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## INSIDE UN:BLOC: HEALTHIANS FOUNDER'S NEXT MOVE

## DEEPAK SAHNI

Deepak Sahni, Founder of Healthians and Un:Bloc shares his vision to challenge the status quo by tackling the most difficult, yet unasked, questions in healthcare through his latest venture Un:Bloc





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**CK Mishra**

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**Strategy**

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President-India  
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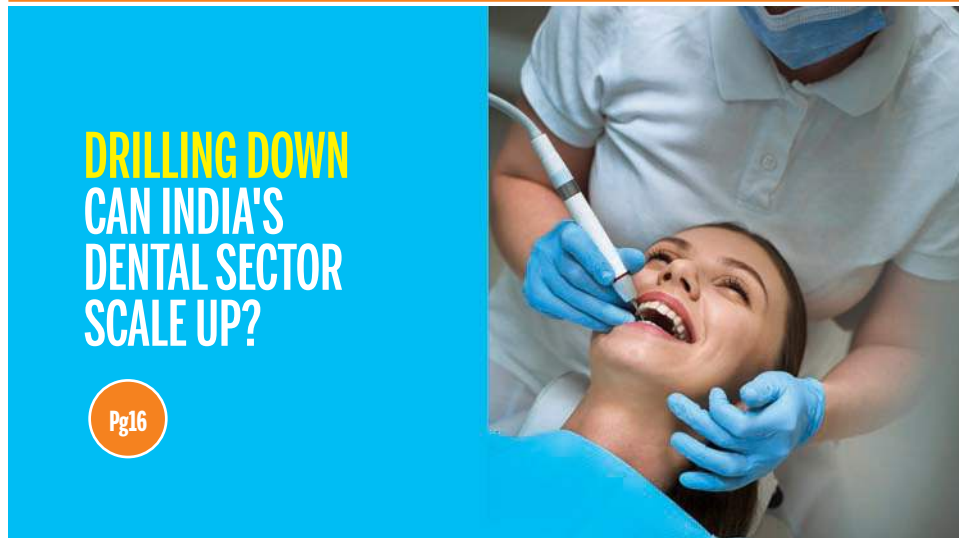
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# New building standards pave way for taller hospitals

**T**he Bureau of Indian Standards' (BIS) recently released the National Building Construction Standards (NBCS) 2026 on April 30 comes after sustained efforts by hospital associations like the NATHEALTH – Healthcare Federation of India.

The association points out that the notification eases long-standing height restrictions for hospitals. NBCS 2016 capped total height at 45 metres, which is 12-15 floors, with ICUs below 30 metres. NBCS 2026 removes the 45 metre cap, with ICUs “preferred” to be kept within 45 metres, subject to enhanced fire safety provisions.

Four days later, at an event marking this year's Nationwide Fire Safety Week (May 4-10, 2026), the Union Ministry of Health and Family Welfare unveiled the National Guidelines on Fire and Life Safety in Healthcare Facilities (2026), with enhanced protocols for high-risk areas including ICUs, NICUs, PICUs, and operation theatres.

As per a PIB report these guidelines have been developed through extensive consultations with experts from a wide range of leading institutions and hospitals, so let's hope that there will be wide adherence to these new guidelines in letter and spirit.

In fact hospitals and schools are the focus of this year's Nationwide Fire Safety Week. There have been numerous incidents of fires in hospitals. The new guidelines, if implemented and monitored closely, should prevent such future tragedies.

Speaking at the same event, Krishna S. Vatsa, Member and Head, National Disaster Management Authority (NDMA), emphasised a proactive, systems-based approach to fire safety in healthcare facilities, and mentioned that the NDMA is planning to organise five regional programmes, along with similar initiatives at the State and district levels, to build capacity and enhance preparedness. Importantly, he highlighted the importance of instituting self-certification mechanisms for regular audits, coupled with sustained awareness efforts on fire safety. He also touched on the need for adequately trained healthcare professionals equipped to respond to fire emergencies, along with clearly defined and practiced evacuation procedures.

Taller hospitals will house more patients, but also call for more medical and more crucially, more paramedical and nursing staff. India's doctor/nurse: patient ratio will have to improve drastically to keep pace with vertical expansion projects.

