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OCTOBER - NOVEMBER 2026

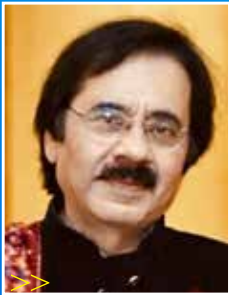
VOL X, Issue- XII, Rs. 200

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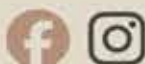
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magazine is based on the information
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Publisher do not necessarily subscribe to
the same.

Double Helical is owned, printed and pub-
lished monthly. It is printed at Polykam
offset, Naraina Industrial Area Phase 1,
New Delhi-110028, and published from
G-1, Antriksh Green, Kaushambi, Ghazi-
abad-201 012.

Tel: 0120-4165606 / 9953604965.

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**PUSHPANJALI MEDICAL RESEARCH CENTRE
ORGANISES PATIENT SAFETY WORKSHOP**



**PUSHPANJALI MEDICAL RESEARCH CENTRE
CONDUCTS SCIENTIFIC SESSION**



NO MORE FINGER-POINTING



SEX IS SACRED



THE "DR" PREFIX DEBATE



PROFITEERING ON PAIN



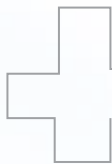
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Safeguarding Vials, Breaking Taboos

“Dear Readers”

Double Helical, a comprehensive national health magazine, serves as a platform to acknowledge innovations, individuals, products, and services transforming India's healthcare sector—paving the way for affordable, high-quality, and inclusive healthcare.

In the current issue, we focus on adulteration in vaccines as our special cover story. Fundamentally, vaccine adulteration refers to the introduction of impure, foreign, or unintended substances into a vaccine supply. While the deliberate addition of inferior or counterfeit ingredients for economic gain is rare in the legitimate pharmaceutical supply chain due to stringent regulatory oversight, risks remain. If sterile conditions break down during production, bacteria or fungi can contaminate batches. In clinical settings, reusing needles or improperly storing opened multi-dose vials can introduce environmental pathogens into the vaccine fluid.

Traces of substances used in the manufacturing process—such as chemical detergents, minute stainless steel particles from machinery, or glass flakes from storage vials—can accidentally slip into the final product. In illegal or unauthorised markets, bad actors may attempt to replicate packaging and fill vials with saline, water, or other ineffective substances.

India should treat the circulation of adulterated and spurious vaccines as a national public-health security issue, not merely as another category of pharmaceutical crime. The country already possesses significant regulatory infrastructure, vaccine-manufacturing capacity, laboratory capability, and one of the world's largest immunisation supply systems. However, the challenge lies in making these systems sufficiently transparent, technologically integrated, and enforcement-oriented so that a counterfeit or compromised vaccine becomes extremely difficult to manufacture, distribute, and administer without swift detection. All medicines require quality control, but vaccines present unique clinical challenges. They are biological products whose potency, purity, sterility, and stability depend upon tightly controlled manufacturing processes. Their efficacy can also be compromised by temperature excursions and inappropriate handling.

As another major feature in this issue, we examine Erectile Dysfunction (ED)—also known as impotence—which is the consistent or recurring inability to achieve or maintain a penile erection firm enough for satisfactory sexual activity. This includes the inability to achieve an erection at any time, getting an erection intermittently, an erection that does not last long enough for intercourse, or a reduced sexual desire and libido.

ED is often linked to a mix of physical, psychological, and lifestyle elements. We discuss blood pressure, diabetes, cholesterol, constipation, arthritis, and even piles without a moment's hesitation. Mention sex or sensual fulfilment, however, and suddenly the voice drops to a timid whisper, eyes look away, and the conversation mysteriously vanishes in a cloud of blushing embarrassment. It is because somewhere along the way, society taught us that sex is

something to be hidden in the dark rather than something to be celebrated and understood in all its passionate glory.

Why are we so afraid to talk about the very intimate act that kindled our creation and gave us life? If sex were not a normal, natural, and exquisitely beautiful function of the human body, none of us would be breathing today.

Sexuality is a normal biological and emotional dimension of human existence. Just as we breathe, our heart beats, we eat, sleep, and eliminate, our capacity for sensual pleasure and deep connection is an intrinsic part of who we are. It is not merely a mechanical physical act; it encompasses biology, psychology, intense intimacy, romantic harmony, and, for many, an essential aspect of identity, vitality, and overall quality of life.

Look at the magnificent cultural heritage of India. The awe-inspiring temples of Khajuraho and Konark, along with sensuous, passionate sculptures preserved across various historical Indian traditions, remind us that human sexuality was not always treated as an unspeakable topic. These artistic marvels formed part of a vast cultural and philosophical landscape, affirming that raw desire, passionate relationships, and the sensual beauty of the human form have been celebrated components of civilisation for millennia. The lesson for us today is not that sexuality should be reduced to mere entertainment. The lesson is far simpler and more profound: we must be able to discuss sexual health, intimacy, and bedroom satisfaction without shame.

In addition to these compelling features, this edition explores a spectrum of critical developments shaping the future of medicine and healthcare policy in India:

The diabetes feature examines the transition from manual finger-stick checks to continuous glucose monitoring (CGM), automated insulin delivery (AID) systems, and AI-driven metabolic support—liberating patients from daily decision fatigue.

A critique of the implementation of the National Commission for Allied and Healthcare Professions (NCAHP) Act, analyses whether prolonging course durations and adding professional titles genuinely improves clinical competence or merely increases the financial burden on students.

Another story breaks down the landmark 176th Report by the Parliamentary Standing Committee on Health and Family Welfare, tackling out-of-pocket medical expenditure, corporate profiteering, transparent hospital tariffs, and the urgent need to raise public health spending to 2.5 per cent of GDP.

Happy reading!

Thanks and regards,

Amresh K Tiwari
Editor-in-Chief



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Pushpanjali Medical Research Centre Organises Patient Safety Workshop

Pushpanjali Medical Education & Research Centre (PMERC), in association with the Consortium of Accredited Healthcare Organisations (CAHO), successfully organised a comprehensive Patient Safety Workshop as part of Pushpanjali Medicon 2026 recently. The event brought together leading members of the healthcare fraternity, including senior clinicians, doctors, hospital leaders, administrators, and healthcare professionals. The workshop provided a dedicated platform for meaningful discussions on





strengthening patient safety practices, building resilient healthcare systems, and addressing the evolving challenges faced by healthcare organisations.

Held under the theme 'Risk, Resilience & Profitability', the workshop focused on the need for healthcare institutions to move beyond viewing patient safety as a standalone quality initiative and instead embed it across clinical, operational, and organisational processes. The programme explored how effective risk management, preparedness, resilient systems, and a strong culture of safety can contribute to better patient outcomes while supporting sustainable and efficient healthcare delivery.

Dr Vinay Aggarwal, CMD, Pushpanjali Medical Education & Research Centre, said: "The overwhelming participation and engagement at the Patient Safety Workshop reflect the growing recognition that patient safety must remain at the core of healthcare delivery. Through nine focused sessions and seven hours of structured learning, the workshop brought together diverse perspectives from clinicians, healthcare leaders, administrators, and experts to discuss practical approaches to risk, resilience, and sustainable healthcare systems. Our association with CAHO further strengthened the academic and professional relevance of the programme. We are pleased with the response from the





healthcare fraternity and believe that such platforms can encourage institutions to continuously evaluate, strengthen, and improve their patient safety practices.”

Lallu Joseph, President, CAHO, said: “The workshop featured nine sessions covering seven hours of learning, providing participants with an extensive academic programme addressing different dimensions of patient safety and healthcare management. The sessions encouraged interaction between experts and delegates, allowing participants to examine real-world challenges, share experiences, and understand practical approaches that can be incorporated into their respective healthcare settings.”

Dr Vijay Agarwal, Past President, CAHO, said: “The workshop also





brought together participants from diverse areas of the healthcare ecosystem, creating opportunities for cross-institutional learning and professional exchange. The presence of senior healthcare professionals and hospital leaders added depth to the discussions, with delegates engaging on the importance of translating patient safety principles into measurable and sustainable practices within their organisations.”

Adding further academic value to the programme, the workshop was accredited for 5.5 hours by the Delhi Medical Council (DMC), recognising its educational relevance for medical professionals. The accreditation also reinforced the workshop’s focus on structured continuing medical education and professional development.

The Patient Safety Workshop formed an important component of Pushpanjali Medicon 2026, the fifth edition of the annual medical education initiative by Pushpanjali Medical Education & Research Centre. The larger programme is being organised on a much grander scale to provide healthcare professionals with opportunities for academic learning, skill development, professional interaction, and knowledge exchange. 





Pushpanjali Medical Research Centre Conducts Scientific Session

Pushpanjali Medical Education & Research Centre (PMERC) successfully conducted the Scientific Session of Pushpanjali Medicon 2026, bringing together more than 3,000 delegates from across the healthcare fraternity. The 24-hour academic programme was conducted simultaneously across three halls, with each hall hosting eight hours of scientific learning.

Eminent doctors, clinicians, medical experts, and healthcare professionals participated in the sessions and

discussed the latest advancements and emerging developments across various medical specialties. Among the distinguished speakers were Dr Sanjiv Kaul, Dr Shekhar Seshadri, Dr Milind Pande, Dr Anil Arora, and Dr Ved Prakash Mishra, alongside several other experts.

Dr Vinay Aggarwal, Chief Patron and CMD, Pushpanjali Medical Education & Research Centre, said: "The participation of more than 3,000 delegates reflects the strong academic relevance of Pushpanjali Medicon and the growing need for platforms that





medical education to participating medical professionals.

The successful scientific session

scientific programme. Speakers discussed how AI-enabled technologies are increasingly being explored across areas such as diagnostics, clinical decision-making, medical imaging, treatment planning, and healthcare management, while emphasising the continued importance of clinical judgment and responsible adoption of emerging technologies.

Adding further academic value, the scientific session was accredited for six hours by the Delhi Medical Council (DMC), providing recognised continuing

formed a key component of Pushpanjali Medicon 2026, bringing together the medical community on a common platform for knowledge exchange, professional interaction, and discussion on the future of healthcare. With participation exceeding 3,000 delegates, the programme reinforced the importance of continuous medical education and collaborative scientific dialogue in keeping healthcare professionals abreast of rapidly evolving medical and technological advancements. 





NO MORE FINGER-POINTING

Continuous glucose monitoring, automated insulin delivery, and artificial intelligence are transforming diabetes management. Modern care is moving from intermittent finger-stick corrections towards connected, round-the-clock metabolic support.

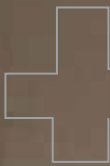
BY DR SUBHASH KUMAR WANGNOO

For decades, living with diabetes meant carrying an unseen, constant mental effort dependent on a rigid cycle of manual finger-stick glucose tests, precise calculation of insulin injections, and detailed food logging.

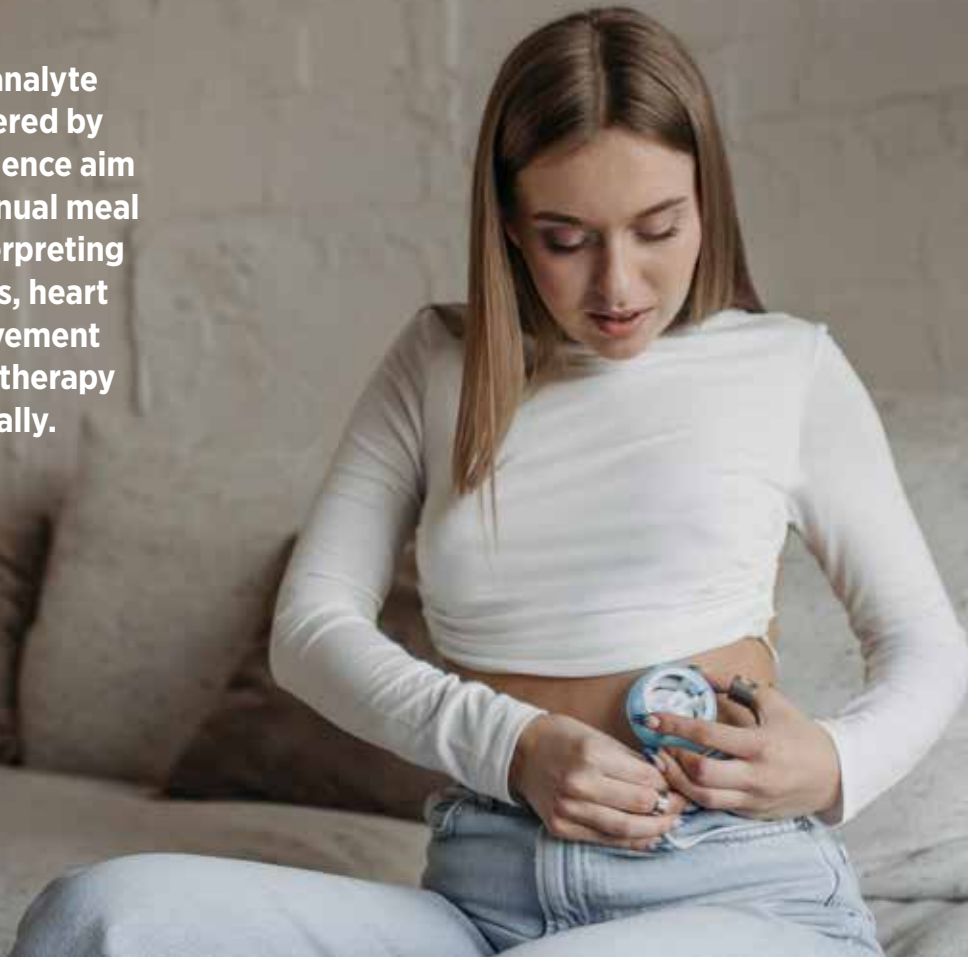
A single glucose reading offered little insight into whether blood sugar was rapidly climbing, steadily holding, or silently dropping. Today, diabetes technology is undergoing a fundamental transformation, shifting management from intermittent, manual corrections toward continuous, connected, and automated metabolic support.

