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53/1, Upper Ground Floor, Bada Bazar Road, Old Rajinder Nagar, New Delhi -110060
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SC LIMITS ED'S POWER TO ARREST PMLA ACCUSED

SC limits ED's power to arrest PMLA accused

Bench upholds right to personal liberty, says those summoned by special courts need not seek bail under PMLA's draconian norms; ED can arrest such accused only with the consent of courts

The Hindu Bureau
NEW DELHI

The Supreme Court on Thursday gave a fillip to the right to personal liberty by holding that a person summoned by a designated special court under the Prevention of Money Laundering Act (PMLA), is presumed to be not in custody and need not apply for bail under the draconian conditions posed by the anti-money laundering law.

"If the accused appears before the special court pursuant to a summons, it cannot be treated that he is in custody. Therefore, it is not necessary for the accused to apply for bail," a Bench of Justices A.S. Oka and Ujjal Bhuyan held in a judgment.

The judgment limits the power of arrest by the Directorate of Enforcement (ED) after a special court takes cognisance of a case.

The Bench said the ED would have to separately apply for the custody of a person once he or she appears in court. The Central agency would have to show specific grounds that necessitated custodial interrogation, said Justice Oka, who wrote the judgment.

However, the special court can direct the accused to furnish bonds in terms of Section 88 of the Code of Criminal Procedure. "A bond... is only an undertaking. An order accepting bond under Section 88 does not amount to grant of bail and hence the twin conditions of Section 45 of the PMLA are not applicable to it," Justice Oka clarified.

The judgment was based on an appeal filed by Tarsem Lal against the ED challenging a Punjab and Haryana High Court denying him anticipatory bail.

The twin conditions of bail under Section 45 of the PMLA pose stringent thresholds for an accused. For one, the person has to prove in court that he or she is *prima facie* innocent of the offence. Secondly, the accused should be able to convince the judge he would not commit any offence while on bail. The burden of proof is entirely on the incarcerated accused, who would be often handicapped to fight the might of the state.

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Easing conditions

The major takeaways from the Supreme Court verdict on the Prevention of Money Laundering Act are:

- An accused is presumed to be not in custody if he appears in court on summons
- The court can direct the accused to furnish bonds in terms of Section 88 of the Code of Criminal Procedure
- The ED has to apply to a special court for custody, giving specific reasons

The twin conditions stated that if an accused in a money laundering case seeks bail, the court must first hear the public prosecutor. The report said bail can only be granted if the court is convinced that the accused is not guilty and is unlikely to commit a similar offence upon release. Section 45 of the PMLA mandates that the public prosecutor should have a chance to contest the accused's bail plea. Additionally, it necessitates the court to ascertain that there are reasonable grounds to believe that the accused is innocent and unlikely to commit any offense while out on bail. These criteria typically pose a significant hurdle for individuals involved in money laundering cases to obtain bail.

What is Prevention of Money Laundering Act (PMLA)?

- PMLA- The Prevention of Money Laundering Act, 2002 (PMLA) is an Act of the Parliament of India enacted to prevent money laundering and provide for the confiscation of property derived from money laundering. It aims to combat money laundering related to illegal activities such as drug trafficking, smuggling, and terrorism financing.

What is Money Laundering?

- PMLA defines money laundering as an act of directly or indirectly attempting to indulge or knowingly assisting or knowingly being a party or actually involved in concealing, possessing, acquiring, using, projecting as untainted property, or claiming as untainted property, in any manner whatsoever, the proceeds of crime.
- It is defined as the process through which an illegal fund, such as black money, is obtained from illegal activities and disguised as legal money, eventually portrayed as white money.

What are the Salient Features of Prevention of Money Laundering Act?

- Section 3 (Defines money laundering)- Section 3 of the PMLA defines money laundering as any attempt, assistance, or involvement in processes connected to the proceeds of crime to project it as untainted property.
- Offences under PMLA- Offences mentioned under Part A, B and C of the Schedule of the Act.

