

In this month's *BrainBuzz*, I'm happy to convey exciting news and developments in areas of research where CAMH studies complex medical health issues, Alzheimer's disease and related dementias, adults with developmental disabilities, and youth with mental health challenges. Feel free to reach out at any time if you have any questions.

Aristotle Voineskos
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The CAMH Centre for Complex Interventions

CAMH is pleased to introduce the CAMH Centre for Complex Interventions and its Inaugural Director Dr. David Castle. The Centre will focus its clinical research on patients with complex medical health issues, many of whom have more than one diagnosis.

"One of the most common examples would be people with psychotic disorders like schizophrenia who also have substance use disorders," said Dr. Castle. "We know that there are physical health issues associated with that. We know tragically that people with schizophrenia die about 20 years younger than they should, largely because of cardiovascular health problems. We are not making the major inroads we need to be making into major risk factors like smoking, exercise and diet."

The Centre for Complex Interventions aims to take a holistic approach to patient health at CAMH.

"Medical services tend to be structured around single disease entities," said Dr. Castle. "This centre is going to bridge across those services to try and provide more holistic, longitudinal care. I want the Centre to be as

responsive to individual needs as possible and not just duplicate what's already out there.”

One key aspect of the Centre's approach to clinical research will be fostering and promoting patient empowerment in the form of a patient self-management program that Dr. Castle pioneered in Australia called the Optimal Health Program (OHP).

The OHP encourages patients to take an active role in their own treatment, including setting goals for success and working on problem solving skills and other self-management supports.

“I'm very much about self-empowerment. Putting people in the driver's seat of their lives,” said Dr. Castle. “Helping them deal with their symptoms. Helping them to deal with their physical health problems. Helping them deal with their drug and alcohol problems in a self-empowering, non-blaming way. I am hoping that the Optimal Health Program will be a useful addition to what will be provided to these individuals and their families. We are really keen on involving collaborative networks around people to manage their lives better. There will be a particular emphasis on patient and family engagement.”



Building on the aging brain's capacity to cope

When [Dr. Tarek Rajji](#) was growing up, it was believed that the physical human brain could not be improved in any way. You start out in life with a certain amount of grey matter and once the aging process begins, the brain keeps losing that grey matter bit by bit and just gets older and weaker, like a draining battery that can never be recharged.

How times have changed.

Today, as Chief of the [Adult Neurodevelopment and Geriatric Psychiatry Division](#) at CAMH and Executive Director of [Toronto Dementia Research Alliance](#), Dr. Rajji is using advanced technology to explore the inner-working of the aging brain and look for clues that could delay, prevent or even reverse the progression of

conditions like Alzheimer's disease and related dementias.

Those clues are known in neurology as "biomarkers", which show the presence of a mental illness through biological changes in the brain and are believed to be the key to improvements in the diagnosis and treatment age-related mental illnesses.

With the help of philanthropic support, Dr. Rajji's team is working on a study in search of those clues that is connected to PACT-MD, the largest ever Canadian investigation into dementia prevention.

Over the duration of the [PACT-MD study](#), CAMH has collected an extensive set of Electroencephalogram (EEG) data from people with cognitive impairment and later life depression, both risk factors for dementia.

Dr. Rajji and his team at CAMH are using this trove of data to develop a new platform for biomarkers discovery in neurodegenerative disorders called BrainHealthSpan.

The hope is that by identifying EEG biomarkers through this study, dementia-related illnesses can be diagnosed earlier and treatment can be more effective.

What Rajji is looking for on those EEG's is evidence of 'cognitive reserve', an adaptive behaviour of the brain only discovered about 30 years ago. Rajji explains cognitive reserve as essentially the brain's way of trying to keep up with cognitive demands as it gets older. Education and a lifetime of learning through work or other pursuits can build up cognitive reserve in the brain, enabling it to compensate for damage resulting from dementia or other age-related mental illnesses. The more cognitive reserve people have in their brain, the more the brain can continue to appear to function normally despite the presence of these illnesses.

By tracking the EEG oscillations of individuals' brain waves as they do problem-solving, Dr. Rajji is looking for evidence that some brains are tapping into that cognitive reserve to make up for injuries to the brain due to a neurological or mental illness.

The way it works is that two test subjects, both of them with risk factors for dementia in the form of depression or mild cognitive impairment or both, perform problem-solving tasks while their brains are monitored by EEG. On the surface, both of them perform equally well. But under the surface, the EEG indicates that one brain—the one with undiagnosed dementia—is using cognitive reserve in other parts of the brain to compensate for the damage caused by the illness. The less cognitive reserve they have compiled over their lifetime, the sooner it will be depleted and

the dementia that had been progressing invisibly inside the brain reveals itself externally.

“We can measure the plasticity of the brain in these EEGs to reflect how the brain organizes information,” says Dr. Rajji. “Cognitive reserve indicates how the brain is coping with mental illnesses. Sometimes you can’t tell the difference between someone who has mild cognitive impairment (MCI) and who has a healthy brain from the tests alone. We hope that we could tell through these EEG biomarkers. If we prove that we can, it suggests that the cognitive reserve may be depleting on subjects with MCI, but not yet below a certain threshold where it manifests itself in performance impairment.”

