

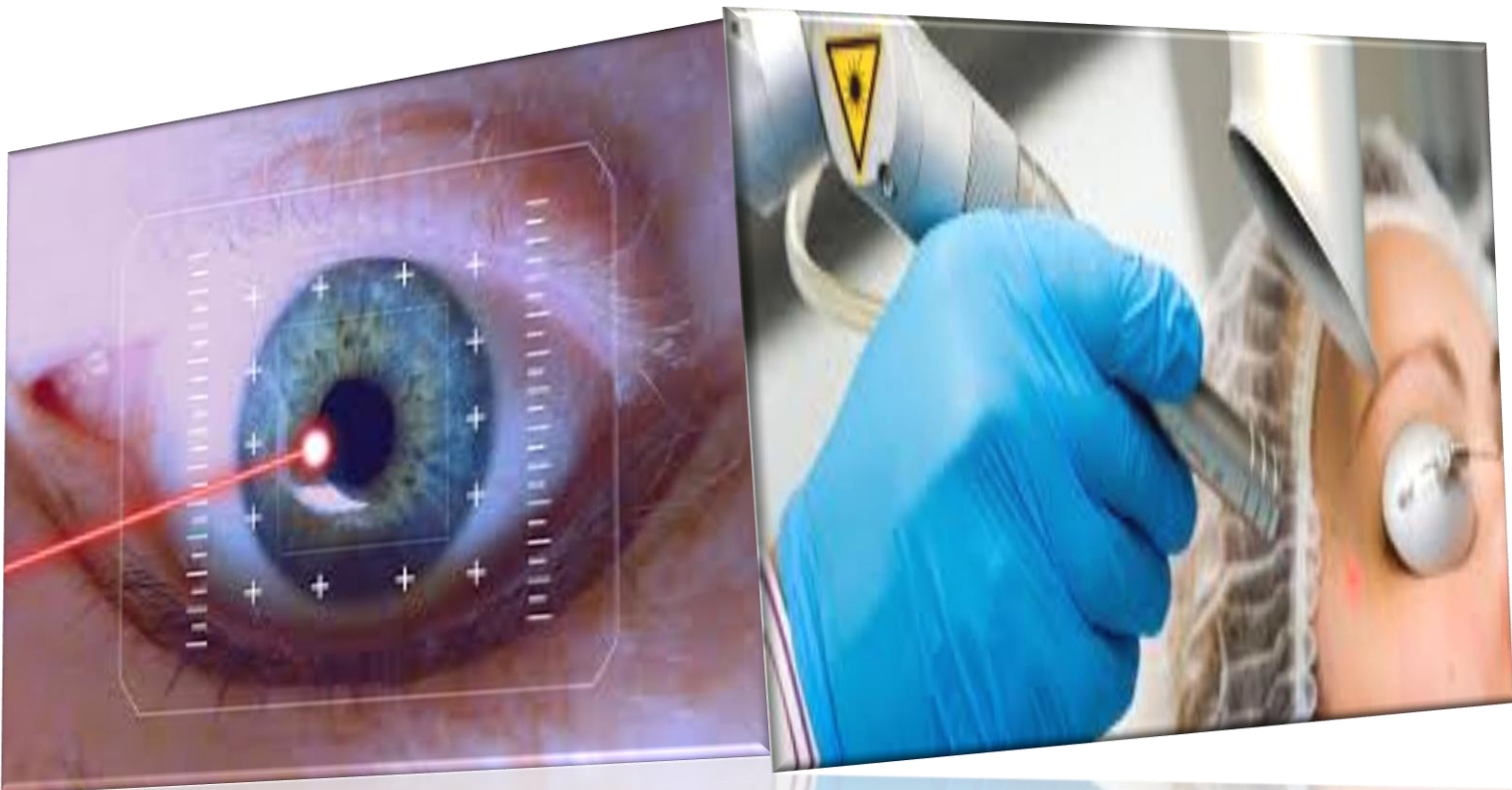
AL MUSTAQBAL UNIVERCITY

Department of Medical Physics



جامعة المستقبل
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Medical Laser Applications