Exactly a year ago, my May 2025 editorial, ‘The case for taller hospitals’, pointed out that vertical expansion allows hospitals to maximise the utilisation of land, ultimately bringing down the cost of healthcare delivery. However I also raised concerns on whether we have strong enough monitoring mechanisms to check that enhanced safety norms are being followed as hospitals add more floors.

The structural constraints are more real one year down the line. India's metros have one of the priciest real estate rates in the world and this high cost of land means that hospitals had to grow vertically. Which translated to limited bed capacity and underutilised equipment for hospitals. Leading to higher healthcare costs for patients.

NATHEALTH's press note hopes that the NBCS 2026 will reduce the need for greenfield projects that are both capital-intensive and time-consuming. This is expected to improve operational efficiencies and, over time, contribute to lowering the cost of care for patients.

Ravideep Singh, Associate Director, Creative Designer Architects (CDA) cautions that once hospitals expand beyond 45 metres, fire and life safety systems require far greater integration to accommodate the complexity of vertical evacuation and critical care operations. Key norms include dedicated fire lifts, refuge areas at prescribed intervals, pressurised staircases, compartmentalisation to prevent smoke spread, sprinkler systems, fire command centres, and emergency power backups for essential medical functions.



As margins improve, will medical inflation and healthcare costs also reduce for patients and their families? Healthier margins should also mean healthier patients, right?

Additionally, Singh points out that vertical circulation must also be segregated for patients, visitors, staff, and services to avoid congestion during emergencies. Structural systems should be reviewed for additional loads, while HVAC, waterproofing, and evacuation planning must align with updated compliance frameworks.

Singh believes that architectural planning becomes critical in ensuring vertical hospital expansion remains compliant without disrupting operations. As he explains, “The design must embed fire safety into the planning framework through strategically located escape staircases, refuge floors, fire-rated compartments, and clearly separated circulation cores. Department stacking also matters in high-footfall outpatient zones, which should remain on the lower floors, while critical care and inpatient functions require efficient, segregated emergency access. Architects must also anticipate future expansion by designing adaptable structural grids and service shafts that can scale with additional floors.”

While Singh points out that the inclusion of refuge terraces with medical gas support reflects a stronger understanding of healthcare-specific evacuation needs, he cautions that implementation remains the real challenge. “Detailed MEP guidelines for critical care infrastructure at higher levels are still unclear, especially for HVAC, oxygen lines, and backup power. Stronger enforcement, independent audits, and stricter facade fire safety regulations will be equally critical.”

Thus the uncapping of height restrictions, combined with greater regulatory oversight on fire and life safety call for increased investment in automated, modern fire and health safety measures, as well as trained staff. Thus the savings on land costs might not be as high as envisioned.

Secondly, will the new building code divert or slow the trend of expansion and consolidation in tier 2/3/4 locations? Will it see more centralisation rather than decentralisation of healthcare facilities?

Thirdly, reading the fine print, experts have pointed out that the shift from National Building Code (NBC) to National Building Construction Standards, the crucial sections like fire and life safety are now advisory instead of mandatory, pointing to the shift in the language from “shall” to “should”.

While this shift may ease the legalities of constructing high rise hospitals, will it make them safer? With these changes in NBCS 2026, the centre puts the onus of implementation and monitoring of these standards on local state level administrations. Unless state regulators make these standards mandatory, implementation will be patchy.

All corporate chain hospitals are in expansion mode and with PE money pouring in, they are flush with funds. Implementing the required fire and life safety standards while adding to existing facilities as well as greenfield projects is a business need, as they need to protect their hard earned reputations. They also need to keep up with global standards to continue to attract overseas patients. But smaller facilities will struggle to implement these norms or end up cutting corners. This endangers patient safety unless local authorities are vigilant. Finding the right balance between protecting lives, without adding bureaucratic hurdles, will be key.

Hospital associations and organisations like NDMA will also play an important role in spreading awareness about the need to implement these standards in both letter and spirit. All in all, healthcare infrastructure in India seems set for a huge boost. As margins improve, will medical inflation and healthcare costs also reduce for patients and their families? Healthier margins should also mean healthier patients, right?

