

2018

# Protecting against hemodialysis induced neuro-cognitive injury

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## Recommended Citation

BrainsCAN, Western University; McIntyre, Chris; and Owen, Adrian 6612111, "Protecting against hemodialysis induced neuro-cognitive injury" (2018). *Project Summaries*. 23.  
<https://ir.lib.uwo.ca/brainscanprojectsummaries/23>

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# Protecting against hemodialysis induced neuro-cognitive injury

## Background

Patients requiring dialysis for kidney failure have poorer survival rates than many kinds of cancer and they suffer very high rates of cardiovascular mortality. The health-related quality of life for those patients is also very poor as living on dialysis is an enormous challenge.

One of the near-universal symptoms of hemodialysis (HD), where a patient's blood is filtered externally with a dialysis machine, is cognitive impairment. Fluid removal during HD is very stressful on the body and we have established that it is causing injury to the white matter in the brain, which leads to cognitive impairment.

## The Problem

We have already demonstrated that cooling the washing fluid in the dialysis machine, known as dialysate, can help maintain blood pressure during dialysis and protect against further brain injury. This approach is very appealing as it is safe, cost-free and universally applicable to any dialysis machine. For this to be adopted widely however, we need a broad study of the impact of dialysate cooling.

We are currently conducting such a study on mortality and cardiovascular events and dialysate cooling. However, it does not include assessment of cognitive function.

## The Project

This existing study is an ideal environment to carry out an additional study on the cognitive impairment outcomes within this same population. We will use a web-based, automated neurocognitive test series to assess cognitive function within this chronic dialysis population. Given the length of the existing study, three years, we will have multiple intervention exposure points to be studied with this population.

However, we need to address some barriers first - they include instrument use and refinement for this population of HD patients. This project will be a pilot phase of this additional study to address these barriers.

## Western Researchers

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### Funding Program

[BrainsCAN Accelerator Grant: Stimulus](#)

Awarded: \$20,000

### Additional BrainsCAN Support

[Human Cognition & Sensorimotor Core](#)

### Western Faculty, Group or Institution

Departments of Medical Biophysics and Medicine, Schulich School of Medicine & Dentistry

### Keywords

[Stroke & ischemic brain injury](#)

### Related

none

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