



Vitamin C

Treatment with vitamin C given intravenously.

Vitamin C is well absorbed through the stomach and intestines up to a certain level (usually about 4-6 grams per day). Beyond that, the vitamin passes straight through the gut and can cause diarrhea. (Many people use the diarrhea threshold to know how much to give – reach diarrhea then take slightly less). In some conditions, higher blood levels than can be achieved by oral vitamin C have been shown to be beneficial – so it is given by an intravenous drip:

- **Immune boosting** – recent exposure to flu or infections, vaccinations, or persisting flu or other viral illnesses – especially glandular fever (Epstein Barr infection). A series of high dose intravenous vitamin C infusions (10 – 30 grams) frequently improves the symptoms significantly, sometimes dramatically.
- **After mercury dental procedures** – Vitamin C can chelate mercury in the blood and allow it to be excreted in the urine and the bile. Many dentists recommend having iv vitamin C immediately after treatments.
- **Other illnesses** and conditions – chronic fatigue, wasting conditions and other poorly defined illnesses can sometimes be helped by iv Vitamin C.
- **Cancer** – vitamin C can be very helpful in the treatment of cancer at all stages – this will be discussed in a section of its own (below).

What an IV Vitamin C infusion involves:

A small ‘butterfly’ needle is located in a vein in the hand or arm, and the vitamin C is slowly infused over about an hour. The infusion is usually painless, some people on higher doses can feel thirsty and they are encouraged to drink plenty. Occasionally the blood sugar level can also fall a little, so people should also bring and eat a snack during the infusion. The procedure is extremely safe with almost no adverse events ever being reported.

Vitamin C infusions for Cancer

A number of clinics around the world have been using vitamin C infusions to treat patients with cancer for many years. The Brightspot in Wichita under the directorship of Dr Hugh Riordin has probably the greatest experience in the world in using this technique. (www.brightspot.org/index_org.shtml) They have helped many patients with advanced cancer to have a significant improvement in their quality of life, but in some cases advanced cancer, some of which had spread (metastases), the disease was arrested and even reversed for many many years. People given just months to live were living an enjoyable life some years later. He and they attribute the intravenous vitamin C to this success.

How does vitamin C affect cancer?

Cancer cells are different from normal cells in a number of ways. Because they continue to multiply in an uncontrolled fashion, this is why the tumours grow. Because of this the cancer cells are less specialized, and do not contain all the enzymes and chemical reaction processes of normal cells. This is why Vitamin C (and some other treatments) are so effective.

Vitamin C has a number of actions:

1. **Boosting the immune system** – the body immune system recognizes abnormal cells (viruses and bacteria) and destroys them. Cancer cells are usually also usually recognised as abnormal and destroyed. Vitamin C boosts the immune system and helps the destruction process.
2. **Sense of wellbeing** – high dose vitamin C often makes people feel better, especially the fatigue and lethargy often found in people with cancer. A common comment is “I feel much more robust”.
3. **Reduce the cancer spread.** Normally the body attempts to wall off abnormal cells to prevent them spreading – in a bacterial infection this leads to a boil. It also tries to wall off and isolate the cancer cells with collagen fibres – but most cancer cells then produce hyaluronidase – and enzyme which dissolves this fibre. Vitamin C is essential in the production of collagen fibre, and many cancer patients have very low vitamin C levels. This may mean they make collagen. This could well be the reason that cancer spreads. Giving high dose vitamin C enables the body to make collagen and may reduce the spread and metastasis of cancer cells.
4. **Direct toxic effect on the cancer cells** –high doses of vitamin C create peroxides (like hydrogen peroxide) in the cells – these are rapidly converted to oxygen and water by enzymes called catalases. Because cancer cells are less specialized, they contain 100 times less catalase than normal cells, they cannot convert the peroxides, these build up inside the cancer cells and damages them. In this simple way, cancer cells are damaged or destroyed while healthy cells remain unaffected. In many patients with advanced disease, the metastases have been seen to stop or even wither away with very high dose vitamin C infusions.

What Vitamin C treatment involves:

- First the plasma vitamin C level is checked, and other blood tests to confirm that high dose vitamin C is safe (G6PD is a very rare condition found in Mediterranean people – they cannot take high dose vitamin C).
- A small butterfly needle is placed in a vein and vitamin C is infused over one hour. Infusions are given twice a week - starting at 15 grams, then 25grams and the dose is increased to achieve a blood level of 200 – 400mg% at the end of the infusion. Apart from feeling thirsty, the infusion has few other side effects.
- Lipoic acid is given simultaneously, this can increase the efficacy of the vitamin C.
- Most patients have 2 treatments per week for about a year. Other preventive and supportive supplements and therapies are also recommended – multivitamins, vitamin E, selenium, Lycopene, lipoic acid, green tea, curcumin (tumeric). Stress management, meditation, imagery and relaxation are all essential in optimizing the effects of these therapies, and are powerful therapies in their own right.
- None of these treatments should replace or interfere with conventional oncology treatments, although some cancer specialists prefer patients not to be taking antioxidants including vitamin C at the time of radiotherapy and some forms of chemotherapy. There should be no problem before and following therapy however.

Which cancer patients should consider iv vitamin C?

- Patients with early cancer could consider vitamin C as part of a total treatment package (but stop it during chemotherapy and radiotherapy.)
- ALL patients with disseminated cancer or where medical chemotherapy or radiotherapy has reached the end of the line – should consider vitamin C in high doses iv – both to improve their quality of life and also for the possibility that the treatment could slow or even reverse the cancer process.