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1. NMC logo: Why are doctors protesting now if it always had Dhanvantri's image?

Introduction

The logo of the National Medical Commission (NMC), with a colourful image of physician god Dhanvantri in the centre, has drawn criticism from doctors, with the Indian Medical Association (IMA) urging the the apex medical education regulator to take "corrective steps".

Officials from the NMC, however, maintained that the image of Dhanvantri had always been a part of its logo, albeit as a dark silhouette. The new logo colourises the image, while also replacing the word 'India' with 'Bharat'.



Why are doctors opposing the new logo?

Once the changes to the logo were highlighted last month, the IMA said it went against the "fundamental values" of doctors. Dr Sharad Agarwal, president of IMA, said: "Doctors take an oath to treat everyone irrespective of their caste, class, or religion. Why then should the logo of an institute that governs training of doctors have any religious connection?"

He added that while doctors can follow their faith at home, institutions must not do so.

Why has Dhanvantri been included?

With Dhanvantri considered to be the god of Ayurveda and medicine, officials from the NMC said it was an appropriate addition to the logo for a medical body. An official said: "If the logo for doctors can be Caduceus — the staff surrounded by two serpents — that is entrenched in Greek mythology, why can't we use symbols from our own mythology?"

Officials from both NMC and the Union health ministry emphasised that Dhanvantri has always been part of the logo. However, even the old logo was adopted only in 2022. The National Medical Commission took over from the former Medical Council of India in 2020. The logo was first approved in 2022, according to officials.

Is this the first time doctors have raised such concerns?

There were similar protests from doctors when the NMC introduced the "Charak Shapath" as part of undergraduate medical training last year. While it was initially thought that the Shapath would replace the doctor's oath — which essentially says doctors should treat everyone and do no harm — the NMC later said the Charak Shapath would be taken at the beginning of the course and the doctor's oath when the students graduate.

Mandatory inclusion of yoga as part of medical curriculum last year also faced similar resistance.

Relevance: GS Prelims & Mains Paper II; Governance

Source: The Indian Express

2. ISRO brought Chandrayaan-3's propulsion module back to Earth's orbit

Why in news?

The Indian Space Research Organization (ISRO) has successfully brought the propulsion module from the Chandrayaan-3 mission back to Earth's orbit. The Propulsion Module (PM) of Chandrayaan-3 was moved from an orbit around Moon to an orbit around Earth.

First, what is this propulsion module? How did it operate?

Unlike Chandrayaan-2, which had a full-fledged orbiter with major payloads and communications systems, Chandrayaan-3 featured a lighter propulsion module. For the lander's communications with Earth, the mission used the Chandrayaan-2 orbiter, which remains functional four years after the 2019 mission.

The main function of PM is to carry the LM (lander module) from launch vehicle injection till final lunar 100 km circular polar orbit and separate the LM from PM. Apart from this, the PM also has one scientific payload as a value addition. The only scientific instrument aboard was the Spectro Polarimetry of Habitable Planet Earth (SHAPE) — an experimental payload which studies the signatures that make Earth a habitable planet, in order to possibly identify habitable planets outside the solar system.

There were no plans to bring the propulsion module back to Earth, with ISRO stating that it simply wanted to operate the SHAPE payload for about three months — the mission life of the module.

So, how did ISRO manage this feat?

What helped was just how precise and efficient the Chandrayaan-3 Mission had gone thus far. To be precise, after over a month of operations, the PM continued to hold over 100 kg of fuel.

A mission plan was created to ensure the PM's return without crashing on to the lunar surface, or entering into a low Earth orbit. Considering the estimated fuel availability, and the safety to GEO spacecrafts, the optimal Earth return trajectory was designed.

What has ISRO learnt from this 'surprise' experiment?

Through these efforts, ISRO has been able to get an idea of "planning and execution of trajectory and maneuvers to return from the Moon to Earth," aiding the space agency's work in developing a software module for such a maneuver.

The experiment will also aid the planning and execution of a gravity assisted flyby across a planets/celestial bodies, as well as avoid "uncontrolled crashing of the PM on the Moon's surface at the end of its life" and prevent space debris creation.

