



**Closed Door Stakeholders' Consultation to deliberate  
on "Developing a Roadmap for Addressing Vitamin D  
Deficiency in India by 2030"**

**Dr. Aashish Chaudhry**

**Tuesday, July 16, 2024**

**Conference Room, ICRIER, India Habitat Centre, Lodhi Road, New Delhi**

## A rare cause of severe dyspareunia: post-osteomalacic contracted pelvic outlet

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*Acta Obstet Gynecol Scand* 2005; 84: 407–408. © Acta Obstet Gynecol Scand 84 2005

**Key words:** dyspareunia; osteomalacia; pelvic contracture; three-dimensional CT, vitamin D

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Osteomalacia is rare in current urban life and societies that have normal diets. Vitamin D helps to maintain the adequate plasma calcium levels. It increases the absorption of the calcium in the intestine, decreases the renal loss of calcium and stimulates the resorption of bones (1,2).

In this case, the patient was presented with pelvic deformity, which is rarely seen as a result of osteomalacia.

### Case report

A 28-year-old woman, who had one normal delivery and one cesarean section before was admitted to the Obstetrics and Gynecology Clinics with a history of having difficulty and pain with sexual contact for the previous year. Vaginal examination was tried at the normal lithotomic position, but after an unsuccessful try, the examination was repeated ultrasonographically under anesthesia and considered a bony obstruction tightening the vagina bilaterally. A pelvic X-ray showed that the patient had an obstruction at the

pelvic outlet. A three-dimensional CT scan reported multiple pseudo-fractures on the bilateral ischion arms and related deformities, plus protrusion acetabuli and pelvic deformity caused by osteomalacia (Fig. 1). The biochemical analysis confirmed the diagnosis with high serum alkaline phosphates and low sodium and calcium levels.

Under general anesthesia, a lithotomic position vaginal examination was performed. The ischion arms were reached by performing an oblique incision from the lateral margin of labia major. The bilateral ischion arms seem to have been quite softened. Approximately 8 cm of bilateral ischion arms were resected and a vaginal examination was repeated intraoperatively and established relaxed vagina. After 3 months, this appearance was confirmed with three-dimensional CT scan (Fig. 2). The patient was given vitamin D about 1 year for osteomalacia. After 1 year, she became pregnant via the normal coital way. The patient was admitted to our clinics with the complaint of absence of fetal movement at sixth month of gestation. An ultrasonographical examination showed two baby deaths. After the cesarean section, the patient had an uneventful recovery period.

### Discussion

Osteomalacia, related to the deficiency of vitamin D, depends on many factors. The major causes are: deficiency



Fig. 1. Preoperative three-dimensional CT images of pelvic outlet are seen as highly restricted with decreased bone density and pseudo-fracture apparent.



