# Prostate Cancer: Immunotherapy

## What is immunotherapy?

Immunotherapy helps your body's immune system to better fight cancer. It is also called biologic therapy. This treatment uses medicines that work with your immune system to attack and kill cancer cells.

## When might immunotherapy be used for prostate cancer?

Immunotherapy may be used for people with certain types of advanced prostate cancer.

There are 2 types of immunotherapy used to treat prostate cancer:

- Vaccine therapy
- Immune checkpoint inhibitors

Before treatment starts, you'll meet with a medical oncologist. This is a healthcare provider with special training to treat cancer with medicines. This provider will discuss your treatment choices with you and explain what you might expect.

## Vaccine therapy

A vaccine is a type of medicine that can help boost the immune system. Vaccines are usually given to help prevent infections. But there is a cancer vaccine (called sipuleucel-T) that can boost the immune system to help it attack prostate cancer.

# When is vaccine therapy used to treat prostate cancer?

Sipuleucel-T is used to treat advanced prostate cancer. It is used when the cancer is no longer responding to hormone therapy but isn't causing many symptoms. This vaccine does not cure prostate cancer. It won't lower PSA levels. But it can help someone with prostate cancer live longer.

# How is vaccine therapy given for prostate cancer?

This vaccine has to be made especially for each person receiving it. Immune cells (white blood cells) are taken from the person's blood and sent to a lab. These immune cells are then exposed to a protein found on prostate cancer cells (called prostatic acid phosphatase or PAP). At the same time, they are exposed to a chemical to boost the immune response to PAP. This helps the immune cells recognize and attack prostate cancer cells.

They are then put back into the person's body as an IV (intravenous) infusion. This means the cells are put right into the blood through a vein. Once back in the body, these cells help other immune cells attack the prostate cancer. This treatment is repeated every 2 weeks for a total of 3 doses.

## Immune checkpoint inhibitors

The body uses certain checkpoint proteins on cells to stop the immune system from attacking normal, healthy cells. Cancer cells sometimes use these checkpoints to keep from being attacked by the immune system. Immune checkpoint inhibitors are medicines (monoclonal antibodies) that block specific checkpoints. This helps the immune system recognize and attack the cancer cells.

# When are immune checkpoint inhibitors used to treat prostate cancer?

Immune checkpoint inhibitors can be used in advanced prostate cancer cases, where the cancer:

- Begins growing again after chemotherapy
- Can’t be treated with surgery
- Comes back (recurs) after treatment
- Spreads to other parts of the body (metastasizes)

## How are immune checkpoint inhibitors used to treat prostate cancer?

There are 2 immune checkpoint inhibitor medicines used for prostate cancer:

- **Pembrolizumab.** This medicine may be used for people with prostate cancer cells that have any of these gene changes (mutations):
    - Changes in the mismatch repair genes (MMR)
    - Signs of microsatellite instability (MSI) in the tumor
    - A high tumor mutational burden (TMB)
- **Dostarlimab.** This medicine may be an option for people with advanced prostate cancer that has DNA mismatch repair deficiency (dMMR).

Both of these medicines work by blocking a checkpoint protein called PD-1. PD-1 is found on immune cells called T cells. PD-1 normally helps stop the T cells from attacking healthy, noncancer cells in the body. Blocking this protein helps the immune system kill cancer cells.

## How are immune checkpoint inhibitors given for prostate cancer?

These medicines are given by an IV (intravenous) infusion into your vein. This is done once every 2 or 3 weeks.

### What are possible side effects of immunotherapy?

Side effects will depend on the type of immunotherapy treatment you have and the medicine that's used.

## Vaccine therapy side effects

The vaccine is made from your cells but can still cause side effects. They often happen around the time of the infusion and go away in a few days. Side effects can include:

- Feeling tired
- Fever
- Chills
- Headache
- Back or joint pain
- Nausea
- Problems breathing (rare)
- High blood pressure, (rare)

# Immune checkpoint inhibitor side effects

Common side effects of immune checkpoint inhibitors can include:

- Cough
- Fatigue
- Nausea
- Constipation
- Diarrhea
- Shortness of breath
- Skin rash
- Itching
- Not feeling hungry
- Joint pain

In some cases, using these medicines may allow the immune system to attack other parts of the body. This is not common. But it can cause severe side effects, such as damage to the following:

- Liver
- Lungs
- Intestines
- Kidneys
- Glands that make hormones
- Other organs

## Working with your healthcare provider

Talk with your healthcare providers about what side effects to look for and when to call them. Make sure you know what number to call with questions or problems. Is there a different number for evenings, weekends, or holidays?

It may be helpful to keep a diary of your side effects. Write down physical, thinking, and emotional changes. A written list will make it easier for you to remember your questions when you go to your appointments. It will also make it easier for you to work with your healthcare team to make a plan to manage your side effects.