

November 2021

Please enjoy new research highlights and successes in this month's brainbuzz™ which includes a novel treatment for PTSD; a new online tool including best practices for children and youth with depression; and new research that is studying the link between COVID, brain inflammation and depression. We're always looking for feedback — reach out to our team at any time to share ideas or to ask questions.

Aristotle Voineskos
VP Research, CAMH



Novel treatment emerges from bio-molecular understanding of trauma

Posttraumatic stress disorder (PTSD) can develop after exposure to severe psychological trauma such as sexual assault or military combat. PTSD can cause debilitating flashbacks, nightmares and anxiety, which can severely impact quality of life. First responders, armed forces and—during the COVID-19 pandemic—front-line health care workers are all at high risk. Existing treatments have had limited efficacy. Many people suffering from PTSD have attempted suicide, died by suicide or exhibit violent behaviour.

A research team at CAMH, led by Dr. Fang Liu, Senior Scientist and Head of Molecular Neuroscience in the Campbell Family Mental Health Research Institute, is changing the trajectory of trauma's impacts on mental health with their discovery of a protein complex that causes the symptoms of PTSD. Based on this discovery, they have also developed a peptide that can target and disrupt the protein complex, thereby preventing PTSD.

The discovery of the protein complex provides a new understanding of molecular mechanisms underlying PTSD. It is believed that this protein complex normally

increases after severe stress, but in most cases, levels soon go back to baseline levels. However, in those who develop PTSD, the protein complex remains persistently elevated. The elevated levels of this protein complex could be a blood-based biomarker for PTSD as well as a target for pharmacological treatment.

"The peptide we developed could be given after a traumatic event, and could possibly prevent the patient from developing PTSD. This is a completely new approach to PTSD and for psychiatric disorders in general."

In the early 2000s when Dr. Liu began taking a closer look at how two types of receptors in the brain known as a 'receptor complex' work together, she believed that they could play a role in mental illness. But when she submitted her first scientific paper on this paradigm-shifting concept, a famous international scientist sent her a one-sentence peer review commentary: "In general, I don't believe it."

Further research into this class of protein complex has shown that manipulating it can disrupt the formation of traumatic memories.

The hope is that a nasal spray containing these peptides could be developed and administered at the time of a traumatic event to prevent that specific event from being encoded as a memory in the brain and therefore prevent PTSD.

Some of Dr. Liu's current work is also looking at this protein complex as a biomarker for treatment response in a blood test, which could allow for faster and more precise measurements of the efficacy of an anti-psychotic drug, which in turn would allow for improvements in existing treatments.

"We are thrilled this CAMH-led discovery can potentially help millions of people put trauma behind them."

This research is part of the featured content within the powerful [Today campaign](#) which conveys the momentum that CAMH is creating to prevent suicide and invites people to accelerate it. Visit the [campaign website](#) to see other featured content and to learn more.



Improving care across Ontario - and beyond - for children and youth with depression

CAMH has launched a new free online tool to help improve the standard of care for youth living with depression. The first-of-its-kind [Cundill Centre Online Tool for the Treatment of Youth Depression](#) summarizes best care practices for supporting youth as they manage their depression, and is now available for primary care providers and other frontline clinicians everywhere.

Created by clinician scientists, youth and other experts from the [Cundill Centre for Child and Youth Depression](#), the tool will also build capacity in primary care—including family doctors—which can help reduce waiting times for specialized care providers like CAMH, so that patients with the most urgent needs can be properly supported.

“The [COVID-19] pandemic has exposed chronic stresses and strains in the youth mental health system, and as a result we’ve seen significant increases in youth mental health issues, particularly depression,” said [Dr. Peter Szatmari](#), Director of Cundill Centre. “Depression is a very significant challenge, one of the most common mental health challenges that kids experience. The rates are going up and have very serious long-term consequences if it’s not treated adequately.”

Unfortunately, health services differ depending on the province you live in, or even what healthcare team you see. There is no standardized treatment for youth depression, so some patients receive best treatment practices, while others do not.

