweden may have 17 months of parental leave per child to be split by its parents until it reaches seven (their solution to what used to be one of the lowest birth rates in the world) and virtually free healthcare, but I could not imagine spending the rest of my life in a place where I would be unable to see the sun four months in a year (although I later realised that houseman year wasn't much different).

It was only three more months until I had to move back to Singapore, and I had just become cognizant of the fact that what I thought would be the last of the four papers in my thesis was not going to work.

For the first two papers in my thesis, I had used data from a stroke study at Singapore General Hospital to show that even after accounting for traditional risk factors, having mild cognitive impairments after a stroke predicted for more dementia, death, vascular events, and dependency. The results of the third paper (that I was staring at), showed me that in the general Swedish population, while mild cognitive impairment increased the risk of dementia, death, and dependency, it didn't affect vascular outcomes at all. The planned fourth paper, an analysis of how genes and environment explain the associations between mild cognitive impairment and vascular events (by using twin modelling), was now moot!

There was only one way out. *Fika* time!

Germinating a great idea

The *fika* is the quintessential Swedish experience. It's a short coffee or tea break in the midmorning and/or midafternoon to catch up with colleagues or friends. I messaged a fellow student: "Study 4 isn't going to work! *Fika* now please!"

And in minutes, I was explaining to her how the results of my earlier study were making the planned final study obsolete. As I was talking, it suddenly hit me that the larger plan of the next 12 months was also now in shambles! Scrapping my current paper 4 and starting from scratch meant I'd be taking the Step 1 and submitting my thesis for examination to NUS on the same day. I was telling my friend this, she uttered the magic words that planted the seed of a solution in my brain: "Well, we have a lot of data. I mean, you've used data from the inpatient registry and the death registry – why not look into what other registries there are that you can use."

It was Wednesday, so the office was deserted (Wednesday was work-from-home day for our department). That allowed us to linger a little longer over coffee and *kanelbulle* (or cinnamon rolls, another Swedish classic – they even have a day for it! The fourth of October, when all offices provide cinnamon rolls for their employees! We need to have a *char kway teow* day in Singapore!) before breaking off to go back to our respective offices. Once ensconced in my office, I pulled up the twin projects folder on our department's shared drive and looked into what registries that the twin projects I had been working on have been linked to:

1. Death registry – *hmmm, I've already used this one...*
2. Inpatient registry – *I guess I could come up with more hypotheses here to test...*
3. Outpatient registry – *only clinics next to academic institutions are involved, so there'd be a huge bias... possible, but let's keep looking...*
4. Crime registry – *hmmm. Cognitive impairment predisposes to more crime? I don't quite think so. I doubt my little old ladies are planning a heist anytime soon.*
5. Prescription drug registry – *possible, complete data since 2005.*
6. *Wait. Back up. The prescription registry is complete?! Every prescription filled in all of Sweden is traceable. Really? That is soooooo cool!*

The dork in me instantly came alive! I already knew who died and who eventually became demented, and could now figure out how all my predemented patients were treated. Should I concentrate on looking at anticholinesterases and memantine? Should I look into antidepressant use? Or tackle the whole Alzheimer's-has-a-probable-vascular-pathology angle and look at cardiovascular medications? Decisions, decisions!

Before I knew it, the clock struck 10 pm! (Not that it mattered as it was already completely dark outside at 4 pm and -15 degrees outdoors regardless of whether it was night or day.) The sheer amount of data that was available for me to play with was overwhelming. Even after whittling the database down to the cardiovascular medications in the twins that we had reliable cognitive data on, the computer still took half a minute to tell me how many observations there were.

I did a little happy dance as I realised there were so many questions that I had and could actually answer. With a sweetener – I could answer them *now*! I didn't have to plan a prospective study and track patients for years before I got my results (I couldn't yet anyway, without a medical licence). Sure, it wasn't a randomised clinical trial, and these studies were going to have their limitations, but I had complete data on every single prescription that had been filled in Sweden. How cool would it be if we could do this in Singapore too? The possibilities of what I could study were endless.

As the adrenaline wore off, I decided that I was too drained to do any more that day. But there was a plan. My life had emerged from the mess it was in eight hours ago. It was going to be hard, but definitely possible; and I was going to enjoy doing it! I glanced at the clock and thought that if I left then, I could just catch the last bus home (instead of slipping and sliding on the ice/slush/snow walking back). As I exited the office, a refreshing blast of cold air hit my face and I could not help but smile – *this was definitely what I wanted to be doing for the rest of my life.* ■



The author is currently a third year SingHealth internal medicine resident. She enjoys travelling a lot and is always planning her next escapade. She likes to combine cuisines from the countries she has visited, into fusion pieces for the enjoyment of her colleagues and family.