This change happens by bringing three core pieces together: a continuous blood sugar sensor, a smart computer program, and an automatic insulin pump. Together, these technologies form automated insulin-delivery (AID) systems—often referred to as early artificial pancreas systems—that dynamically adjust insulin delivery based on real-time and predicted glucose trajectories. Recognising this clinical evolution, the 2026 American Diabetes Association (ADA) Standards of Care officially identifies AID as the preferred insulin-delivery approach for people living with type 1 diabetes, as well as for adults and children with type 2 diabetes who rely on insulin therapy. Crucially, recent guidelines remove historical





Future multianalyte systems powered by artificial intelligence aim to eliminate manual meal logging by interpreting glucose trends, heart rate, and movement data to adjust therapy automatically.



prerequisites, such as requiring specific C-peptide levels, verified antibody status, or a mandatory minimum duration of insulin therapy, before allowing individuals to access pump or AID technology.

Current AID systems are highly advanced, but they still cannot perfectly mimic how a healthy human body works. Healthy pancreatic beta and alpha cells work in unison, releasing insulin to clear excess glucose and counter-regulatory hormones like glucagon to prevent dangerous drops. Current AID systems deliver only insulin; while they can reduce or suspend insulin delivery when glucose plummets, they cannot actively raise blood sugar. Because meals, physical activity, emotional stress, acute illness, and fluctuating insulin sensitivity can alter blood glucose far faster than

subcutaneously injected insulin can act, the next frontier of diabetes care is moving beyond insulin-only delivery toward bihormonal, multihormonal, and multianalyte systems. The ultimate goal is not just to build a better insulin pump, but to create a system that truly understands the body's needs and takes away the daily stress, planning, and worry of living with diabetes.

CONTINUOUS GLUCOSE MONITORING: ILLUMINATING THE COMPLETE PICTURE

Continuous Glucose Monitors (CGMs) are the foundation of modern diabetes care because they track blood sugar constantly instead of using painful finger-pricks. Instead of a single snapshot in time, a CGM acts like a live video stream of blood sugar. It uses a

tiny sensor under the skin to send real-time numbers, trend arrows, and alerts directly to a smartphone.

CGMs provide constant updates on whether blood sugar is rising, falling, or staying steady. Modern sensors last 10 to 14 days and connect automatically to smart insulin pumps. They sound early warnings for dangerous highs or lows, protecting patients during vulnerable periods such as deep sleep, exercise, or illness.

CGM technology has moved diabetes evaluation past the traditional Haemoglobin A1C test, which shows only a three-month average and hides daily fluctuations. Two individuals can have the exact same A1C score, yet one may have stable blood sugar while the other experiences severe swings. CGMs expose these hidden patterns using six



Metric	Clinical Definition	Target Significance
Time in Range (TIR)	Percentage of the day blood sugar stays in a healthy zone.	Target range is 70 to 180 mg/dL.
Time Below Range (TBR)	Time spent in low blood sugar (hypoglycaemia).	Minimising risk of severe drops.
Time Above Range (TAR)	Time spent in high blood sugar (hyperglycaemia).	Identifying post-meal spikes.
Glucose Management Indicator (GMI)	Estimated A1C calculated from sensor data.	Provides real-time clinical proxy.
Glycaemic Variability	Score showing daily blood sugar stability.	Measures graph fluctuations.
Pattern Profiling	Tracking trends during sleep, meals, or exercise.	Pinpoints specific daily risk windows.



standardised measurements:

CGMs are no longer restricted to type 1 diabetes. Clinicians prescribe them based on personal risk profiles and therapeutic goals. They are highly recommended for individuals with type 2 diabetes who use insulin, older adults at risk for sudden glucose drops, and pregnant individuals requiring strict glycaemic control.

Despite their clinical benefits, CGMs

Integrating continuous ketone monitoring into wearable devices provides an early warning system, detecting insulin delivery interruptions hours before the onset of diabetic ketoacidosis.

present practical limitations. Sensor readings can lag behind actual blood glucose when levels change rapidly. Physical issues include early detachment, skin irritation, and compression lows caused by sleeping on the sensor. Constant alerts and connection glitches can also lead to alarm fatigue. Ultimately, technology cannot replace human judgment, and patients must verify unusual readings



Automated insulin delivery systems represent a shift in diabetes care, moving management from intermittent finger-stick corrections towards seamless, data-driven metabolic support.



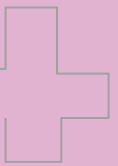
before making treatment decisions.

**AUTOMATED INSULIN DELIVERY:
ALLEVIATING DECISION FATIGUE**

Automated Insulin Delivery (AID) systems take the math and guesswork out of diabetes management by connecting a pump directly to a live sensor. Standard insulin pumps offer flexibility over daily injections for individuals with irregular schedules or morning glucose spikes. AID systems, or hybrid closed-loop systems, link the sensor, the pump, and a control algorithm to automatically adjust or pause insulin delivery based on predicted glucose trajectories.

These systems replace multiple daily injections with a wearable patch or tubing changed every few days. They automatically manage early morning spikes (the dawn phenomenon) and unpredictable daily schedules, reducing





the need to calculate doses manually.

CGM LIVE SENSOR – ALGORITHM CONTROL PROGRAM – AUTOMATED PUMP ADJUSTMENT

Current systems are termed ‘hybrid’ because they still require manual input at mealtimes. Because food raises blood sugar faster than subcutaneously delivered insulin can act, users must estimate carbohydrate intake and enter meal sizes manually. Without this manual input, blood glucose will spike before the control algorithm can compensate.

Despite this limitation, hybrid systems keep blood sugar in target ranges, lower A1C levels, and prevent severe drops across all age groups. The 2026 ADA guidelines officially recommend automated systems as a first-choice standard of care for patients relying on insulin therapy.

Living with diabetes requires dozens of daily mathematical calculations regarding food ratios, active insulin, physical activity, and overnight levels. By taking over routine adjustments, AID systems lift a significant mental burden. Parents gain relief regarding overnight hypoglycaemia, and adults manage unpredictable work schedules with greater flexibility.

Automated systems still require active management. Users must handle hardware issues such as pump blockages, detached pods, and technical glitches. They must understand emergency care, sick-day rules, ketone monitoring, and manual carbohydrate counting. Because pumps deliver fast-acting insulin, a blocked tube or disconnected patch stops all insulin delivery immediately. This can lead to rapid blood sugar spikes and Diabetic Ketoacidosis (DKA). Proper training, backup supplies, and an emergency plan remain essential safety requirements.

SMART PENS AND CONNECTED ECOSYSTEMS: EMPOWERING INJECTION THERAPY

Smart insulin pens offer a connected alternative for individuals who prefer or require multiple daily injections over wearing a pump. Many patients choose injections due to personal preference, equipment costs, lifestyle factors, or physical discomfort from wearable devices. Smart pens and connected pen caps log the exact time and size of every insulin dose, transmitting the data wirelessly to a smartphone application.

Smart pens prevent missed or duplicated doses by maintaining a clear digital record. The system calculates active insulin to prevent dose stacking, while built-in calculators assist with mealtime and correction doses. When paired with CGMs, smart pens provide medical teams with a complete clinical picture:

- **Explaining Glucose Spikes:** Clinicians can verify whether high glucose stems from missed doses, incorrect carbohydrate calculations, stress, or insulin resistance.
- **Spotting Glycaemic Trends:** Care teams can identify recurring patterns, such as post-breakfast spikes or nocturnal drops.
- **Tracking Lifestyle Changes:** Reports illustrate how glucose levels respond to weekend routines, travel, or irregular work shifts.

THE BIOLOGICAL PUZZLE: PHYSIOLOGICAL LIMITS OF SINGLE-HORMONE SYSTEMS

A healthy pancreas balances blood glucose through two distinct cell responses. After mealtimes, beta cells

release insulin to promote glucose uptake while co-secreting amylin, which slows digestion and suppresses liver glucose release. When blood sugar falls, alpha cells release glucagon, signalling the liver to convert stored glycogen into glucose.

Current automated systems utilise a single tool: increasing or decreasing insulin delivery. When blood sugar rises, the system increases insulin; when it drops, the system pauses delivery. However, pausing insulin is a passive response that stops further glucose decline but cannot actively raise blood sugar levels.

Single-hormone delivery faces physiological speed limits. Ingested carbohydrates enter the bloodstream in minutes, whereas subcutaneously injected insulin takes longer to peak. Sudden physical activity can cause rapid glucose drops even if insulin delivery has been suspended. When stress or acute illness causes glycaemic volatility, single-hormone systems lack the active tools required for rapid corrections.

BIHORMONAL ARTIFICIAL PANCREAS SYSTEMS: ACTIVE COUNTER-REGULATION

To address the limitations of single-hormone delivery, researchers have developed dual-hormone systems that utilise both insulin to lower blood sugar and glucagon to actively raise it. This bihormonal approach provides an automated safety net during unplanned exercise, sleep, or accidental insulin over-dosing, reducing the fear of sudden hypoglycaemia.

Clinical trials show that dual-hormone systems achieve comparable Time in Range to advanced single-hormone pumps, with both automated approaches performing significantly better than manual therapy. However, dual-hormone systems face practical hurdles. Standard liquid glucagon degrades quickly in solution, creating risk for pump tubing blockages. Dual-chamber hardware is bulkier, and

While current single-hormone pumps can pause insulin delivery when blood sugar drops, they remain passive and cannot actively raise glucose levels the way a healthy pancreas does.



operating two infusion sites increases daily effort and supply costs. Long-term effects of chronic micro-doses of glucagon on liver physiology also require ongoing study. Automated glucagon acts as an additional safety layer, and systems must be capable of reverting to single-hormone delivery if glucagon supplies deplete or sensors fail.

AMYLIN AND PRAMLINTIDE: RESTORING MEALTIME BALANCE

Integrating amylin (via its synthetic analog, pramlintide) into automated systems creates a tri-hormonal approach that mimics post-meal pancreatic physiology. Individuals with type 1 diabetes lack endogenous amylin. Replacing amylin slows gastric emptying and suppresses postprandial glucagon secretion, preventing rapid glucose spikes without requiring large insulin boluses.

Clinical studies indicate that combining insulin with pramlintide in automated systems improved Time in Range from 74 per cent to 84 per cent compared to insulin-only delivery, allowing users to announce meals without precise carbohydrate counting. Potential trade-offs include gastrointestinal side effects such as nausea and increased device complexity.

Multihormonal and Multianalyte Systems: Holistic Metabolic Tracking

The long-term vision for diabetes technology is an automated artificial pancreas that monitors multiple physiological signals and manages delivery across three hormones. Beyond glucose, future systems aim to track continuous ketones, heart rate, physical motion, and sleep metrics:

- **Exercise Adaptations:** If glucose falls while sensors register an elevated heart rate and physical motion, the system can suspend insulin and deliver a micro-dose of glucagon.
- **Postprandial Response:** When mealtime glucose spikes occur, the system can administer insulin while



co-delivering amylin to slow digestive absorption.

Continuous Ketone Monitoring (CKM) represents a vital safety advancement. Standard ketone testing relies on finger-stick blood samples or urine test strips used after symptoms appear. A wearable, continuous ketone sensor detects rising ketone levels early, warning of infusion set blockages or insulin interruption hours before the onset of Diabetic Ketoacidosis (DKA).

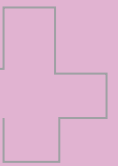
Multianalyte engineering faces technical challenges. Processing multiple sensor inputs can lead to algorithmic noise, signal lag, and false alarms. Control algorithms must accurately differentiate between physical exercise and acute physiological stress. Regulatory approval, cybersecurity protection, and manufacturing scalability remain necessary prerequisites for widespread

commercial availability.

