India's first human metabolic chamber opens at CMC Vellore

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News

Union Health Secretary Punya Salila Srivastava inaugurated India's first dedicated human metabolic chamber at the Christian Medical College (CMC), Vellore on 23 Nov 2026. It was set up jointly by CMC and the Tata Institute of Fundamental Research (TIFR), Hyderabad, with funding from the Department of Atomic Energy, CSR support from Hindustan Unilever and technical advice from NUTRIM, Maastricht University (Netherlands).

Key facts for the exam

Point	Details
What it is	Airtight, room-sized whole-room indirect calorimeter
How it works	Measures oxygen used and carbon dioxide produced by a volunteer for 24 hours or more
What it tells	Total energy spent; how much fat and carbohydrate the body burns
Purpose	India-specific data on diabetes, obesity and nutrition
Partners	TIFR Hyderabad's ARUMDA unit; CMC's Department of Endocrinology, Diabetes and Metabolism

Background

- Indirect calorimetry works out energy use from gas exchange. The respiratory quotient (RQ) = CO_2 produced ÷ O_2 consumed: about 1.0 when burning carbohydrate and about 0.7 when burning fat.
- Most clinics use 20–30 minute tests; a room chamber records a full day, including meals and sleep. Indians tend to develop diabetes at a lower body weight than Western populations, so local data matter.

Tamil Nadu link: CMC Vellore began in 1900 as a one-bed clinic started by Dr. Ida S. Scudder. Vellore Fort saw the Vellore Mutiny of 10 July 1806, an early revolt of Indian soldiers against the British.

Frequently asked questions

What is this news about?

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What are the key facts to remember for the exam?

What it is: Airtight, room-sized whole-room indirect calorimeter; How it works: Measures oxygen used and carbon dioxide produced by a volunteer for 24 hours or more; What it tells: Total energy spent; how much fat and carbohydrate the body burns; Purpose: India-specific data on diabetes, obesity and nutrition.

What is the background to this news?

Indirect calorimetry works out energy use from gas exchange. The respiratory quotient (RQ) = CO_2 produced ÷ O_2 consumed: about 1.0 when burning carbohydrate and about 0.7 when burning fat.

Practice questions (with answers)

1. Where was India's first dedicated human metabolic chamber inaugurated?

A) ICMR-NIN, Hyderabad

B) Christian Medical College, Vellore

C) PGIMER, Chandigarh

D) AIIMS, New Delhi

Answer: B – Explanation: Union Health Secretary Punya Salila Srivastava opened it on 23 Nov 2026, to generate Indian data on diabetes, obesity and nutrition.

2. Which institute set up the chamber jointly with CMC Vellore?

A) CSIR-CCMB, Hyderabad

B) IISc, Bengaluru

C) BARC, Mumbai

D) TIFR, Hyderabad

Answer: D – Explanation: TIFR = Tata Institute of Fundamental Research (its Hyderabad unit ARUMDA). Technical advice came from NUTRIM, Maastricht University (Netherlands).

3. When the body burns fat, the respiratory quotient (RQ = CO_2 produced ÷ O_2 consumed) is about:

A) 0.7

B) 1.0

C) 1.5

D) 0.3

Answer: A – Explanation: RQ is about 1.0 for carbohydrate and about 0.7 for fat. The chamber measures gas exchange for 24 hours to infer what the body burns (indirect calorimetry).

4. Who started CMC Vellore as a one-bed clinic in 1900?

A) Mary Verghese

B) Annie Besant

C) Dr. Ida S. Scudder

D) Florence Nightingale

Answer: C – Explanation: American medical missionary Ida Scudder began it in Vellore to provide medical care for women.

5. The Tata Institute of Fundamental Research (TIFR), which set up the chamber with CMC, works under which Union department?

A) Department of Atomic Energy

B) Department of Science and Technology

C) Department of Biotechnology

D) Department of Health Research

Answer: A – Explanation: TIFR, founded in 1945 by Homi J. Bhabha, is a deemed university under the Department of Atomic Energy, which also funded the chamber.