News from the South Wales MS research team – 2020

Welcome to our annual newsletter which includes information on work we've recently published, and studies we're currently working on. Our research is based on data and samples from the 'Epidemiology of MS' project and the Welsh Neuroscience Research Tissue Bank. Many of you have contributed to these studies, so thank you to all our participants!

SNOWDONIA (formerly 'Epidemiology of MS Project')

SNOWDONIA
A Study of Neuroinflammatory Outcomes in Wales: Disease biology, Observation & NeuroImAging

This ongoing longitudinal study which began in 2006 has recently been re-approved by the Regional Ethics Committee. We have taken the opportunity to update the project's name to 'SNOWDONIA' (A Study of Neuroinflammatory Outcomes in Wales: Disease biology, Observation & NeuroImAging), mainly to develop the profile of what we do. There is no change to how we run the study, the way you're involved, or our aims to investigate MS and other neuroinflammatory disorders, but we may approach you at a clinic visit to re-consent to the study.

Welsh Neuroscience Research Tissue Bank (WNRTB)

Welsh Neuroscience Research TISSUE BANK

The WNRTB oversees the collection and analysis of samples (e.g. blood) for the SNOWDONIA study. The samples allow us to analyse DNA and biochemical markers of disease. If you have not already donated and would like to volunteer please contact wnrtb@cardiff.ac.uk.

Uncovering predictors of fatigue (Completed)

Fatigue is a common debilitating symptom in MS. This study investigated perceived fatigue, cognitive fatigability (how cognitive performance changes over time), and the factors that may influence these in MS.

Sixty-one people with MS undertook assessments of the severity and impact of their fatigue, and their cognitive fatigability. Assessments of physical disability, cognition (e.g. attention, learning, memory), and psychological factors (e.g. mood, sleep quality, pain, coping, self-efficacy) were also undertaken.

Approximately half of participants were fatigued, and 56% demonstrated cognitive fatigability on assessment. It was found that fatigue and cognitive fatigability were largely influenced by psychological factors, in particular depression, anxiety, and coping ability. These findings will help guide appropriate interventions for people with fatigue in the future. See the full research paper at https://tinyurl.com/udjsjjm.

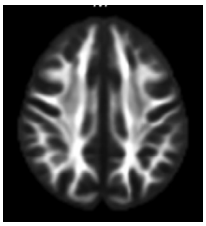
Socioeconomic status and disability progression in MS (Completed)

This study assessed the association between socioeconomic status (SES) at onset of MS and reaching certain levels of disability (e.g. needing a stick to walk 100m). The study combined data on 3,113 people with MS from Canada and South Wales.

Lower SES (greater deprivation) was associated with an elevated risk of having reached higher disability levels. In people with relapse-onset disease, lower SES was also associated with an increased risk of progressive worsening of disability (secondary progressive disease). A sub-analysis found no relationship between physical environment (air quality, proximity to waste and industrial sites, and flood risk) and disability outcomes.

SES represents a complex combination of factors. However, interventions to improve aspects of SES, (e.g. lifestyle factors or general health) could lead to improvements in disability outcomes for some people with MS.

Quantifying white matter damage in the brain in people with MS (Completed)



The number and volume of white matter (WM) lesions visible on brain MRI does not correlate highly with disability in MS. Microstructural damage in lesions and 'normal-appearing' WM, which is not visible using standard MRI techniques, may better explain disability and prognosis in MS. A number of MRI-based methods to quantify this microstructural damage exist. They may help to quantify damage and assess potential neuroprotective and repair therapeutics. This study investigated the relative merits of these methods.

Measurements of microstructural damage from four different methods were obtained from brain MRI of 123 people with MS. The study found that the measures were partially correlated with each other, but that they measured different aspects of pathology (the causes and effects of MS). Exploiting these differences could be beneficial in clinical trials testing the effects of therapeutic interventions. See the full research paper at https://tinyurl.com/tqyajxy.

Meet a Team Member: Dr Sam Loveless

Sam is our Laboratory and Biobank Manager. She has been an integral member of the MS research team in Cardiff for over 10 years. Sam helped to set up the WNRTB (see front page for more info), and maintains it along with the collection of biological samples from the SNOWDONIA/ Epidemiology of MS project. The WNRTB collects and holds biological samples from patients with neurological disorders, or undergoing investigations for neurological conditions such as epilepsy, gliomablastoma, motor neurone disease, hydrocephalus, meningitis and migraine, as well as healthy volunteers.

Sam's work includes making sure that the governance and regulations on the use and storage of human samples are met, obtaining and processing biological samples, maintaining the laboratory and equipment, and dealing with requests for samples.

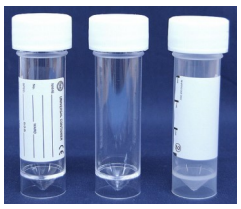
DELIVER-MS (In progress)

DELIVER-MS

Whilst there are now over a dozen treatment options available for relapsing forms of MS, we don't know which treatment is best for different people. DELIVER-MS is a multi-centre study designed to show if starting treatment with a highly effective disease-modifying therapy (DMT) improves the prognosis for people with MS. Currently it is unclear if this approach is better or worse than an escalation approach, where people only take stronger treatments if necessary to control their symptoms.

Cardiff is one of 24 study centres in the UK and US, and over 20 participants have already been recruited here. These participants, who are starting treatment for the first time, are being monitored over 3 years with both clinical assessments and brain MRI. Dr Emma Tallantyre (Clinical Senior Lecturer and Consultant Neurologist) has been key to getting this study up and running. Read more about the study at https://deliver-ms.com.

Distinguishing neuroinflammatory disorders using plasma biomarkers (Completed)



MS can be difficult to differentiate from other demyelinating diseases, particularly neuromyelitis optica spectrum disorder (NMOSD). Biomarkers (measurable biological indicators of a condition) to reliably identify MS from NMOSD would be valuable.

Cerebrospinal fluid (CSF) from the WNRTB of 11 NMOSD, 53 MS & 35 controls was used in this study. Samples were tested for biochemical compounds that are part of the 'complement system', a series of proteins in the CSF and blood that can become sequentially activated in a cascade in some diseases. Analysis showed that some of these compounds were higher in people with NMOSD than MS, and could help distinguish the two diseases. These compounds could be useful biomarkers to differentiate MS and NMOSD at an early stage, enabling optimal treatment. See the full research paper at https://tinyurl.com/ssfemfs.

Want to get involved in the design of our research?
If you would like to be involved in the design and direction of our research in Cardiff, we are looking for people affected by MS to engage with us through focus groups & questionnaires. Please contact us at msdata@cardiff.ac.uk (or add a comment when you return your questionnaire) and we will send you a short form to complete.

BRAIN Repair & Intracranial Neurotherapeutics
Ymchwil Iechyd a Gofal Cymru Health and Care Research Wales
Ariennir gan Lywodraeth Cymru Funded by Welsh Government
wellcome
MS Society
BRAIN
NOVARTIS
Biogen