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## INTERVIEW

### Inside UN:BLOC: Healthians founder's next move

In an insightful conversation with with **Express Healthcare, Deepak Sahni**, Founder of Healthians and UN:BLOC shares how early struggles shaped his grounded approach to business, the pivotal ideas behind Healthians, and his vision to shift healthcare conversations from diagnosis to deeper causality through his latest venture, UN:BLOC

#### Your journey didn't start in a boardroom... how did those early days shape you?

My journey didn't begin with a pitch deck or a strategy offsite, it began with survival, curiosity, and a willingness to get my hands dirty. At 19, when I started a computer assembly business, I wasn't thinking about scale or valuations. I was thinking about how to make things work, how to sell, how to fix, how to earn trust one customer at a time.

Those early years taught me something that no business school can, reality sits on the ground, not in presentations. When you've dealt with customers directly, handled cash flows yourself, and seen things break in real time, you develop a very different instinct for building.

When I later entered healthcare, especially in India, I realised that the system is far more complex than it appears. It's fragmented, trust-deficient, and deeply human. Those early experiences helped me stay close to reality, to customers, to operations, and to problems that don't show up in dashboards.

#### What was the "aha moment" behind Healthians?

While working in healthcare marketing and medical value travel, I had a front-row seat to how healthcare works globally versus in India. One thing stood out. In most systems, the first touchpoint is diagnosis, but in India, diagnostics was treated as a passive, almost invisible



The real "aha moment" wasn't a single event, it was a pattern. I saw that everything in healthcare- treatment, cost, stress- escalates because we enter too late. And the only way to change that is to shift the starting point from illness to awareness

function.

The real "aha moment" wasn't a single event, it was a pattern. I saw that everything in healthcare- treatment, cost, stress- escalates because we enter too late. And the only way to change that is to shift the starting point from illness to awareness.

Diagnostics, if done right, could become that first line of defence.

That's when the idea clicked not to build another diagnostics company, but to reimagine diagnostics as a preventive, tech-led, at-home experience. That became Healthians.

#### You faced 11 funding rejections before Yuvraj Singh came on board. Looking back, what was the most common skepticism from investors, and how did you use that to refine the Healthians model?

The skepticism was actually very valid.

Investors questioned whether:

- Indians would trust home diagnostics
- Quality could be maintained outside hospitals
- Preventive healthcare would ever become a habit

At that time, diagnostics was synonymous with hospitals. What we were proposing felt counterintuitive.

But those rejections forced us to sharpen the model:

- Build strong quality control systems
- Standardise sample collection
- Use technology to

eliminate human error

- Focus deeply on trust, not just convenience

In hindsight, those rejections didn't slow us down, they made the foundation stronger.

### **Building trust in home diagnostics. How difficult was it?**

Extremely difficult, because we were not just building a service, we were changing behaviour.

Healthcare decisions are deeply emotional. People associate hospitals with safety. Asking them to trust a home service for something as critical as diagnostics required us to rethink everything.

We realised early that:

- Trust cannot be marketed, it has to be engineered
- Every process must be standardised
- Every interaction must reinforce credibility

From tamper-proof kits to trained phlebotomists to tech-enabled quality checks, everything was designed to remove doubt. Over time, customers didn't just adopt the service, they shifted their mindset. And that's when we knew we were not just scaling a business, but shaping a category.

### **You recently transitioned from Executive positions from Healthians. Was this decision personal or strategic?**

It was both, but primarily strategic and evolutionary.

After building Healthians over a decade, I realised that the company had reached a stage where it needed institutional leadership, not founder dependency. A strong professional team was already in place, and empowering them was the natural next step.

At a personal level, I've always been a builder. I enjoy the early stages, the uncertainty, the problem-solving, the creation. Once systems stabilise, my role evolves. Stepping back was not about moving away but it was about moving forward differently. It allows

Healthians to scale as an institution, while I focus on solving new problems and supporting other builders.

### **You've just unveiled UN:BLOC on World Health Day. What blockages in the current system are you aiming to clear?**

I chose World Health Day deliberately. Because the question I wanted to ask needed the largest possible room.