FOOD for THOUGHT

# Sunshine Vitamin: Our Health Blanket



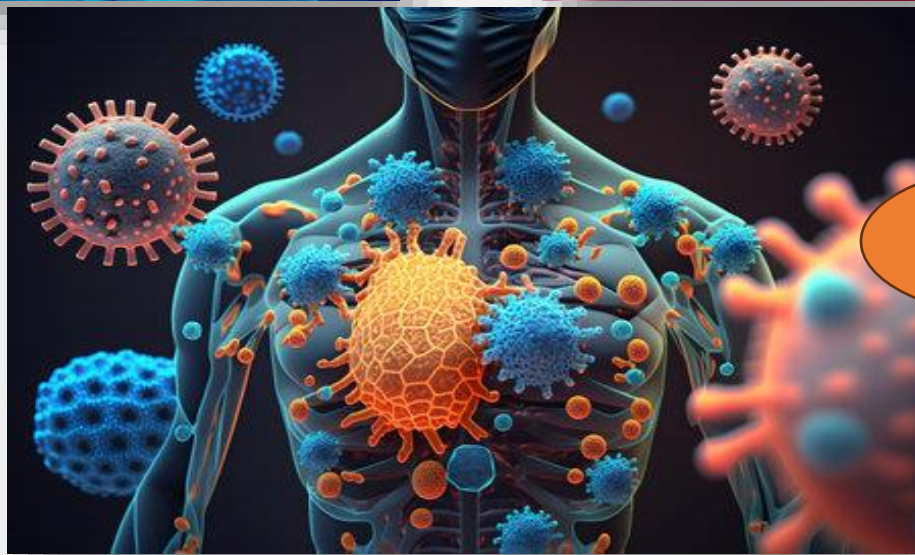
Rickets and osteomalacia



Muscle and Joint pain



CVS



Immunity

# Sunshine Vitamin: Our Health Blanket



Infertility



Cancer



Hip Fractures

# Vit D deficiency & Infertility



Journal of Reproductive Immunology

Volume 151, June 2022, 103633



Review article

## Vitamin D deficiency and female infertility: A mechanism review examining the role of vitamin D in ovulatory dysfunction as a symptom of polycystic ovary syndrome

Mechanistic evidence indicated an association between vitamin D deficiency and impaired ovulatory function. Sub-optimal vitamin D levels were implicated in disrupted reproductive hormone balance, including overproduction of anti-mullerian hormone (AMH); accumulation of pro-inflammatory Advanced Glycation End Products (AGEs) and formation of Reactive Oxygen Species (ROS) in ovarian tissue, leading to abnormal folliculogenesis. Human intervention studies demonstrated the capability of vitamin D

70.3% of infertile women with PCOS had vitamin D levels < 20 ng/ml

women with PCOS and vitamin D deficiency have significantly diminished rates of ovulation ( $p = 0.008$ ), pregnancy ( $p = 0.049$ ), and reduced chance of live birth ( $p = 0.3$ ) (Butts et al., 2019).

# Vit D deficiency & Cancer, CVD

## Genetically low vitamin D concentrations and increased mortality: mendelian randomisation analysis in three large cohorts



OPEN ACCESS

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genetically low plasma 25-hydroxyvitamin D concentrations are associated with increased all-cause, cancer, and other mortality

lipoprotein cholesterol, and obesity may causally decrease 25-hydroxyvitamin D plasma concentrations and increase risk of cardiovascular disease.<sup>6-49</sup> That is, low plasma 25-hydroxyvitamin D may be a consequence of a predisposition to cardiovascular disease rather than a cause of cardiovascular disease.

# Vit D deficiency & Diabetes

Meta-Analysis > Clin Chem. 2013 Feb;59(2):381-91. doi: 10.1373/clinchem.2012.193003.

Epub 2012 Dec 11.

