



The Dr. Karen Pape Program in Neuroplasticity – 2020-2021 Progress Report

The Program is now fully up and running and has had another productive year. Below is a summary of both the status of key activities and of the advances made over the last year:

Dr. Karen Pape Clinical Research Program

We are thrilled to report that the **RECOVER study** (Remote Early intervention for Cerebral palsy to improve Outcomes using Virtual care following pERinatal asphyxia) went live in June 2021 after many months of thoughtful preparation as well as delays due to the pandemic. In addition to those activities reported on last year, this year Dr. Linh Ly:

- Recruited research staff, a physiotherapist and a nurse practitioner to support the trial.
- Trained the research team to deliver the intervention and provide holistic support to families, including mental health support for parents.
- Developed an online parent resource library, including a whole battery of teaching videos to help families learn how to position their baby and perform the infant massage.
- Explored and submitted grants for additional funding to support the program's ongoing work.

Patient recruitment has been a little slower than we had hoped, but for a good reason—the majority of kids coming into the NICU in the past few months have had normal MRIs and so are not eligible for recruitment into the trial. Recruitment will be a key focus in the coming year and we are pleased that many families of high risk infants have expressed interest in the trial.

The Inaugural Dr. Karen Pape Fellow

Dr. Mehmet Cizmeci is now in the second year of his three-year fellowship, which combines training in neonatal neurology, neonatal transport medicine, and neuroplasticity research. He has been a fantastic addition to the team. At weekly rounds, he presents on the neuroradiology of brain ultrasound, helping staff and trainees to interpret the images and understand what's going on in the brain of our patients. His role in the clinical research program is to review every MRI and assesses each patient's eligibility for the clinical trial. Typically, Dr. Linh Ly would do the follow up and we would have neuroradiologists read the imaging, but Dr. Cizmeci can do both—he connects the dots and is able to do prediction based on the imaging to determine who might require early intervention. He's become a bridge between the neonatal intensive care unit, the neonatal follow up program, and neuroradiology. He's also helping to advance capacity building through the Toronto Centre for Neonatal Health. If you're curious, you can view his webinars through their website.

SickKids Foundation
525 University Ave Suite 835
Toronto ON M5G 2L3
Phone: 416.813.6166
Fax: 416.813.5024
Toll Free: 800.661.1083

www.sickkidsfoundation.com

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In fact, he's making such an invaluable contribution to the program that we hope to be able to retain him as a full-time staff member in the Neonatal Follow Up Program and help him establish a research lab following the completion of his Fellowship.

Knowing all the clinical tools that were of interest to Karen, her commitment to early intervention, and her passion for knowledge sharing, we think she would be thrilled to know Dr. Cizmeci is helping to advance her legacy.

We will soon begin the process of recruiting for the next Dr. Karen Pape Fellow. We will be working with our colleagues to identify specific areas of expertise where we would like to build further capacity to support the clinical and research aims of the Dr. Karen Pape Program in Neuroplasticity.

Inaugural Dr. Karen Pape Health Outcomes Grant

You may recall that the inaugural Dr. Karen Pape Health Outcomes Grant was awarded to Dr. Mahmoud Slim for his Vascular Endothelial Dysfunction and Stroke in Early Life Study (VESSELS). The goal of the study is to demonstrate that vascular endothelial dysfunction is a primary mechanism of childhood stroke—which is a major cause of neonatal brain injury, leading to cerebral palsy. With this knowledge, clinicians can then work to reduce the occurrence of stroke.

This past year, Dr. Slim accepted a position outside of SickKids and so Dr. Nomazulu Dlamini, Director of the Children's Stroke Program at SickKids, took over management of the project. The team has expanded the scope of the project to include not just healthy controls and stroke patients, but also a third group: children with complex congenital heart disease and no history of stroke. This change will allow the team to compare the endothelial health of healthy children, children with a high-risk stroke condition, and children with stroke. They hypothesize that there will be a spectrum of vascular endothelial dysfunction between the three groups and that this endothelial dysfunction will be predictive of cognitive outcomes in children and youth. Additionally, the team is working with Health Canada to get approval to use a device called RespirAct that is expected to provide great insight into cerebral vessel health.

This proof-of-principle study is the first step toward the development of an evidence-based approach to the individualized prediction of stroke risk. We hope that this will result in a shift in public health strategy and the approach to preventing stroke in those at risk.

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