Part A	Includes money laundering offences under the following acts– Indian Penal Code, Prevention of Corruption Act, Narcotics Drugs and Psychotropic Substances Act, Antiquities and Art Treasures Act, Trademark Act, Wildlife Protection Act, Copyright Act and Information Technology Act
Part B	Includes money laundering offences that are mentioned in Part A, but are of a value of Rs 1 crore or more.
Part C	Includes money laundering offences under Trans-border crimes

- Section 4 (Punishment for Money Laundering)- The offence of money-laundering shall be punishable with rigorous imprisonment for a term not be less than three years extending to seven years and shall also be liable to fine.
- Agencies powers under the Act
  - The Enforcement Directorate (ED) in the Department of Revenue, Ministry of Finance, is responsible for investigating the offences of money laundering and attachment of properties.
  - The Financial Intelligence Unit-India (FIU-IND), under the Department of Revenue, is the central national agency responsible for receiving, processing, analyzing, and disseminating information relating to suspect financial transactions.
  - The scheduled offences are separately investigated by the agencies mentioned under respective acts. For exThe local police, CBI, customs departments, SEBI, or any other investigative agency, as the case may be.
- Obligations under the Act
  - Imposes obligations on banking companies, financial institutions, and intermediaries to verify and maintain client identity records.
  - These financial firms are required to report their financial transactions to the Financial Intelligence UnitIndia (FIU-IND).
- Setting up of Authority
  - PMLA envisages the setting up of an Adjudicating Authority to exercise jurisdiction, power and authority conferred by it.
  - It also envisages the setting up of an Appellate Tribunal to hear appeals against the order of the Adjudicating Authority and the authorities like Director FIU-IND.

What have been the observations of the SC?

Strict bail conditions	**Nikesh Tarachand Shah vs Union of India (2018)-** SC held that the bail provision of the PMLA Act was unconstitutional as it was violation of Article 14 and Article 21. **Restoration of the Provision by the Parliament:** Parliament restored the strict bail provisions with certain amendments. **Vijay Madanlal Choudhary vs Union of India (2022)-** The SC upheld that the strict bail provision is reasonable and has direct nexus with the purposes and objects of the PMLA Act. SC upheld the constitutionality of the PMLA.
ED's Overreach	**Pankaj Bansal vs Union of India-** Supreme Court highlighted inconsistencies and lack of transparency in its operations. SC emphasized the need for the ED to act with fairness.
Procedural Violations	**Pavana Dibbur vs The Directorate of Enforcement (2023)-** SC observed procedural violations and misuse of the PMLA. It pointed out the need for strict adherence to legal standards by the ED and other authorities.

MAY 2024 S.C on arrest & Bail

- Special Courts under PMLA- One or more courts of sessions are designated as Special Courts to try offences under PMLA and other related offences.

- The Supreme Court of India ruled on Thursday that the Enforcement Directorate and its officers cannot arrest an accused under Section 19 of the PMLA after the Special Court has taken cognizance of the complaint.
- If the ED wants custody of such an accused, it will have to apply to court for custody. Accused who appeared before the court pursuant to the summons are not required to apply for bail, and thus, the twin conditions of Section 45 of PMLA are not applicable,"
- The court will only grant custody with reasons satisfying that custodial interrogation is needed."

PYQ Relevance:Mains:

Q) Discuss how emerging technologies and globalisation contribute to money laundering. Elaborate measures to tackle the problem of money laundering both at national and international levels. **(UPSC CSE/2021)**

Q) Analyze the complexity and intensity of terrorism, its causes, linkages and obnoxious nexus. Also suggest measures required to be taken to eradicate the menace of terrorism. **(UPSC CSE/2021)**

Q) Money laundering poses a serious security threat to a country's economic sovereignty. What is its significance for India and what steps are required to be taken to control this menace? **(UPSC CSE/2013)**

Q. Consider the following statements regarding Prevention of Money Laundering Act (PMLA):

1. An FIR is required before starting an investigation under the act.
2. Under PMLA, burden of proving innocence is on the accused.

Select the correct answer using the codes given below

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: B

Notes:

- Statement 1 is incorrect. : IN case of PMLA, an ECIR (Enforcement Case Information Report) is registered. It is an equivalent of the FIR, is considered an "internal document" and not given to the accused.
- Statement 2 is correct. In PMLA, this burden has been shifted to the accused persons; they will have to prove their innocence. Under general law every person is innocent until proven guilty.