## Low 25-hydroxyvitamin D and risk of type 2 diabetes: a prospective cohort study and metaanalysis

Shoaib Afzal<sup>1</sup>, Stig E Bojesen, Børge G Nordestgaard

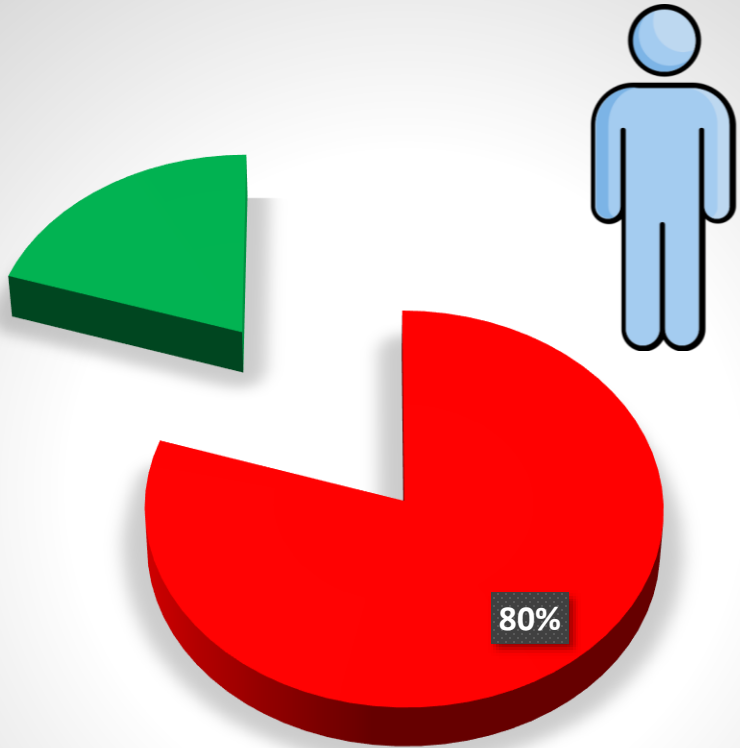
Affiliations + expand

PMID: 23232064 DOI: 10.1373/clinchem.2012.193003

Vitamin D deficiency has been implicated in decreased insulin secretion and increased insulin resistance, hallmarks of type 2 diabetes mellitus.

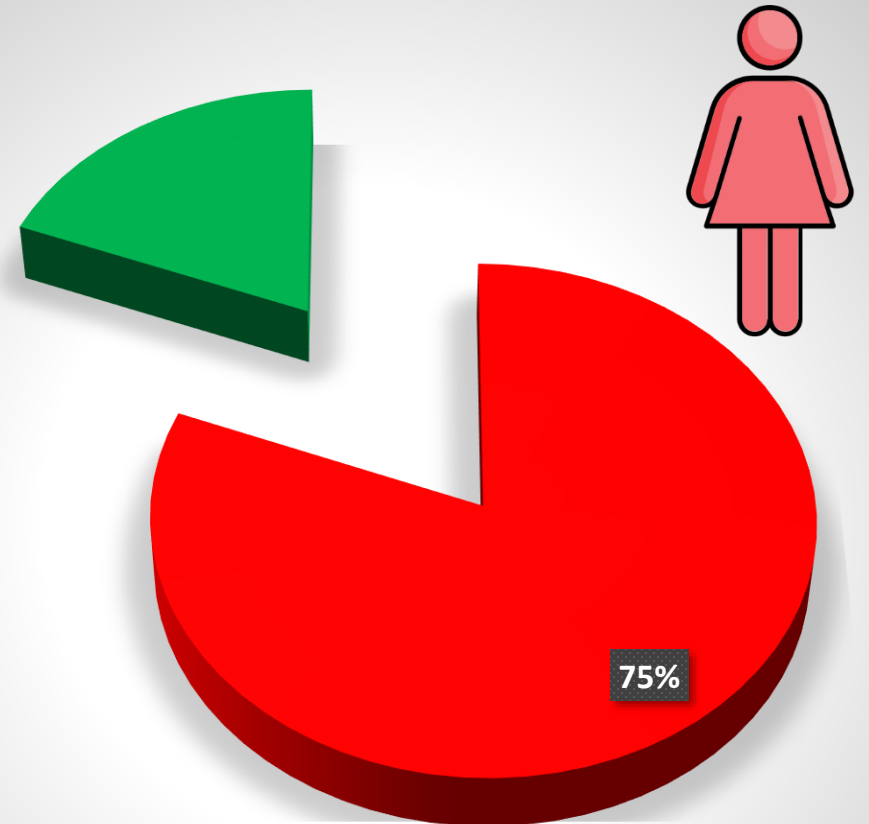
vitamin D status has been implicated in 2 essential processes linked to type 2 diabetes, i.e., insulin secretion and insulin resistance. (1) Evidence supporting a role for vitamin D in insulin secretion: the vitamin D receptor and the 1- $\alpha$ -hydroxylase enzyme, the enzyme that converts 25(OH)D into the active hormone 1,25-dihydroxyvitamin D, are present in  $\beta$ -cells (31, 32); in vitro and in vivo studies show that vitamin D receptor knockout or vitamin D deficiency impairs glucose-induced insulin secretion