What was the other 'surprise' experiment carried out during the Chandrayaan-3 mission?

This was Chandrayaan-3's second surprise experiment, after the previously-mentioned hop experiment carried out by the lander 11 days into its time on the lunar surface.

On command, it [the lander] fired the engines, elevated itself by about 40 cm, as expected, and landed safely at a distance of 30–40 cm away. Although a small jump, the hop experiment indicated ISRO's capability to get the lander to fire its engines and produce the thrust needed to lift off from the lunar surface. In conjunction with the current experiment, these are seen as key for ISRO's ambitions conducting the Lunar Sample Return Mission (LSRM) — where a lander take-off from the lunar surface, dock with the orbiter, which will then make a return journey to Earth, all while carrying lunar soil samples.

ISRO is also working on technology for re-entry of space capsules to earth.

Relevance: GS Prelims & Mains Paper III; Science & Technology

Source: The Indian Express and The Hindu

3. India's first Pompe disease patient passes away: What is this rare genetic disorder?

Introduction

Nidhi Shirol, India's first Pompe disease patient, passed away last month at the age of 24 years after battling the disease. She spent the last six years in a semi-comatose state.

In 2010, her father Prasanna Shirol started the Organisation for Rare Diseases India (ORDI), the first NGO in the country for rare diseases.

What is Pompe Disease?

Also known as Glycogen Storage Disease Type II, Pompe disease is a rare genetic disorder caused by a deficiency of the enzyme acid alpha-glucosidase (GAA). This enzyme is crucial for breaking down glycogen into glucose within the lysosomes of cells.

Its prevalence estimates range from 1 in 40,000 to 1 in 300,000 births. It occurs across diverse ethnicities and populations. The age of onset and severity can vary, leading to a spectrum of clinical presentations.

How does Pompe disease affect an individual?

The severity of the condition and the progression of symptoms may differ among individuals. Some key symptoms are:

***Muscle weakness:** Progressive muscle weakness is a primary feature of Pompe disease. It affects both skeletal and smooth muscles, leading to difficulties in mobility and daily activities. Weakness in the respiratory muscles can result in breathing difficulties, especially during physical exertion or even while lying down.

***Motor skill delay:** Children with the disease may experience delays in achieving motor milestones, such as sitting, crawling, and walking. The degree of motor skill delay can vary, and some individuals may never attain certain motor milestones.

***Degenerative impact on bones:** Prolonged muscle weakness and reduced mobility can have a degenerative impact on bones, leading to joint contractures and skeletal deformities.

***Respiratory complications:** The weakening of respiratory muscles, including the diaphragm, can have an impact. Patients may experience shortness of breath, respiratory infections, and in severe cases, respiratory failure.

***Cardiac involvement:** In some cases, Pompe disease can affect the heart muscles, leading to complications. Symptoms such as heart palpitations, fatigue, and chest pain, may manifest.

***Hypertrophic cardiomyopathy:** Pompe disease can cause hypertrophic cardiomyopathy, characterised by the thickening of the heart muscle walls. This can lead to impaired heart functions and cardiovascular symptoms.

***Implications for daily living:** Patients may face challenges in performing daily activities independently due to muscle weakness and respiratory limitations. Assistive devices such as wheelchairs and respiratory support equipment may become necessary.

How is Pompe disease diagnosed?

Diagnosing Pompe disease involves a multi-faceted approach. Enzyme assays are conducted to measure the activity of acid alpha-glucosidase (GAA), the deficient enzyme. Genetic testing identifies mutations in the responsible GAA gene.

Clinical evaluations consider the patient's symptoms and medical history. Enzyme tests, often performed on blood or skin cells, provide crucial insights into GAA deficiency. Genetic analysis confirms the presence of specific mutations associated with Pompe Disease.

The combination of these diagnostic tools enables healthcare professionals to accurately identify and confirm the disease, helping achieve timely intervention and management.

Is Pompe disease curable?

While there is currently no cure for Pompe disease, there are treatment options available to manage symptoms and improve the patient's quality of life. Enzyme Replacement Therapy (ERT) is a standard treatment, involving the infusion of the missing enzyme to alleviate glycogen buildup.

Relevance: GS Prelims

Source: Indian Express