

## **PCL/25/12 - Study of modifiable Inflammatory determinants of Resilience after IntraCerebral Haemorrhage (STIR-ICH)**

Stroke due to bleeding into the brain (known as brain haemorrhage) is the second most common type of stroke but causes more death and disability than other stroke types. After a brain haemorrhage, the nearby brain can swell due to inflammation caused by the immune system. Swelling worsens brain injury and hampers recovery. However, some types of inflammation also help to clear blood from the brain and might help with recovery.

To develop medicines for brain haemorrhage, we need to find out which types of inflammation affect how patients recover. I cannot study this using brain tissue from people who survive brain haemorrhage because brain surgery is rarely done after a haemorrhage. Instead, I plan to use a blood test from people with brain haemorrhage to study markers of inflammation. I will see if these markers predict swelling on brain scans and how people recover.

I previously found that medicines used for other diseases can reduce harmful inflammation, boost beneficial inflammation, and improve the recovery of mice with brain haemorrhages. I will test promising medicines such as these on human brain tissue. I will see if this changes human brain immune cells to be more like those which predicted good outcomes in our blood test study. For this, I will use small pieces of normal living human brain tissue. These are removed in the normal process of brain surgery to gain access to tumours, and then donated for research by patients who consent.

This study will answer questions that people with brain haemorrhage, their carers and experts, have said are important when responding to surveys about brain haemorrhage priorities done by us and by others. This study will provide the information needed to select the most promising medicines to test in humans to improve outcome for people with brain haemorrhage.