HEALTH ADVICE TO TAKE WITH NO PINCH OF SALT

Health advice to take with no pinch of salt

Dr. Chandrakant Lahariya

a medical doctor, was formerly with the World Health Organization. He is a consultant physician at the Centre for Health and Wellness, a primary health-care initiative based out of New Delhi

Dr. Balram Bhargava

a medical doctor and cardiologist, is the former Director General of the Indian Council of Medical Research, New Delhi, and, currently, President of the National Academy of Sciences, India

In the last three years, the COVID-19 vaccine has generated a lot of public interest as a possible risk factor for blood clot formation, resulting in sudden cardiac arrest. However, a proven, bigger, and preventable risk factor for heart attack and brain stroke, i.e., hypertension, rarely gets due public attention. Let us dive deep into high blood pressure and its public health relevance.

In 2023, the World Health Organization (WHO) released a report, the first ever on hypertension, titled "Global report on hypertension: the race against a silent killer". Hypertension was considered a silent killer as people often are not aware about high blood pressure till they develop complications. High blood pressure is the singlemost important risk factor for early deaths, leading to an estimated 10.8 million preventable deaths every year, globally. High blood pressure causes more deaths than other leading risk factors, such as tobacco use and high blood sugar. The number of adults with hypertension nearly doubled in the last three decades (since 1990) to reach 1.3 billion. Globally, an estimated 46% of adults with hypertension are unaware that they have the condition, and less than half (42%) with hypertension are diagnosed and treated. Only one in five adults (21%) with hypertension has it under control.

The Indian Council of Medical Research-INdia DIABetes (ICMR-INDIAB) study has estimated that in India, 311 million people (or one in every three adults) have hypertension. In the country, adults with hypertension are threefold of the estimated 101 million people living with diabetes.

Cut the salt

Excess dietary salt intake (five grams or more per day), one of the key risk factors to hypertension, contributed to two million cardiovascular disease deaths in 2019. Research studies have shown that by reducing salt, cardiovascular disease risks can be reduced by 30% and mortality by 20%. Indian adults consume on average eight to 11 grams of salt per day, which is approximately twice that of the WHO recommended daily salt intake. High salt intake is responsible for an estimated 1,75,000 deaths in India.

Hypertension is not an issue for any one socio-economic group. A Delhi-based non-governmental organisation, Foundation for People-centric Health Systems, conducted 50 health camps in five localities of Delhi and Gurugram, from October 2023 to March 2024, and screened and treated around 12,000 people. Most of the people were women, migrant workers, and rickshaw and taxi drivers, nearly all from low income groups. A large number of them were found to have diabetes and hypertension, a majority of cases detected for the first time in these camps, indicating the gaps in terms of awareness, detection and treatment.

In India, the government has set a target of putting 75 million people with hypertension and/or diabetes on standard care by 2025. The India Hypertension Control Initiative (IHCI), a collaborative project of the ICMR, Ministry of Health and Family Welfare/Directorate General of Health Services, WHO India and other partners, was initiated in November 2017 in 25 districts in five States of India.

Simple and scalable

The IHCI follows five simple and scalable strategies, implemented through primary health care. The IHCI rolled out simplified drug and dose-specific treatment protocols for primary-care settings. It also focused on strengthening the drug supply chain by including protocol-based drugs in the State essential drug list; the forecasting of drugs based on morbidity, and ensuring adequate budget allocation in annual plans to purchase hypertension medication. The IHCI has also followed team-based and decentralised care. In addition, components to make health services patient-centric by measures such as the dispensing of 30 days of medicine in every patient visit are part of the initiative. It has also used information systems for programme monitoring.

Nearly six years of IHCI implementation has resulted in two major programmatic learnings. First, the development of simple treatment protocols with fewer drugs, ensuring reliable drug supply, linking patients to facilities closer to home for follow-up and engaging teams increases access and utilisation of health services from government facilities, by bringing people to health services. Second, simplified programme monitoring makes programme performance assessment both quantifiable and actionable. The IHCI won the '2022 UN Interagency Task Force, and WHO Special Programme on Primary Health Care Award'. The IHCI was expanded to 140-plus districts of India, in 2023.

