



Trialling transcranial magnetic stimulation to help people with drug-resistant depression in Wales



This partnership project sought to understand the benefits and challenges of introducing a transcranial magnetic stimulation (TMS) service to help people with drug-resistant depression in Wales.

➤ Transcranial magnetic stimulation (TMS) is a form of non-invasive brain stimulation which can help some patients with severe depression. It's used all over the world but isn't currently offered in Wales.

- Life Sciences Hub Wales supported this project to deliver a trial TMS service in Glangwili Hospital, helping to understand the challenges and opportunities involved in offering this service for patients in Wales.
- The service evaluation assessed its acceptability with patients and staff, and a business case is now being developed setting out the feasibility of a permanent service offering within Hywel Dda University Health Board (UHB).



When depression is hard to treat

Depression is a common mental health disorder thought to be experienced by about one in six people in the UK. It can affect people in different ways but it is generally characterised by persistent sadness. A leading cause of disability worldwide, the condition interferes with a person's ability to function in daily life, impacting on work and relationships. In more severe cases it can lead to suicide.

Treatments for depression include a range of talking therapies and antidepressant medications. However, up to 30% of people diagnosed with depression continue to experience symptoms despite treatment. This is known as treatment-resistant or drug-resistant depression.

In severe cases of drug-resistant depression electroconvulsive therapy (ECT) is sometimes used, but this treatment requires sedation and can cause serious side effects.

Partners

- Psychiatry Department, Glangwili Hospital, Hywel Dda UHB
- TriTech Institute
- Magstim
- Life Sciences Hub Wales
- Health Technology Wales

Support from Life Sciences Hub Wales

- Convening partners for this collaborative project.
- Ongoing support throughout the project.
- Development of a detailed business case to consider the feasibility of resourcing a permanent service in Hywel Dda UHB, and of extending service offerings to other parts of Wales.

A non invasive treatment for depression

Transcranial Magnetic Stimulation (TMS) is an effective, non-invasive treatment for depression which stimulates the areas of the brain that regulate mood.

A purpose-made electromagnetic coil is held against the scalp, inducing electric currents in the brain. Repetitive pulses of electromagnetic energy are delivered at various frequencies or intensities and can be targeted to help specific areas of the brain using imaging.

Research has shown that a large proportion of patients with drug-resistant depression experience a significant improvement in their symptoms when treated with TMS. It's considered a better alternative to ECT as it's less invasive for patients and less expensive for the health service.

TMS does not need anaesthesia and can be provided on an outpatient basis. Treatment usually consists of daily sessions lasting about 30 minutes, typically for a period of between 2-6 weeks.

“ TMS is designed to support the brain’s natural electrical activity. Some people say that they think of TMS as a way of ‘jump starting’ a flat battery or re-connecting a loose cable to a lamp! ”

Magstim



Trialling a TMS service in West Wales

The technology needed to provide TMS has been around for many years, however there has never been a TMS service available in Wales. This is despite the fact that Magstim, a leading provider of TMS equipment internationally, is actually a Welsh company based in Carmarthenshire.

We at Life Science Hub Wales were also interested in exploring the potential for a national roll out of TMS technology in Wales. We introduced Magstim to their local health board, Hywel Dda UHB. Members of the Psychiatry Department there were already aware of the technology and enthusiastic about the positive results it could achieve.

Ronnie Stolec-Campo, CEO at Magstim explains:

“ We already sell TMS equipment to over 60 countries worldwide, and, with NICE approval since 2015, it’s now used by a growing number of NHS trusts in England. As we are based in Wales, we were particularly keen to find a way into the Welsh NHS to ensure our own local communities would have the opportunity to benefit from the powerful effects of TMS therapy at home in Wales. ”

A collaborative project was born to set up a three-month trial of TMS treatment within the adult mental health service at Glangwili hospital. With the guarantee of ongoing support from us, Magstim agreed to loan the health board a TMS machine for the length of the project. They also provided training to the clinical team, which included a specialist nurse employed as part of the project.

Other key partners in the project included TriTech Institute, a healthcare technology research venture within Hywel Dda UHB, who led on evaluating the project to assess its outcomes and acceptability with patients and clinicians. Health Technology Wales also provided additional research and data analysis, producing a review of the published evidence on the use of transcranial magnetic stimulation for the treatment of depression.

