1. What to know about the Listeria outbreaks in the US and Canada

Why in News?

Two separate outbreaks of listeria, a bacteria which can contaminate food, have been reported in the United States and Canada in recent weeks. The US government's Centers for Disease Control and Prevention (CDC) reported an outbreak across 12 states, attributing it to the consumption of undercooked meats sliced at deli counters (counters in a supermarket which serve different types of cheese, cold cooked meat, prepared salads, etc). Two deaths have been reported, while 28 people have been hospitalised.

The Canadian government's public health notice recently said 12 cases had been reported and two of them resulted in deaths. Here is what to know.

What is listeria and listeriosis?

Listeria or Listeria monocytogenes is a type of bacteria found in soil, vegetation, water, sewage and even the faeces of animals and humans. Listeria-contaminated food can lead to an infection called listeriosis.

What are the symptoms of listeriosis?

Most people who ingest listeria-infected food do not fall sick or develop symptoms. The bacteria can be present in the infected person's system for up to two months until the symptoms present themselves, making it difficult to establish the connection between what was consumed and the infection.

Symptoms include vomiting, nausea, cramps, severe headache, constipation and fever.

Who is vulnerable to listeriosis?

People with compromised immune systems, pregnant persons and their offspring and the elderly (aged 65 and above) are vulnerable. The US outbreak has a median age of 75. Listeria can result in hospitalisation and even death for the immunocompromised and the elderly.

According to the CDC, pregnant women are 10 times more likely to develop a listeria infection and risk pregnancy loss, premature birth or even life-threatening infection in the newborn.

Some foods are more likely to have listeria than others, including milk, raw sprouts, deli meats and hot dogs, soft cheeses and smoked seafood.

What is the treatment for listeriosis?
Treatment depends on the extent of the infection. In many cases, intestinal listeriosis manifests within a day or two of consuming the contaminated food item and may lead to diarrhoea and vomiting. The treatment is similar to one for a routine stomach infection and could require antibiotics.

If the infection spreads beyond the intestines, it leads to invasive listeriosis. Severe symptoms present themselves two weeks after the food has been consumed.

Has any advisory been issued?
The CDC has advised the public, especially high-risk groups, to avoid unheated deli meats, cheeses and salads and opt for packaged items instead. Deli equipment, surfaces and food can be easily contaminated, while refrigeration of deli items does not kill the bacteria. All deli meats are recommended to be heated to an internal temperature of 165 degrees F before consumption to kill Listeria, if present.

Refrigerators, containers and surfaces that have come into contact with deli meats are advised to be thoroughly sanitised. Finally, all patients displaying symptoms, especially those in the high-risk groups, are advised to seek medical attention immediately.

Relevance: GS Prelims; Science & Technology
Source: Indian Express

2. Government slashes prices for targeted cancer drugs

Introduction
In her Budget 2024-25 speech, Finance Minister Nirmala Sitharaman announced customs duty exemptions on three targeted cancer drugs — trastuzumab deruxtecan, osimertinib, and durvalumab. Before the Budget announcement, the customs duty on these drugs stood at around 10%.

The decision is likely to make these drugs more accessible to Indian patients, and reduce the overall cost of cancer therapies.

First, what are targeted cancer drugs?
Targeted cancer drugs are designed to attack only the cancer cells, leaving the normal cells unaffected. They target specific genetic changes in cancer cells that help them grow, divide, and spread.

These drugs have better outcomes and fewer side effects compared to traditional chemotherapy drugs that indiscriminately target all cells.

Newer targeted cancer therapies such as immunotherapy do not target the cancer itself by using any drug. Instead, they train the patient's immune system to find and attack the cancer cells.

How do these three drugs work?

📌 **Trastuzumab deruxtecan** is an antibody-drug conjugate — a substance made up of a monoclonal antibody (a laboratory-made protein that acts like human antibodies) chemically linked to a drug. It is used to treat any cancer with HER-2 receptor (a protein that appears on the surface of some breast cancer cells) that has metastasised or cannot be operated on.

Developed by Daiichi Sankyo and marketed by Astrazeneca as Enhertu, trastuzumab deruxtecan is a second-line treatment, which is used when traditional therapies have failed. In 2019, the drug was approved for the treatment of breast cancers, and, in 2021, for targeting certain types of gastrointestinal cancers.

Earlier this year, it became the first drug in its class to receive "tissue-agnostic approval" from the US Food and Drug Administration (FDA) — meaning it can be used to treat any cancer with HER-2 receptor regardless of where it originates.

Cost: The drug costs around Rs 1.6 lakh per vial.

📌 **Osimertinib** is the most commonly used of the three cancer drugs in India. Marketed as Tagrisso by AstraZeneca, the drug is used to treat lung cancers that have epidermal growth factor receptors (EGFR) — they are thought to be involved in the development of cancer. Osimertinib blocks these receptors on cancer cells, and stops the cancer from growing.

The drug can be prescribed after the tumour has been removed surgically, or even as a first-line treatment when the cancer has metastasised. The drug can be consumed till it fails and the cancer starts to progress again, or till there is a case of severe toxicity.

According to expert "Osimertinib has survival benefits over other available treatments as it can extend the life of cancer patients by four to five years".

Cost: The drug, however, is quite expensive — it costs 1.5 lakh per strip of ten pills, and has to be taken every day.