In order to help establish evidence-based standards of care, the Cundill Centre has been working for some time with health teams across the province to identify and share best practices with respect to screening, prevention, and treatment of child and youth depression. One such collaboration is with the [Georgian Bay Family Health Team](#), a Collingwood-based team of interdisciplinary health

care providers, as well as [New Path Youth and Family Services](#), located in Barrie.

Dr. Karin Euler, family physician with the Georgian Bay Family Health Team, spoke about how this tool will directly benefit her team and their patients. “All of us were just doing whatever we thought was the right thing to do, not based on any evidence. Children and youth were receiving different advice depending on who they saw. We weren’t unified in our response to how we should manage depression. Children and youth deserve the best treatment possible, and the best treatment possible is based on evidence and good clinical practice guidelines.”

The new Cundill Centre online tool is interactive and user friendly. It includes an overview of depression in youth, a section on assessment—along with a video simulating a virtual assessment—as well as links to assessment tools. The online tool also provides two treatment pathways: one for mild depression and one for moderate/severe depression, and concludes with a resource section with links to other practical tools, many developed by the Cundill Centre in collaboration with youth and service providers. The full content of the tool can be reviewed in under 20 minutes, and is freely available to primary care clinicians in all parts of Canada. The Cundill Centre will also launch the tool next month in the U.K. for international health care providers eager to use it.

“We wanted to curate the evidence, reduce the variability, and package it in a way that is accessible and useful to a wide range of stakeholders,” added Dr. Szatmari. “I’m hoping that family doctors, school counsellors, social workers, and pediatricians can use this tool to learn what’s the best way to treat depression.”

Zara Uddin, who served as a youth advisor on the online tool, feels optimistic about how it will facilitate better care. She also had a message for her peers struggling with depression: “[Young people should] reach out for help, especially from a physician or counsellor. Depression can be highly treatable, and they can feel better. Sometimes, you just need to ask for help.”

[Click here](#) to watch a brief video overview of the new Cundill Centre Online Tool for the Treatment of Youth Depression.

Learn more about the [Cundill Centre for Child and Youth Depression](#).



CAMH investigating potential link between COVID-19 and brain inflammation, which may lead to depression

Research builds on a recent study showing that one in three people with COVID were later diagnosed with a psychiatric or neurological condition.

Launched this past summer, a new CAMH study is investigating whether people who have contracted COVID-19 have higher levels of brain inflammation, which has been associated with higher levels of depression.

The study is led by [Dr. Jeffrey Meyer](#), head of the Neuroimaging Program in Mood & Anxiety at the [Campbell Family Mental Health Research Institute](#) at CAMH. "It is generally believed that if you have a high level of inflammation in the body that it can cause inflammation in the brain through connections to certain nerves and spread of inflammation-signaling proteins," said Dr. Meyer. "My team and I previously discovered brain inflammation in people with depression, so when the pandemic began I wanted to look at brain inflammation in relation to COVID and then look at the effects on mood."

There is already ample evidence that COVID impacts mental and neurological health. A study in [The Lancet](#) earlier this year of almost a quarter of a million people who contracted COVID found that one in three of them were diagnosed with a psychiatric or neurological condition afterwards. A study in [JAMA Open](#) last month found that among those sick enough to require hospitalization, 80 per cent had at least one neurological or psychiatric side-effect. There is even a new term—long haulers (also called post-COVID syndrome)—being used to describe people who continue to experience a variety of symptoms for months after a COVID diagnosis, including depression, anxiety, headaches and memory and concentration problems.

“Historically after previous major viral outbreaks, there have been high rates of depression symptoms in survivors,” said Dr. Meyer. “It’s thought that perhaps the reasons for these symptoms are related to brain inflammation. We are going to get to the heart of the matter by doing brain scans on people with long hauler COVID symptoms, to see whether there is inflammation in the brain.”

