



Early Health Warning System

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Why in News

The **Ministry of Earth Sciences** (MoES) is developing an unique **Early Health Warning System** which is expected to forecast the possibility of disease outbreaks in the country.

The **India Meteorological Department** (IMD) is also involved in the development studies and the process.

Key Points

About:

- The model being developed is based on the **relationship between weather changes and incidence**.
- There are certain diseases where **weather patterns play a crucial role**.
Such as **malaria**, for which **particular temperatures and rainfall patterns can approximately predict** whether an area is likely to have an outbreak with fairly reasonable accuracy

Early Health Warning System

- According to the **World Health Organisation** (WHO), **early warning systems** are timely surveillance systems that collect information on epidemic-prone diseases in order to trigger prompt public health interventions.
- However, these systems **rarely apply statistical methods to detect changes** in trends, or sentinel events that would require intervention.
- In most cases they **rely on an in-depth review done by epidemiologists** of the data coming in, which is rarely done in a systematic way.
Epidemiology is the study of the distribution and determinants of health-related states and events in specified populations.

- **Significance:**
 - It is expected to **predict outbreaks of vector-borne diseases**, particularly **malaria** and **diarrhoea**. Subsequently, it is likely to **monitor non-communicable diseases** (NCDs) as well.
 - **Vectors** are organisms that **transmit pathogens and parasites** from one infected person (or animal) to another, causing serious diseases in human populations. For example, **Chikungunya**, Malaria, **Dengue**, **Yellow fever**, **Lymphatic filariasis**, Chagas disease, etc.
 - Vector-borne **diseases have direct links to weather patterns**.
 - **NCDs are affected by weather conditions**. For example, **cardiovascular problems and respiratory diseases** are associated with **rising heat waves and environmental pollution**.
 - Such a system, when deployed, would **give local authorities ample time to prepare**.
- **Analysis and Studies:**
 - To verify the robustness of the advance warning system, a **detailed analysis was carried out of malaria and diarrhoea** cases in two districts of Maharashtra, **Pune and Nagpur**.

While both districts have incidences of both diseases, Nagpur reports a higher number of malaria cases while diarrhoea cases are higher in Pune.
 - **Temporal and spatial variability in weather parameters**, for example, a **short-term increase in temperature and rainfall** as an effect of **El-Niño** can lead to **malaria epidemics**.
 - A study by the **Intergovernmental Panel on Climate Change** (IPCC) noted that climate change may increase the risk of **diarrhoeal diseases**, which is of major concern in developing countries, with increasing **incidents of floods as well as drought**.
 - **On Covid-19:**

Although there have been studies and analysis on weather patterns affecting the spread of **viral diseases**, researchers are **unable to establish a certain link between Covid-19 pandemic and the weather** as it is a far more **complex** disease.

Source: IE