Seventy-six million cardiovascular deaths and 450 million disability adjusted life years (DALYs) would be avoided, if countries, with proven interventions, mobilise to achieve the goal of 50% population hypertension control by 2050. An estimated 4.6 million deaths can be prevented in India by 2040 if half the hypertensive population has its blood pressure under control. This will help countries achieving the targets under their National Health Policy along with global targets and commitments such as universal health coverage.

What should be done? First, raise awareness about the risk of and long-term adverse impact of untreated hypertension. High blood pressure can affect the entire vascular system (multiple organs including the heart, kidneys, brain and eyes).

Second, scale up evidence-based public health interventions such as the IHCI. Strategies and lessons from such experiences should be used to design and implement interventions to prevent and control other lifestyle diseases such as diabetes mellitus and chronic kidney diseases.

Third, the interventions in health programmes are often targeted on modifiable risk factors. However, there are non-modifiable risk factors such as family history, an age of over 65 years and pre-existing comorbidities such as diabetes and/or kidney disease, all of which make a person at higher risk of hypertension. India already has a high burden of each of these non-modifiable risk factors: high burden of hypertension (a family risk factor for future generation); high burden of comorbidities and a rapidly rising elderly population. Therefore, hypertension control initiatives in India need to focus on the healthy adults as well, who may have known non-modifiable risk factors.

Fourth, intensify efforts to reduce dietary salt consumption using strategies such as 'SHAKE the salt habit' under the WHO's HEARTS strategy. Under SHAKE, there are five approaches: of Surveillance to measure and monitor salt use; Harness industry to promote and reformulate foods and meals that contain less salt; A adopt to standard labelling and marketing; Knowledge, educate and communicate to empower individuals to eat less salt; Environment – support settings that promote healthy eating.

Fifth, lifestyle diseases demand multi-sectoral actions. In 2017, India developed and approved a multi-sectoral plan for the prevention and the control of non-communicable diseases. These plans must be revisited and more concrete actions done by key sectors. We need to leapfrog to this as soon as possible.

Sixth, having informed citizens is the key to control hypertension at the population level. Raise awareness about salt in food. There is invisible salt in the form of pickles, breads, namkeen and papad. Food packages need to have better labelling of items/packets in terms of low, medium and high salt content. People also need to be sensitised to read food package labels and make informed decisions.

Seventh, stronger enforcement of food regulation in India has the potential to prevent many diseases and reduce the burden on health services. There needs to be higher taxation on high salt (and also high sugar, high fat) food and other packaged products.

Regular BP checks

Take Control. Regular checking of one's blood pressure should become an integral part of lifestyle. Access to BP apparatus needs to be increased in public places such as malls, shops and pharmacies, where people can have their BP measured either free or at nominal and affordable charges. Every office and workplace needs to have a functional BP apparatus and employees should be encouraged to check their BP regularly. Every single visit to health-care providers should be used to measure one's BP. Physicians should advise/sensitise people to measure and monitor their BP.

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Indians need to have greater awareness about the long-term impact of untreated hypertension and the danger of excess dietary salt intake

Q. Why a person suffering from a high blood pressure is advised to take minimum quantity of salt

Idea

- Osmotic pressure is directly proportional to the concentration of the solutes .
- Our body fluid contains a number of Solutes .
- On taking large amount of common salt , Na+ and Cl-ions enter into the body filled thereby raising the concentration of the solutes.
- As a result osmotic pressure increases which may rupture the blood cells

THE USE OF AI IN DRUG DEVELOPMENT

The use of AI in drug development

What are target proteins and how are they identified? How do AI-based tools AlphaFold 3 and RoseTTAFold All-Atom help in predicting the correct target protein and its interactions with drugs? Where does India stand in the field of computational drug development?

