

## Acute Promyelocytic Leukemia (APL)

**Prelims** – Current events of national and international importance |General Science.

**Mains (GS III)** – *Science and Technology* – *Developments and their applications and effects in everyday life.* 

## Why in News?

The new test, RAPID-CRISPR developed using CRISPR technology can quickly and accurately diagnose acute promyelocytic leukemia (APL).

- It is a rare but serious **<u>blood cancer</u>** characterized by the abnormal accumulation of immature white blood cells called promyelocytes, often leading to severe bleeding and clotting problems.
- It is classified as a subtype of Acute Myeloid Leukemia (AML), a cancer of the blood-forming tissue (bone marrow).
- It accounts for about **10-15%** of newly diagnosed AML cases.
- Common symptoms
  - $\circ\,$  Sudden bleeding from the gums and nose
  - Fatigue
  - Unexplained fever
  - $\circ$  Bone pain
- While these symptoms may mimic those of other conditions, definitive diagnosis relies on histopathological assessments, including complete blood count (CBC) and cell morphology.
- APL results from a genetic mutation that causes an abnormal fusion of two genes, PML and RARA, which disrupts the normal production of blood cells.
- This genetic alteration leads to a significant <u>decrease in white blood cells and</u> <u>platelets</u>, hindering the body's ability to combat infections and manage bleeding.
- Average Diagnosis age in India 34 years.
- Affecting Ratio Male-to-female ratio of 1.5:1.
- Severity The condition poses a particular risk due to the potential for sudden internal bleeding in critical organs such as the lungs and brain, which <u>can be life</u><u>threatening</u> within days if not addressed promptly.
- **Prognosis** With appropriate treatment, APL is considered one of the most curable subtypes of AML, with high remission and cure rates.
- **Treatment** Often treated with a combination of chemotherapy and nonchemotherapy drugs like <u>all-trans-retinoic acid (ATRA) and arsenic trioxide (ATO).</u>

## Reference

The Hindu | Acute Promyelocytic Leukemia (APL)

