Infectious Diseases and Their Association with Drug Use

Q&A with Dr. Thomas Brothers, Internal Medicine Fellow at Dalhousie University & PhD student in Epidemiology & Public Health at University College London

BY SUPRIYA HOTA

Dr. Thomas Brothers recently completed his residency in internal medicine at Dalhousie University in Halifax, Nova Scotia, Canada, and certification in addiction medicine through the International Society of Addiction Medicine. He is currently a general internal medicine fellow at Dalhousie University and a PhD student in Epidemiology and Public Health at University College London in London, England His clinical and research work focuses on improving health care for people who use criminalized drugs and people experiencing homelessness. Dr. Brothers is currently involved in various research projects that aim to understand and prevent bacterial and fungal infections associated with injection drug use. In addition to high-impact research work, he is leading an interprofessional hospital Addiction Medicine Consultation Service (AMCS) and worked with HaliFIX Overdose Prevention Society to organize Atlantic Canada's first safe injection site.

You are a resident physician and the path to become a physician is a very long one. What led you to pursue a PhD in Epidemiology and Public Health following your MD graduation?

When it comes to clinical work, I am interested in caring for people who use drugs and who are experiencing homelessness. As I went through my medical training, it became clear that our mainstream and traditional approaches to healthcare haven't incorporated these patients' needs. In medical school, when I started caring for hospitalized patients with infectious complications of injection drug use, my colleagues and I didn't understand how to help – we let patients down and we caused harm. In many areas there was evidence we weren't implementing, and in other areas we didn't have enough research to guide care. I wanted to pursue research training to try to improve prevention and care throughout my career. I have also been encouraged by some wonderful research mentors throughout medical school and residency, including Dr. Ken Rockwood, Dr. Susan Kirkland and Dr. Duncan Webster.

What does your average day look like?

Before October, I was a full-time internal medicine resident. Depending on the day and month, I would be on a different clinical rotation, whether in the hospital or in the clinic. I would spend the whole day there and then come home and try to tackle the academic and research work on evenings and weekends. Now, I'm completing a research fellowship

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and a graduate degree in Epidemiology and Public Health from University College London in London, England. Because of travel restrictions due to COVID-19, I Zoom in for courses and meetings. Every day is very different; some days are split between research and clinical work and others are fully spent doing one or the other. For example, I'm doing a general internal medicine call shift once per week in the evenings or over the weekend, and I spend a full day at the clinic once a month. I provide addiction medicine care in the hospital on an as-needed basis throughout the week. I also lead some education sessions, centered on caring for patients with medical complications from addiction. The rest of my time is spent working on my research.

Since you are managing so many different roles, do you have any tips on time management for us?

Priorities are always changing. Things that I have found helpful are listing out my tasks, breaking down tasks into subtasks and using my Google Calendar to remind me of my deadlines. I have also started using a white board to keep track of the projects I'm involved in and my progress on them. This allows me to have a visual representation on everything that I'm currently working on; it tells me if and where I'm dropping the ball so that I can go back and reserve a bit of time for projects that need it. Finally, if there's an important task that I'm not able to dedicate enough time to, I block off time in my schedule as if for a meeting and dedicate it to the task.

Your research focuses on infectious diseases and injection drug use. What sparked your interest in your current research?

My clinical work introduces me to new questions that I don't have answers for, and this is where most of my research questions stem from. I was interested in going into medicine in part because I wanted to work towards social and health equity. Early on in medical school, I happened to meet someone who became an influential mentor in my life: Patti Melanson. Patti established a street nursing service in Halifax called Mobile Outreach Street Health (MOSH). MOSH provides primary care to people living outside and in shelters, alongside Mainline Needle Exchange outreach. I was fortunate to spend time with Patti, MOSH and Mainline throughout medical school. This is where I was introduced to the philosophies of harm reduction, compassionate and non-judgmental care, supporting people with their own goals, and recognizing that individuals are experts in their own complicated lives; I thought these lessons were incredibly powerful. When I started my clinical rotations, I learned that these philosophies of care aren't necessarily common in mainstream medicine, especially in acute care. This is where I saw the disconnect between what could be offered in the community with harm reduction-based healthcare and what we were currently offering in the hospital. Early on in medical school, I participated in the care of patients who injected drugs and were subsequently hospitalized. These patients were forced into opioid withdrawal, which led many to have to leave the hospital and medicate themselves only to come back even sicker. There was a lot of stigma and judgment, and we created a lot of harmful situations for these patients. The combination of being exposed to harm reduction as a philosophy, having inspiring mentors, seeing the possibility of how things could improve, and building relationships with these sick patients but not having the necessary tools was a big motivator for me. Some of these patients unfortunately passed away, but they were great teachers and I'm encouraged by their memory. They shared their wisdom and experience on how things could be better.