ARTIFICIAL INTELLIGENCE: REDUCING MANUAL BURDEN AND UNDERSTANDING CONTEXT

Advanced Artificial Intelligence (AI) and Machine Learning (ML) aim to eliminate manual meal logging and exercise entries by interpreting physiological context automatically. By analysing real-time glucose, heart rate, and movement data, AI algorithms infer patient activities:

- **Unannounced Meals:** If blood glucose rises rapidly while physical activity sensors remain stationary, the algorithm identifies meal intake and adjusts insulin delivery.
- **Physical Exercise:** If glucose drops while heart rate and physical acceleration increase, the algorithm recognises exercise and reduces insulin delivery to prevent



hypoglycaemia.

AI algorithms adapt to an individual's changing metabolic patterns over time, adjusting parameters for growth spurts, pregnancy, illness, or shifting work schedules. Safety parameters are essential for automated medication control. Control algorithms require built-in cutoffs to prevent erroneous dosing caused by sensor glitches or corrupted data. AI models trained on general populations must adapt safely to individuals with unique conditions, such as renal impairment or severe insulin resistance. AI serves as a decision-support tool designed to assist, rather than replace, clinical management.

Remote monitoring tools and AI analytics can expand access to specialised care across diverse geographic regions, from urban centres like Delhi to rural communities across India. Achieving this impact requires affordable hardware,

stable connectivity, and clinical training for local healthcare providers.

WEARABLE INTEGRATION AND CONNECTED CARE

Diabetes hardware is transitioning toward smaller, integrated wearable patches that combine monitoring, delivery, and control algorithms. Engineers are evaluating single-patch devices that handle sensing and insulin delivery simultaneously, alongside dual-analyte sensors tracking glucose and ketones on one platform.

Combined wearable devices present a single point of failure risk. If an all-in-one patch detaches, clogs, or fails mechanically, the user loses glucose monitoring and insulin delivery at the same time. Maintaining a verified manual backup plan remains a core safety requirement.

Cloud-based data platforms enable

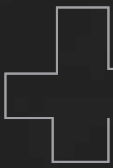
medical teams to review device data remotely. Rural patients living far from tertiary care centres can receive remote regimen adjustments, while urban users manage busy schedules while remaining connected to their clinicians. Because connected devices continuously log sensitive data—including glucose levels, insulin doses, exercise, and sleep metrics—robust end-to-end encryption and transparent patient data controls are mandatory.

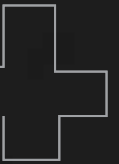
TAKEAWAYS

Translating AI-driven and multihormonal technology into routine clinical practice requires addressing core engineering and operational challenges. Preventing liquid glucagon degradation and tubing precipitation over extended wear periods is essential for hormonal stability. Designing dual-chamber and multianalyte hardware that remains compact and comfortable for daily wear will drive device miniaturisation. Control software must maintain safe delivery during sensor dropouts, compression lows, or data noise to achieve algorithmic reliability.

Securing insurance coverage and reducing out-of-pocket costs for wearable devices and monthly consumables will improve economic accessibility. Minimising alarm fatigue, skin irritation from medical adhesives, and daily interaction burden will enhance the user experience. Maintaining secure wireless connectivity, robust app integration, and cloud data protection supports seamless system integration. Finally, training patients and healthcare providers to interpret complex multianalyte data streams and continuous metric reports remains crucial for clinical education. 

(The author is Senior Consultant Endocrinologist and Diabetologist, Apollo Centre for Obesity, Diabetes and Endocrinology [ACODE], Indraprastha Apollo Hospital, New Delhi.)





Sex Is Sacred

We treat sex like a dirty secret rather than the very spark that kindles humanity's existence. Sexual pleasure, touch, and intimacy are not frivolous luxuries—they are throbbing strands of human vitality, health, and ecstasy.

BY PROF DR DEEPAK K. JUMANI





We discuss blood pressure, diabetes, cholesterol, constipation, arthritis, and even piles without a moment's hesitation. Mention sex or sensual fulfilment, however, and suddenly the voice drops to a timid whisper, eyes look away, and the conversation mysteriously vanishes in a cloud of blushing embarrassment. It is because somewhere along the way, society taught us that sex is something to be hidden in the dark rather than something to be celebrated and understood in all its passionate glory. Why are we so afraid to talk about the

very intimate act that kindled our creation and gave us life? If sex were not a normal, natural, and exquisitely beautiful function of the human body, none of us would be breathing today.

Sexuality is a normal biological and emotional dimension of human existence. Just as we breathe, our heart beats, we eat, sleep, and eliminate, our capacity for sensual pleasure and deep

Sexuality has no expiry date. When two bodies yield to tender touch and electric intimacy, the fires of pleasure burn brightly across every phase of life.

connection is an intrinsic part of who we are. It is not merely a mechanical physical act; it encompasses biology, psychology, intense intimacy, romantic harmony, and, for many, an essential aspect of identity, vitality, and overall quality of life. As I often share with my patients:

'SEX IS NOT A SECRET OF THE BODY; IT IS A SACRED SONG OF THE SOUL.'

And it is high time we stopped whispering about it.

OUR ANCESTORS WERE NOT AFRAID OF THE SUBJECT

Look at the magnificent cultural heritage of India. The awe-inspiring temples of

Clinical Domain	Vascular / Biological Connection	Strategic Health Implication
Cardiovascular Risk	ED and coronary artery disease share identical risk factors and endothelial mechanisms.	In many men, ED precedes clinical manifestations of coronary heart disease by several years.
Metabolic Health	Insulin resistance, diabetes, hypertension, and obesity strongly impair erectile tissue.	Sexual symptoms frequently appear well before diabetes is formally diagnosed.
Psychological Wellbeing	Untreated sexual dysfunction erodes self-esteem, driving anxiety, depression, and relationship distress.	Addressing ED preserves mental health, self-worth, and marital harmony.

'When a man has erectile dysfunction, don't just ask whether he can have sex. Ask what his blood pressure, blood sugar, weight, cardiovascular risk, and mental health are telling you.'



Khajuraho and Konark, along with sensuous, passionate sculptures preserved across various historical Indian traditions, remind us that human sexuality was not always treated as an unspeakable topic. These artistic marvels formed part of a vast cultural and philosophical landscape, affirming that raw desire, passionate relationships, and the sensual beauty of the human form have been celebrated components of civilisation for millennia.

The lesson for us today is not that sexuality should be reduced to mere entertainment. The lesson is far simpler and more profound: we must be able to discuss sexual health, intimacy, and bedroom satisfaction without shame.

WHEN THE BODY'S NATURAL FUNCTION DEVELOPS A PROBLEM

Sexual dysfunction is not a single disease entity. It is an umbrella term covering persistent problems involving

An erection is a complex vascular event. Persistent erectile dysfunction often serves as an early warning signal for heart disease and diabetes.

sensual desire, sexual arousal, firm erections, smooth ejaculation, peak orgasmic release, intimacy-related pain, or overall sexual fulfilment. And it can affect anybody. In my clinical practice, I see sexual-health concerns in men and women across diverse ages and backgrounds, including heterosexual, gay, lesbian, bisexual, and transgender individuals.

In men, common clinical presentations include fading libido, frustrating erectile dysfunction, premature ejaculation, delayed or absent climaxes, difficulty reaching peak ecstasy, and poor overall sexual satisfaction. In women, we routinely encounter dwindling desire, mismatched arousal rhythms between partners, persistent dryness, painful intercourse, involuntary vaginal spasms (vaginismus), inability to experience orgasm (anorgasmia), and a loss of sensual bliss.

One crucial clinical insight must be

underscored: sexual satisfaction is not synonymous with a rigid erection, mechanical penetration, or an explosive orgasm. A person may possess perfectly functioning sexual anatomy and still experience sexual frustration. Why? Because the spark of passion and sexuality begins in the mind. The brain, hormones, nerves, blood vessels, raw emotions, romantic chemistry, and overall health all orchestrate the intimate sexual response.

‘The most important sexual organ is not between the legs. It is between the ears.’

WHY DOES SEXUAL DYSFUNCTION HAPPEN?

There is rarely a single culprit. Sometimes the issue is physical, sometimes psychological, and frequently it is an intricate interplay of both mind and body.

Conditions like diabetes, hypertension, obesity, and dyslipidaemia (an abnormal level of lipids—fats such as cholesterol or triglycerides—in the blood) damage delicate pelvic blood vessels and sensitive nerve endings that fire up arousal. Hormonal imbalances directly dampen the fires of libido and blunt physiological passion. Neurological disorders and pelvic surgeries can impair nerve pathways. Even common prescription medications can cool down the body’s natural romantic engine.

And then there is the modern epidemic of chronic stress. Workplace pressure, financial worries, relationship friction, anxiety, depression, and poor sleep take a heavy toll. A person may retire to bed with their body under the covers, but their mind is still sitting at the office desk or racing with worry—leaving no room for warmth, touch, or ecstasy!

Performance anxiety creates another vicious cycle. A person worries whether they will satisfy their partner or maintain a firm, lasting erection, and that very anxiety suppresses the physiological flow of blood and sensation. The resulting disappointing experience



amplifies anxiety for the next encounter, perpetuating the cycle.

Lifestyle factors further compound the issue. Smoking, excessive alcohol intake, recreational drugs, physical inactivity, obesity, and poor dietary habits stifle arterial blood flow and dull sexual vitality. Moreover, the digital revolution has introduced a complex dimension: pornography often creates unrealistic expectations regarding body image, unrealistic stamina, and staged erotic behaviour. Pornography is scripted entertainment—not a medical textbook. Real, soul-stirring intimacy does not come with artificial background scores, strategic camera angles, and rehearsed retakes.

WHY SHOULD ERECTILE DYSFUNCTION CONCERN US?

This is perhaps the most critical message for men. Many regard erectile dysfunction merely as a frustrating bedroom failure. It is far more significant than that. An erection is a thrilling, highly dynamic vascular event requiring a surge of healthy blood flow, functional nerves, appropriate hormonal signalling, and a coordinated response between the brain and blood vessels.

Therefore, persistent erectile dysfunction often serves as an early warning signal of underlying vascular or metabolic disease.

THE DOCTOR MUST ASK THE QUESTION

One of the greatest barriers in sexual healthcare is not a lack of effective treatments, but the absence of open conversation. Physicians operate under tight time constraints, patients feel embarrassed to confess their erection and penetration struggles, and doctors may feel uncomfortable—so both remain silent.

We must overcome this clinical inertia. When a patient presents with obesity, a family history of diabetes, hypertension, or cardiovascular risk, sexual health and bedroom satisfaction should never be sidelined. A simple, compassionate inquiry can change everything:

‘HOW IS YOUR SEXUAL HEALTH?’ OR ‘DO YOU HAVE ANY CONCERNS MAKING LOVE?’

That single question can uncover erectile dysfunction, premature ejaculation, fading sexual desire, medication side effects—or even previously undiagnosed



metabolic disease. Sometimes the most powerful diagnostic instrument in medicine is not a complex machine, but a timely question coupled with attentive, empathetic listening.

CAN SEXUAL DYSFUNCTION BE TREATED? ABSOLUTELY.

Modern sexual medicine has advanced dramatically. However, treatment must never begin with blindly prescribing a tablet to chase a quick spark. Comprehensive clinical evaluation is the essential first step. The physician must understand the timeline, underlying medical conditions, medications, lifestyle, psychological dynamics, and relationship context.

Depending on individual needs, treatment may encompass lifestyle modification, psychosexual counselling, sex therapy to reignite emotional chemistry, management of cardiovascular risks, correction of hormonal imbalances, and evidence-based pharmacotherapy. For erectile dysfunction, oral PDE-5 inhibitors remain valuable first-line options for appropriate candidates. Advanced clinical options offer remarkable solutions for severe, treatment-resistant cases, including:

1. Vacuum erection devices [mechanical acrylic cylinders placed over the male organ that use a manual or motor-driven vacuum pump to draw blood directly into the erectile tissue, held firmly in place by a soft tension ring at the base for intercourse]
2. Intracavernosal injections [the direct, virtually painless administration of micro-doses of vasoactive medications into the side of the shaft using a fine needle, triggering rapid arterial dilation and a firm erection within minutes regardless of nerve damage]
3. Penile prostheses [surgically implanted internal devices—

ranging from malleable semi-rigid rods to sophisticated three-piece inflatable systems with a hidden fluid reservoir and pump concealed within the scrotum—that allow a man to achieve a completely natural-looking, firm, and fully controllable erection whenever desired].

Women require tailored strategies depending on whether the issue is hormonal, psychological, pelvic-floor related, pain-induced, or secondary to a medical condition.

The horizon of regenerative medicine—including platelet-rich plasma ‘vampire’ shots, stem-cell therapies, and gene therapies—is currently under investigation. However, caution is paramount: new does not

automatically mean clinically proven. Patients must remain wary of unverified promises of guaranteed ‘permanent cures’ sold by predatory clinics. Medicine must offer hope, but hope must walk hand in hand with scientific evidence.

LIFESTYLE MAY BE THE MOST POWERFUL PRESCRIPTION

There is a potent treatment that does not come in a pill bottle: lifestyle modification. Regular physical exercise, healthy weight management, restorative sleep, a balanced diet, blood pressure and blood sugar control, smoking cessation, alcohol moderation, and stress reduction dramatically enhance stamina, pelvic blood circulation, and sexual vitality.



