Prelim Bits 03-07-2022 & 04-07-2022 | UPSC Daily Current Affairs

Acute Diarrhoeal Diseases

The Health Department of the Union Territory of Puducherry has declared a 'Public Health Emergency' in Karaikal following the outbreak of Acute Diarrhoeal Diseases (ADDs) and deterioration of water quality in the region.

- **Diarrhoea** is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual).
- There are 3 clinical types of diarrhoea:
    1. Acute watery diarrhoea - lasts several hours or days, and includes cholera;
    2. Acute bloody diarrhoea - also called dysentery; and
    3. Persistent diarrhoea - lasts 14 days or longer.
- **Acute Diarrhoeal Diseases (ADDs)** can be caused by a number of different agents.
- Common infective causative agents include
    1. Bacteria such as *Salmonella* and *Vibrio parahaemolyticus*, and
    2. Viruses such as norovirus, rotavirus, sapovirus and astrovirus.
- Less common causative agents include the bacteria causing bacillary dysentery, cholera and Shiga toxin-producing *E. coli* infection, etc.
- Acute diarrhoeal diseases may occur in all ages, with **children being more commonly affected**.
- **Symptoms** - Patients with ADDs present with sudden onset of frequent loose or watery stools, often accompanied by vomiting and fever.
- The disease is usually mild with spontaneous recovery.
- In severe cases, dehydration and shock may occur.
- **Transmission -** ADDs are usually transmitted by contaminated hands or ingestion of contaminated food or drinks.
- Occasionally, the disease is spread by aerosol spread with contaminated droplets of splashed vomitus.
- **Incubation period**
    1. For bacterial diarrhea - Few hours to 5 days after exposure,
    2. For viral diarrhea - 1 to 3 days after exposure.
- ADDs are usually managed by fluid and electrolyte replacement. In severe cases, self-medication is not advisable.
- It can be prevented by maintaining good personal hygiene, food hygiene and environmental hygiene.

Reference

1. https://www.thehindu.com/news/cities/puducherry/public-health-emergency-declared-in-karaikal-following-add-outbreak/article65595549.ece
2. https://www.chp.gov.hk/en/healthtopics/content/24/10.html
3. https://www.who.int/westernpacific/health-topics/diarrhoea

4. https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease#:~:text=There%20are%20three%20clinical%20types,lasts%2014%20days%20or%20longer.

Stealth Wing Flying Testbed

India conducted the flight test of a sub-scale flying model of the 'Stealth Wing Flying Testbed'.

- The mockup of the Stealth Wing Flying Testbed (SWiFT) is an Autonomous Flying Wing Technology Demonstrator.
- It can be operated in a completely autonomous mode.
- The Autonomous Flying Wing Technology Demonstrator is precursor to an autonomous stealth Unmanned Combat Air Vehicle (UCAV) being developed by the DRDO for the Indian Air Force.
- It was developed by the Aeronautical Development Establishment (ADE), a facility of the Defence Research and Development Organisation (DRDO).

- The specialty of the technology demonstrator is its **flying wing structure**, which refers to a tailless fixed-wing aircraft.
- This aircraft houses its payload and fuel in its main wings and does not have a defined fuselage-like structure found in the conventional aircraft.
- The flying wing type of aircraft has a key operational advantage like high fuel efficiency and stealth, as it has **low reflective cross sections** resulting in **low radar signature**, making it a stealth machine.
- Because of the shape, the aircraft also has **very low drag or air resistance**.
- However, this unique design also comes with its issues related to stability and thus requires additional systems.

The Airframe is the basic mechanical structure of the aircraft.

The undercarriage is the landing gear used for take-off and landing.

- The airframe, the undercarriage and the entire flight control along with avionics systems used for the demonstrator have been developed indigenously.
- The vehicle is powered by a small turbofan engine, which is an air-breathing type jet engine.
- The engine is Russian TRDD-50MT originally designed for cruise missiles.

Drones developed by the DRDO include Nishant, Rustom, Tapas and Lakshya among others.

Reference

1. https://indianexpress.com/article/explained/explained-features-unmanned-combat-aircraft-india-successfully-tested-8004985/
2. https://www.thehindu.com/news/national/drdo-flight-tests-new-autonomous-flying-wing-technology-demonstrator/article65589041.ece
3. https://swarajyamag.com/news-brief/maiden-flight-test-indias-stealth-flying-wing-technology-demonstrator-carried-out-successfully

Exchange-traded Commodity Derivatives

The Securities and Exchange Board of India's (SEBI's) board allowed the Foreign Portfolio Investors (FPIs) to trade in exchange-traded commodity derivatives.

> The move will enhance liquidity and market depth, as well as promote efficient price discovery.

- **Derivative Contracts** are financial instruments whose value is based upon the value of an underlying asset like equities, currency or other financial assets or commodities.
- **Commodity derivatives contract** is a derivative contract, which has a commodity as its underlying asset.
- In India, commodity derivative contract is decided under the Securities Contracts (Regulation) Act, 1956 (SCRA).
- The players in the commodity derivatives market are risk givers (hedgers) and risk takers (investors and arbitrageurs).
- **Exchange-traded Commodity Derivatives** are financial contract that is listed and traded on a regulated exchange.
- These are derivatives that are traded in a regulated environment.
- Generally, the commodities traded in commodity derivatives market are,
    1. Agricultural Commodities (perishables and processed) and
    2. Non-Agricultural Commodities (natural resources that are mined or processed) - Bullion and Gems, Energy commodities, and Metal commodities.

