Medical and surgical treatments to treat spasticity

- Intrathecal Baclofen Therapy
- Selective Dorsal Rhizotomy
- Botulinum Toxin A (BTA)

The most common therapy used for treating the spasticity associated with cerebral palsy is physiotherapy. Physiotherapy (as outlined in Capability Scotland’s CP factsheet, ‘Introduction to Therapy’) is the treatment of disorders of movement and function through exercise, manipulation, heat, as well as electrical or ultrasonic procedures.

Besides physiotherapy, there are a number of medical and surgical procedures available that are used to manage spasticity. This factsheet looks at three relatively new medical and surgical techniques.

**Intrathecal Baclofen Therapy**

Baclofen is a muscle relaxant drug used to relieve the stiffness caused by spasticity (tight and stiff muscle tone). However, when taken orally (by mouth) it can have side effects in some people, including lethargy and loss of balance.

Intrathecal Baclofen Infusion Therapy (ITB) was developed to deliver Baclofen directly into the spinal fluid by a pump implanted under the skin in the abdomen. By putting the Baclofen directly into the spinal fluid, the drug can act as a muscle relaxant and reduce spasticity in the lower limbs without the side effects associated with taking the drug orally.

The Baclofen pump is the size of ice hockey puck (about 3cms in diameter) and is inserted into the abdominal cavity in an operation lasting about 50 minutes. The pump then delivers a small amount of Baclofen into the spinal fluid via a small tube. A computer turns the pump on and the dose of Baclofen can be adjusted up or down, depending on the individual’s response to the drug.

The pump needs to be refilled about every two months by inserting a needle into the pump through the skin. The pump will need to be replaced after five or six years.

Children (as young as 5 years) as well as adults have received ITB. However the treatment is
not suitable for everyone who has cerebral palsy. It does not help people with low muscle tone (often described as floppy muscles), chorea (uncontrollable, small jerky movements of toes and fingers), or athetosis (involuntary movements of face, arms and trunk).

**Further Information**

You can find more information about ITB from:

University Hospital Nottingham Centre  
QMC campus  
Derby Road  
Nottingham  
NG7 2UH  
Tel: 01159 249 924 ext. 63635  
Website: www.baclofen.info

**References**


**Selective Dorsal Rhizotomy**

Selective dorsal rhizotomy is a neurosurgical procedure used to treat spasticity in the lower limbs. The treatment aims to reduce spasticity, increase range of movement and improve body positioning and walking in those who can walk.

The surgery involves cutting sensory nerve fibres in the spinal cord in the lower area of the back. With cerebral palsy, these sensory nerves do not function effectively, and this is thought to contribute to spasticity. By identifying and cutting those nerve fibres which are not ‘transmitting’ effectively, the aim is to reduce muscle tone.

This is major surgery requiring a general anaesthetic. The duration of the operation is likely to be about 5 hours.
The treatment is not suitable for everyone with cerebral palsy. Factors which appear to contribute to the success of the surgery include:

- Being age 2 or over
- Having spastic diplegia or quadriplegia
- Being born prematurely
- The ability to participate in post-operative therapy

After surgery, intensive physiotherapy will be required for around 3 months to 1 year.

There are two UK centres currently offering this treatment: the Robert Jones and Agnes Hunt Orthopaedic and District Hospital, Oswestry, Shropshire and the Frenchay Hospital, North Bristol. Each hospital has their own selection criteria and referrals must be made through your GP.

Selective dorsal rhizotomy is a relatively new, and in some ways controversial intervention which has not yet been subjected to adequate controlled trials. Reports are mixed regarding the long-term effects on function. Full evidence of any side effects is not yet available.

Further information

The Robert Jones and Agnes Hunt Orthopaedic and District Hospital

**NHS Trust**

Oswestry

Shropshire

SY10 7AG

Tel: 01691 404000

Fax: 01691 404050

Website: www.rjah.nhs.uk

**Frenchay Hospital**

Frenchay Park Road

Bristol

BS16 1LE

Tel: 0117 970 1212

Website: www.nbt.nhs.uk
References

What’s the Evidence? Selective Dorsal Rhizotomy published by Cerebra (www.cerebra.org.uk) This document also lists a number of research papers and clinical trials which have been published around SDR.


Botulinum Toxin A (BTA)

Botulinum Toxin A (BTA) is a muscle relaxant derived from the bacterium, Clostridium Botulinum. This bacteria is linked with botulism - a rare form of food poisoning - but it can provide safe, effective relief from a number of conditions when used in small, controlled doses.

BTA is licensed in the UK to treat pes equinus (‘tip-toe walking’) in children with cerebral palsy. This results from spasticity in the surrounding muscles which makes it difficult, or impossible to place the foot flat on the floor. When injected into the calf muscles, BTA can relax these muscles, making walking easier and more comfortable, as well as generally improving balance and reducing the frequency of falls.

The injections take effect within a few days and last until new nerve endings grow back and the affected muscles recover, usually around 12 – 16 weeks. The injections are then repeated to maintain the improvement in tone. There is no absolute limit to the number of re-injections.

BTA can also be used to treat tightness in the hamstrings, hips, arms, wrists and thumbs.

The main reported side-effects of BTA are mild and short-lived. These include mild cold or flu-like symptoms, temporary incontinence, mood swings/irritability, and fatigue. As yet no research is available on the possibility of adverse long-term side-effects from this treatment.

Although this treatment is now becoming more common, not all NHS Boards will fund BTA. As with all medical treatments, referral should be made via your GP or consultant.

Further Information

The Medicines Healthcare Products Regulatory Agency produces information on BTA. Go to www.mhra.gov.uk

As with any other therapy or treatment, we advise people with cerebral palsy, their carers or parents to consult their GP, consultant or health professional before starting or paying for any treatment.
Due to the individual nature of cerebral palsy, some people will benefit from specific treatments and therapies, and others will not. Assessment of individual needs is very important.

This factsheet is for information purposes only and is not intended to be a recommendation.

Advice Service Capability Scotland acknowledges the co-operation of SCOPE in the preparation of this fact sheet. SCOPE has more information about each procedure on individual fact sheets. For more information contact:

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