



Photodynamic Therapy – Frequently Asked Questions

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What is Photodynamic Therapy (PDT)?

PDT is a treatment in which a special light-sensitive drug (amino levulinic acid, or 5-ALA) is taken by mouth in a pill form or applied to cancer on the skin as a cream. The 5-ALA accumulates more in the cancer cells compared to the normal cells, and is converted to a light-sensitive chemical called PpIX (protoporphyrin 9). The cancer is then exposed to intense red light causing a reaction with the PpIX which results in rapid death of the cancer cells. Blood vessels that feed the tumour are also damaged. In some cases, the immune system may be activated into detecting the cancer, and destroying it in other areas of the body. There is almost no damage to the healthy cells surrounding the cancer. Drugs other than 5-ALA can be used, but Medicor is using only 5-ALA at this time because of the low side effects.

Is PDT an approved treatment?

PDT (using 5-ALA) has been extensively researched around the world, and is approved for treatment of various pre-cancers and cancers in the following countries: Australia, Austria, Belgium, Brazil, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, United Kingdom and United States.

In Canada, PDT is presently only approved for treatment of pre-cancerous skin lesions called actinic keratoses. Use of PDT as a treatment for other cancers is considered “off-label”.

Why is PDT not being used more in Canada?

Since PDT can only be used “off label” in Canada for cancer treatment, hospitals will avoid using it unless they are conducting a clinical trial. Most doctors will also reject its use for the same reason. It is also not popular due to the time and cost involved in setting up PDT equipment, acquiring the drugs, and learning the correct procedures.

Who can use PDT to treat their cancer?

Red light PDT can be used for off-label treatment of the following cancers:

- skin cancers that are not easily treated by approved therapies, or are not responding to approved therapies (includes basal cell carcinoma, squamous cell carcinoma and melanoma)
- skin tumours (skin cancer or metastases) that are not easily treated with approved therapies e.g. not responding to chemo, maximum radiation already given, cannot have surgery
- skin tumours with frequent bleeding that needs to be stopped
- local recurrence of skin cancers after surgery

What are the benefits of PDT?

- PDT is much safer than chemotherapy
- PDT causes much less damage to normal cells than radiation therapy
- PDT may destroy cancer by 3 mechanisms – direct damage to cancer cells, damage to blood vessels supplying the tumour, and enhancing the immune system to detect the cancer and kill it outside the area of light exposure
- PDT can be performed easily in the office with local anesthetic.
- The side effects of 5-ALA are mild.
- PDT often will give a better cosmetic outcome than surgery

What are the problems with PDT?

- PDT usually only works on a small area of cancer (there is a possibility it will work on a larger area – see iPDT below)
- PDT is only effective to a limited depth below the surface of the tumour or skin (about 10mm)
- PDT will cause rapid death of cancer cells leaving an open wound which has to be properly managed
- PDT for cancer treatment is not funded by OHIP

Is PDT safe?

Yes, this is a very safe treatment. Some of the known side effects of PDT are:

- Light sensitivity of the skin all over the body for 1-2 days after taking 5-ALA
- Mild nausea and occasional vomiting after taking 5-ALA
- Temporary increase in liver enzymes or bilirubin after taking 5-ALA (no permanent liver injury)
- Mild pain with application of light to the tumour
- Tumours break down within hours of PDT leaving open wounds which must be properly cared for
- Skin in PDT-treated area may become darker or lighter than surrounding skin

Since 5-ALA is a natural chemical that is found within the body, the chance of an allergic reaction to it is very low.

What is immune-enhanced photodynamic therapy (iPDT)?

iPDT is similar to PDT, but an extra step is used in the treatment. A second drug (imiquimod) is given for 2-4 weeks before the 5-ALA to make the immune system more active. When the PDT is performed, the cancer cells that are breaking down are more likely to be detected by the overactive immune system, which uses them to find and kill the same type of cancer cells in other parts of the body. There are published cases of cures of stage 4 melanoma with iPDT at the University of Oklahoma (also called photo-immunotherapy).

Do I Qualify for PDT Treatment?

Patients with cancer (any type) that is visible on the skin may be eligible for PDT. After an initial assessment, it will be determined if PDT is appropriate for you.