Future plans related to this study include expanding the BrainHealthSpan platform through engagement with other brain scientists in Canada and internationally, including partnerships with the Ontario Brain Institute and the Ontario Neurodegenerative Disease Research Initiative

The hope is that this area of brain biomarker research will not only allow for much faster diagnosis of dementias, it might actually help prevent or even reverse brain damage associated with these diseases.

“We have learned over the past few decades that at least 40 per cent of dementia cases are potentially preventable. The ultimate goal of this work is to discover treatment interventions that increase cognitive reserve so that people can maintain their cognitive ability and their functional independence in the community. We hope that by targeting these brain networks, we can actually help the brain heal. By engaging the oscillations in the brain with targeted brain stimulation, we also may be able to clear the brain of Alzheimer’s disease proteins.”

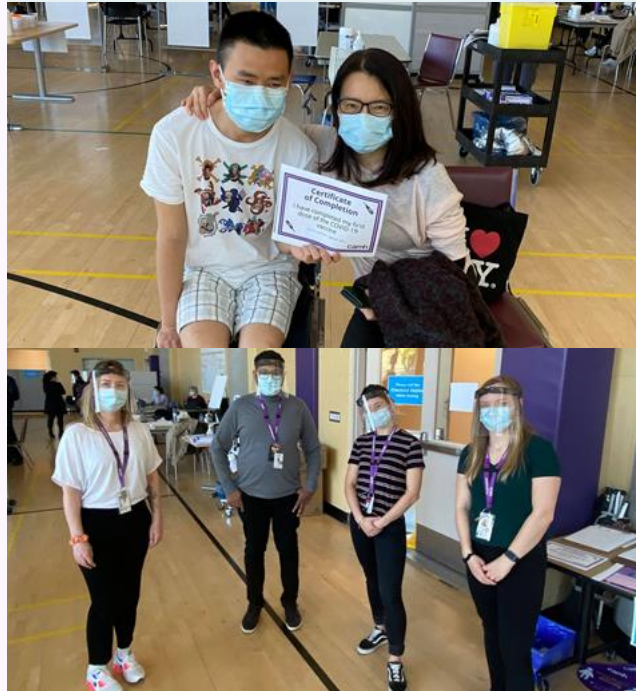


CAMH hosts vaccine clinic for adults with developmental disabilities

In early May, CAMH held a special access clinic

dedicated exclusively to adults of all ages with developmental disabilities, enabling 40 CAMH outpatients and their caregivers to get their first shot of the COVID-19 vaccine.

The clinic, which CAMH hopes to hold on a regular basis, was a collaborative effort. [Adult Neurodevelopment Services](#) clinicians knew that existing hospital and community-based clinics would not be accessible for some of their clients, and [Azrieli Adult Neurodevelopmental Centre](#) researchers had been studying and developing resources to support accessible vaccinations for this often forgotten group. When the provincial government included adults with developmental disabilities in the high-risk category for phase two of the vaccine rollout, CAMH put the gears in motion, initiating a plan that included proactively reaching out to Adult Neurodevelopmental Services clients and their caregivers.



"We needed to do something to support this population right here at CAMH. We know from research conducted during the pandemic that people with developmental disabilities who contract COVID-19 are more likely to be hospitalized or die than the general population," says [Dr. Yona Lunsky](#), Director, Azrieli Adult Neurodevelopmental Centre, who emailed CAMH President and CEO on a Sunday morning with her idea for a CAMH-hosted clinic and received an immediate enthusiastic response.

Because many people with development disabilities have heightened sensitivity to environmental stimulation like large crowds and loud noises, the clinic at the Sandi and Jim Treliving Gym was set up with comfortable beanbag chairs and a large-screen television with soothing underwater ocean visuals displayed. They also only saw one or two clients at a time to reduce noise, and attendees had the option of

settling in at a table where they could stay with their support person from start to finish.

“Typically at a vaccine clinic there is lot of waiting, a lot of people, a lot of stimulation. We wanted instead to create an environment that would set our clients up for success, taking into account some of their personal and environmental needs, and create a safe and calming space for them so they can get their vaccine in a dignified way,” says Occupational Therapist Elyse Goodfield.

One of those clients was Jason, 27, who has autism and was one of the first arrivals at the clinic with his mother Olga. She had been unsuccessful getting a vaccine appointment elsewhere in Toronto before CAMH reached out to her and her son.

“I take care of my parents who are over 80 as well and I was just nervous that my son and I had not been vaccinated,” says Olga as Jason proudly displays a certificate saying he has received his first dose. “I’m very relieved. I feel more at ease now. I’m just happy that it’s done.”