Twenty-five years in healthcare taught me one uncomfortable truth: the system is not broken. It is working exactly as it was designed to. The design, however, was never centred on the patient getting better. It was centred on the patient being managed.

When I finally asked that question myself, with the same diagnostic rigour I had applied to millions of patients over two decades, the answer changed everything. Not just for me. For how I understood every patient I had ever served.

UN:BLOC is built on that upstream question. And it is a question the current healthcare system is structurally, not maliciously, but structurally, designed not to ask.

That is the blockage I am here to clear. Not a process. Not a policy. A question. I am sure with our launch in July what exactly we will do and how it will be crystal clear. For now, what I will say is this: the founding thesis is real. The science behind it is real. The early results are real.

### **You are backing the next wave of founders through your Rs 100 crore fund. Beyond a good pitch deck, what specific traits do you look for in entrepreneurs?**

When I announced this commitment in January, the question I got most was: why now, and why so broadly-consumer brands, deep tech, AI? The honest answer is that the fund reflects exactly how I think about building: category and convention matter less than the person

holding the idea.

I have backed Handpickd, Beanly, Repill, Indian Sneaker Fest, and others. What connects them is not the sector. It is the founder.

I look for three things that no pitch deck can fake.

First, founders who have lived the problem. The empathy that comes from personal experience of a broken system cannot be manufactured. It shows in every decision, especially the difficult ones.

Second, founders who formed a view of the future before they built the solution. Healthians was built on the belief that Indians would pay for preventive diagnostics at home, years before that behaviour existed. The market validated the view. The view always comes first.

Third, founders who are genuinely, stubbornly customer-first. India has an extraordinary tendency to build for the system's convenience rather than the person it serves. The founders who flip that, in any sector, are the ones I want behind.

Capital is the easy part. What I am really committing is the twenty-five years of mistakes I have already made on their behalf.

### **If Healthians changed how India perceives diagnostics, what do you want the legacy of UN:BLOC to be?**

Healthians gave India a mirror. It said, here is your health, clearly, at your doorstep, without the friction that kept you from looking.

UN:BLOC wants to change what India does when it looks in that mirror.

For too long, the conversation between a patient and their health has been: here is what is wrong with you, here is what manages it, come back in three months. It begins and ends with the disease. The patient is a bystander in their own biology.

I want UN:BLOC's legacy to be the moment that

conversation changed. When patients stopped asking only "what do I have?" and started asking "why do I have it?" When that second question, the harder, deeper, more important one, became as natural as the first.

My doctor friends, many of whom have spent decades in this system, tell me this is the question their patients have always wanted to ask but never had the language or the permission for. If UN:BLOC gives them that language, and the evidence-backed answers to go with it, that is legacy enough.

I am not trying to replace medicine. I am trying to complete the conversation it started.

### **What is the one thing about scaling healthcare in India that most tech-first founders overlook?**

Trust. And the specific nature of how trust is built in healthcare.

Technology can build speed, scale, and access. It cannot build the belief that something genuinely works. In every other consumer category, you can acquire a user, deliver an experience, and earn loyalty through that experience alone.

In healthcare the stakes are different. The person on the other side is not trying a new food delivery app. They are making decisions about their body, their family, their future. The threshold for trust is categorically higher, and the speed at which technology moves is categorically mismatched with the pace at which clinical trust is earned.

The founders who have scaled healthcare in India sustainably, across every category, are the ones who built clinical credibility first and technology second. The ones who failed are, almost without exception, the ones who inverted that order.

I learned this at Healthians not by getting it right from the beginning. I learned it by watching what happened when we prioritised operational speed over clinical quality,

and correcting courses quickly enough to survive the lesson.

Technology is the vehicle. Clinical trust is the road. You cannot drive faster than the road allows.

### **By the end of this decade, do you believe India will be a global benchmark for preventive healthcare, or are we still too far away?**

I am genuinely optimistic. But not for the reason most people cite.

The optimism I hear most often is about infrastructure, more facilities, more schemes, more digital health records. These matter. But infrastructure without behaviour change is a road with no drivers.

The reason I am optimistic is more fundamental. India's relationship with its own body is changing. A generation of Indians is growing up with access to information their parents never had. They are questioning things their parents accepted. They are asking their doctors questions that would have been considered impertinent ten years ago.