'WHAT IS GOOD FOR YOUR HEART IS USUALLY GOOD FOR YOUR SEXUAL HEALTH.'

The penis, vagina, heart, and brain do not reside in separate territories. They share the exact same circulatory system, neural network, hormones, and biological environment.

THE SEXUAL-HEALTH TSUNAMI AMONG THE YOUNG

We are witnessing a worrying confluence of challenges affecting younger generations: sedentary habits, obesity, early-onset diabetes, chronic stress, sleep deprivation, substance use, relationship anxieties, and unrealistic expectations fuelled by digital media and adult films.

We possess more information about sex than any generation in history, yet we lack genuine sexual-health literacy and emotional maturity in the bedroom. Young adults need accurate, scientific education regarding their bodies, consent, sensual connection, healthy relationships, contraception, sexually transmitted infections, and the psychological impact of pornography. The solution is neither fear nor moral policing—it is open communication and responsible healthcare.

SEX HAS NO EXPIRY DATE

Perhaps the final myth we must shatter is that sensuality and sexual passion belong exclusively to the young. It does not. Sexuality evolves and deepens throughout life. Hormones shift, bodies change, and health conditions emerge. Yet the human need for affection, tender touch, passionate warmth, companionship, and emotional connection does not vanish with advancing age. Sexual health in later years is not about proving youth—it is about preserving overall quality of life and celebrating enduring intimacy.

So let us stop laughing at sexual problems. Let us stop whispering about them. Let us stop dismissing sexual dysfunction as merely an inevitable part of ageing. And let us start talking.

TAKEAWAYS

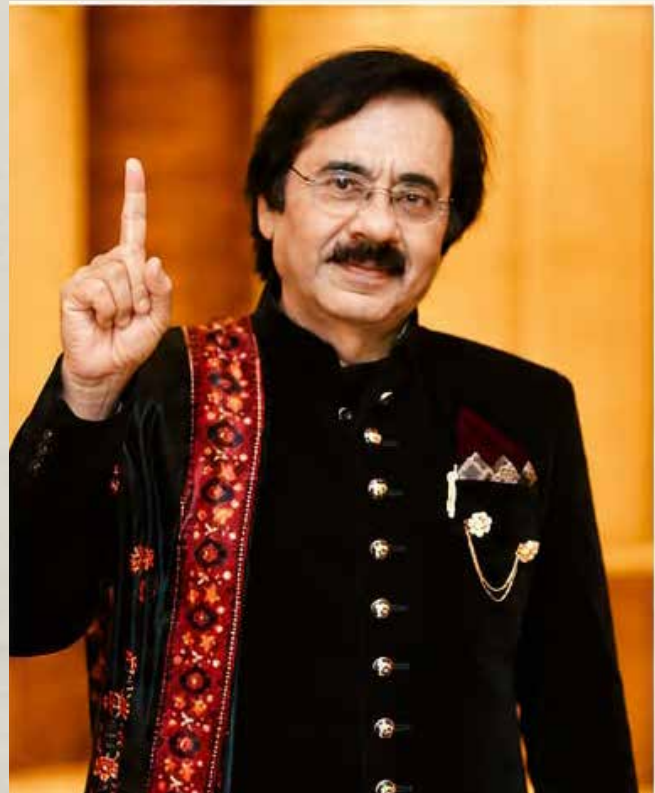
Navigating sexual wellness effectively requires understanding five fundamental truths.

First, sexual dysfunction is remarkably common; it is a genuine biological and psychological health issue rather than a personal failure or a loss of intimacy.

Second, erectile dysfunction is rarely just a bedroom issue, serving frequently as a sensitive early barometer for diabetes, hypertension, and cardiovascular disease.

Third, self-medicating with unregulated over-the-counter aphrodisiacs or online supplements can be hazardous, making professional medical evaluation indispensable.

Fourth, healthy lifestyle choices—including regular exercise, restful sleep, weight control, and stress management—directly fuel sensual vitality and pelvic blood flow.



The penis, heart, and brain share the same circulatory and neural networks. Heart-healthy lifestyle choices are the most effective prescription for nourishing your body's fiery vascular pulse to help you achieve mind-blowing stamina and experience sensual ecstasy.

Fifth, seeking timely guidance from a qualified healthcare professional removes unnecessary suffering and restores passion, proving that with compassionate, evidence-based care, sex truly has no expiry date. 

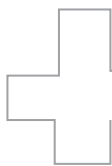
(The author is a Senior Sexual Health Physician and Counsellor based in Mumbai with four decades of experience in sexual medicine, education, and counselling. Associated with Sir JJ Group of Government Hospitals, Grant Medical College, Breach Candy Hospital, and Mumbai Police Hospital, he has been conferred with the Dronacharya Award by the Government of India, the Dr B.C. Roy Award by the IMA National Hqrs, and the Excellence in Sexology Award by the Council of Sex Education and Parenthood International [September 2026].)



DUBIOUS SHOTS,
DEADLY
RESULTS

The circulation of fake vaccines poses a grave threat to public health. From refilling discarded vials to exploiting digital platforms, counterfeiters take advantage of gaps in supply chains and regulatory oversight, putting lives at risk and eroding public trust in vaccination.

BY DR AMITAV BANERJEE



Vaccines are among the most consequential products in modern public health. Unlike an ordinary consumer product, a vaccine is administered directly into the human body, often to healthy people, including infants, pregnant women, older adults, and people with underlying vulnerabilities. The public, therefore, has a legitimate expectation that every vial administered through an authorised programme or healthcare facility is authentic, properly manufactured, correctly stored, and safe to use.

When adulterated, substandard, or spurious vaccines enter circulation, the damage goes far beyond the individual patient: they can undermine immunisation programmes, weaken confidence in science and public institutions, create avoidable disease outbreaks, and impose enormous economic and social costs.

India has recently faced serious concerns over counterfeit/falsified rabies vaccines, particularly involving the brand Abhayrab. In January 2025, Indian Immunologicals Ltd. reported a counterfeit batch, KA24014, which authorities and international health agencies subsequently warned could have been circulating since November 2023; people who received the affected or unidentified vaccine were advised to seek medical assessment because a counterfeit dose may not provide adequate protection against rabies. In September 2026, Indian regulators identified another suspected falsified Abhayrab batch, KE25012, which was originally seized in April 2026 from an unlicensed premises in Delhi; testing at the Central Drugs Laboratory, Kasauli, found it misbranded and not of standard quality, with significant discrepancies in packaging, labelling, and other identifying features, and the



A patient receiving an injection cannot determine its authenticity simply by looking at it. Therefore, vaccine safety cannot depend on consumer vigilance alone; system-level authentication must be the primary defence.

CDSCO directed State Drug Controllers to maintain vigilance. The developments are particularly concerning because rabies is almost invariably fatal once clinical symptoms develop, making the authenticity and potency of post-exposure vaccination critical.

Against this background, India should treat the circulation of adulterated and spurious vaccines as

a national public-health security issue, not merely as another category of pharmaceutical crime. India already possesses significant regulatory infrastructure, vaccine-manufacturing capacity, laboratory capability, and one of the world's largest immunisation supply systems. The challenge lies in making these systems sufficiently transparent, technologically integrated, and enforcement-oriented



so that a counterfeit or compromised vaccine becomes extremely difficult to manufacture, distribute, and administer without detection.

EXPLANATION OF VARIOUS CATEGORIES OF DUBIOUS VACCINES

The issue also requires conceptual clarity. “Adulterated,” “substandard,” “misbranded,” “spurious,” and “falsified” are not interchangeable terms. Under India’s Drugs and Cosmetics Act, 1940, an adulterated drug can include one contaminated or prepared, packed, or stored under unsanitary conditions, or one whose quality or strength has been reduced by the addition of another substance.

A spurious drug, by contrast, concerns fraudulent identity or origin—for example, a product made under another drug’s name, an imitation intended to deceive, a product bearing the name of a fictitious manufacturer, or a product falsely purporting to be manufactured by a genuine company. WHO uses the broader terminology of “substandard and falsified” medical products. This distinction matters because the solution to manufacturing contamination is not identical to the solution to deliberate counterfeiting.

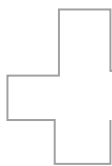
THE VACCINE IS A SPECIAL KIND OF PHARMACEUTICAL PRODUCT

All medicines require quality control, but vaccines present

particular challenges. They are biological products whose potency, purity, sterility, and stability depend upon tightly controlled manufacturing processes. Their effectiveness can also be affected by temperature excursions and inappropriate handling.

This means that the phrase “fake vaccine” covers several different risks.

At one extreme is a completely fraudulent product: a vial containing an unknown liquid but labelled as a legitimate vaccine. At another is a genuine vaccine that has been improperly stored and has therefore lost quality. There can also be a genuine vial with a falsified label, an



altered batch number or expiry date, or a genuine discarded vial that has been refilled. These scenarios have very different origins but share one characteristic: the person receiving the injection cannot reasonably be expected to determine its authenticity simply by looking at it.

That is why vaccine safety cannot depend primarily on consumer vigilance.

A patient might notice poor printing, spelling errors, damaged packaging, or an unusual vial. But sophisticated counterfeits may look remarkably convincing. WHO has specifically warned that falsified vaccines can be difficult to distinguish from genuine products. In one 2021 alert concerning falsified AstraZeneca COVID-19 vaccine, WHO noted that discarded genuine vials could be illicitly refilled and that such products could appear almost indistinguishable from authentic vaccine.

Consequently, the principal defence must be system-level authentication, supported by professional vigilance.

COVID-19 EXPOSED THE VULNERABILITY OF EXTRAORDINARY DEMAND (REAL OR PANIC DRIVEN)

The COVID-19 pandemic demonstrated why this subject deserves sustained attention.

During the pandemic, vaccines became scarce and extraordinarily valuable commodities. Governments were attempting to vaccinate enormous populations while manufacturers were expanding production, supply chains were under intense pressure, and the public was urgently seeking protection. That combination created exactly the environment in which fraudsters can attempt to exploit demand.

WHO reported falsified Covishield products in the South-East Asia and African regions in 2021, including products reported at patient level in



Knowing that a hundred vials moved from a warehouse to a district does not prove every physical vial is genuine. The next generation of vaccine security must integrate inventory tracking with individual dose-level product authentication.

India. The genuine manufacturer, Serum Institute of India, confirmed that the products identified in the alert were falsified. Among the indicators were falsified expiry information, an incorrect presentation, and falsified batch details.

This is not merely a historical curiosity. India's own Central Drugs Standard Control Organization subsequently documented multiple samples of purported Covishield vaccines that were declared spurious. Its published records for 2022



When adulterated, substandard, or spurious vaccines enter circulation, the damage goes far beyond the individual patient. They can undermine immunisation programmes, weaken confidence in science, and impose enormous social costs.

attempt to penetrate the system or exploit parallel channels.

WHO's contemporary guidance was also reassuring in an important respect: people receiving vaccines through regulated and controlled supply chains were at substantially lower risk. The appropriate response was not panic, but vigilance, authentication, and strong supply-chain controls.

THE DIFFERENCE BETWEEN ADULTERATION AND COUNTERFEITING MATTERS

Public debate often uses "adulteration" as a catch-all term. That can obscure where intervention is required.

Adulteration is primarily a quality and safety problem. A product may contain harmful contaminants, be manufactured in unhygienic conditions, contain an inappropriate substance, or have its strength reduced. Such failures may arise through negligence, inadequate manufacturing controls, deliberate fraud, or some combination.

Substandard products are products that fail to meet established quality standards or specifications, whether or not fraud is involved.

Misbranding involves false or misleading presentation or labelling.

Spurious or falsified products

involve deliberate deception about identity, composition, or source.

A manufacturer whose batch accidentally fails a specification is not necessarily a counterfeiter. Conversely, a criminal enterprise selling a perfectly sterile vial filled with an unrelated substance and labelled as a prestigious vaccine is not simply making a "low-quality vaccine"; it is committing deliberate fraud.

The distinction is important because a strong national strategy needs both quality assurance and criminal investigation.

INDIA'S REGULATORY ARCHITECTURE IS SUBSTANTIAL—BUT ENFORCEMENT MUST REMAIN RELENTLESS

India has a long-established statutory framework governing drugs. The Drugs and Cosmetics Act defines adulterated and spurious drugs and provides serious penalties. For spurious drugs not falling into the most serious harm category, Section 27 provides for imprisonment that can extend to life imprisonment, with specified minimum terms and fines; where adulterated or spurious drugs are likely to cause death or grievous hurt, the penalties are considerably more severe.

This sends an appropriate legal message: pharmaceutical counterfeiting is not an ordinary commercial offence.

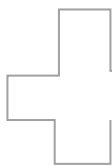
BUT LAWS ALONE DO NOT GUARANTEE SAFETY.

The effectiveness of regulation depends on inspections, sampling, laboratory capacity, intelligence gathering, prosecution, inter-state cooperation, and the speed with which dangerous products are recalled.

