

Proton Beam Therapy

What is proton beam therapy?

Proton beam therapy (PBT) is a form of radiotherapy that uses high energy proton beams to destroy cancerous cells and prevent their continued growth. Conventional radiotherapies use X-rays that affect a greater portion of the surrounding tissue and cells and are recommended for tumours that have spread. Proton beams are more precisely targeted at the tumour growth and do not exit the other side of the tumour limiting the exposure of healthy tissue to radiation. For more complex tumours this may reduce the volume of normal tissue receiving radiation, and thereby mitigate some of the acute and long term effects of the radiotherapy. The treatment is typically used to treat complex tumours that reside near vital nerve functions, are hard to reach or have a more defined shape. For more information, [read our fact sheet](#).

The Brain Tumour Charity's View

Cancer Research UK estimates that approximately 1% of patients across all cancers are suitable for the procedure (1). PBT is only suitable for some types of tumours, and is usually used to treat brain tumours in sensitive areas. Some clinicians believe that children in particular may benefit from PBT as limiting the exposure to radiation is particularly important for the developing brain. There is emerging evidence that PBT might reduce the exposure to radiation and reduce side effects for children with some types of tumour (2). However there is little evidence that it is more effective than conventional radiotherapy at killing cancerous cells.

The Brain Tumour Charity supports the availability of treatments which have a positive impact on quality of life and survival for people affected by a brain tumour. We are pleased that the government is funding specialised centres from 2018 to deliver the treatment in the UK. Providing PBT in the UK will add capacity, relieve patients and their families of the stress of travelling abroad for treatment, and allow patients with complex needs to access this type of treatment. Government proposals state that the provision of PBT in the UK is cost effective and can deliver greater capacity with only marginal additional costs compared with sending patients abroad with potential savings in the longer term (3).

People who are treated using PBT should be followed up so that information on their survival and the side effects they experience can be used to inform treatment decisions for others in the future.

How can PBT be accessed?

Guidance for the referral of patients abroad for NHS proton treatment recommends that the patient's multi-disciplinary team (MDT) should consider PBT if, "PBT confers any significant advantage over conventional radiotherapy or IMRT" (4). When making this judgement, clinicians take into account a number of factors including the type of tumour, its location in the brain, and the patient's ability to travel.

Since 2008, some people have accessed PBT in the USA through the NHS England's Proton Overseas Programme. All cases across UK are approved by the UK Proton Panel and the devolved nations undergo the same approval process as England. Two new centres that specialise in PBT and aim to treat approximately 1500 patients per year will open in University College London Hospitals (UCLH) and The Christie NHS Foundation Trust in Manchester in 2018. These two centres will predominantly treat patients with complex tumours of the brain, head, neck and spine.

What we are doing

There are unique challenges to developing treatments for brain tumours. We will continue to support early phase feasibility studies and increase our investment in clinical trials to expand the treatment options available to people affected by a brain tumour. The development of clinical trials is a long process and so we will continue to lobby the government to invest in schemes, such as the Early Access to Medicines Scheme, which allows for faster access to treatments.

References

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