That questioning instinct, applied to health, is the most powerful preventive force in existence. More powerful than any policy or programme.

Where I think we deeply underestimate ourselves. India is the only country in the world that has a 5,000-year documented medical tradition and a 21st-century technology infrastructure in the same room simultaneously. No other nation has that combination. If we learn to use both, not as competitors but as complements, India does not just become a benchmark for preventive healthcare. India becomes the source code the rest of the world learns from.

We are not too far away. We are, for the first time, close enough that the people building the future can see it clearly.

## Redefining clinical and operational excellence: Apollo DigiSmart Central Reference Laboratory's (CRL) pioneering journey

**Dr Mamta Soni**, Chief of Laboratory Services, Senior Consultant and Head Haematology and Clinical Pathology, explains how Apollo Hospitals is reshaping the future of diagnostics with its DigiSmart Central Reference Laboratory in Chennai

Apollo Hospitals has set a new benchmark in diagnostics with its 45,000 sq. ft. Apollo DigiSmart CRL in Chennai, guided by the vision of 'One Patient-One Touch-One Report.'

The lab is built on a digital first model with automation and Lean Six Sigma and enhances precision, quality, efficiency, and scalability in diagnostics.

Within a year of implementation, the facility has simplified manual processing steps by 78 per cent and improved the turnaround time (TAT) for core clinical lab by 47 per cent.

### Visionary thinking: The foundation of transformation

The Apollo DigiSmart Lab is more than a facility, it's a manifestation of a clear, progressive strategic design philosophy centred.

The Apollo DigiSmart CRL ushers in a new standard for diagnostics:

**1. Multidisciplinary end to end automation:** A radical departure from traditional fragmented processes, this approach embodies the promise of delivering a true 'One Patient-One Report' experience.

**2. Seamless digital integration:** By unifying AHLL (Apollo Health and Lifestyle Ltd) and AHEL (Apollo Hospitals Enterprise Ltd) systems, the CRL ensures synchronisation across geographies and stakeholders.

**3. Optimised workflow management:** Every step of sample handling, from entry to reporting is optimised for agility and clinical precision.

**4. Future-proof technology infrastructure:** With a tenfold capacity growth in mind, redundancy and scalability are built into the lab's DNA, ensuring it can evolve alongside technological and healthcare advancements.

### A blueprint for scaled impact: The hub-and-spoke configuration

Apollo Hospitals maximised the strategic advantage of its geographical footprint by adopting an innovative hub-and-spoke 'Cluster Consolidation' approach, with the CRL at its centre.

### Geographic and logistical advantages of the model

- A 50-minute transit radius, connecting Apollo Hospitals' diagnostics centres, and collection points within the bustling Chennai region.

- Centralised efficiency, allowing a transportation model while minimising pre-analytical variations due to delays.

- Predictable TAT: The model ensures strict adherence to the 90th percentile TAT standard in all disciplines by leveraging robotics and digital infrastructure to bridge distances and increase reliability.

By seamlessly merging geographic efficiencies with clinical precision, the Apollo DigiSmart CRL acts not just as an operational hub but as a nerve center for improving patient outcomes across the Chennai cluster.

The Apollo DigiSmart CRL's robotic-enabled, digitally controlled infrastructure ensures agreed service levels for clinicians and



Dr Mamta Soni

patients are consistently met.

### Pioneering technology as a catalyst

At the core of the Apollo DigiSmart CRL is an integrated, Roche Diagnostics powered Total Laboratory Automation (TLA) system, which transforms the diagnostic testing journey into a seamless, end-to-end automated lifecycle improving accuracy, reducing variability, and unlocking the full potential of clinical laboratories.

### Highly integrated automated workflow

Key automation pillars include:

**1. Bulk loading infrastructure:** Automated sample identification and entry eliminate delays and manual errors.

**2. High-throughput centrifugation:** Dual-line workflows streamline biochemistry and hematology workflows, leading to faster processing.

**3. Sample quality checks:** Automation of HIL (Hemolysis, Icterus, and Lipemia) ensures samples meet clinical standards right from the start.

