ChemotherapyA red line under the title of this fact sheet.

When you are diagnosed with a brain tumour there are several ways your health team may treat you. One of these is by chemotherapy, which is the use of cytotoxic (anti-cancer) drugs to destroy cancer cells by disturbing   
their growth.

[Chemotherapy](http://www.thebraintumourcharity.org/NR/exeres/05EFEFD0-1D42-4972-BF9A-3F7FB7C3012F,frameless.htm?NRMODE=Published#MainControl_Glossary_ZoneMain_GlossaryPlaceholderControl1_ctl00_PresentationModeControlsContainer_SECTION_C) is sometimes used on its own or it may be used before surgery to shrink the tumour or afterwards to prevent it from returning.

This fact sheet is relevant to adults - please note that there will be   
significant differences for children receiving chemotherapy.

# In this fact sheet:

* How chemotherapy works
* How chemotherapy is given
* After treatment
* Answers to some common questions you may have about chemotherapy

## How chemotherapy works

Our bodies are made up of cells, which divide as part of their natural cycle. Tumours occur when cells divide at a faster rate than normal. Chemotherapy affects the growth of cancer cells (which create tumours) by interfering with the way they divide and create copies of themselves. Chemotherapy acts on dividing cells, including healthy cells. Healthy cells are able to repair themselves better than cancer cells so fewer of them die after treatment. The fact that chemotherapy acts on dividing cells explains some of its side-effects. Cells in the body that divide frequently (i.e. skin and hair cells and cells lining the digestive system) are therefore vulnerable to chemotherapy. This is why these parts of the body are often affected by chemotherapy. For more information about side effects, see further down this factsheet.

## How treatment is given

Chemotherapy will be given to you in a series of treatments and rest periods. A treatment session and rest period is called a ‘cycle’ and cycles make up   
the ‘course’ of treatment. There are a number of ways chemotherapy can   
be given:

### Tablets

Some chemotherapy drugs can be taken in tablet or capsule form like any other tablet. They are absorbed and carried around your body in the bloodstream to reach cancer cells. You will be able to take the tablets at home but will need to take care to touch them as little as possible and should wash your hands straight afterwards. As with all medication, tablets should be kept out of the reach of children.

### Injection or drip

Chemotherapy drugs can be injected into a vein (‘intravenously’) or into the spinal fluid (‘intrathecally’). They can also be given via a drip to the veins over a time period of anywhere between around half an hour to a few hours. The drugs are absorbed and carried around your body in the bloodstream to reach cancer cells.

### Wafers

Chemotherapy drugs are put inside a polymer wafer, which is inserted into the brain during surgery. Polymer wafers are made from a biodegradable material (i.e. one that breaks down in the body). Wafers look a bit like a large white chocolate button. The wafer is placed where the tumour started and the polymer gradually dissolves over 2-3 weeks, releasing the chemotherapy drug ‘carmustine’ directly into the brain. Wafers are used to target cells which couldn’t be removed by surgery.

## Names of common chemotherapy drugs

There are around 50 different types of chemotherapy drug. Names of common chemotherapy drugs used to treat primary brain tumours include lomustine (CCNU), procarbazine, carmustine (Gliadal ®), vincristine and temozolomide (Temodal ®). You may be given just one, or you may have a mixture; this is called ‘combination therapy’. The most common combination of drugs used to treat brain tumour is known as PCV and is a combination of procarbazine, lomustine (CCNU) and vincristine.

## After treatment

You will have check up appointments following treatment, which will sometimes include scans. These appointments may continue for a number   
of years after your chemotherapy has finished.

## Why are treatment periods followed by rest periods?

Rest periods between treatment sessions allow your body to recover from any side effects and give healthy cells a chance to repair themselves. Having chemotherapy in a series of cycles also enhances its effectiveness. This is because chemotherapy only destroys cells that are in the process of dividing. Cancer cells are not dividing all the time so there will be times when they are resting. The first time you are given chemotherapy it won’t work on the cells that are resting. The second time you’re given it, the cells that were resting the first time may now be dividing and the chemotherapy will destroy them.