“ Having seen this product used all over the world, it was amazing to finally find a way to demonstrate success within Wales, and in our local health board too. Life Sciences Hub Wales really helped that come about, particularly by creating the contacts and networks needed to help us get the project off the ground. ”

Ronnie Stolec-Campo, CEO at Magstim



Evaluating the trial

A sample cohort of **10 patients** with drug-resistant depression were invited to receive **30 treatments** of TMS over a **six-week period**. The service evaluation took into account feedback from both patients and staff, plus patient reported outcome measures.

Benefits for patients and clinicians

The evaluation showed the treatment was very well received by patients, with those who had gone through ECT treatments before feeling that TMS was much more favourable. Positive clinical and personal changes were seen in patients, with most showing an improvement in the clinical scores relating to their depression.

The majority of patients did experience some fatigue as a result of the treatments, alongside other side effects, and some found attending daily appointments difficult, especially if they lived far from the hospital or were in full time employment. But despite this patients were positive about the treatment. Having regular contact and care from the clinical team was also seen as a positive.

All staff interviewed had positive opinions on the technology, and in particular staff who were directly in contact with the patients during treatments rated the device and its clinical potential very highly.

Achievements



Evidence review published into use of TMS for treating depression.



Six-week trial with 10 patients successfully completed at Glangwili Hospital.



Detailed evaluation produced showing both patients and clinicians reported positive outcomes.



Further data gathered for a detailed business case to be developed.

Recommendations from the evaluation

The project showed that TMS was well received by patients and staff, and can be successfully delivered as a service within the Welsh NHS. However there are resource implications which mean the service hasn't yet been permanently adopted by the Health Board.

The evaluation made a number of recommendations. These included more work to consider what's needed to introduce a permanent service, researching other applications for the device so that it could be used with a larger range of patients, and evaluating shorter protocols for TMS treatment, which would allow more patients to be seen in a shorter time frame.

“ Overall we found it to be highly acceptable to both patients and staff with clinical benefits demonstrated in some patients. We now need to consider the cost effectiveness, impact on staff and service time, and longer-term clinical benefits before a TMS service is moved into routine clinical care within Hywel Dda, and we're currently working with Life Sciences Hub Wales to develop a business case which takes these factors into account. ”

Billy Woods, Clinical Scientist, TriTech Institute



Developing a robust business case

We're now leading on the development of a detailed business case to explore the more permanent adoption of the TMS service at Hywel Dda UHB. This will lay out all the facts in terms of patient outcomes and cost effectiveness to the health board so they can make a decision about how to take it further.

The business case will provide a factual and objective review of the benefits of implementing this kind of service, including a robust economic analysis and considering both clinical effectiveness and cost-value benefit.



“ There’s already an enormous amount of evidence worldwide on the efficacy of this technology, but it’s been really interesting to explore the unique challenges and opportunities involved in delivering a service like this in Wales. We hope this will be useful for any other health boards considering similar services going forward, and it will be really interesting to see how this work develops over the coming years. ”

Rhodri Griffiths, Innovation Adoption Director at Life Sciences Hub Wales

“ Mental health is a huge issue, and we particularly need solutions for clinically-resistant depression. If this kind of service were to be rolled out in Wales, it has the potential to make a real impact for some patients for whom other treatments have failed. ”

Rhodri Griffiths, Innovation Adoption Director at Life Sciences Hub Wales



Ensuring more patients in Wales can benefit from TMS technology

Mental health is a growing problem for people in Wales and it's thought that the number of people experiencing severe mental health issues more than doubled during the pandemic ([research by Cardiff University](#) showed that the share of people in Wales reporting severe mental health problems climbed from 11.7% pre-pandemic to 28.1% by April 2020).

So it's vital that patients have access to a range of treatments close to home, and we are keen to work with technology providers and health services to create the connections needed to see proven innovations like TMS adopted more widely.

Can we help?

Our team has a wealth of experience in helping the production of business cases that drive innovation projects towards clinical adoption.

Submit your enquiry today via our website: lshubwales.com/innovation-enquiry-form



Hwb Gwyddorau Bywyd Cymru
Life Sciences Hub Wales



Hwb Gwyddorau Bywyd Cymru
Life Sciences Hub Wales



Bwrdd Iechyd Prifysgol
Hywel Dda
University Health Board



Technoleg Iechyd Cymru
Health Technology Wales

magstim