In a pioneering [2015 study published in JAMA Psychiatry](#), Dr. Meyer found that the brains of people with depression had more inflammation—30 per cent more on average—than the brains of people who were not depressed. The greater the inflammation, the more severe the depression. It was the first time an association between depression and brain inflammation had been found. This research was so ground-breaking that it became one of the most highly-cited international research studies ever produced by to date CAMH.

One of the reasons the study was so influential is that inflammation is actually quite difficult to detect in the brain. Despite all of the advances in brain imaging technology, there is still no way to detect brain inflammation with the naked eye. As with the 2015 study, Dr. Meyer is looking for brain inflammation in people who have contracted COVID-19 by using radioactive positron emission tomography (PET) tracers that were either created or adapted for clinical use by [Dr. Neil Vasdev](#) and his team at the [Brain Health Imaging Centre at CAMH](#).

The PET tracers will look for heightened levels of two proteins called TSPO and MAO-B of which the brain produces more when there is inflammation present.

“CAMH is uniquely positioned to do this study quickly and make an impact on how COVID is treated,” said Dr. Meyer. “If we can establish an association between COVID and brain inflammation, we can use anti-inflammatory medications to see if we can get a reduction in symptoms for the long haulers suffering from symptoms of depression. This could provide new ways to reduce those affected by mental illness due to the pandemic and provide more information concerning the mental health risks from getting infected; especially for those who are wondering about the value of getting vaccinated.”

The study by Dr. Meyer is one of several research initiatives related to COVID-19 going on at CAMH according to Vice President of Research [Dr. Aristotle Voineskos](#).

“At CAMH, we have several studies funded by the Canadian Institutes of Health Research (CIHR) and other granting agencies to understand the impact of

the pandemic on the mental health of children, adults, and the elderly. But, similar to Dr. Meyer's study, we now have an emerging line of research that is trying to better understand the effects of COVID infection on brain and cognitive health across the lifespan."

Dr. Meyer is actively recruiting participants who have experienced depression since testing positive for COVID-19. Anyone interested in taking part in the study who wants to find out if they are eligible can inquire at 416-535-8501 ext 30741 or via email at COVID19study@camh.ca.

This study is one of upwards of nearly 550 human participant research studies currently taking place at CAMH. CAMH receives \$63M in funding annually from funding agencies like CIHR to conduct research to better understand and treat mental illness.

Mental health research is saving lives today.

Buzz-worthy News

- A big congratulations to Dr. Jeffrey Meyer for winning the CCNP award for Innovations in Neuropsychopharmacology! Jeff is a world-leader in PET imaging in mood disorders, and has helped contribute to a better understanding and treatment of depression.
https://twitter.com/ccnp_ca/status/1455641168595886083
- Congrats to Gillian Strudwick on her winning pitch about using technology to advance mental health services, and runners up Drs. Clement Zai and Sanjeev Kumar. Learn more about the CAMH Engage Breakthrough Challenge:
<https://twitter.com/CAMHResearch/status/145537865073512449>
- The latest from researchers at CAMH's McCain Centre: A longitudinal examination of youth mental health and substance use concerns during COVID-19.
<https://bmjopen.bmj.com/content/11/10/e049209>
- What is the link between sleep & mental health? KCNI's scientist, Dr. Shreejoy Tripathy, spoke to NewsTalk1010 about the links he & Dr. Michael Wainberg discovered, and where we go from here. Listen for more:
<https://omny.fm/shows/newstalk1010/restless->

[nights-tied-to-mental-illness-new-large-s](#)

Get In Touch!

Aristotle Voineskos | VP Research, CAMH | aristotle.voineskos@camh.ca

Eileen McMahon | Chair, CAMH Research Committee of the Board of Trustees | emcmahon@torys.com

Stephanie Capobianco | Director, Research Practice & Policy, CAMH | stephanie.capobianco@camh.ca



Centre for Addiction and Mental Health
Research Operations, Services & Support (ROSS)
33 Ursula Franklin St., Toronto, ON M5S 2S1

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