## How long will chemotherapy last?

Individual treatment plans vary and yours will be carefully planned for you specifically. Typically though, a course of treatment may last 3-6 months, consisting of 4-8 cycles. You may have chemotherapy on a few days every few weeks.

## Who decides whether I have chemotherapy by injection, tablets or wafers?

Doctors will choose the best treatment for you based on several factors including:

* The type of tumour you have and whether it has spread
* Your general health and fitness
* Your age

## Do I need to stay in hospital during the chemotherapy?

Chemotherapy is generally given as an outpatient treatment, which means that you don’t have to stay in hospital overnight, although in certain circumstances you will need to. Your doctor will talk to you about this before you start your treatment. If you are taking tablets, you can take these at home. If you are having chemotherapy by injection, you would usually have this in a chemotherapy clinic. You may be in the clinic for up to a few hours as you’ll need to have blood tests before the treatment and wait for the results to check it’s safe for you to have the injection. If you have chemotherapy by drip, this will generally happen in the hospital.

## What are chemotherapy drugs made from?

There are many different types of chemotherapy, which are made from different sources and work in slightly different ways to destroy cancer cells. Drugs are made in a laboratory, but many of them are derived from natural plant extracts.

## How will I know if chemotherapy has worked?

Throughout the process, you will be monitored for any changes to the tumour. This can be through the use of scans (Magnetic Resonance Imaging, or ‘[MRI](http://www.thebraintumourcharity.org/NR/exeres/05EFEFD0-1D42-4972-BF9A-3F7FB7C3012F,frameless.htm?NRMODE=Published#MainControl_Glossary_ZoneMain_GlossaryPlaceholderControl1_ctl00_PresentationModeControlsContainer_SECTION_M)’ and Computerised Tomography, or ‘[CT](http://www.thebraintumourcharity.org/NR/exeres/05EFEFD0-1D42-4972-BF9A-3F7FB7C3012F,frameless.htm?NRMODE=Published#MainControl_Glossary_ZoneMain_GlossaryPlaceholderControl1_ctl00_PresentationModeControlsContainer_SECTION_C)’) to see whether the tumour is shrinking. Another way of detecting whether the tumour is responding to treatment is via ‘tumour markers’ in the blood. A tumour marker is a product that is secreted by cancer cells. Decreasing volumes of tumour markers suggest that the tumour is shrinking.

## Is there a maximum number of times I can have chemotherapy?

This very much depends on the type of chemotherapy drug. Some are limited based on cumulative toxicity (i.e. with each dose, there are increased side effects that affect body functions), while others are stopped either because they are not working, an unacceptable toxicity occurs, or you can no longer tolerate the drug.

## What side effects can I expect?

Side effects vary from person to person and according to the drugs you have been given. Because chemotherapy (temporarily) acts on healthy cells as well as cancer cells though, it may cause some unpleasant short-term side effects, which commonly include:

### Lowered immunity

Chemotherapy temporarily lowers the white blood cell count. As white blood cells play a vital role in fighting infection, you may be more susceptible to other infections during this time. Your doctors will monitor you and will give you antibiotics to help fight infection if necessary.

### Tiredness

Many people who have chemotherapy experience tiredness and low energy ([fatigue](http://www.thebraintumourcharity.org/NR/exeres/05EFEFD0-1D42-4972-BF9A-3F7FB7C3012F,frameless.htm?NRMODE=Published#MainControl_Glossary_ZoneMain_GlossaryPlaceholderControl1_ctl00_PresentationModeControlsContainer_SECTION_F)). This can be frustrating if you have been an active person up until now. It’s important to be patient with yourself and rest as much as you need to. Ask friends and family for help around the house to conserve your energy. The tiredness will wear off once your course of treatment has finished, but it may take a few months for your energy levels to return to normal.

