



Alzheimer's Disease

Why in News?

After the **US Food and Drug Administration (FDA)** granted “accelerated” approval for a drug to treat Alzheimer's disease, developed by Biogen and Eisai and called [lecanemab](#), another pharmaceutical company, Eli Lilly, has released its **own candidate Alzheimer's treatment, donanemab**.

- Donanemab is currently not approved for use in either the US or Europe.

What is Donanemab and Lecanemab?

▪ About:

- Donanemab belongs to a class of [antibody-based therapies](#) that target **amyloid-beta (A β) proteins**. These proteins can form amyloid plaques in the brain, leading to cognitive decline.
 - Donanemab aims to **remove these plaques** and slow the progression of the disease.
 - Lecanemab belongs to a class of drugs called **monoclonal antibodies**. These antibody-mediated drugs also **target beta amyloid and disrupt cell function**.

▪ Safety Concerns and Side Effects:

- Both donanemab and lecanemab carry a high risk of side effects, including **amyloid-related imaging abnormalities (ARIA)**, such as **brain swelling or bleeding**.
- Tragically, three patients in the donanemab trials **lost their lives due to these side effects**.

What is Alzheimer's Disease?

▪ About:

- Alzheimer's disease is a **progressive neurodegenerative disorder** that affects the **brain, leading to memory loss, cognitive decline**, behavioral changes, problems with words in speaking or writing, poor judgment, changes in mood and personality, confusion with time or place, etc.
- Alzheimer's disease is the most **common cause of dementia**, accounting for **60-80% of dementia cases**.

▪ Causes and Risk Factors: Currently the causes of Alzheimer is not fully known, still factors that may contribute to Alzheimer's include:

- **Age:** Advancing age is the primary risk factor, with the **majority of cases occurring in individuals over 65**.
- **Genetics:** Certain gene mutations, such as those in the **APP, PSEN1, and PSEN2 genes**, can increase the risk of developing Alzheimer's.
- **Amyloid Protein:** Alzheimer's disease is thought to be caused by the abnormal build-up of amyloid-beta and tau proteins in and around brain cells.
 - Amyloid-beta protein clumps together to form plaques between nerve cells in the brain, while tau protein forms twisted tangles inside neurons.
- **Lifestyle Factors:** Chronic conditions like [cardiovascular disease](#), [diabetes](#), **obesity**, **smoking**, and a sedentary lifestyle may contribute to the risk.

▪ Diagnosis:

- Cognitive and neuropsychological tests to assess memory, thinking, and problem-solving abilities.
- Imaging techniques (MRI, PET scans) to identify brain changes.
- [Biomarker tests \(cerebrospinal fluid analysis, amyloid PET\)](#) to detect amyloid plaques.
- **Treatment and Management:**
 - There's currently **no cure for Alzheimer's disease**. But there is medicine and supportive therapies available that can temporarily reduce the symptoms.
- **Prevalence:**
 - Alzheimer's disease affects a significant number of people worldwide, with **at least 55 million individuals suffering from the condition**.
 - In India, As India's population ages, the number of people with **dementia and Alzheimer's** is set to rise to **7.6 million by 2030**.

Dementia

- **Dementia** is an umbrella term that refers to a **group of symptoms characterized by a decline in cognitive abilities** severe enough to interfere with daily functioning.
- Dementia is currently **the seventh leading cause of death** and one of the major causes of disability and dependency among older people globally.

[Source: IE](#)

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