The CDSCO's current alert system is therefore important. Its public database contains regular listings of drugs, medical devices, vaccines, and

included samples with falsified batch information and an unlabelled vial purported to contain a COVID-19 vaccine; cases were investigated and prosecuted.

The lesson is not that India's entire vaccination system was unsafe. Quite the opposite: the existence of regulatory detection and laboratory confirmation demonstrates that surveillance mechanisms can work. The lesson is that even during a massive government-controlled vaccination effort, criminal actors can



cosmetics declared spurious or not of standard quality. The system provides a mechanism through which regulators and the public can see that quality failures are being detected rather than hidden.

The challenge is to ensure that detection is followed by rapid containment.

A vaccine batch should not remain in circulation for weeks while regulators determine who has received it. Once a credible signal emerges, the system should be capable of moving rapidly from detection – verification – quarantine – recall – patient notification – clinical follow-up – investigation.

THE SUPPLY CHAIN DEMANDS HAZARD ANALYSIS & REMEDIAL ACTION AT CRITICAL POINTS

A counterfeit vaccine does not spontaneously appear inside a vaccination centre. It has to move through a chain.

Manufacturing facilities, warehouses, transporters, distributors, wholesalers, hospitals, clinics, pharmacies, and vaccination sites all represent potential points of vulnerability.

WHO notes that substandard and falsified products commonly exploit weak links in long supply chains. They can enter through intermediaries whose credentials are not adequately checked, and increasingly sophisticated online commerce can create additional channels outside regulated distribution.

India's immunisation programme already has a major advantage: it has built sophisticated vaccine logistics infrastructure.

The National Cold Chain and Vaccine Management Resource Centre functions as a technical resource centre for India's immunisation supply chain. The country's Electronic Vaccine Intelligence Network, or eVIN, provides information on vaccine stock



and storage conditions, while the broader cold-chain system monitors storage equipment and temperatures.

But there is an important distinction between tracking a vaccine's location and proving its identity. Knowing that "100 vials of vaccine X were sent from warehouse A to district B" does not necessarily establish that every physical vial in district B is genuine. The next generation of vaccine security should therefore integrate inventory management with individual-product authentication.

FROM BATCH TRACKING TO DOSE-LEVEL AUTHENTICATION

India should progressively move toward a system in which every vaccine pack has a secure digital identity that can be checked throughout the legitimate supply chain.

A robust system could combine:

- Secure serialisation;
- Tamper-evident packaging;
- Machine-readable codes;
- Batch and expiry verification;
- Manufacturer authentication;
- Temperature-history information where technically appropriate;
- Automated alerts for duplicated or suspicious serial numbers;
- Electronic records connecting



Counterfeit vaccines attack both individual health and public trust simultaneously. India must adopt a philosophy of zero tolerance combined with maximum transparency to preserve the integrity of vaccination.

domestic traceability.

That direction is welcome. The logical next step is to make traceability increasingly comprehensive for high-risk biological products, including vaccines.

THE COLD CHAIN IS NOT THE SAME AS AUTHENTICITY—BUT IT IS PART OF AUTHENTICITY ASSURANCE

Another common misunderstanding is to treat counterfeit prevention and cold-chain management as separate issues.

They are distinct, but interconnected.

A genuine vaccine that is stored outside its required conditions may no longer provide the expected protection. Conversely, a perfectly maintained cold chain cannot make a counterfeit vaccine genuine.

India has made significant investments in cold-chain infrastructure. The government's 2024–25 reporting notes that the National Cold Chain Management Information System tracks equipment availability and performance, while Effective Vaccine Management assessments are used to identify gaps and improve supply-chain performance. The national EVM score increased from 68 per cent in 2018 to 82 per cent in 2022.

These systems should increasingly be integrated with product authentication.

Imagine a vaccine vial whose identity, batch, expiry, storage history, and administration record could be verified through a secure system. A suspicious vial could then generate an alert before it reaches a patient's arm.

CYBERCRIMINALS HAVE ENTERED THE VACCINE AND DRUGS COUNTERFEIT MARKET

The digital economy has brought enormous benefits to healthcare, but it has also created new avenues for medical fraud.

A person searching online for a scarce or expensive vaccine may encounter websites, social-media accounts, messaging groups, or informal brokers claiming to offer genuine products. During periods of shortage or panic, consumers may become particularly vulnerable.

WHO has repeatedly warned about medical products offered through unauthorised websites. It advises people to be cautious about websites that conceal physical addresses or other basic identifying information and to obtain medical products through authorised channels.

India therefore needs a stronger partnership between drug regulators, cybercrime authorities, customs, police, online platforms, payment companies, and manufacturers.

The regulator should not have to discover a fake vaccine website after thousands of consumers have already interacted with it.

There should be mechanisms for rapid detection, takedown, investigation, and public warning.

At the same time, enforcement should distinguish between legitimate online healthcare services and fraudulent sellers. The objective is not to push patients away from digital healthcare, but to make legitimate digital commerce safer.

THE MOST DANGEROUS COUNTERFEIT MAY BE THE ONE

procurement, distribution, and administration;

- Rapid recall functionality.

The objective should not be to burden vaccinators with unnecessary paperwork. Technology should reduce administrative work while increasing security.

India has already recognised the value of digital traceability more broadly. In a 2026 intervention to the WHO Executive Board, India stated that it has implemented risk-based inspections and enhanced market surveillance, maintains a national drug track-and-trace system for exported pharmaceutical products, and is progressively strengthening



THAT LOOKS GENUINE

One of the greatest misconceptions is that fake products are necessarily crude. They are not.

Modern printing, packaging, and digital design can make counterfeit packaging highly convincing. A falsified product can carry a genuine-looking logo, batch number, manufacturer name, and expiry date.

This is why public education campaigns that simply tell people to “look carefully at the vial” have limited value. Consumers should certainly be encouraged to report suspicious packaging, but the deeper solution must be institutional.

Hospitals and vaccination centres should procure only through authorised channels. Staff should know how to recognise suspicious products. Manufacturers should provide regulators with secure authentication methods. Distributors should maintain documented chain-of-custody records. Empty vaccine vials should be disposed of in ways that make unauthorised reuse difficult.

WHO’s warning about refilled COVID-19 vaccine vials illustrates the point: improper disposal of empty genuine vials can itself create a counterfeit opportunity.

Waste management, therefore, becomes part of vaccine security.

THE COUNTRY’S REPUTATION AS THE PHARMACY OF THE WORLD IS ALSO AT STAKE

There is another dimension that deserves more attention: India’s position as a major global pharmaceutical and vaccine producer.

India supplies medicines and vaccines to numerous countries. Its vaccine manufacturers have developed substantial international reputations and manufacturing capabilities.

Consequently, counterfeit products carrying the name of an Indian manufacturer do two kinds of damage.

First, they can harm patients. Second, they can damage the reputation of legitimate Indian manufacturers. This makes combating counterfeiting a matter not only of domestic public health but also of India’s international economic and diplomatic interests.

At the same time, India should be careful not to confuse isolated criminal counterfeiting with legitimate manufacturing failures. Transparency is essential. If a genuine product fails a quality specification, regulators should communicate the facts accurately. If a counterfeit merely uses a company’s name, the company should not be portrayed as having manufactured it. Precision in communication is part of maintaining public confidence.

PUBLIC TRUST IS THE MOST VALUABLE ASSET—AND THE EASIEST TO DAMAGE

A vaccine programme ultimately depends on trust. People must trust that the vaccine is what the label says it is. They must trust the healthcare worker administering it. They must trust the regulator. They must trust that adverse events will be investigated honestly. And they must trust that authorities will tell them when something goes wrong. A counterfeit vaccine threatens all four layers simultaneously.

If one person receives a fake product and later develops the disease the vaccine was supposed to prevent, the individual may conclude that the vaccine itself “does not work.” If the story spreads on social media, thousands of people may begin questioning legitimate vaccination. This is why the harm from a single falsified vial can be disproportionately large.

WHO explicitly identifies the erosion of confidence in healthcare systems as one of the harms associated with substandard and falsified medical



products. The appropriate communications strategy should therefore be neither denial nor sensationalism.

If a counterfeit batch is found, authorities should say:

- What was detected;
- Where it was found;
- Whether it entered an authorised programme;
- What batch numbers are affected;
- What action has been taken;
- Whether anyone received the product;
- What affected individuals should do;



- What is known and what remains under investigation. That is how trust is protected.

REGULATION SHOULD BECOME MORE INTELLIGENCE-LED

Traditional pharmaceutical inspection often involves periodic inspections and laboratory sampling. These remain essential, but modern counterfeiting requires an intelligence-led approach.

Regulators should identify high-risk products, suppliers, and routes.

For example, unusual purchasing patterns, large volumes of a scarce vaccine, price anomalies, unexplained

movement of stock, repeated batch-number duplication, or products appearing outside authorised distribution networks should trigger investigation.

India's recent emphasis on risk-based inspection and market surveillance is therefore particularly relevant.

Regulators should also combine information from different sources rather than treating every signal separately.

A hospital complaint, a customs seizure, an online advertisement, and a suspicious batch number might appear unrelated when viewed

independently. An integrated intelligence system could reveal that they are connected.

This is where artificial intelligence and data analytics could eventually become useful—not as replacements for laboratory science or regulatory judgment, but as tools for identifying patterns that humans might miss.

LABORATORIES ARE THE FINAL LINE OF DEFENCE

No digital system eliminates the need for laboratory testing.

When a suspicious vaccine is identified, laboratories may need to determine whether the contents match the declared product, whether potency and identity are consistent with specifications, whether contamination is present, and whether the packaging and label correspond to the manufacturer's records.

India already has a network of drug-testing laboratories, and the CDSCO regularly publishes laboratory-based quality alerts. The regulator's current public alert system demonstrates that laboratory surveillance remains an important component of enforcement.

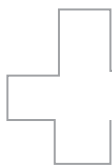
The priority should now be to make laboratory testing faster.

A counterfeit vaccine discovered in one city should trigger rapid information sharing across the country. Laboratories should have validated methods for high-risk biological products and access to reference materials and manufacturer cooperation.

Speed matters because every hour between detection and containment represents an opportunity for further distribution.

ACCOUNTABILITY MUST REACH BEYOND THE PERSON HOLDING THE VIAL

Counterfeit medical products are often discussed as if the culprit is simply a small illegal manufacturer.



The reality can be more complicated. A supply chain may involve brokers, distributors, transporters, warehouse operators, corrupt insiders, forged documentation, and online sellers. If enforcement captures only the final seller, the network can reappear under another name.

India therefore needs investigations that follow the money, materials, communications, and logistics behind counterfeit vaccines.

The legal framework already provides severe penalties for serious spurious-drug offences. But the effectiveness of deterrence depends on the certainty and speed of detection and prosecution, not merely on the theoretical maximum sentence. A ten-year sentence written in a statute does little to deter a sophisticated criminal network if the probability of detection is perceived to be low. The policy objective should therefore be: detection + rapid investigation + strong prosecution + asset seizure + appropriate punishment.

MANUFACTURERS ALSO HAVE RESPONSIBILITIES

It would be unfair to place the entire burden on government. Manufacturers should invest in anti-counterfeiting technology, secure packaging, and supply-chain visibility. They should maintain robust records that allow regulators to verify whether a particular batch, vial, or serial number is genuine. Manufacturers should also have rapid-response systems for suspected counterfeits. If a hospital sends a suspicious vial to a company, the response should not take weeks.

The company should be able to say rapidly whether the product corresponds to a genuine batch and whether the packaging matches its specifications. The pharmaceutical industry should view anti-counterfeiting technology not merely as a regulatory cost but as part of product quality.



RECOMMENDATIONS FOR A NATIONAL STRATEGY TO CHECK THIS MENACE

India should build a National Vaccine Authentication and Security Framework around seven principles:

1. **Authenticate every high-risk vaccine:** Every vaccine should progressively carry a secure, machine-readable identity that can be checked through authorised systems.
2. **Integrate supply-chain data:** Procurement, distribution, cold-chain records, batch information, and administration data should be interoperable wherever privacy and security requirements permit.
3. **Strengthen risk-based surveillance:** Sampling should be concentrated where the risk of falsification or degradation is highest, rather than relying exclusively on uniform inspection.
4. **Establish rapid recall mechanisms:** When a suspicious batch is identified, affected

products should be traceable quickly and removed from circulation.

5. **Strengthening the roles of border and cybercrime agencies:** Customs, police, cybercrime units, CDSCO, state regulators, and online platforms should cooperate against illicit vaccine distribution.
6. **Protection of whistleblowers:** Healthcare workers, distributors, and employees who identify suspicious products should have safe channels for confidential reporting.
7. **Transparency:** The public should receive factual information quickly, without exaggerating the scale of a problem and without minimising legitimate risks.

CREATING AWARENESS AMONG THE GENERAL PUBLIC ABOUT WAYS TO AVOID GETTING CONNED



Patients should receive vaccines through authorised vaccination programmes, hospitals, or licensed healthcare providers. They should be suspicious of vaccines offered through informal channels, unusually cheap offers, anonymous online sellers, or products that cannot be authenticated.