EXPLAINER

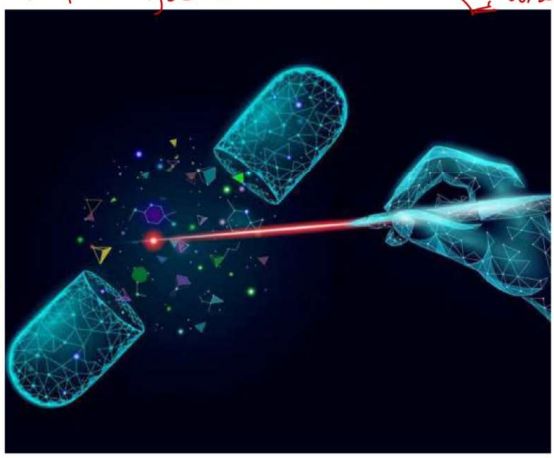
Binay Panda

Drug development is an expensive and time-consuming process. However, the advent of Artificial Intelligence (AI) has opened up a world of possibilities with respect to fast-tracking drug development.

How does the process start?

The process of developing a drug starts with identifying and validating a target. A target is a biological molecule (usually a gene or a protein) to which a drug directly binds in order to work. The overwhelming majority of targets are proteins. Only those proteins with ideal sites where drugs can go and dock to do their business are druggable proteins.

Target proteins are identified in the discovery phase, wherein a target protein sequence is fed into a computer which looks for the best-fitting drug out of millions in the library of small molecules for which the structures are stored in the computer. The process assumes that the structures of the target protein and drug are known. If not, the computer uses models to understand the sites where a drug can bind. This discovery process avoids time-consuming laboratory experiments that require expensive chemicals and reagents and have a high failure rate. Once the suitable protein target and its drug are identified, the research moves to the pre-clinical phase, where the potential drug candidates are tested outside a biological system, using cells and animals for the drug's safety and toxicity. After this, as part of the clinical phase, the drug is tested on a small number of human patients before being used on more patients for efficacy and safety. Finally, the drug undergoes regulatory approval and marketing and post-market survey phases. Due to a high failure rate, the discovery phase limits the number of drugs that pass and carry on to the pre-clinical and clinical phases.



GETTY IMAGES

How can AI help this process?

AI has the potential to revolutionise target discovery and understand drug-target interaction by drastically cutting down time, increasing the accuracy of prediction of interaction between a drug and its target, and saving money. The development of two AI-based prediction tools, AlphaFold and RoseTTAFold, developed by researchers at DeepMind, a Google company, and the University of Washington, U.S., respectively, has provided a major scientific breakthrough in the last four years in the area of computational drug development. Both tools are based on deep neural networks. The tools' neural networks use massive amounts of input data to produce the desired output – the three-dimensional structures of proteins. Published recently, the new avatars of AlphaFold and RoseTTAFold, called AlphaFold 3 (developed jointly by Isomorphic Labs, a DeepMind spinoff) and RoseTTAFold All-Atom, respectively, take the capability of these tools to an entirely new level. The significant difference between the upgraded versions and their previous forms is their capability to predict not just static structures of proteins and protein-protein interactions but also their ability to predict structures and interactions for any combination of protein, DNA, and RNA, including modifications, small molecules and ions. Additionally, the new versions use generative diffusion-based architectures (one kind of AI model) to predict structural complexes. In a test with 400 interactions between targets and their small molecule drugs, AlphaFold 3 accurately predicted their interactions 76% of the time versus 40% by RoseTTAFold All-Atom.

What are the drawbacks?

With all the promise and potential in drug development, AI tools have limitations. For example, the tools can, at best, provide up to 80% accuracy in predicting interactions (the accuracy comes down drastically for protein-RNA interaction predictions). Second, the tools can only aid a single phase of drug development, target discovery and drug-target interaction. It will still have to go through the pre-clinical and clinical development phases, and there is no guarantee that the AI-derived molecules will result in success in those phases. Third, one of the challenges with diffusion-based architecture is model hallucinations, where insufficient training data causes the tool to produce incorrect or non-existent predictions. Finally, unlike the previous versions of AlphaFold, DeepMind has not released the code for AlphaFold 3, restricting its independent verification, broad utilisation and use for protein-small molecule interaction studies.

What about India?