Particulars	Spot Market	Commodity Derivative Market
Regulator	Respective state governments	Securities and Exchange Board of India
Nature of trades	Party to party contract (buyer and seller may be known to each other)	Trade takes place anonymously between two parties on the Stock Exchange platform
Nature of contracts	Customised	Standardised
Prerequisites	No collateral	Initial margin before trading
Type of settlement	Physical - Instantaneously or within 11 days of the deal	At the end of the day, i.e. mark to market settlement in cash Final settlement - Cash / Physical, at the expiry of the contract
Guarantee of the trades	On trust /mutual understanding	Clearing corporation ensures performance guarantee of the contract

Reference

1. https://www.business-standard.com/article/markets/sebi-permits-fpis-to-deal-in-exchange-traded-commodity-derivatives-122062901325_html
2. https://www.sebi.gov.in/sebi_data/faqfiles/nov-2021/1636459721896.pdf
3. https://www.investopedia.com/terms/e/exchange-traded-derivative.asp

Anthrax

After finding several carcasses of wild boar, Kerala health officials confirmed the presence of anthrax in Athirappilly forest region, Kerala.

Anthrax has usually been found in India's southern states and is less frequently found in the northern states.

- Anthrax is a rare but serious infectious disease caused by the rod-shaped spore-forming bacteria known as **Bacillus anthracis**.
- It is also known as **malignant pustule** or **woolsorter's disease.**
- Anthrax occurs naturally in soil, plants or water.
- It is primarily a disease of herbivores (both domestic and wild animals), which is infected when they breathe in or ingest spores.

Herbivorous animals can get the disease through contaminated soil and feed, while omnivorous and carnivorous animals get infected through contaminated meat, bones and other feeds.

- Host animals shed the bacteria into the ground, which sporulates when exposed to the air.
- These spores, which can persist in the soil for decades, wait to be taken up by another host, subsequently germinating and multiplying.
- Anthrax is a **zoonotic disease**, meaning that it is naturally transmissible from animals (usually vertebrae) to humans.
- People can get the disease through direct contact with the infected animals or indirect contact with the animal products that are contaminated with bacteria.
- Even though Anthrax is generally regarded as non-contagious, there are some extremely rare instances of person-to-person transmission.
- **Symptoms** - In livestock species, the first sign is usually the sudden death of one or two animals within the herd.
- In wildlife, sudden death is also a usual indicator, often accompanied by bloody discharge from natural orifices (mouth, nose, ear, anus), bloating, incomplete rigour mortis and the absence of clotting of the blood.
- In humans, the symptoms differ based on the type of anthrax (discussed below).
- **Treatment** - Antibiotic therapy (Penicillin, ciprofloxacin and doxycycline) administered early in the course of the infection.
- **Prevention** - One way to prevent the disease is by vaccination of livestock so that the disease cannot spread.
- There are also vaccines for humans, but their availability is usually restricted to at-risk individuals, such as lab workers and people who handle animals (farmers, veterinarians, livestock handlers, wool sorters.)

Types

- **Cutaneous anthrax** develops when anthrax spores get into the skin, usually through a cut or scrape.
- Symptoms include groups of small blisters that may itch, painless skin sores with a black centre, with the possibility of swelling around them.

- This is the most common route of the disease and is seldom fatal.
- **Inhalation anthrax** develops when a person breathes in anthrax spores.
- People who work in places such as wool mills, slaughterhouses, and tanneries may breathe in the spores when working with infected animals or contaminated animal products from infected animals.
- It is the most deadly form of anthrax and leads to death within 2-3 days.
- **Gastrointestinal anthrax** develops when a person eats raw or undercooked meat from an animal infected with anthrax.
- Its symptoms can include nausea and vomiting (with blood), swelling of the neck, stomach pain and diarrhoea.

Reference

1. https://indianexpress.com/article/explained/explained-what-is-anthrax-the-infectious-disease-found-in-kerala-8005418/
2. https://www.cdc.gov/anthrax/basics/index.html
3. https://www.cdc.gov/anthrax/basics/types/index.html

National Investigation Agency

The National Investigation Agency (NIA) has taken over the probe into the killing of tailor Kanhaiyya Lal in Rajasthan over a social media post supporting a suspended political leader.

- In the wake of the 26/11 Mumbai terror attack in November 2008, the National Investigation Agency (NIA) was established.
- Headquartered in Delhi, the NIA is a **statutory body** under the National Investigation Agency Act, 2008.
- The NIA is a central agency mandated to investigate all the offences affecting the sovereignty, security and integrity of India, and the friendly relations with foreign states.
- It also investigates all the offences under the statutory laws enacted to implement international treaties, agreements, conventions and resolutions of the UN, its agencies and other international organisations.
- These include terror acts and their possible links with crimes like smuggling of arms, drugs and fake Indian currency and infiltration from across the borders.
- The agency has the power to search, seize, arrest and prosecute those involved in such offences.
- **Jurisdiction** - The law under which the agency operates extends to the whole of India and also applies to
    1. Indian citizens outside the country;
    2. Persons in the service of the government wherever they are posted;
    3. Persons on ships and aircraft registered in India wherever they may be;
    4. Persons who commit a scheduled offence beyond India against the Indian citizen or affecting the interest of India.
- The NIA investigates the scheduled offences referred to it by the Central government, the cases referred to it by the State governments through the Central government (Union Home Ministry).
- State governments are required to extend all assistance to the NIA.
- While investigating any scheduled offence, the agency can also investigate any other offence, which the accused is alleged to have committed if the offence is connected to the scheduled offence.

Reference

1. https://www.thehindu.com/news/national/explained-the-functioning-of-the-national-investigation-agency/article65596033.ece?homepage=true
2. https://www.nia.gov.in/vision-mission.htm