WHO recommends obtaining medical products from authorised sources and seeking professional advice if a product appears suspicious or causes an unexpected problem.

A patient cannot reasonably be expected to determine whether a microscopic difference in a label indicates a counterfeit. The system should be designed so that the safest choice is also the easiest choice.

LESSONS FROM THE COVID-19 PANDEMIC

The extraordinary counterfeit-vaccine risks seen during COVID-19 should not be remembered merely as an unusual feature of 2021. They should be treated as a case study in what happens when demand, scarcity, fear, and criminal opportunity converge.

WHO's alert history shows that falsified COVID-19 vaccines appeared in multiple regions during the pandemic, including falsified Covishield reported in India and falsified Pfizer-BioNTech and AstraZeneca products reported elsewhere. The next public-health emergency may involve a different disease and a different vaccine. The lessons remain the same.

TAKEAWAYS

Adulterated and spurious vaccines represent one of the most serious forms of pharmaceutical fraud because they attack both the individual patient and the public-health system simultaneously.

The physical harm can be immediate: exposure to an unknown or contaminated substance, failure to

receive the intended protection, delayed treatment or immunisation, and potentially severe medical consequences. But the psychological and societal consequences can be even broader. A counterfeit vaccine can generate stories of "vaccine failure," feed misinformation, reduce confidence in immunisation, and undermine years of public-health work.

India should therefore adopt a philosophy of zero tolerance combined with maximum transparency.

Zero tolerance means that deliberate manufacture, trafficking, and administration of spurious vaccines must attract serious regulatory and criminal consequences. It means investing in inspections, laboratories, secure packaging, digital traceability, intelligence-led enforcement, and cross-border cooperation.

But zero transparency would be equally dangerous. Authorities must not hide detected problems out of fear that publicising them will damage confidence. Responsible disclosure, rapid containment, and honest

communication ultimately strengthen confidence.

India has many of the necessary foundations already in place. CDSCO operates a national regulatory framework and publishes quality alerts; the country has specialised vaccine oversight and pharmacovigilance mechanisms; the immunisation programme has extensive cold-chain infrastructure; eVIN provides real-time visibility into vaccine stocks and storage conditions; and India is increasingly emphasising risk-based inspection and domestic traceability.

The task now is to connect these strengths into a genuinely integrated vaccine-security system.

The ultimate goal should be simple: from the moment a vaccine leaves an authorised manufacturer to the moment it enters a patient's body, its identity, quality, custody, and storage should be demonstrable.

A country that can manufacture vaccines at enormous scale should also be able to make counterfeit vaccines exceptionally difficult to manufacture, distribute, and administer. That is not merely a regulatory aspiration. It is a basic obligation to every citizen who places their health—and often their child's health—in the hands of the vaccination system. The fight against spurious vaccines is therefore not a fight against vaccination. It is a fight to protect the integrity of vaccination itself. 

(The author is a renowned epidemiologist and Professor Emeritus at D Y Patil Medical College, Pune. Having served as an epidemiologist in the armed forces for over two decades, he ranked in Stanford University's list of the world's top 2 per cent scientists for three consecutive years [2023–25]. He has penned the book, "Covid-19

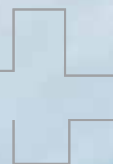




THE “DR” PREFIX DEBATE

The use of the 'Dr' by physiotherapists and occupational therapists remains contentious, with regulatory uncertainty and court challenges keeping the issue alive.

**BY DR PRADIP
KUMAR GUPTA**





The National Commission for Allied and Healthcare Professions (NCAHP) Act, 2021 was a necessary reform. For decades, allied and healthcare education developed under different universities, hospitals, State authorities, and private institutions, producing wide variations in course names, duration, curriculum, clinical exposure, and professional standards. The Act created, for the first time, a national framework for regulating education and professional services, assessing institutions, maintaining Central and State Registers, and promoting research and scientific advancement.

The need for regulation is not in dispute. The concern is whether standardisation is being equated with longer courses, additional internships, and enhanced professional titles without first ensuring adequate clinical material, trained supervisors, affordable fees, and clearly defined scopes of practice. A course becomes stronger through demonstrable competence—not merely through the addition of semesters.

THE REGULATORY STRUCTURE

The Act distributes responsibility among related national and State institutions:

This structure can bring coherence to a previously fragmented field. It may, however, also produce excessive standardisation if course duration is prescribed without sufficient attention



Dr Pradip Kumar Gupta

The dispute over the 'Dr' prefix is not merely about professional prestige; it concerns patient comprehension, scope of practice, and accountability when harm occurs. The answer lies in precise scope-of-practice regulation and transparent identification rather than an ambiguous title.

to the competencies required for each profession or to an institution's capacity to provide supervised clinical training.

The Act itself distinguishes between two broad groups. An allied health professional ordinarily completes a diploma or degree comprising at least 2,000 hours over two to four years. A healthcare professional completes a degree comprising at least 3,600 hours over three to six years. These ranges recognise that occupations carrying different levels of responsibility and risk need not all follow the same educational model. The spirit of this distinction should not be lost during implementation.

THE EXPANSION OF COURSE

Institution	Principal Role
National Commission	National policy; educational and professional standards; recognition; coordination; and maintenance of the Central Register.
Ten Professional Councils	Profession-specific advice on education, training, scope of practice, ethics, and standards.
State Allied and Healthcare Councils and Autonomous Boards	State registration; institutional assessment; recognition; enforcement; and professional discipline.



Discipline or Qualification	Around 1947	Around 1980	Emerging Pattern by 2026
MBBS	About five years; internship requirements varied	4½ academic years plus a one-year internship	4½ academic years plus a one-year compulsory rotating internship
B.Sc. Nursing	The four-year degree programme was introduced in India in 1946	Four years	Four years
General Nursing and Midwifery	General nursing was commonly followed by midwifery training	About three years	Three years with integrated clinical training
Physiotherapy	Mainly hospital-based rehabilitation training; no uniform national degree	Commonly a two- or three-year diploma, with longer degree programmes emerging	Five-year NCAHP curriculum: four academic years plus a one-year internship
Occupational Therapy	Formal Indian training began around 1950	Commonly a three-year diploma or degree, varying by institution	Five-year structure: four academic years plus a one-year internship
Medical Laboratory Science	Hospital certificates, commonly lasting six months to two years	One- or two-year diplomas; some three-year degrees	Commonly a four-year bachelor's programme including internship; a two-year diploma pathway also exists within the Act's broader framework
Medical Imaging or Radiography	Hospital-certificate training	Commonly a two-year diploma	Commonly a four-year bachelor's programme including clinical training or internship
Optometry	Apprenticeship or ophthalmic-assistant training	Commonly a two- or three-year diploma	Five-year NCAHP curriculum: four academic years plus a one-year internship
Anaesthesia, Operation-Theatre, Dialysis, Respiratory, and Emergency Technologies	Mostly on-the-job training or not separately recognised	Short certificates or diplomas in many institutions	Commonly structured as multi-year bachelor's programmes, with duration varying by profession and curriculum

DURATION

Medical knowledge has expanded enormously since Independence. Yet the duration of the MBBS programme has remained broadly stable for decades, even while its curriculum has repeatedly been revised. Several allied health programmes, by contrast, have progressed from hospital-based

certificates or short diplomas to four- or five-year bachelor's programmes, often with a compulsory internship.

The following comparison is indicative. The position around 1947 and 1980 was not governed by a single national framework and varied among universities, hospitals, and States. Those entries, therefore, represent

common patterns rather than uniform national rules. The 2026 column similarly reflects the emerging national direction and common programme structures; implementation may differ by profession and institution.

This evolution has brought genuine benefits. Students receive a broader scientific foundation, a stronger



professional identity, and greater opportunity for postgraduate study. Standardised qualifications may also improve mobility between States and, in some instances, international recognition. These advantages, however, do not by themselves justify making nearly every allied health programme progressively longer.

MORE TIME DOES NOT AUTOMATICALLY MEAN MORE KNOWLEDGE

Curriculum duration should follow the competencies required for safe practice. It should not be determined by professional prestige, international comparison alone, or the commercial value of selling a longer degree.

The relevant questions are practical:

- What procedures must a graduate perform independently

and safely?

- How many supervised cases are required to acquire and demonstrate each skill?
- What level of assessment and clinical reasoning is necessary within the profession's defined scope?
- Does the institution possess the

Allied health education is inseparable from patient care. If the attached or affiliated hospital lacks patients, departments, equipment, or trained preceptors, an additional internship becomes a mere attendance exercise.

patients, departments, equipment, and qualified supervisors needed to teach those competencies?

- Could the same outcomes be achieved through a well-integrated three- or four-year programme instead of a longer course followed by a weak internship?

The NCAHP's competency-based approach is sound in principle. Its curricula emphasise early clinical exposure, skill laboratories, supervised practice, logbooks, and measurable outcomes. The danger arises when institutions comply with the prescribed number of years but cannot provide the clinical experience for which those years were added. Regulation then measures time served rather than competence required.



CLINICAL EDUCATION WITHOUT A CLINICAL ECOSYSTEM

Allied health education is inseparable from patient care. A physiotherapist cannot learn rehabilitation only through lectures. An occupational therapist cannot acquire functional-assessment skills without observing and treating patients. A laboratory professional cannot become competent without supervised work across an adequate range and volume of specimens. A radiographer, operation-theatre technologist, dialysis technologist, or respiratory therapist cannot be trained safely without functioning clinical departments.

Many programmes are nevertheless offered by stand-alone institutions without a medical college, a multidisciplinary teaching hospital, or sufficient patient load. Some rely upon memoranda of understanding with distant hospitals. Students may visit such facilities to complete attendance requirements, yet receive limited supervision, incomplete rotations, and too few opportunities to perform or assist in procedures.

An additional internship cannot repair several years of deficient clinical education. If the attached or affiliated hospital lacks patients, departments, equipment, or trained preceptors, the internship may become an attendance exercise. Students lose another year, families bear further expenditure, and the health system receives graduates whose qualifications are longer but whose competence remains uncertain.

The Commission's curriculum framework recognises this risk. It places responsibility on teaching institutions to arrange appropriate hospitals, clinical supervision, logbooks, transport where facilities are off-campus, and reasonable stipends for interns. These requirements must become enforceable conditions of recognition rather than aspirations recorded in a handbook.

CLINICAL TRAINING MUST BEGIN

WITHIN THE COURSE

Allied health education is applied education. Supervised clinical work should begin early and increase progressively throughout the programme. Theory, simulation, and bedside, laboratory, or rehabilitation practice should reinforce one another rather than appear as disconnected stages.

Internship remains valuable when it provides responsibilities and competencies that cannot reasonably be acquired earlier. It should not become a universal substitute for inadequate practical teaching during the academic years. For some allied health disciplines, a well-designed three-year degree containing the prescribed hours and continuous supervised clinical training may produce a safer and more employable graduate than a nominally longer programme with poor patient exposure. Higher-risk or more complex professions may reasonably require four or five years. Duration must, therefore, be justified profession by profession and competency by competency.

THE ECONOMICS OF PROLONGED EDUCATION

Every additional year imposes three separate costs: another year of tuition and institutional charges; another year

Every additional year imposes another year of tuition, living expenses, and foregone earnings, falling most heavily on families of modest means. Course length must therefore be treated as an equity issue, imposed only when the regulator can demonstrate that institutions can actually teach the added competencies.

of accommodation and living expenditure; and another year during which the student cannot earn. The burden falls most heavily on families of modest means.

Private tuition varies greatly among courses and institutions. In several allied health programmes, annual fees range from tens of thousands of rupees to several lakh, before accommodation, examinations, equipment, transport, and internship expenses are added. National income-tax statistics may record more than eight crore individual return filers, but the filing of a return is not evidence that a household can finance several years of private professional education. Even the earlier estimate—approximately four crore taxpaying families with some capacity to consider private professional education—is only a broad analytical assumption, not a direct measure of affordability. The number able to bear four or five years of fees without serious debt is smaller still.

Course length must, therefore, be treated as an equity issue. An additional year should be imposed only when the regulator can identify the competencies it adds and demonstrate that recognised institutions can actually teach them. Where an internship is full-time and productive, students should receive a reasonable stipend. They should not be charged another full year of tuition merely for being placed in an outside hospital.

THE “DR” PREFIX: RECOGNITION OR CONFUSION?

The word doctor has an academic history extending beyond medicine. In a hospital or clinic, however, the public commonly understands “Dr” to mean a person qualified and registered to practise medicine. The dispute is, therefore, not merely about professional prestige. It concerns patient comprehension, scope of practice, referral responsibility, and accountability when harm occurs.



The 2025 NCAHP curricula recommended the prefix “Dr” with the suffix “PT” for physiotherapists and “OT” for occupational therapists. On 9 September 2025, the Directorate General of Health Services directed removal of the prefix from the physiotherapy curriculum. That communication was withdrawn the following day because the matter required further examination and deliberation.

