Title: The effect of sepsis on cerebral microvascular blood flow

Background: Sepsis is a dysregulated host response to infection that affects 18 000 000 people worldwide, and over 325 000 000 dollars are spent treating sepsis in Canada every year. One of the symptoms of severe sepsis is an altered mental state, which is accompanied with a measured decrease in oxygen levels in the skeletal muscle microvasculature. It is hypothesized that this altered mental state is due to a lack of oxygenated blood reaching the brain.

Hypothesis: After the onset of sepsis, microvascular cerebral blood flow and oxygen levels in the blood will decrease. Onset of decreased blood flow in the brain is expected to occur later than in skeletal muscle.

Methods: Data will be collected from Sprague Dawley rats. Rats will undergo a sepsis inducing procedure, and one of the right leg muscles will be exposed. Data will be collected from this muscle via intravital video microscopy, and from the left leg and the brain via near infrared spectroscopy.

Results: Expected results include a decrease in microvascular blood flow in both legs and the brain, with a later onset of decreased flow in the brain compared to the leg.

Discussion: It is known that sepsis causes changes in skeletal muscle microvasculature. If we see these same changes in the cerebral microvasculature, this may be an indication that there isn't enough oxygen reaching the brain. This could be a cause of a decreased mental state, and would be worth further exploration.