

Novel ‘combination approach’ to rehabilitation seeks new ways to improve arm use and cognition after stroke

StrokeCog Clinical Trial Training Platform fellowship will enable Urvashy Gopaul to test complex intervention involving touch, movement and robotics to prime the brain for recovery

Toronto Rehabilitation Institute researcher Urvashy Gopaul has been awarded a StrokeCog Research Post-Doctoral Fellowship Award to conduct a clinical trial into a novel ‘combination approach’ to improve stroke recovery.

Dr. Gopaul will recruit 40 participants for a randomized controlled trial to determine if bundling together hands-on movement therapy, sensation and cognitive training with robotics will help improve function in stroke-affected arms. The trial will involve adults of all ages, who are at least six months post-stroke.

“This award is such an honour for me because there are very few post-docs focused on clinical trials,” says Dr. Gopaul, who is supervised by Dr. Mark Bayley, Program Medical Director and Physiatrist-in-Chief at UHN-Toronto Rehabilitation Institute.

After beginning her career as a university lecturer in Mauritius – her home country in the Indian Ocean off the southeast coast of Africa – Dr. Gopaul became determined to advance stroke care through research. “In my country, there were big gaps in stroke rehabilitation and I wanted to find answers.”

She completed a Master’s degree in physiotherapy from the UK’s University of Nottingham and a PhD from the University of Newcastle in Australia before moving to Canada to begin post-doctoral studies.

The foundation for this new Toronto-based trial, called iCOSMO (integrated COgnitivesomatoSensory-MOtor), was built while Dr. Gopaul was doing her earlier PhD research. “When we looked at how rehabilitation is delivered, we deliver motor training separately from sensory training separately from cognition training. And that was the gap,” she says.

In everyday life, the brain processes many streams of information at the same time – where the hand or arm is in relation to the body, what it touches and feels, how it reacts.

Dr. Gopaul proposes that rehabilitation should be delivered in the same complex way. “The aim is to prime the brain and hope that we get better outcomes.”



In addition to hands-on therapy, a Canadian-made robotic device, called Kinarm, will be used in the trial to deliver a series of training tasks. These include games, developed by Dr. Sean Dukelow's lab at the University of Calgary. The games require participants to manage speed changes or changes in direction and to coordinate both hands while seated in a robot, which can precisely measure changes in impairments.

Thanks to StrokeCog funding, Dr. Gopaul is now working with clinics to help recruit participants for the two-year study, set to begin in early 2024. There will be 20 people in the six-week treatment group and 20 in the control group. Those in the control group will be given the tools and training to do a home-based stroke rehabilitation therapy, called GRASP, for the same duration as those in the treatment group.

If feasible, Dr. Gopaul hopes to eventually run iCOSMO at other sites of the Canadian Stroke Recovery Trials Platform across Canada that have the Kinarm robot.

"The reason why I moved to Canada is to have a career in research. So, for me, having this Clinical Trials Training Platform (CTTP) award is really helping to set me up for success," Dr. Gopaul says. "I am excited about participating in the CTTP because I want to develop the core competencies to conduct multi-centre clinical trials."