# The Indian Suffering data



**VITAMIN D  
DEFICIENCY**

shutterstock.com - 104757255



# The Health & Economic Burden



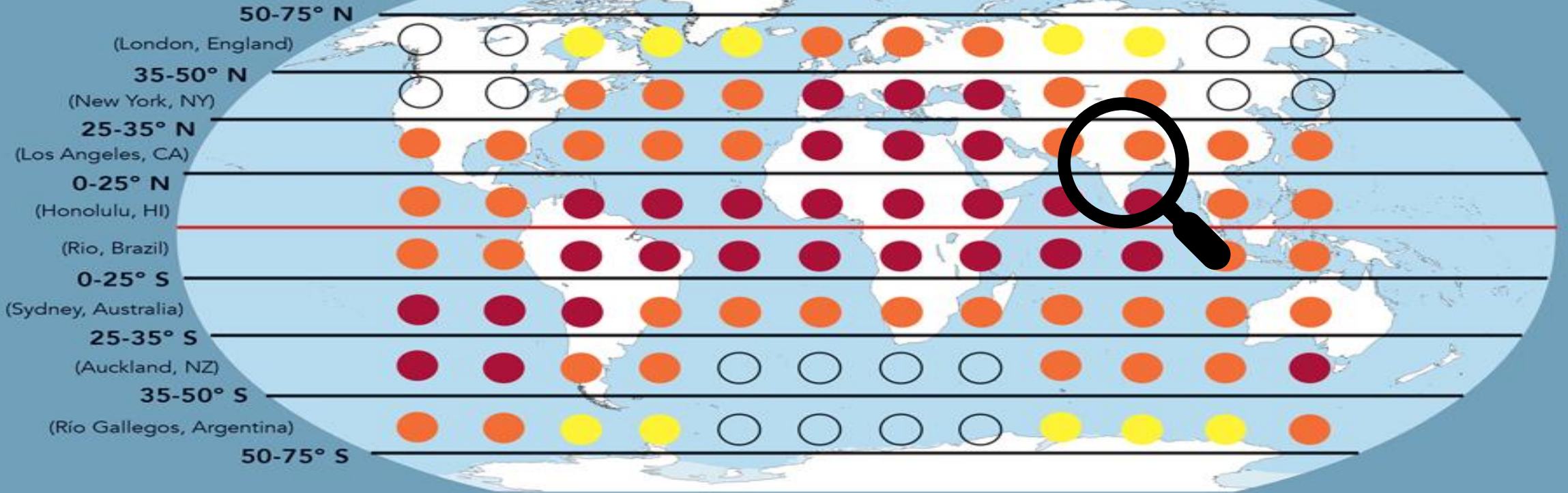
The estimated absolute risk differences for all cause mortality associated with vitamin D deficiency were 75.4 events in Europe and 96.6 events in the United States, per 100 000 population, per year Using the population prevalence estimates of vitamin D deficiency from this study, 9.4% of all deaths in Europe and 12.8% of those in the United States could be attributed to vitamin D deficiency.

BMJ 2014; 348 doi: <https://doi.org/10.1136/bmj.g1903> (Published 01 April 2014)



# SUNSHINE CALENDAR

JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



Source: <https://www.grassrootshealth.net/document/sunshine-calendar/>

## KEY

- Intense Sunshine  
 time needed to produce sufficient vitamin D:  
**10 minutes** (light-skinned), **45 minutes** (dark-skinned)
- Moderate Sunshine  
 time needed to produce sufficient vitamin D:  
**20 minutes** (light-skinned), **60 minutes** (dark-skinned)
- Low Sunshine  
 time needed to produce sufficient vitamin D:  
**30 minutes** (light-skinned), **90 minutes** (dark-skinned)
- None  
 not enough sunshine for adequate amounts of vitamin D

