
1. Post-Intensive Care Syndrome

Why in News?

- Studies have pointed out that, after leaving the ICU, people may suffer from what is known as post-intensive care syndrome (PICS), which can happen to any person who has been in the ICU.
- PICS comprises impairment in cognition, psychological health and physical function of a person who has been in the ICU.

Highlights:

- As per the WHO-China Joint Mission report that examined 55,924 laboratory-confirmed cases of Covid-19, over 6.1 per cent were classified as critical, which means they experienced respiratory failure, shock and multiple organ failure. Many critical cases need ICU admissions.
- Critically ill Covid-19 patients are older, and have more comorbidities such as hypertension and diabetes. Significantly, Acute Respiratory Distress Syndrome (ARDS), one of the manifestations of Covid-19, is a common reason for ICU admission and such a person may need mechanical ventilation to deliver oxygen and remove carbon dioxide from the body.
- PICS is defined as new or worsening impairment in physical (ICU-acquired neuromuscular weakness), cognitive (thinking and judgment), or mental health status arising after critical illness and persisting beyond discharge from the acute care setting,” the article notes.
- Psychological disability may arise in a person in the form of depression, anxiety and posttraumatic stress disorder (PTSD).
- The most common PICS symptoms are generalised weakness, fatigue, decreased mobility, anxious or depressed mood, sexual dysfunction, sleep disturbances and cognitive issues.
- These symptoms may last for a few months or many years after recovery.
- Patients who develop this may take at least a year to fully recover, until which time they may have difficulty in carrying out everyday tasks such as grooming, dressing, feeding, bathing and walking.
- Further, after leaving the ICU, over 30-80 per cent may develop problems related to cognitive function and other mental health issues, including difficulty in falling and staying asleep.

- It is recommended that to avoid PICS, patients' use of deep sedation is limited and early mobility is encouraged, along with giving them "aggressive" physical and occupational therapy.
- Further, patients should be given the lowest dose of pain medications when possible, and should be put on lung or cardiovascular rehabilitation treatments along with treatments for depression, anxiety and PTSD.

2. Scientists Discover Six New Coronaviruses in Bats

Why in News?

- Researchers have discovered six new coronaviruses in bats in Myanmar -- the first time these viruses have been detected anywhere in the world.

Highlights:

- Researchers detected these new viruses while conducting biosurveillance of animals and people to better understand the circumstances for disease spillover as part of the PREDICT project.
- The newly discovered coronaviruses are not closely related to coronaviruses Severe Acute Respiratory Syndrome (SARS CoV-1), Middle East Respiratory Syndrome (MERS) or COVID-19. The findings will help understand the diversity of coronaviruses in bats and inform global efforts to detect, prevent and respond to infectious diseases that may threaten public health, particularly in light of the ongoing COVID-19 pandemic.
- Worldwide, humans are interacting with wildlife with increasing frequency, so the more we understand about these viruses in animals, what allows them to mutate and how they spread to other species, the better we can reduce their pandemic potential.
- The team focused their research on sites in Myanmar where humans are more likely to come into close contact with local wildlife due to changes in land use and development. Researchers tested and compared the samples to known coronaviruses and identified six new coronaviruses for the first time. The team also detected a coronavirus that had been found elsewhere in Southeast Asia, but never before in Myanmar.
- These findings underscore the importance of surveillance for zoonotic diseases as they occur in wildlife. The results will guide future surveillance of bat populations to better detect potential viral threats to Public Health.

3. OSIRIS-REx Mission

Why in News?

- NASA's OSIRIS-REx spacecraft has been orbiting asteroid Bennu for over a year now, since it arrived at the space rock in December 2018. Now, the spacecraft has successfully completed its 'Checkpoint' rehearsal and is one step closer to land on the asteroid's Surface.

Highlights:

- The rehearsal allowed the OSIRIS-REx team to test whether the various systems aboard the spacecraft like imaging, navigation and ranging systems worked as they should during descent.
- While landing the OSIRIS-REx autonomously checks its position and velocity at a location known as the checkpoint. At this position, it adjusts the trajectory down towards the surface.
- It was able to successfully deploy its sampling arm which is known as the Touch-And-Go Sample Acquisition Mechanism (TAGSAM) and used the instruments on board to make observations of the sample site.
- Through the rehearsal, the team also confirmed that OSIRIS-REx's Natural Feature Tracking (NFT) guidance system worked accurately.

OSIRIS-REx Mission:

- The OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer) is a NASA asteroid study and sample-return mission.
- The mission's primary goal is to obtain a sample of at least 60 grams (2.1 oz) from 101955 Bennu, a carbonaceous near-Earth asteroid, and return the sample to Earth for a detailed analysis.
- The material returned is expected to enable scientists to learn more about the formation and evolution of the Solar System, its initial stages of planet formation, and the source of organic compounds that led to the formation of life on Earth.
- If successful, OSIRIS-REx will be the first U.S. spacecraft to return samples from an Asteroid.

Objectives:

- Return and analyze a sample of pristine carbonaceous asteroid regolith in an amount sufficient to study the nature, history, and distribution of its constituent minerals and organic compounds.
- Map the global properties, chemistry, and mineralogy of a primitive carbonaceous asteroid to characterize its geologic and dynamic history and provide context for the returned samples.
- Document the texture, morphology, geochemistry, and spectral properties of the regolith at the sampling site in situ at scales down to millimeters.
- Measure the Yarkovsky effect (a thermal force on the object) on a potentially hazardous asteroid and constrain the asteroid properties that contribute to this effect. Characterize the integrated Global Properties of a primitive carbonaceous asteroid to allow for direct comparison with ground-based telescopic data of the entire asteroid population.