Judicial decisions have not been uniform. In *Sri Sarjoo Prasad v. State of Bihar* (2003), the Patna High Court held that physiotherapists and occupational therapists who were neither enrolled in the State Medical Register nor otherwise authorised under State law could not claim a right to practise modern scientific medicine. In 2022, the Madras High Court rejected a physiotherapists’ association’s claim to use “Dr” as a prefix. A Kerala High Court decision in February 2025 likewise treated the use of the prefix by a physiotherapist, in the circumstances before it, as misleading.

The legal position then shifted under the new regulatory framework. On 22 January 2026, a Single Bench of the Kerala High Court dismissed challenges to provisions of the NCAHP curricula and held that medical statutes did not confer an exclusive right to the title upon medical practitioners. The Court also declined to confine physiotherapists and occupational therapists to a merely supportive role. Appeals against that judgment were admitted by a Division Bench on 2 March 2026. As of September 2026, the appeals remained pending, and no final appellate decision had been located in publicly available reports.

The present position should, therefore, not be reduced to a table declaring every profession either “fully entitled” or “prohibited”. Statutes, regulatory curricula, and judgments delivered under different legal frameworks intersect. The title question also differs from the separate and more important question of who may practise modern



medicine.

MISREPRESENTATION AND UNAUTHORISED PRACTICE

Section 34 of the National Medical Commission Act, 2019 prohibits a person who is not enrolled in the State or National Register from practising medicine as a qualified medical practitioner, holding an office reserved for a physician or surgeon, issuing specified medical or fitness certificates, or giving expert evidence on medical matters. Contravention may be punished with imprisonment for up to one year, a fine of up to ₹5 lakh, or both. Under Section 54, a court may take cognisance of an offence under the Act only upon a written complaint by an authorised officer of the Commission, the Ethics and Medical Registration Board, or a

State Medical Council.

These provisions should not be paraphrased as creating automatic imprisonment merely for writing “Dr” before one’s name. Liability depends upon the applicable statute, the person’s registration, the representation made to the public, and whether the person has actually held himself or herself out as a qualified medical practitioner or practised beyond the legally permitted scope. Where deception, impersonation, forged credentials, or dishonest inducement is involved, provisions of the *Bharatiya Nyaya Sanhita* (BNS)—rather than the repealed Indian Penal Code for conduct occurring after 1 July 2024—may also become relevant. Each case turns on its facts.

Whatever final policy or judicial decision emerges, three safeguards are



essential:

1. The professional qualification, statutory suffix, and registration number—such as PT or OT—must be displayed prominently wherever the prefix “Dr” is used.
2. No title, signboard, prescription, or advertisement should imply registration as an MBBS medical practitioner, or authority to prescribe modern medicines, when such authority has not been granted by law.
3. Scope of practice, referral responsibilities, and limits of independent care must be defined profession by profession and communicated in language that patients can readily understand.

The words “assess, diagnose and treat” cannot by themselves settle the

controversy. Nurses, physiotherapists, occupational therapists, optometrists, and other professionals make assessments and clinical judgments within their respective fields. Their autonomy, however, depends on training, statutory authority, and the risk attached to particular decisions. The answer lies in precise scope-of-practice regulation and transparent identification—not in an ambiguous title, but equally not in denial of legitimate professional expertise.

AUTONOMY WITHIN ACCOUNTABLE CLINICAL NETWORKS

Professional recognition need not mean clinical isolation. Complex patients frequently have neurological, orthopaedic, cardiopulmonary, metabolic, or psychiatric conditions that alter the safety and appropriateness of rehabilitation. An apparently simple complaint may conceal a fracture, infection, malignancy, vascular event, or progressive neurological disease. Allied health autonomy must, therefore, be accompanied by defined referral thresholds and access to medical review.

Physiotherapy and occupational-therapy services should be integrated with departments of Physical Medicine and Rehabilitation and, according to the clinical problem, with Orthopaedics, Neurology, Paediatrics, or other relevant specialties. Speech-language and hearing services should have structured referral relationships with ENT, Neurology, Paediatrics, and Rehabilitation Medicine. Any extension of prescribing authority to nurses should operate through defined formularies, competency certification, clinical protocols, audit, and access to medical consultation—particularly through General Medicine or the relevant specialty.

Such arrangements should not reduce trained professionals to passive assistants. Their purpose is to create accountable multidisciplinary care:

independent practice within a defined field, compulsory referral when red flags or limits are reached, and shared responsibility for patients whose needs cross professional boundaries. This protects patients while recognising the distinct expertise of every member of the healthcare team.

A MORE RATIONAL FRAMEWORK

A national review of allied health education should adopt the following principles:

- Competence before duration: Define the skills, case numbers, levels of responsibility, and measurable outcomes required for each profession before prescribing course length.
- No course without a clinical base: Recognition should require an attached or formally affiliated teaching hospital with adequate departments, patient load, equipment, and named supervisors. Paper affiliations should not suffice.
- Clinical training from the first year: Practical exposure should be distributed throughout the course and recorded through verified logbooks and workplace-based assessment.
- Internship according to demonstrated need: Internship should be retained where it adds identifiable competencies. It should not be imposed mechanically on every programme or used to compensate for weak clinical teaching.
- Differentiated educational pathways: Two-, three-, four-, and five-year programmes should coexist where justified by different statutory categories, levels of responsibility, and risk. Students seeking advanced specialisation or international equivalence may proceed through structured postgraduate



- pathways.
- Affordable mobility within health education: A common foundation component across health-science programmes should be explored. Subject to seat availability, rigorous standards, and a common merit examination, high-performing students could be permitted defined bridge pathways into other professional programmes, including MBBS or BDS. Such mobility must be transparent and must never amount to automatic transfer.
- Protection during internship: Full-time interns should receive reasonable stipends, supervision, and insurance. Institutions should not collect a full additional year of tuition for an internship delivered mainly through an outside hospital.
- Transparent professional identity: Titles, suffixes, qualifications, registration numbers, and limits of practice should be displayed in

a form that an ordinary patient can understand.

- Referral and escalation protocols: Each profession should have defined red flags, referral thresholds, and access to medical or specialist advice. Multidisciplinary care should be embedded in regulation, not left to informal goodwill.
- Periodic independent audit: Course duration, fees, clinical exposure, graduate competence, employment outcomes, and patient-safety indicators should be reviewed at fixed intervals by bodies including educators, employers, working professionals, students, and patient representatives.

TAKEAWAYS

India needs a larger, better-trained, and more respected allied health workforce. The NCAHP can make that possible by replacing fragmented standards with coherent national

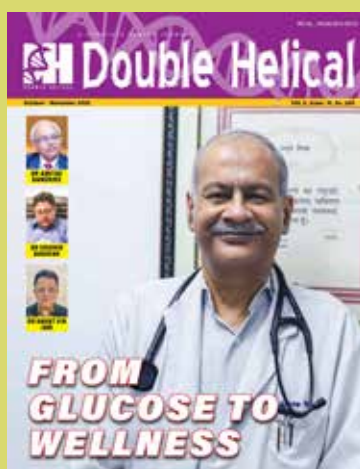
regulation. Its success, however, should not be measured by the number of programmes converted into four- or five-year degrees, nor by the prestige attached to professional titles.

The true measure is whether graduates can perform their defined work safely; whether students receive adequate clinical exposure; whether education remains accessible beyond affluent families; and whether patients can understand who is treating them, within what scope, and under whose accountability.

Regulation must prevent weak institutions from selling time in place of training. Duration should follow competence; clinical responsibility should follow demonstrated skill; professional autonomy should operate within an accountable referral system; and recognition should never come at the cost of affordability or patient clarity. 

(The author is a renowned Radiologist based in Delhi / NCR.)

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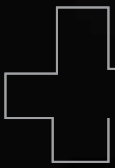
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Double Helical is owned, printed and Published monthly. It is printed at Polykam offset, Naraina Industrial Area Phase 1, New Delhi-110028, and published from G-1, Antriksh Green, Kaushambi, Ghaziabad-201 010. Tel: 0120-4219575, 9953604965.

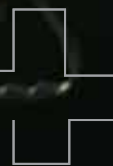
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FOCUS - HEALTHCARE GOVERNANCE



PROFITEERING ON PAIN



Expanding hospital beds and issuing insurance cards means little when the cost of a single hospitalisation can push a family into financial ruin. Out-of-pocket medical expenses continue to burden millions of families across urban and rural India.

**BY DR VIJAY
AGARWAL**



In India's sprawling medical landscape, falling ill remains a fast route to financial ruin. Corporate hospitals cater to affluent patients and global tourists. Meanwhile, millions of citizens remain trapped between under-resourced public facilities and an unregulated, expensive private sector. The Parliamentary Standing Committee on Health and Family Welfare presented its 176th Report in August 2026. Titled *Affordability and Accessibility of Healthcare Facilities in Public and Private Sector*, the report examines healthcare costs, quality, regulation, and regional disparities. It also evaluates insurance coverage, medicines, diagnostics, digital health, human resources, and Ayush integration.

India has expanded public infrastructure, medical education, and digital health platforms. Telemedicine and affordable medicines have also seen growth. However, out-of-pocket expenditure remains high. Spending is especially high for medicines, diagnostics, outpatient care, chronic diseases, emergency care, and private hospitalisation. The Committee stresses that real reform demands a balanced model. India needs stronger public health infrastructure and better-regulated private care. It requires wider insurance coverage, transparent pricing, and stronger primary care. The country must also increase public health spending as a share of GDP, improve workforce planning, lower device costs, and deliver patient-centric care.

KEY FINDINGS

1. PUBLIC SECTOR REMAINS THE BACKBONE, BUT IS UNDER-CAPACITATED

Public healthcare is essential for rural, poor, and vulnerable populations because it offers free or low-cost care. However, public facilities suffer from severe overcrowding and long waiting times. They face specialist shortages



Affordability in healthcare cannot be achieved by insurance alone. It requires higher public spending, strengthened public facilities, regulated private pricing, and digital accountability.

and inadequate infrastructure at PHC, CHC, and district-hospital levels. Gaps in diagnostics and essential medicines also reduce public confidence in these centres. The Committee stresses that improving public-sector quality is the most sustainable way to lower household health spending.

2. PRIVATE SECTOR IS ESSENTIAL BUT INSUFFICIENTLY REGULATED

The private sector provides over 60% of inpatient care and around 70% of

outpatient care in India. It offers advanced care, better amenities, shorter waiting times, and specialised urban services. However, major concerns persist regarding high and unpredictable costs. Patients face arbitrary billing, over-investigation, and non-standard treatment packages. Facilities remain heavily concentrated in urban areas. Furthermore, small clinics, nursing homes, and diagnostic centres face weak regulation, and the Clinical Establishments Act sees uneven



enforcement. The Committee recommends stronger regulation, transparent tariffs, standard treatment guidelines, and package-rate discipline.

3. OUT-OF-POCKET EXPENDITURE IS STILL A MAJOR BURDEN

Although out-of-pocket expenditure has declined over the years, it remains significant. Major drivers include medicines, diagnostics, outpatient care, consultation fees, and consumables. Costs for ICU care, emergency services, chronic disease management, private hospitalisation, and rural patient travel further add to the burden. The report stresses that insurance schemes remain hospitalisation-heavy. They fail to adequately cover outpatient visits and recurring medicine expenses.

4. HEALTH SPENDING NEEDS TO RISE

Government Health Expenditure stood at around 1.43% of GDP in 2022–23. This remains well below the National Health Policy target of 2.5% of GDP. The Committee recommends a binding, time-bound roadmap to reach 2.5%. It urges ring-fenced multi-year health allocations and annual reporting to

Parliament. It also calls for a minimum threshold for health spending in total government expenditure and protection against post-pandemic budget cuts.

5. INSURANCE COVERAGE HAS EXPANDED, BUT GAPS REMAIN

AB-PMJAY has provided financial protection to vulnerable populations and extended coverage to citizens aged 70+. Nevertheless, major gaps persist. The “missing middle” remains under-protected, while informal and gig workers need better coverage. Outpatient costs receive poor coverage, and claim delays discourage hospital participation. Additionally, package rates do not reflect real costs, and fraud remains a concern. The Committee recommends low-cost standardised insurance products, faster claims settlement, package-rate revisions, and digital fraud detection.

6. RURAL, TRIBAL, HILLY, AND UNDERSERVED REGIONS NEED PRIORITY

The report highlights persistent geographic inequities across regions. Rural and tribal areas face specialist shortages, long travel distances, and

poor emergency access. Many sub-centres lack buildings, and diagnostic capacity remains weak. Meanwhile, private hospitals concentrate heavily in urban areas, limiting rural access to tertiary care. The Committee recommends targeted investment, rural service incentives, mobile medical units, telemedicine, and digital referrals. It also advocates incentives for private investment in tier-2, tier-3, aspirational, tribal, and remote districts.

7. DIGITAL HEALTH IS CENTRAL TO ACCESS AND CONTINUITY OF CARE

The Committee strongly supports the Ayushman Bharat Digital Mission (ABDM) and ABHA IDs. It endorses the Health Facility Registry, eSanjeevani, U-WIN, digital health records, e-prescriptions, and teleconsultations. It also highlights clinical decision support, remote patient monitoring, and AI-enabled screening. The report recommends mandatory ABDM compliance for public facilities and PMJAY-empanelled private hospitals.