## GETTING VITAMIN D? LOOK AT YOUR SHADOW!

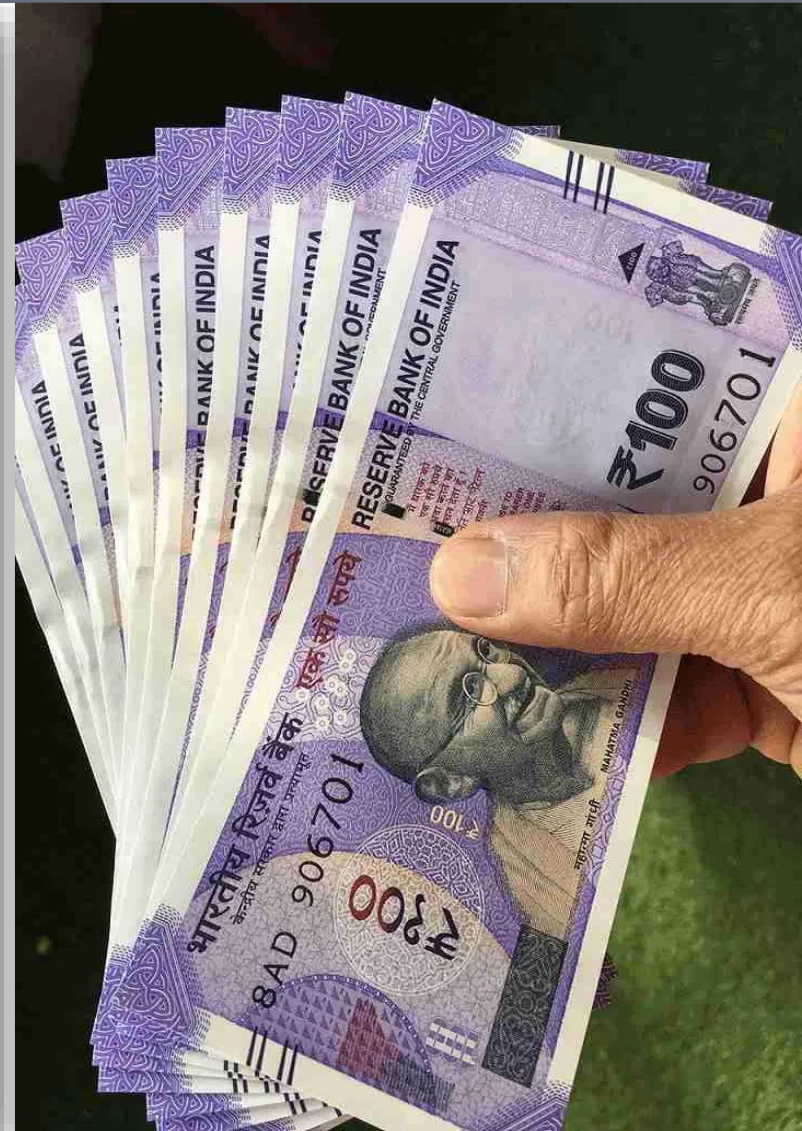
- shadow is shorter than you are tall, UV index is above 3
- shadow is longer than you are tall

