

Intravenous Vitamin C in Cancer Care

Patient resource

What is Intravenous Vitamin C?

Intravenous vitamin C (IVC) is a treatment where vitamin C is given directly into a person's veins, which is called intravenous (IV) administration. This allows much higher levels of vitamin C to circulate in the blood than is possible with oral supplementation, as the body cannot absorb very much vitamin C when it is taken by mouth. Most often in cancer care, relatively high doses are used (higher than would be used for other conditions, like treating vitamin C deficiency), and this is often called high dose IVC.

What is IVC used for?

IVC is not a standard treatment for cancer. IVC is not to be used as a cure for cancer or as an alternative for cancer treatments such as chemotherapy.

Some people with cancer choose to use it as a complementary or integrative therapy as it may:

- Support quality of life
- Reduce cancer-treatment related side effects
- Improve treatment outcomes or slow cancer progression

Does it work?

The research on high dose IVC in cancer is still in the early stages. Although there are over 20 clinical trials of IVC in cancer, many studies have been small and suffer from weak methodology.

Most studies have used IVC for people receiving chemotherapy, while a few have studied it with radiation therapy, androgen deprivation therapy, or by itself. IVC

is generally safe and well tolerated, with minimal and mild side effects. There is no evidence that IVC negatively interacts with any cancer treatments studied so far. Some studies have found benefit for quality of life or symptom management alongside cancer treatments such as chemotherapy, but other studies have found no change. Symptoms that may improve with IVC include fatigue, pain, nausea, and appetite loss. There is promising early research for improved survival or response to treatment with IVC combined with cancer treatments in people with advanced pancreatic cancer, lung cancer, and certain types of colorectal cancer.

How does IVC work?

High dose IVC likely has several effects in the body, including: (1) hydrogen peroxide (H_2O_2) generation, (2) enzyme reactions, (3) antiangiogenic activities (interference with tumour blood vessel formation), (4) anti-inflammatory actions, and (5) immune system effects.

The generation of hydrogen peroxide has been considered the primary action of high dose IVC. At high blood concentrations, H_2O_2 is produced which is toxic to cancer cells but is non-toxic to healthy cells. Healthy cells contain enzymes to break down the H_2O_2 , and also tend to have less H_2O_2 around them due to differences in the environment around cancer cells compared to healthy cells. This H_2O_2 generation is often referred to as the “pro-oxidant” effect of high dose IVC.

Is it safe?

IVC has a good safety profile. However, like all therapies there are certain times where IVC may not be

safe. IVC should not be administered to patients with kidney failure, or those with a deficiency of the G6PD enzyme. IVC should be used cautiously in people with impaired kidney function, a history of kidney stone formation, insulin-dependent diabetes, iron storage diseases, fluid overload conditions, or those on warfarin. Please speak to a knowledgeable healthcare provider to discuss whether you are a good candidate for IVC therapy.

What are the side effects?

Many people do not experience side effects, but some do. Side effects are generally mild, and may include: thirst, dry mouth, increased urination, elevated blood pressure, diarrhea, nausea, fatigue, weakness, headache, dizziness, injection site discomfort and vein irritation, swelling, and loss of appetite. A full list of reported side effects can be found in our health care provider monograph.

What is the usual dose, frequency, and length of use?

Dosing of IVC varies in research studies, but the most common dose is around 1g/kg of body weight (e.g., 75g for a 75kg adult). Data shows that doses up to 1.5g/kg of body weight are generally safe.

Treatments are usually administered 1 to 3 times per week over the course of a few weeks up to several months. Therapy may be continued longer-term based on discussion with their healthcare provider. Each treatment lasts between 1 and 3 hours, depending on the dose.

Where can I get more information?

For more detailed information including all references you can read the companion healthcare professional version on the [CCNM research website](#), or scan the QR code below. You can also consult with a health care provider such as a naturopathic doctor, medical doctor, or nurse practitioner who is experienced in the use of IVC.

Disclaimer

This document provides a summary of available evidence and neither advocates for nor against the use of a particular therapy. Every effort is made to ensure the information included in this monograph is accurate at the time it is published. Prior to using a new therapy or product, always consult a licensed health care provider. The information in this resource should not be interpreted as medical advice nor should it replace the advice of a qualified health care provider.



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