8. MEDICINES AND DIAGNOSTICS REQUIRE STRONGER AFFORDABILITY CONTROLS

Medicines remain a primary source of household health expenditure. Key recommendations include guaranteeing essential medicines at public facilities and expanding Jan Aushadhi Kendras. Jan Aushadhi and AMRIT pharmacies should co-locate inside hospitals. Regulators must enforce generic prescribing and monitor drug availability through DVDMS. The NPPA should take stronger action on trade margins and enforce price controls on essential medicines and devices. Fast-track mechanisms are also necessary to prevent shortages.

9. HUMAN RESOURCES ARE A CRITICAL BOTTLENECK

India has expanded MBBS and PG seats, medical colleges, AIIMS, and



nursing colleges. However, training capacity alone is insufficient. Critical requirements include a clear rural deployment strategy and uniform pay scales for specialists. ASHA and NHM workers require timely remuneration. Systems also need flexible hiring for super-specialists, expansion of the allied health workforce, a national workforce registry, better faculty availability, and a dedicated hospital administrator cadre.

10. AYUSH INTEGRATION IS SEEN AS PART OF AFFORDABILITY AND PREVENTIVE CARE

The Committee supports integrating Ayush with mainstream public healthcare. This requires co-locating Ayush services at PHCs, CHCs, and district hospitals. It also involves Ayushman Arogya Mandirs, standard treatment guidelines, and broader insurance coverage. Essential Ayush medicines require price controls, alongside rigorous scientific validation

of Ayush interventions.

STAKEHOLDER-WISE SEGMENTS

POLICYMAKERS AND GOVERNMENT MINISTRIES

Public health expenditure remains below the 2.5% GDP target. Health budgets fluctuate after emergencies, and public infrastructure remains uneven. Private costs face inadequate regulation, while insurance fails to fully protect households. Key actions include

Public hospital trust will improve through shorter wait times, guaranteed availability of essential medicines and diagnostics, digital queue management, and transparent performance metrics.

creating a binding roadmap to raise health spending to 2.5% of GDP. Policymakers must ring-fence health allocations through multi-year budgeting. They should strengthen PHCs, CHCs, district hospitals, and medical colleges. Enforcing the Clinical Establishments Act across states is vital.

Authorities must standardise treatment packages and private-sector billing. They should expand PMJAY and design low-cost insurance for the “missing middle.” Financial protection models must include outpatient care and diagnostics. Furthermore, government must accelerate PM-ABHIM and NHM grants, integrate digital health platforms, and build a national emergency referral network. Strategically, the report pushes the government toward universal health coverage through public investment and regulated private participation.

STATE GOVERNMENTS

States face uneven adoption of national laws and poor sub-centre infrastructure. They suffer from specialist vacancies, delayed fund utilisation, and regional disparities. Recommended measures include adopting and enforcing the Clinical Establishments Act. States must ensure IPHS compliance across facilities using digital dashboards. They must fill CHC specialist vacancies urgently and deploy Finance Commission grants faster.

States should build missing sub-centres and upgrade district hospitals. They need to strengthen urban primary health systems for slums and migrants. Developing telemedicine-linked specialist hubs is essential. Local governments require incentives to invest in elderly and palliative care. Finally, states must accelerate insurance claims processing. States must shift focus from mere scheme implementation to measurable service readiness and accountability.





PUBLIC HOSPITALS AND GOVERNMENT MEDICAL COLLEGES

Public facilities suffer from overcrowding and long wait times. Consultation times are short, bed shortages persist, and diagnostic testing faces delays. Administrative systems also remain weak. Key actions involve expanding bed capacity and recruiting specialists and allied health workers. Institutions should establish dedicated hospital administrator cadres. They must publish key performance indicators, such as wait times, bed occupancy, infection rates, and average stay.

Facilities need to improve digital appointment queues and create step-down care pathways. They should co-locate Jan Aushadhi and AMRIT pharmacies on campus. Strengthening

trauma, cancer, geriatric, and palliative care is essential. Hospitals should utilise AI-assisted triage and link internal systems with ABDM and ABHA. Public hospitals must become patient-centric, digitally managed, transparent, and operationally efficient.

PRIVATE HOSPITALS AND HEALTHCARE PROVIDERS

Private care displays high prices,

Insurance must evolve from reimbursing basic hospitalisation expenses to providing comprehensive financial protection that includes outpatient care, chronic diseases, and diagnostics.

variable quality, arbitrary billing, and urban concentration. Scheme participation remains low due to poor package rates and claim delays. Recommended actions include publishing transparent tariffs and adopting standard treatment guidelines. Providers should follow standardised package rates and participate in PMJAY. They must accept digital claims via NHCX and avoid over-investigation.

Private chains should expand into tier-2, tier-3, and rural districts. They can use international patient revenue for cross-subsidised care. Allocating beds for government scheme beneficiaries is necessary. Providers must also adopt ABDM-compliant digital records. Private healthcare will remain essential, but it must operate within a regulated, transparent, and equity-oriented framework.

HEALTH INSURERS, IRDAI, AND NHA

The “missing middle” lacks coverage, while outpatient expenses remain neglected. Claim settlement delays damage provider trust, package rates are outdated, and policy terms remain complex. Insurers must develop low-cost standardised products for informal workers. They should expand coverage beyond hospitalisation to include outpatient, diagnostic, and chronic disease care.

Insurers must periodically revise package rates and utilise NHCX for faster claims. Deploying AI-based fraud detection will reduce losses. Companies should standardise billing documentation, improve grievance redressal, and simplify policy language. Insurance must evolve from basic hospitalisation reimbursement to comprehensive financial protection.

Pharmaceutical Companies, NPPA, and Medical Device Sector

Medicine costs remain a primary driver of out-of-pocket spending. These costs are inflated by high trade margins and drug supply risks. Action items include expanding price regulation for essential medicines and devices. Authorities must continue trade margin rationalisation and monitor raw material costs. Regulators should prevent formulation withdrawals and support domestic manufacturing.

Policy should encourage innovation through carefully designed exemptions. Strengthening MedTech Mitra and HTA mechanisms will support affordable indigenous medical technologies. Sector leaders must support value-based and cost-based pricing models. Quality and packaging standards also require strengthening. India requires both affordable generics and advanced indigenous innovation.

DIGITAL HEALTH, AI, AND HEALTH-TECH STAKEHOLDERS

Digital systems remain fragmented, ABDM adoption is uneven, and rural



Quality-linked affordability connects patient safety directly to cost reduction by eliminating unnecessary investigations, reducing hospital infection rates, and streamlining discharge protocols.

facilities lack connectivity. Stakeholders should make ABDM compliance mandatory for public and empanelled private facilities. Systems must link ABHA IDs with health records, referrals, NCD screening, and claims. Expanding eSanjeevani and teleconsultation services is crucial.

Providers should deploy validated AI screening tools for diabetic retinopathy, chest X-rays, oncology, and mental health. AI can also assist in epidemic

forecasting. Facilities need live dashboards for ICU beds and emergency occupancy, alongside GIS-based ambulance tracking. AI deployment must remain ethical, validated, and clinically supervised. Digital health serves as the connective tissue of universal healthcare.

RURAL, TRIBAL, MIGRANT, ELDERLY, AND VULNERABLE POPULATIONS

Vulnerable groups face long travel distances, poor specialist access, and high medicine costs. They suffer from weak emergency care, chronic disease burdens, and low insurance awareness. Recommendations include strengthening local primary care and expanding mobile medical units. Telemedicine access must improve, and essential medicines and diagnostics must remain free.

Authorities should expand PMJAY senior-citizen coverage and build



geriatric and palliative services. Utilizing portable digital health records will aid mobile populations. Tribal belts require stronger sickle-cell screening. Outreach programs must target migrants and the urban poor, while ambulance and referral networks undergo upgrades. The report frames healthcare access fundamentally as a question of equity, geography, and social protection.

AYUSH INSTITUTIONS AND INTEGRATIVE MEDICINE STAKEHOLDERS

Ayush lacks uniform integration into public care. Insurance reimbursement remains uneven, and price controls for Ayush medicines are limited. Key actions include co-locating Ayush facilities in PHCs, CHCs, and district hospitals under a mandatory baseline policy. Stakeholders must develop standard treatment guidelines across Ayush streams.

Insurance benchmark rates require updating, alongside price controls for essential Ayush drugs. Expanding satellite clinics and mobile units is necessary. Public health budgets for Ayush need ring-fenced protection. Scientific validation requires strengthening through ICMR, AIIMS, and research councils. Finally, institutions must train allied Ayush workers and integrate Ayush into preventive NCD care. Ayush can contribute significantly to affordable preventive care if evidence and integration improve.

PATIENTS AND CIVIL SOCIETY

Patients suffer from a lack of price transparency and complex insurance terms. High diagnostic bills, long hospital waits, and weak grievance redressal create frustration. Recommended steps include demanding itemised transparent bills. Patients should utilise Jan Aushadhi generic options whenever appropriate. They should verify PMJAY and insurance eligibility.

Adopting digital records, ABHA, and telemedicine will streamline care. Patients must report overcharging or denial of entitled care. They should seek treatment through empanelled hospitals and utilise public bed dashboards. Participating in health screening and advocating for patient rights remains vital. Patients must become informed users, while the system must become easier to navigate.

PRIORITY THEMES FOR CAHO AND QUALITY STAKEHOLDERS

Given CAHO's focus on quality, accreditation, safety, and system improvement, the report's key themes align with specific opportunities:

1. STANDARD TREATMENT GUIDELINES AND CLINICAL GOVERNANCE

The report emphasises STGs to reduce unnecessary investigations and irrational treatment variation. STGs also

combat overbilling, antibiotic misuse, insurance disputes, and unpredictable costs. CAHO can develop implementation toolkits, audit formats, and training modules for STG adoption.

2. TRANSPARENT PRICING AND ETHICAL BILLING

The Committee calls for standardised packages, tariff disclosure, and billing transparency. CAHO can create a voluntary "transparent billing and patient financial communication" framework for hospitals.

3. QUALITY-LINKED AFFORDABILITY

Affordability connects directly to avoiding hospital-acquired infections and excessive lengths of stay. It prevents delayed diagnosis, weak referral systems, inefficient discharge planning, and step-down care deficits. CAHO can promote quality-improvement projects that directly reduce patient costs.

4. PUBLIC-PRIVATE PARTNERSHIP STANDARDS

The report supports PPPs in diagnostics, dialysis, specialist care, and underserved districts. CAHO can define quality and safety standards for PPP service delivery.

5. DIGITAL HEALTH READINESS

ABDM compliance, e-prescriptions, digital referrals, and claims exchange are major priorities. CAHO can create hospital readiness assessments for ABDM, NHCX, digital consent, and interoperable records.

6. PATIENT EXPERIENCE AND EMERGENCY COORDINATION

The report highlights patient satisfaction, waiting times, service efficiency, and live ICU dashboards. It also emphasises ambulance networks and trauma care expansion. CAHO can develop patient-experience indicators and support emergency-care quality standards alongside inter-facility



making care affordable, accessible, predictable, accountable, and equitable. It calls for a health system where public hospitals are stronger and less overcrowded. Private hospitals must operate with transparency and regulation. Insurance must cover real household risks rather than just hospitalisation. Medicines and diagnostics must remain affordable. Rural and vulnerable populations require targeted support. Digital health must enable continuity, referrals, claims, and surveillance. AI and innovation must deploy responsibly. Ayush needs integration backed by evidence and standards.

transfer protocols.

STAKEHOLDER COMMUNICATION DIRECTIVES

Government officials must recognise that affordability cannot be achieved by insurance alone. It requires higher public spending, strengthened public facilities, regulated private pricing, and digital accountability. Private hospitals face a future operating environment that demands tariff transparency, standard treatment protocols, ABDM compliance, faster digital claims, and demonstrable value. Public hospitals can restore trust through shorter waits and guaranteed medicine availability. Specialist access, digital queues, performance dashboards, and patient navigation are also essential.

Insurers must expand beyond hospitalisation reimbursement. They must address outpatient, chronic disease, diagnostic, and medicine expenditures. Digital health companies should target ABDM integration, digital referrals, claims automation, AI screening, emergency dashboards, and public-health analytics. Ultimately, patients deserve care that is affordable, nearby, transparent, and digitally portable. Care must protect households against catastrophic expenditure. This



creates a strong policy opening for quality-linked affordability, standard protocols, ethical billing, patient safety, and measurable clinical outcomes.

TAKEAWAYS

The Parliamentary Committee's report argues that India's healthcare challenge is no longer only about building more hospitals or expanding scheme enrolment. The real challenge is

Quality, patient safety, and cost rationalisation must become central to healthcare policy. For healthcare leaders, the report signals that the next phase of reform will focus on value, transparency, standardisation, digital accountability, and patient protection. 

(The author is Past President, Consortium of Accredited Healthcare Organisations [CAHO].)

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