# Supplements: The Cost Involved



Average cost / Dose:  
30-120 Rs

# Average Cost Per Family: 600 / Month



# Average Cost for testing kits: Rs 100-500



**Pregnancy Testing**



**Covid Testing**



**HIV Testing**



**Blood sugar Testing**

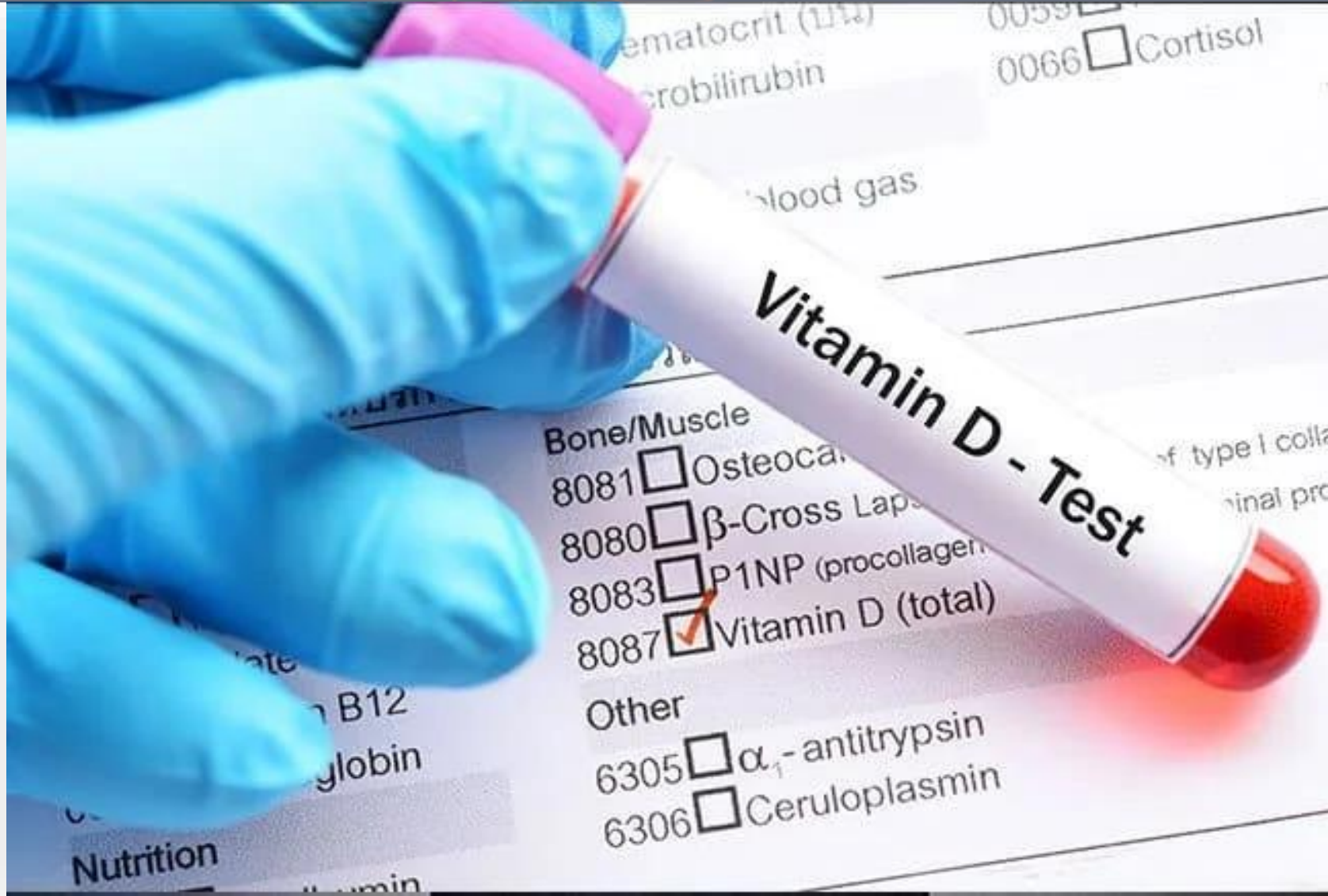


**Typhoid Testing**



**Dengue Testing**

# Vitamin D Testing: Rs 1000-2500





# Way Forward



**FOR MASSES**



**FOR THE NATION**

# Fortified foods in India



Milk

A & D



Edible oil

A & D



Wheat

Iron, Folic acid, B12



Salt

Iodine



The background is a dark blue color. It features several large, overlapping orange triangles on the left and right sides. In the center, the text "Thank you" is written in a white, serif font. Scattered across the background are numerous faint, light-colored square outlines of varying sizes.

**Thank you**