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Navigation with Indian Constellation (NavIC) (Source: The Indian Express)

NAVIGATION WITH INDIAN CONSTELLATION (NavIC)

India's Own Navigation – For Viksit Bharat

NavIC (Navigation with Indian Constellation) is India's independent satellite navigation system developed by ISRO to provide accurate Position, Navigation and Timing (PNT) services for India and a region around it.

ACCURATE POSITIONING
 RELIABLE NAVIGATION
 PRECISE TIMING
 STRATEGIC INDEPENDENCE

WHAT IS NavIC?

- Independent regional navigation satellite system by India.
- Provides accurate PNT (Position, Navigation and Timing) services.
- Designed for strategic, civilian and commercial applications.
- Operates in L5 and S band frequencies for reliable service.

THE NavIC CONSTELLATION

- 7 Satellites in total
- 3 Geostationary Satellites (GEO)
 - Positioned at 32.5°E, 83°E and 131.5°E
- 4 Geosynchronous Satellites (IGSO)
 - Inclined at 29° to the equator
- Designed for continuous visibility over India and a region ~1500 km beyond Indian mainland.

GLOBAL NAVIGATION SYSTEMS

	GPS (Global Positioning System)	USA (Global)
	GLONASS (Global Navigation Satellite System)	Russia (Global)
	GALILEO (Global Navigation Satellite System)	European Union (Global)
	BEIDOU (BeiDou Navigation Satellite System)	China (Global)
	QZSS (Quasi-Zenith Satellite System)	Japan (Regional)
	NavIC (Navigation with Indian Constellation)	India (Regional)

NavIC SERVICES

Standard Positioning Service (SPS)

- For civilian users
- Open and free service for general navigation needs
- Accuracy: Better than 20 meters

Restricted Service (RS)

- For authorized users
- Encrypted service for strategic and military applications
- Accuracy: Better than 5 meters

APPLICATIONS OF NavIC

Land Navigation	Maritime Navigation	Aviation Navigation	Personal Navigation
Precision Agriculture	Disaster Management	Fleet & Asset Tracking	Surveying & Geospatial Applications

KEY ADVANTAGES

- India's independent navigation system – reduces dependence on foreign systems.
- Accurate and reliable services in challenging environments.
- Critical for national security and strategic autonomy.
- Supports economic growth, digital navigation and technology development.
- Complementary to global systems like GPS, GLONASS, Galileo and BeiDou.

ATMANIRBHAR NAVIGATION. ACCURATE. SECURE.
NavIC – Powering India's Progress on Land, Sea, Air and Beyond.

2 Hepatitis (Source: The Hindu)



What is Hepatitis?

- Inflammation of the liver, most commonly due to a viral infection, leading to liver damage.

Causes

- Viral infections (HAV, HBV, HCV, HDV, HEV)
- Excessive alcohol use
- Certain medicines (drug-induced)
- Autoimmune disorders
- Metabolic factors (e.g., fatty liver, obesity)



Transmission (Viral Types)

- Contaminated food & water (A, E)
- Blood & needles (B, C, D)
- Unprotected sexual contact (B, C)
- Mother to child (B, D)

Possible Complications



Symptoms



- Fatigue and weakness
- Loss of appetite
- Nausea and vomiting
- Jaundice (yellowing of skin/eyes)
- Dark urine, pale stools
- Abdominal discomfort (especially in the liver area)

Types of Viral Hepatitis

- A** **Hepatitis A** – Fecal-oral spread; usually acute, self-limiting.
- B** **Hepatitis B** – Spread through blood, sexual contact and from mother to child; can become chronic.
- C** **Hepatitis C** – Mainly blood-borne; high risk of chronic liver disease.
- D** **Hepatitis D** – Occurs only with Hepatitis B; causes more severe disease.
- E** **Hepatitis E** – Water-borne; usually acute, severe in pregnant women.

Diagnosis & Treatment



Diagnosis:

- Blood tests (liver function, viral markers)
- Imaging / liver biopsy (if required)



Treatment:

- Supportive care for Hepatitis A & E (usually self-limiting).
- Antiviral drugs for Hepatitis B & C (e.g., tenofovir, entecavir; DAAs for HCV).
- Management of complications (e.g., cirrhosis, liver cancer).

Prevention

- Vaccination (against Hepatitis A & B)
- Safe hygiene & clean water
- Safe sexual practices
- Screened blood transfusion
- Use of sterile needles & instruments
- Avoid excessive alcohol

Key Government Initiatives in India



National Viral Hepatitis Control Programme (NVHCP)

- Universal screening, diagnosis, treatment & prevention.



Inclusion in National Health Mission (NHM)

- Surveillance, vaccination and awareness.

3 Gene Therapy (Source: The Hindu)