CAMH, YWHO, ACCESS Open Minds and Foundry launch first-of-its kind initiative to help young people with mental health challenges find employment

Canadian youth are in crisis. They are experiencing an increase in mental health challenges while also disproportionately experiencing higher rates of unemployment and disruptions in education due to the ongoing pandemic. In order to help support vulnerable young people through this challenging time, the Centre for Addiction and Mental Health’s (CAMH) [Margaret and Wallace McCain Centre for Child, Youth and Family Mental Health](#), [ACCESS Open Minds](#), [Foundry](#) and [Youth Wellness Hubs Ontario](#) are proud to launch a new initiative that incorporates personalized employment services into integrated support teams across Canada.

The project, called [What works for work? Employment integration in youth service hubs across Canada](#), is now available in two integrated youth service hubs in Toronto and Haliburton, and by late 2021, it will be offered out of 12 hubs across the country to more than 700 youth aged 12 to 25. The hubs, including integrated youth services developed as part of ACCESS Open Minds, Youth Wellness Hubs Ontario and

Foundry, already focus on youth mental health, substance use, physical health, and social support needs. This project strengthens these services by implementing and evaluating the Individual Placement and Support (IPS) model, which provides youth with personalized and optimized opportunities for employment, education and training.



IPS is an evidence-informed model of supported employment for people with mental health challenges and has been adapted to include education supports for youth. IPS is unique because it adopts a “place-then-train” approach instead of focusing on pre-employment training like traditional supported employment programs. In this model, the employment specialist is integrated into the mental health services team and works to help youth find, secure and keep meaningful employment. Low- or no-service barriers, competitive employment, meaningful job search and individualized support are a few of the key principles that make IPS successful among youth.

“Currently, vulnerable youth with mental health challenges generally receive mental health care through one agency and then have to go elsewhere for employment and educational support. It can be daunting and frustrating to have to navigate disparate agencies,” said Dr. Joanna Henderson, Director, Margaret and Wallace McCain Centre for Child, Youth & Family Mental Health, and Project Lead for *What Works for Work?* “With evidence-informed services integrated into our youth service hubs, young people will now have the opportunity to access employment and education supports in a youth-friendly, mental health and social service environment in a one-stop-shop model for integrated support.”

A youth advisory team has been included in all aspects of designing and implementing *What works for work?* “This project has been really invested in youth involvement from the very start,” said Em Hayes, Lead Youth Advisor. “This is crucial because when services are informed by the people they’re designed for, they’re far more effective.”

On May 5, 2021, the [Future Skills Centre](#) (FSC) announced an investment of \$3.8 million to expand this program to more participants and additional locations. This follows an initial investment of \$2.32

million by FSC in June 2020, to make this initiative possible.

“Assisting vulnerable youth to find pathways into the job market is an example of the programs supported by the Future Skills Centre that invest in building an inclusive workforce that includes future generations and leaves no-one behind,” said Pedro Barata, Executive Director of the Future Skills Centre. “This program can serve as a model that works, moving us closer to breaking long-term cycles of dependence on social assistance. Adding employment and education support to hubs that focus on mental health will help unlock the potential of young people so they can become independent, economically strong members of society.”

“Investing consistently in young people and the integration of services is critical to ensure the well-being of all of our communities in the future. This program takes the pressure off young people to navigate a complex system filled with short-term programs. It allows diverse young people to receive services that are integrated, youth-centred, and meaningful,” said Dr. Skye Barbic, Director of Research, Foundry.

The team is also excited to announce the development of an online IPS training system. This unique program will ensure that youth across the country have access to skilled employment specialists who are trained in IPS now and in the future. Canadian youth will be engaged in the development process to ensure that IPS training is responsive to and reflective of their needs.

“Finding and retaining employment or resuming and continuing education are essential aspects of recovery. They give young people a sense of purpose, agency and citizenship. *What Works for Work?* will help youth achieve these outcomes in socioeconomically, geographically, linguistically and culturally diverse settings across Canada. It could not have come at a time of any greater need than in the throes and aftermath of a pandemic,” added Srividya Iyer, the Scientific-Clinical Director of ACCESS Open Minds.

Partner Organizations

CAMH is Canada's largest mental health and addiction teaching hospital and a world leading research centre in this field. CAMH combines clinical care, research, education, policy development and health promotion to help transform the lives of people affected by mental illness and addiction. CAMH is fully affiliated with the University of Toronto, and is a Pan American Health Organization/World Health Organization

Collaborating Centre. For more information, please follow @CAMHnews on Twitter.

Funded by the Canadian Institutes of Health Research and the Graham Boeckh Foundation, ACCESS Open Minds is a youth mental health services research network of 16 communities from seven provinces and one territory across Canada. ACCESS Open Minds is hosted at the Douglas Research Centre (affiliated with McGill University) in Montreal, Canada.

Foundry is removing barriers and increasing access to health and wellness services for young people ages 12–24 and their caregivers across British Columbia. At Foundry, young people can easily access our integrated services by walking into a local Foundry centre, exploring our online tools and resources at foundrybc.ca, or connecting virtually through our provincial virtual services.

The [Future Skills Centre](#) (FSC) is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Ryerson University, Blueprint, and The Conference Board of Canada, and is funded by the [Government of Canada's Future Skills Program](#).

Get In Touch!

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