brainstrust
the brain cancer people

know how

Immunotherapy DCVax®-L – information for patients and carers

brainstrust information sheet

Know Hows are published by *brainstrust* to help people living with a brain tumour to understand current topics. They are produced with input from relevant scientific and clinical experts and are written in a way that should help you to understand often complicated topics.

If you have an idea for a Know How, then please let us know.

If you have any queries, don't forget you can talk to one of our support specialists on **01983 292 405** or email **hello@brainstrust.org.uk**.

Why do we need this Know How?

Brain tumour immunotherapy, particularly DCVax®-L, is gaining an increasing amount of media coverage and interest. We are seeing a growing number of calls to our brain tumour support helpline about DCVax®-L and brain tumour immunotherapy. This Know How sheds some light on the current state of play for one particular brain tumour immunotherapy trial and some recently published results.

What is immunotherapy?

Immunotherapy is a broad term used for one way of treating cancer. It harnesses the power of the body's immune system to treat cancer. There have been some promising reports of a particular type of immunotherapy having an impact on brain cancer. This immunotherapy is called DCVax®-L and is produced by a biotech company called Northwest Biotherapeutics (NW Bio).

What is DCVax®-L?

DCVax®-L is an immune therapy made from each patient's dendritic cells and specific biomarkers (antigens) from their glioblastoma (GBM) tumour. Dendritic cells are a type of immune cell that helps the body's immune system recognise and attack potentially harmful things, such as foreign invaders or tumour cells. A marker of the invading microbe or pathogen, or the tumour cell, is called an antigen. It is seen as a threat by the immune system and can stimulate an immune response. Dendritic cells conduct surveillance throughout the body, and when they find an antigen, they alert multiple parts of the immune system to respond, including mobilising T cells against the antigen and producing antibodies against it.

DCVax®-L is composed of a patient's own dendritic cells. A patient's immature immune cells are obtained through a blood draw, and then they are matured into dendritic cells in a lab. The cells are activated and educated to recognise the antigens from the patient's own tumour. These dendritic cells are reintroduced into the patient (by a simple injection in the arm, similar to a flu shot) to mobilise the body's own immune system to attack the GBM tumour. When reintroduced into the body, the DCVax®-L dendritic cell vaccine educates the immune system about which antigens to attack.

What stage is the research currently at?

Clinical trials have been completed, and the results were presented at a scientific conference in May 2022. This phase 3 trial enrolled 331 patients from 94 trial sites across the UK, Germany, USA and Canada. Phase 3 is the final phase in the clinical trial process prior to seeking regulatory approval (enabling doctors to prescribe the treatment). The last patient was enrolled in November 2015, and long-term survival has been followed up to determine the survival 'tail'.

What do these phase 3 clinical trial results tell us?

Both endpoints were met with statistical significance. This means that DCVax®-L made a difference to the overall survival for some patients with a newly diagnosed GBM (nGBM) and recurrent GBM (rGBM). Median survival for people with nGBM who are treated with the current standard of care is about 15–17 months from surgery. These phase 3 trial results show a median overall survival of 33 months from surgery for nGBM patients with methylated MGMT, and about 18 months from surgery for patients with unmethylated MGMT. Median survival is the time – expressed in months or years – at which half the patients are expected to be alive. It means that the chance of surviving beyond that time is 50%. Median overall survival for patients with rGBM was 13.2 months from recurrence with DCVax®-L compared to 7.8 months in the control patients, who received existing treatments.

You can view more detailed information about the phase 2 clinical trial results brainstrust.org.uk/press-release-immunotherapy-dcvax-for-people-living-with-a-glioblastoma/.

What are the next steps for this therapy?

Now that the data is mature and the results have shown a significant statistical difference for patients who are newly diagnosed, or at recurrence, the next step would be to seek regulatory approval, e.g. from MHRA. If MHRA approves the therapeutic vaccine, then the final step is negotiation with the National Institute for Health and Care Excellence (NICE) for reimbursement and delivery through the NHS. NW Bio hopes this treatment can become widely available – NW Bio does not want DCVax®-L to be seen as a niche product that is only accessible to very few people. It has recently opened a production plant near Cambridge so that production can be matched to need. NW Bio is also working on automation of the manufacturing of these personalised living immune cells, in order to bring the cost of this manufacturing down so that the costs of the treatment can be reduced over time.