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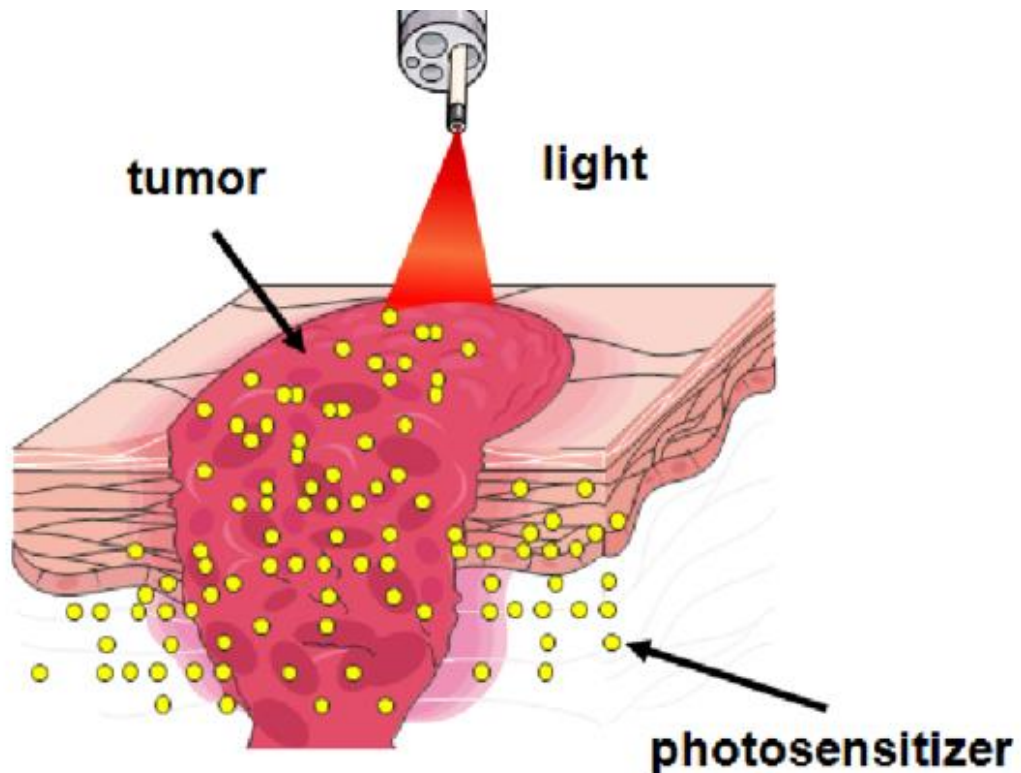
sixth lecture

PHOTODYNAMIC THERAPY

What is photodynamic therapy?

Photodynamic therapy (PDT) uses a drug that is activated by light, called a photosensitizer or photosensitising agent, to kill cancer cells. The light can come from a laser or other source, such as LEDs.

Photodynamic therapy is most often used as a local treatment, which means it treats a specific part of the body.



Cancer and precancers treated with photodynamic therapy

Photodynamic therapy use to treat:

- actinic keratosis
- advanced cutaneous T-cell lymphoma

- Barrett esophagus
- basal cell skin cancer
- esophageal (throat) cancer
- non-small cell lung cancer
- squamous cell skin cancer (Stage 0)

Photodynamic therapy is also used to relieve symptoms of some cancers, including:

- esophageal cancer when it blocks the throat
- non-small cell lung cancer when it blocks the airways

