How is carfilzomib given?

Carfilzomib is given as an intravenous (into the vein) infusion. It is given with the steroid dexamethasone.

Carfilzomib is taken as a continuous treatment, meaning it is taken until the myeloma shows signs it is beginning to come back.

- Carfilzomib is usually given over two consecutive days each week for three weeks, with one week off in a 28-day cycle.
- The infusion is administered over 30 minutes.
- The dose is 20mg/m² for the first cycle but the dose will be increased to 56mg/m² for the remaining cycles if the starting dose is tolerated.

20mg

56mg

Other information about carfilzomib

Carfilzomib has been found to cause heart problems or worsen pre-existing heart conditions, so you will be closely monitored for signs of heart problems if being treated with carfilzomib.

Women must not take carfilzomib if they are pregnant, and must not become pregnant whilst taking carfilzomib, as it is expected to be harmful to an unborn baby. This means you must use effective methods of contraception while on treatment and for one month after treatment has finished if you are a woman of childbearing potential or for three months after treatment if you are a man and your partner is a woman of child bearing potential.

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For a list of references used to develop our resources, visit myeloma.org.uk/references
What is carfilzomib?

Carfilzomib, also known as Kyprolis®, is a proteasome inhibitor drug used in the treatment of myeloma.

How does it work?

Carfilzomib works by blocking the actions of proteasomes. Proteasomes are large molecules found in all cells of the body, and they are involved in the breakdown of damaged or unwanted proteins. Carfilzomib permanently blocks their function, stopping them from breaking down unwanted proteins. This causes proteins to build up to toxic levels, killing the cell. Myeloma cells rely more heavily on proteasomes than normal healthy cells; they are therefore much more sensitive to carfilzomib.

Possible side effects

Carfilzomib has a number of possible side effects which can vary considerably from patient to patient. It is important to report any side effects to your doctor or nurse as soon as possible so they can be treated or managed promptly.

Low blood counts

Carfilzomib may cause a decrease in the number of red blood cells, white blood cells and platelets in your blood. This can cause anaemia and fatigue, as well as making you more susceptible to infection and increasing your risk of bleeding. If necessary, you will be given supportive treatment to help with these side effects and to boost your blood cell counts.

Gastrointestinal disturbances

Carfilzomib can cause diarrhoea, constipation, vomiting and/or nausea. While usually mild and manageable, these side effects can become problematic in some cases. Maintaining a good fluid intake and a balanced diet is important. Your doctor may prescribe specific treatment which can help prevent or control the symptoms.

Skin rashes

Some myeloma patients taking carfilzomib can develop a skin rash, which may be itchy and need treatment with antihistamines and/or steroid creams. If this is particularly problematic, it may be necessary to stop treatment temporarily or restart at a lower dose.

Peripheral neuropathy

Peripheral neuropathy is damage to the nerves in the hands, feet, arms or legs. This can lead to numbness, tingling, increased sensitivity and pain, most often in the feet or hands. Although they come from the same family of drugs, carfilzomib is thought to cause much lower rates of peripheral neuropathy than bortezomib.

For most patients, symptoms will improve or disappear after the dose and/or frequency of administration of carfilzomib is reduced. However, in some cases, carfilzomib may need to be temporarily stopped or discontinued and other options discussed. If you have severe peripheral neuropathy you may not be able to have other treatments in the future that are also known to cause it.

Pain and discomfort can be alleviated by gentle massage, warm baths, heat/cold packs and specific nerve painkilling drugs, such as pregabalin and gabapentin.

Blood clots

Carfilzomib can cause the formation of blood clots in veins, which is called a venous thromboembolic event (VTE). This most often occurs in the legs, where it is known as deep vein thrombosis (DVT). More rarely, clots can travel to the lungs causing a pulmonary embolism (PE). This can be a serious complication of carfilzomib. You may be prescribed an anticoagulant (anti-clotting) drug such as aspirin, low-dose heparin or warfarin either to prevent or to treat VTE.

It is very important that you tell your doctor or nurse if you notice any red, swollen or painful areas in your body, particularly in your calf, and the area is warm to touch. Any new episodes of shortness of breath and/or chest pains must be reported immediately.

Fatigue

Fatigue usually resolves shortly after treatment has finished. There are a number of medical and non-medical strategies you may try to deal help manage fatigue. For example, treatment for anaemia may reduce fatigue if it is caused by low red blood cell counts. Increasing your levels of activity and having complementary therapies, such as aromatherapy or massage, may also help.

**Figure 1:** Mechanism of action of proteasome inhibitors
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Figure 1: Mechanism of action of proteasome inhibitors

- Carfilzomib inhibits the proteasome, causing proteins to build up.
- Small protein tags are added to proteins by enzymes present in the cell.
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- Drug tagged for recycling.
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