When will this therapy be available?

We don't know. What we do know is that completion of the clinical trial brings DCVax®-L closer to being made available as a treatment for those patients for whom it is appropriate, subject to regulatory approval. NW Bio is working hard and fast to make this happen.

What can I do if I want to access this treatment in the UK now?

DCVax®-L can be accessed privately on a compassionate-use basis if your physician feels it would potentially be helpful and appropriate. Please discuss with your clinical team and ask them to contact NW Bio if your team would like more information. You can contact NW Bio here: www.nwbio.com/contact-us/.
Phone +1-240-497-902.

Is this treatment available for children?

As far as we are aware, no. These results are from an adult trial, and we are not aware of any plans to trial DCVax®-L for children with glioblastoma.

Will DCVax®-L work for other types of brain cancers/tumours?

DCVax®-L is designed to treat all types of operable solid tumors, but the phase 3 trial was for patients with a newly diagnosed GBM (nGBM) and patients with recurrent GBM (rGBM).

What else do we know?

In order to produce DCVax®-L, a small sample of a patient's tumour is needed – ideally, about two grams, but smaller amounts (even less than one gram) can be used. The tumour sample can be a fresh sample sent at the time of surgery or a frozen sample from a surgery already performed (but not a prior sample embedded in paraffin).

- The study took eight years to recruit 331 patients (there was a four-year funding gap), and 92% of patients were enrolled between 2012 and 2015. Patients were followed since enrolment for survival.
- 1,599 were screened for the trial:
  - 306 patients were ineligible for the trial because pathology analysis of tumour tissue confirmed the patient did not have a GBM.
  - A further 250 screened patients showed possible evidence of disease progression prior to being randomised and so could not join the trial. NW Bio elected to follow 55 of these patients in an 'information arm' (outside the phase 3 trial). Results for this population of patients, who typically do poorly, were encouraging.
  - 337 patients did not successfully make the vaccine, mainly due to insufficient viable tumour tissue.
  - 331 patients enrolled in the trial, so 20.7% of patients who were screened.
- Those patients who have a good surgical resection of the tumour tend to do better.
- Progression-free survival (PFS) was not significantly different between the DCVax®-L arm and the placebo arm. This may be because DCVax®-L caused pseudo-progression, where tumours looked like they were growing on MRI scans, but actually, it was just inflammation or immune cells infiltrating the tumour site to fight the tumour (imaging technology today cannot tell the difference between real tumour progression and inflammation or immune cells).
- DCVax®-L is suitable for combinations with a wide range of other treatments.
- DCVax®-L can be administered in community settings as well as major cancer centres.
- When a DCVax®-L patient has recurrence, new batches of DCVax®-L can be made, and the patient can continue the treatment.

What does this mean?

Bottom line? For the first time in 17 years, there is a new systemic treatment that extends overall survival in people with nGBM. For the first time in 27 years, there is a new treatment that extends overall survival in rGBM. It has an excellent safety profile and noteworthy long tails of survival, with 13% of people in the trial living for five years or more.

You can read our commentary on this topic brainstrust.org.uk/what-the-latest-news-on-dcvax-clinical-trials-means-for-the-community/.

Ask yourself

- What specifically am I struggling with?
- What do I want to know?
- What have I found out for myself?
- What makes it hard?
- What's on the horizon?
- What are the sources of information that will help me fill in the gaps?
- Who can help me?
- How can *brainstrust* help me?

Contact

Talk to *brainstrust*. We can help. You can call, write, type, text. Email for help and support: **hello@brainstrust.org.uk**.
Telephone: **01983 292 405**.

Other helpful links

brainstrust.org.uk/glioblastoma.

www.cancer.gov/news-events/cancer-currents-blog/2018/immunotherapy-glioblastoma.

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