How photodynamic therapy treats cancer

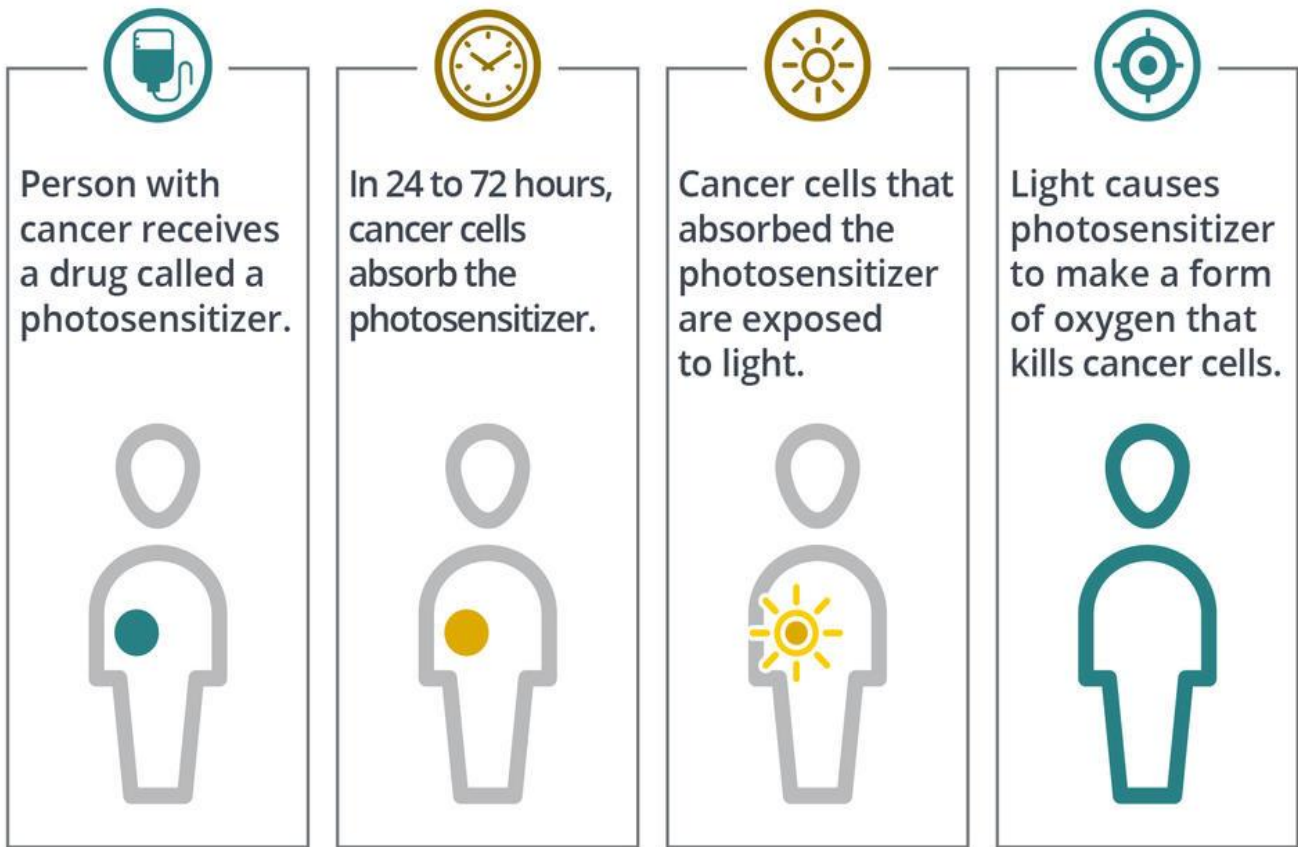
When cells that have absorbed photosensitizers are exposed to a specific wavelength of light, the photosensitizer produces a form of oxygen, called an oxygen radical, that kills them.

Photodynamic therapy may also damage blood vessels in the tumor, which prevents it from receiving the blood it needs to keep growing. And, it may trigger the immune system to attack tumor cells, even in other areas of the body.

How photodynamic therapy is given

Photodynamic therapy is a two-step process. First, you will first receive a photosensitizer. The drug may be taken by mouth, spread on the skin, or given through an IV, depending on where the tumor is in the body. After 24 to 72 hours, most of the drug will have left normal cells but remain in cancer or precancer cells. Then your tumor will be exposed to the light source.

PHOTODYNAMIC THERAPY



[cancer.gov/about-cancer/treatment/types/photodynamic-therapy](https://www.cancer.gov/about-cancer/treatment/types/photodynamic-therapy)

How the light is applied depends on where the tumor is. For skin tumors, the light is aimed right at the cancer. For tumors in the throat, airways, and lungs, the doctor will insert an endoscope down the throat. An endoscope is a thin, lighted tube that can help the doctor see inside the body. Once the endoscope is in place, the doctor threads a fiber optic cable that transmits light through it to reach the treatment areas.

One type of photodynamic therapy called extracorporeal photopheresis (ECP) is used to treat abnormal white blood cells that can cause skin symptoms in people with cutaneous T-cell lymphoma. In ECP, a machine collects blood cells, treats them with a photosensitizer, exposes them to light, and then returns them to the body through a needle in a vein. You may have photodynamic therapy by itself, or you may have it along with other cancer treatments.

Benefits of photodynamic therapy

Photodynamic therapy limits damage to healthy cells because the photosensitizers tend to build up in abnormal cells and the light is focused directly on them.

Photodynamic therapy does not cause scarring, which makes it good for people with skin cancers and precancers.