I'm fortunate to continue to learn from people who use drugs, as well as my colleagues and friends in the Canadian Association of People who use Drugs (CAPUD) and Halifax Area Network of Drug-using People (HANDUP).

"These unanswered questions motivate me to understand how we can provide better care to people who experience infections from injection drug use so that these patients, who are mostly young adults, don't face death, disability or serious health complications later in life."

What are some projects that you are currently working on?

My thesis project focuses on understanding and preventing bacterial and fungal infections associated with injection drug use. When it comes to harm reduction practices, safer drug use and public health messaging, there has been a big focus on viral infections such as human immunodeficiency virus (HIV) and hepatitis C. We're also seeing increasing incidence of bacterial and fungal infections associated with injection drug use on a global scale, but the reason behind this rise in infections is poorly understood. Historically, the focus on prevention has mostly centered around individual risk practices and health behaviors (e.g. cleaning hands and sterilizing skin before injecting). However, individuals who experience homelessness, poverty and criminalization related to drug use can't always do that. How can you wash your hands and clean your skin if you don't have access to clean water or alcohol swabs, or can't take your time if you're worried about being arrested? I'm really interested in the potential of addressing social and political determinants, community health re-

sponses and different approaches to addiction treatment. I'm starting off by conducting a systematic review to identify the social and structural factors associated with these infections, with the goal of identifying opportunities for prevention that go beyond individual skin cleaning and hand washing. I'm also working with a dataset containing patients who have been on opioid addiction treatment in New South Wales, Australia. Their addiction treatment information has been linked to their hospitalization records, incarceration records and vital statistics (e.g. death). Using this dataset, I'm focusing on the potential role for opioid addiction treatment (and other risk factors) in the prevention of injection-related bacterial and fungal infections.

Addiction Medicine Consultation Service (AMCS) is a current project that you are really excited about. What were some challenges that your team faced in this project? What factors makes these services successful? What factors could have made it more successful? Are there any plans of making this service official?

A big part of my mind and heart is being invested into the Addiction Medicine Consultation Service (AMCS). Patients come into the hospital with medical complications of addiction and our AMCS team of medical residents do assessments, treat withdrawal and pain, and offer to start addiction treatment while still in the hospital. We published our first evaluation of the program and have a few more projects on the way. What we're doing right now, which is unofficial, is enabled by our supervisors and mentors, who are community-based addiction physicians who volunteer their time to supervise us. One mentor in particular, Dr. John Fraser, has been incredibly generous with his time and teaching, and the program would not be possible without him. We do need a funding model that will allow the service to be sustainable. Another barrier, initially, was a lack of training. In mainstream medicine and hospital-based care, we haven't traditionally integrated addiction medicine into training, so part of the reason that patients weren't getting the standard-of-care was because we didn't have the education, expertise or skills to deliver it. We have since had several residents and attending physicians join our team, and everyone continues to teach others. Moving beyond our current program and looking at teams that exist in other provinces, we would like to create a multidisciplinary model that involves physicians, individuals with lived experience of substance use (such as peer workers), social workers, nurses and pharmacists. These individuals would not only contribute their expertise to the development of care plans for patients, but could also educate colleagues throughout the hospital. I think we are doing good work with basic tools, but so far, our team has only consisted of physicians and medical residents. It would be wonderful to expand to a multidisciplinary team that involves people with lived experiences to help design and deliver care.

Has COVID-19 opened any new avenues in your research?

The fact that I didn't move to London was incredibly disappointing at first, but it actually meant that I could stay involved in the clinical work and harm reduction community here in Halifax. The fact that so many people have moved their lives online means that I can meet with people and get their advice across the world quite easily. Right now, I'm working with a big dataset housed in Australia. Before COVID-19, I would have had to fly to Australia for a few weeks or months to work with them, but now they're creating a portal where international team members can login and analyze the data from the computer in their lab. Their research collaboration would not have happened without COVID-19. Staying in Canada, I also get to work closely with the CAPUD, an advocacy group for people who use drugs. Rates of overdose deaths have continued to increase during the pandemic, due to increasingly toxic and unpredictable illicit drug supply, social isolation, and loss of income and housing. This is a big motivation for advocacy groups like CAPUD to push for urgent solutions, such as decriminalization of drug use and providing a "safe supply" of drugs as an alternative to the illicit drug supply. I have co-written a couple of papers with CAPUD about the rationale of safe drug supply and we are working together on a research grant to conduct a scoping review to look at the barriers and facilitators to providing safe drug supplies during pandemics and public health emergencies.