



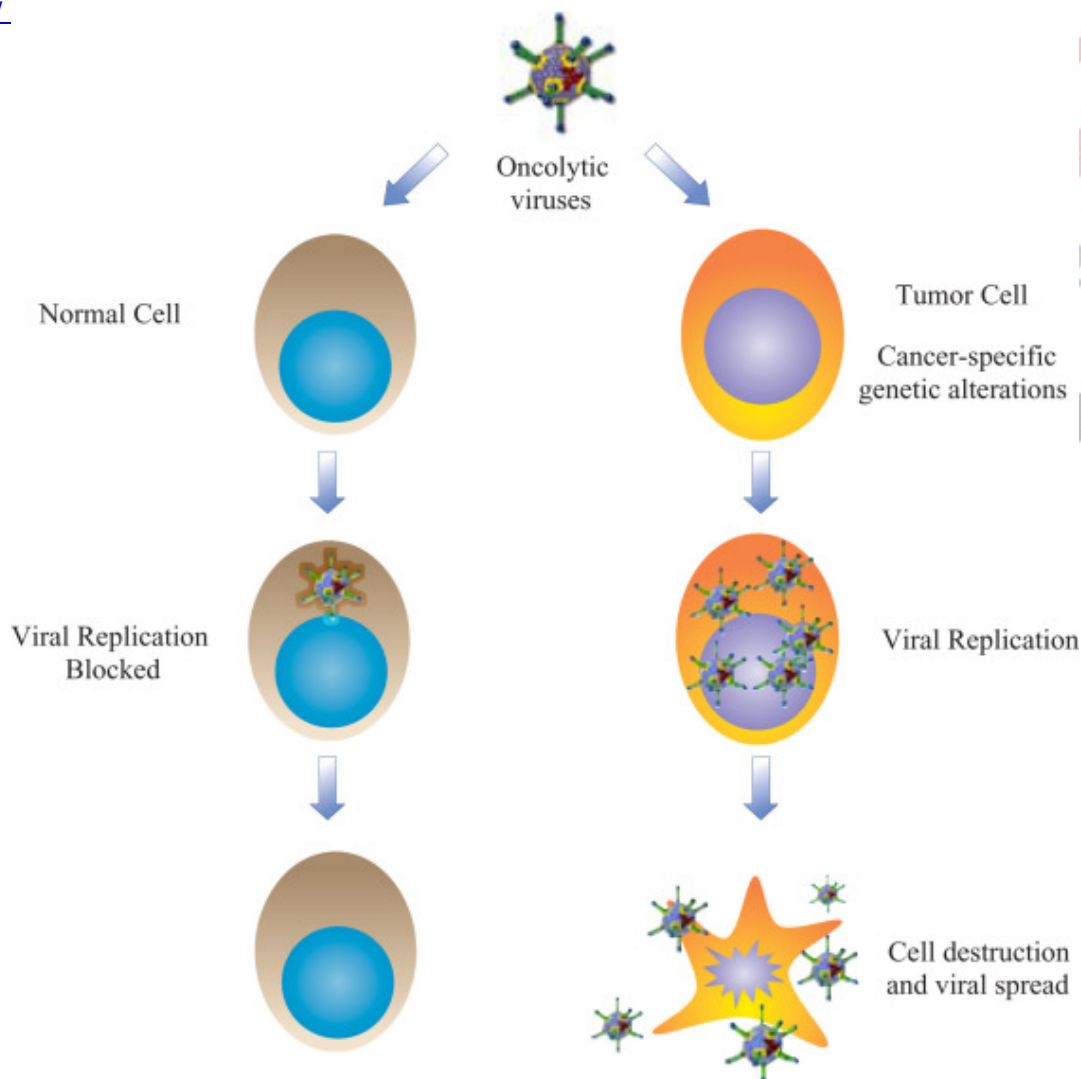
# Oncolytic Virotherapy for Treating Cancer

## Why in News?

Researchers in the US have developed a **novel strategy in Oncolytic Virotherapy (OV)** to improve a **cancer therapy** that can kill tumour cells while leaving nearby healthy tissues intact.

- Earlier a **Monoclonal Antibody** trial was held in the USA, where **12 patients were completely cured** of **rectal cancer** without requiring any surgery or chemotherapy.

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## What is Oncolytic Virotherapy?

- Oncolytic viruses can **kill cancer cells while leaving nearby healthy cells and tissues**

intact.

- In oncolytic virotherapy, the **treatment also exerts its influence by activating an antitumor immune response made of immune cells** such as Natural Killer (NK) cells.
- However, sometimes those natural killers limit the oncolytic viruses, and so despite the exciting development in the OV field in recent years, **there is room for improvement to tackle some limitations**, including the relatively weak therapeutic activity and lack of means for effective systemic delivery.

## What is the Novel Approach?

- A **region of the gene is deleted which shows to activate the signaling pathway** that enables the virus to replicate in normal cells.
- It consists of **a new oncolytic virus called FusOn-H2**, based on the Herpes simplex 2 virus, (HSV-2), commonly known as genital herpes.
- Arming FusOn-H2 with a chimeric NK engager that can engage the infiltrated natural killer cells with tumour cells **can significantly enhance the effectiveness of this virotherapy**.

## What is Cancer?

### ▪ About:

- It is a **large group of diseases that can start in almost any organ or tissue of the body when abnormal cells grow uncontrollably**, go beyond their usual boundaries to invade adjoining parts of the body and/or spread to other organs. The latter process is called metastasizing and is a major cause of death from cancer.
- A **neoplasm and malignant tumor are other common names for cancer**.
- Lung, prostate, colorectal, stomach and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, cervical and thyroid cancer are the most common among women.

### ▪ Cancer Burden:

- Cancer remains as one of the leading causes of adult illness and death due to chronic and **Non-Communicable Diseases (NCD)** world-over including in India.
- According to the **World Health Organisation (WHO)**, cancer is the second leading cause of death globally and in 2018, there were approximately 18 million cases globally, of which 1.5 million were in India alone.

### ▪ Prevention:

- **Between 30% and 50% of cancer deaths could be prevented by modifying or avoiding the key risk factors**.
- Key risk factors include tobacco use, alcohol use, diet, exposure to ultraviolet radiation, pollution, chronic infections, etc.

### ▪ Treatment:

- Options include surgery, cancer medicines and/or radiotherapy, administered alone or in combination.
- Palliative care, which focuses on improving the quality of life of patients and their families, is an essential component of cancer care.

## What are the Related Initiatives?

- **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke**
- **National Cancer Grid**
- **National Pharmaceutical Pricing Authority**
- **International Agency for Research on Cancer**
- **National Cancer Awareness Day**

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