### Nausea

Some people experience nausea (feeling sick) or actually do vomit after treatment. Not all chemotherapy drugs cause this however, and some people experience no sickness at all. Your doctor will be able to give you some   
anti-sickness tablets if you are affected by nausea or if the particular chemotherapy drugs you are having are known to be likely to cause it.

### Hair loss

Not all chemotherapy causes hair loss, it really depends on which drug or combination of drug you have. Some drugs result in no hair loss at all, or only a very small amount. Some chemotherapy drugs cause only hair thinning, rather than loss, but other drugs do cause more substantial hair loss. Generally, any hair loss will start within a few weeks of treatment beginning. Once treatment has finished, hair should begin to grow back over the next few months but may be different to how it was previously. Side effects tend  
to gradually disappear over time once the treatment is complete, but if you are concerned about any of your side effects, please remember to speak to your doctor.

## Where can I find a wig or headwear?

There are lots of different styles of wig to choose from, including synthetic (monofibre) and human hair wigs. You can also buy headscarves and other headwear. While we cannot recommend specific companies, below are some companies that sell wigs and headwear:

[**Cancerwigboutique.com**](http://www.cancerwigboutique.com/) This is an online directory that lists numerous companies selling wigs   
and headwear.

**Chemotherapy Headwear**   
Sells a range of hats and headscarves for people experiencing hair loss following chemotherapy. [www.chemotherapyheadwear.com](http://www.chemotherapyheadwear.com) / 0208 742 2345

**Direct Wigs**Sells a range of both ladies’ and gents’ wigs, hair pieces and headscarves  
[www.directwigs.co.uk](http://www.directwigs.co.uk/) / 01793 632152

**4myhead.com**An online shop for hats, scarves and wigs for cancer patients.   
[www.4myhead.com](http://www.4myhead.com) / 07505 028 099

### You can get free synthetic wigs on the NHS if:

* you're under 16, or under 19 and in full-time education
* you're a hospital inpatient
* you're a war pensioner and the wig is for your accepted disablement and you have a valid war pension exemption certificate

### You're entitled to help if you:

* get Income Support
* get Income-based Jobseeker's Allowance
* get Income-related Employment and Support Allowance
* get Pension Credit Guarantee Credit
* are named on or entitled to an NHS tax credit exemption certificate
* are named on a valid HC2 certificate

Ask your clinical nurse specialist or staff at the hospital you are being treated at for more information.

**Disclaimer:**

The Brain Tumour Charity provides the details of other organisations for information only. Inclusion in this factsheet does not constitute a recommendation or endorsement.

# What if I have further questions?

If you require further information, any clarification of information, or wish to discuss any concerns, please contact our Support and Information Team.

* Call 0808 800 0004 (free from landlines and most mobiles including 3, O2, Orange, T-mobile, EE, Virgin and Vodafone)
* Email [support@thebraintumourcharity.org](mailto:support@thebraintumourcharity.org)
* Join our online forums at [www.thebraintumourcharity.org/forums](http://www.thebraintumourcharity.org/forums)

# About us

The Brain Tumour Charity makes every effort to ensure that we provide accurate, up-to-date and unbiased facts about brain tumours. We hope that these will add to the medical advice you have already been given.

Please do continue to talk to your doctor if you are worried about any medical issues. We are the UK’s leading brain tumour charity. We fund scientific and clinical research into brain tumours and offer information and support to those affected, whilst raising awareness and influencing policy.

We rely 100% on charitable donations to fund our vital work. If you would   
like to make a donation, or want to find out about other ways to support us including fundraising, leaving a gift in your will or giving in memory, please visit us at [www.thebraintumourcharity.org](http://www.thebraintumourcharity.org) or call 01252 749043.

# About this fact sheet

This fact sheet has been written and edited by The Brain Tumour Charity’s Support and Information Team. The accuracy of medical information has been verified by a leading neuro-oncologist. Our fact sheets have been produced with the assistance of patient and carer representatives and up-to-date, reliable sources of evidence. If you would like a list of references for any of the fact sheets, or would like more information about how we produce them, please contact us.

# Chemotherapy

# Your notes



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