Developing new AI tools for drug development requires large-scale computing infrastructure, especially ones with fast Graphics Processing Units (GPUs) to run multiple tasks with longer sequences. GPU chips are expensive, and with newer and faster ones being produced by hardware makers every year, they have a quick expiration date. India needs such large-scale computing infrastructure. That, along with a lack of skilled AI scientists, unlike in the U.S. and China, is the second reason why researchers in India could not establish a first-mover advantage in developing AI tools for drug development despite the country having a rich history in protein X-ray crystallography, modelling and other fields of structural biology. However, with a growing number of pharmaceutical organisations, India can lead the way in applying AI tools in target discovery, identification, and drug testing.

Binay Panda is Professor at JNU, New Delhi and posts at @ganitlabs.

THE GIST

- The process of developing a drug starts with identifying and validating a target. A target is a biological molecule (usually a gene or a protein) to which a drug directly binds in order to work.
- AI has the potential to revolutionise target discovery and understand drug-target interaction by drastically cutting down time, increasing the accuracy of prediction of interaction between a drug and its target, and saving money.
- The development of two AI-based prediction tools, AlphaFold and RoseTTAFold, developed by researchers at DeepMind, a Google company, and the University of Washington, U.S., respectively, has provided a major scientific breakthrough in the area of computational drug development.

Q. Consider the following statements about AlphaFold:

1. AlphaFold is an AI-based protein structure prediction tool.
2. It is based on a computer system called deep neural network.

Which of the statements given above is/are not correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: D

Notes: Explanation: **About AlphaFold:**

- ❖ AlphaFold is an AI-based protein structure prediction tool. It is based on a computer system called deep neural network.
- ❖ It uses processes based on 'training, learning, retraining and relearning'. By using this method, AlphaFold has now predicted the structures of the entire 214 million unique protein sequences deposited in the Universal Protein Resource (UniProt) database.

KERALA SOUNDS WARNING ON WEST NILE VIRUS; NEIGHBOURING STATES ON GUARD

Kerala sounds warning on West Nile Virus; neighbouring States on guard

C. Maya

Kerala's annual battle with vector-borne diseases has begun early this year, even before the South West monsoon, with West Nile Fever (WNF) being reported from several districts.

The first official alert was sounded by the Health department on May 7 and according to the IDSP report till date, the State has reported 20 suspected cases (only 10 cases confirmed so far) and two deaths are also suspected. Given that Kerala has been endemic for the WN virus for at least two decades and that 80% of cases are asymptomatic, for every officially reported case, there could be several unreported and asymptomatic cases in the community.

In symptomatic cases, patients usually have fever, headache, fatigue, myalgia, nausea and vomiting, and sometimes, swollen lymph glands. As clinical symptoms of most mosquito-borne viral diseases are similar, the possibility of WN or JE is considered only when the patient exhibits symptoms of neuroinvasive diseases like encephalitis or meningitis, collectively known as Acute Encephalitis Syndrome (AES). Thus, because of the diagnostic difficulties in identifying WNF in its acute phase, only a few cases get recorded in the State's official surveillance mechanisms.

Diagnostic difficulties

Only 1 in 150 cases affected by the WN virus gets a severe disease, and even fewer get encephalitis. WHO states that while serious illness can occur in people of any age, people over the age of 50 and some immunocompromised persons, like transplant patients, are at the highest risk of falling severely ill when infected with WNV.

Kerala's Director of Health Services, K. J. Reena, said that WNF has been in the official surveillance records of Kerala every year since 2011 and that cases are being reported from almost all districts now. Districts that have reported WN cases this year include the northern districts of Thrissur, Malappuram, Kozhikode, and Palakkad.

The principal vectors of the disease are mosquitoes of the genus Culex, generally found breeding in stagnant, large water bodies like paddy fields. WNV circulation is maintained in mosquito populations through vertical transmission (adults to eggs).

In a study, published in the *Indian Journal of Medical Research* in 2017, B. Anukumar, et al. say that the first reported acute encephalitis syndrome (AES) outbreak in Kerala occurred in the Kuttanad region between January and February 1996, causing 105 cases and 31 deaths.

Exceptional features

Although the Japanese Encephalitis virus was reported to be an aetiological agent associated with the outbreak, there were some exceptional features noticed during the outbreak. The seasonality of the outbreak was different from the one known for JE in Kerala, and most patients were from adult age groups, whereas JE occurs mainly in children.