📌 **Durvalumab** — an immunotherapy treatment — is used for the treatment of certain lung cancers, biliary tract cancers, bladder cancer, and liver cancer. It attaches itself to PD-L1 proteins — they are present on the surface of cancer cells, and help them escape immune detection — and allows the body's immune system to recognise cancer cells and kill them. Studies have shown that patients on the drug remained in remission and live longer.

Cost: Sold as Imfinzi, durvalumab costs around Rs 1.5 lakh for every 10ml vial.

What will be the impact of the customs duty exemptions?

The customs duty exemptions on these drugs is widely expected to help reduce the financial burden on cancer patients and their families.

What is the cancer profile in India?
The number of cancer cases is rising in India. An estimated 14.6 lakh new cancer cases were detected in 2022, up from 14.2 lakh in 2021, and 13.9 lakh in 2020, according to the National Cancer Registry data. The number of deaths due to cancer increased to an estimated 8.08 lakh in 2022, up from 7.9 lakh in 2021, and 7.7 lakh in 2020.

The incidence of cancer is higher among women — 103.6 per 100,000 population in 2020 — compared to 94.1 among men. Among men, the most common cancers were of the lung, mouth, prostate, tongue, and stomach; for women, they were breast, cervix, ovary, uterus, and lung.

The therapies that will become cheaper are useful for the treatment of lung and breast cancers, which are among the most common cancers in men and women, respectively.

One in nine Indians will develop cancer during their lifetime, according to an Indian Council of Medical Research (ICMR) study, which used data from population-based cancer registries. One in 68 men will develop lung cancer, and one in 29 women will develop breast cancer, the study said.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

3. 'Royalty is not a tax': How Supreme Court recognised states' powers to tax mining activities

Why In News?
Royalty is not a tax, the Supreme Court has ruled. States have the power to tax mining activities. How did this long-pending matter reach a nine-judge Constitution Bench; what issues did the judges consider?

India's states have the power to tax mining activities, and collecting "royalties" from mining leaseholders is entirely separate from taxaing, and does not interfere with, the power to impose taxes, a nine-judge Constitution Bench ruled.

Following the judgment, states can generate additional revenues in the form of taxes on mining activities and on the land used to conduct these activities.

Mineral Area Development Authority v M/s Steel Authority of India
The case, Mineral Area Development Authority v M/s Steel Authority of India, which had been pending for more than a quarter century, was decided by an 8-1 split.

How did this matter reach the nine-judge Bench?

Royalties refer to the fees paid to the owner of a product in exchange for the right to use that product. For example, if a movie studio wants to use an existing piece of music by a specific artist in their new film, they will have to pay a royalty fee that goes to the artist.

Section 9 of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDRA) requires those who obtain leases to conduct mining activities to "pay royalty in respect of any mineral removed" to the individual or corporation who leased the land to them.

This raises a question: If a state government is the entity leasing the land to a leaseholder, does this make royalties under the MMDRA a form of tax?

The Supreme Court answered this question for the first time in India Cement Ltd v State of Tamil Nadu (1989). A seven-judge Bench heard a challenge by the company to a Tamil Nadu law imposing a cess — a tax levied in addition to the normally taxable amount — on land revenues, including royalties.

The court held that states only have the power to collect royalties, not to impose taxes on mining activities. It said that the Centre has overriding authority over "regulation of mines and mineral development" under Entry 54 of the Union List to the extent provided by law (MMDRA in this case), and that states do not have the power to impose further taxes on the subject.

So why did the majority decision hold that royalty is not a tax?
The majority held that a royalty is not a tax because there is a "conceptual difference" between royalties and taxes. Royalties are based on specific contracts or agreements between the mining leaseholder and the lessor (the person who leases the property) who can even be a private party.

Also, taxes are meant for public purposes such as welfare schemes and creating public infrastructure, whereas the payment of royalties is to a lessor in exchange "for parting with their exclusive privileges in the minerals".

And why did the court find that states have the power to tax 'mineral development'?
The second aspect that the court considered was whether states have the power to tax mineral development activities, or whether such taxes are the sole province of the Centre under the MMDRA. This friction can be traced to the Seventh Schedule of the Constitution.

Under the State List, states are given the exclusive power to make laws relating to "Taxes on mineral rights subject to any limitations imposed by Parliament by law relating to mineral development" (Entry 50). However, Entry 54 of the Union List gives the Centre the power over "Regulation of mines and mineral development to the extent to which… is declared by Parliament by law to be expedient in the public interest".

According to the India Cement position, the royalty collected by state governments under the MMDRA would be in the form of a tax which "covers the field", barring any further taxes from being imposed. However, the court in Mineral Area Development Authority held that royalty is not a tax. As a result, "royalty would not be comprehended within the meaning of the expression 'taxes on mineral rights'" (under Entry 50 of the State List). Effectively, the court held that the MMDRA only gives states another revenue stream through royalties, and does not interfere with states' powers to impose taxes under Entry 50.

The court also held that Parliament's powers under Entry 54 of the Union List do not extend to imposing taxes, as that power exclusively rests with state legislatures. However, Entry 50 allows Parliament to place "any limitations" on states' power to impose taxes, which the court held "may include even a 'prohibition'" against imposing taxes.

The court did not limit states' power to tax mineral development activities to Entry 50, though. It held that the state also had the power to tax the land where mines and quarries are located as it includes "(i) all types of lands; and (ii) covers everything under or over land". These taxes, the court held, "will not be affected by the MMDR Act".

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express