Another outbreak occurred in 1997, causing 121 cases and 19 deaths. The role of WNV in AES cases was not ruled out, Dr. Anukumar says.

In 2006, during the Chikungunya epidemic in Alappuzha, abundant in paddy fields and prone to waterlogging, the possibility of the co-circulation of the WN virus was mooted because of the high mortality rate during the epidemic. However, NIV (National Institute of Virology, Pune) provided conclusive evidence about the major presence of the WN virus in the region in 2011 during an AES outbreak when 208 cases were reported.

Public health experts say that the fact that the northern districts too have begun reporting the presence of the WN virus frequently could be either due to improved diagnostic facilities or the fact that the WN virus itself has been spreading. Most cases of AES are still reported by the health system as AES/JE or JE-WN complex because only the plaque reduction neutralisation test (usually done only in NIV) can isolate the WN virus antibodies.The WN virus is maintained in nature in a mosquito-bird-mosquito transmission cycle. More than 250 species of birds are reservoir hosts of WNV. "In Kerala, the presence of large stagnant water bodies and migratory birds provides an ideal eco system for the WN virus to thrive. In the era of climate change, when mosquito-borne diseases are emerging as major public health problems, it is important that the State establishes efficient surveillance systems on the One Health platform to identify new pockets where WN and similar arboviruses may emerge," points out T.S. Anish, a public health expert and Associate Professor of Community Medicine, Government Medical College, Manjeri.

Avian reservoir

"Members of the crow family are said to be particularly susceptible. All our information on the WN virus is based on Western literature. Have there been any studies to identify if our common crow could be spreading any viruses?" Dr. Anish wonders.

Kerala's health department, while issuing a public alert on WN fever and asking people to take protective measures to prevent mosquito bites, perceives WN virus to be a lesser villain because of the low mortality profile of the disease, when compared to JE or dengue. WNV rarely turns fatal.

The health department also contends that unlike dengue fever, which is spread rapidly and efficiently by Aedes mosquitoes, the WN virus does not cause huge outbreaks. Viremia due to WN virus is transient in humans, and hence Culex mosquitoes cannot transmit the virus efficiently to more people.

Neurological sequelae left behind by the virus is not something that can be discounted however. Neurological sequelae reported by doctors post WN infection include cognitive dysfunction, memory loss, seizure episodes and motor deficits.

(maya.c@thehindu.co.in)

For feedback and suggestions
for 'Science', please write to **science@thehindu.co.in**
with the subject 'Daily page'

What is West Nile Fever?

- About:
  - It is caused by the West Nile virus (WNV), a single-stranded RNA virus that is transmitted to humans through the bite of an infected mosquito (Mosquitoes of the genus Culex are generally considered the principal vectors of WNV) and Birds serve as reservoir hosts.
- The virus is a member of the Flaviviridae family and the flavivirus genus.
  - The virus is commonly found in Africa, Europe, the Middle East, North America, and West Asia.
  - It was first isolated in a woman in the West Nile district of Uganda in 1937. It was identified in birds in the Nile Delta region in 1953, according to the World Health Organization.
- Transmission:
  - Mosquitoes become infected when they feed on infected birds, subsequently transmitting the virus to humans and animals through bites.
  - The virus may also be transmitted through contact with other infected animals, their blood, or other tissues.
  - Rare cases of transmission through organ transplant, blood transfusions, and transplacental transmission.
  - No human-to-human transmission of WNV through casual contact has been documented.

Q. With reference to the West Nile Virus, consider the following statements;

1. The Aedes species of mosquito act as the principal vectors for transmission.
2. The disease is asymptomatic in 80% of the infected people.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: B

Notes:

- **Statement 1 is incorrect**: Culex species of mosquitoes act as the principal vectors for transmission.
- **Statement 2 is correct**: The disease is asymptomatic in 80% of the infected people. The rest develop what is called the West Nile fever. In these 20% cases, the symptoms include fever, headache, fatigue, body aches, nausea, rash and swollen glands. Severe infection can lead to encephalitis, meningitis, paralysis and even death.