**4. Biohazard-free decapping and aliquoting:** Reduced risks for medical staff through complete automation.

**5. High-capacity storage and retrieval:** The lab can house an impressive 27,000 samples, enabling instant retrieval for re-runs or validations.

### Digital intelligence – navify® Lab Operations (nLO) and navify® Monitoring (nMon)

Coupled with Roche's navify® Lab Operations (nLO) middleware, the CRL acts as a nexus for connected lab analysis by integrating instruments from multiple key disciplines and linking them with Apollo Diagnostics LIS and Apollo Hospitals HIS platforms, enabling:

- Real-time monitoring of work flow, workload, TATs, and quality control.

- Advanced six-checkpoint rule based auto-verification, eliminating errors, accelerating validation, and ensuring real-time actionable insights for clinicians.

- Features real-time dashboard monitoring for workload management, TAT, quality control, and critical results.

### Performance gains: Clinical and operational outcomes

Automation and robotics have delivered remarkable results in both clinical quality and operational metrics.

**Performance metrics:** Pre vs post automation Hemolysis rejection rate improved to just 2.1 per cent and sample volume rejection rate reduced to 0.76 per cent.

### Rule-based auto verification via navify® Lab ops nLO:

Six-checkpoint Auto verification (AV) rule engine now automates result validation by filtering for QC errors, Sample Quality HIL flag, Analyzer flags, Patient delta checks, Critical result flags and clinical correlation.

17,000 to 22,000 results daily are filtered through the AV funnel, run past a rule-engine for 56 conditional clinical correlation checks to ensure accurate clinical interpretation. Each result value is evaluated against 44 clinical conditions for automated expert comments in patient reports, enabling clinicians interpret reports better.

Apollo DigiSmart CRL has achieved an average of 77 per cent results auto verified across 6 clinical specialties.

### Empowering people through technology

The Apollo DigiSmart CRL transformation has significantly improved the work environment for medical technicians, driving both efficiency and satisfaction.

- Enhanced productivity
- Sample productivity: Increased by 2.1x per technician.
- Test productivity: Increased by 1.8x per technician.

### Staff satisfaction survey results (n=35)

- 95 per cent: Lab is well-organised and aesthetically comfortable.

- 96 per cent: Workloads have been reduced, allowing focus on higher-value tasks.

- 90 per cent: Satisfaction with the transformation.

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## Partnering with diagnostic laboratories: the next frontier for IVD growth in india

As India's diagnostics sector evolves with consolidation and rising demand, **Dr Aruna Subramanian**, Director-Sales and Marketing and Customer Care, Sysmex India Pvt Ltd shares how Sysmex India is adapting its strategy to deliver value-driven solutions and strengthen partnerships across both large diagnostic chains and emerging labs

India's diagnostics landscape is undergoing a structural shift - one that is redefining how the in vitro diagnostics (IVD) industry engages with its customers. At the center of this transformation is the rapid rise of organised diagnostic chains and the consolidation of smaller, independent laboratories. Stand-alone labs that once dominated local markets are increasingly being acquired or outcompeted by large national and regional chains. These networks bring scale, standardisation, and capital, but also fundamentally change the rules of engagement. Decision-making is now centralised, procurement is strategic, and expectations from partners are significantly higher.

At the same time, government initiatives such as Ayushman Bharat are expanding access to diagnostics, particularly in semi-urban and rural India. This is accelerating demand while also increasing pressure on labs to deliver high-quality testing at lower costs.

For IVD companies, traditional sales approaches, focused on individual instruments, relationships, and price negotiations, are no longer sufficient.

Large diagnostic chains now drive a significant share of volumes, operating with a sharp focus on return on investment (ROI), asset utilisation, and cost per test. As they expand through acquisitions and hub-and-spoke models, they introduce pricing uniformity—but also intense price pressure. Leveraging scale, these players demand lower reagent costs, bundled offerings, long-term contracts, and



The conversation has shifted from “What is the price?” to “What is the total cost of ownership and how does this improve network profitability?”

standardised pricing across geographies.

The conversation has shifted from “What is the price?” to “What is the total cost of ownership and how does this improve network profitability?”

In this evolving environment, Sysmex is aligning its strategy to partner closely with large diagnostic chains while continuing to support smaller laboratories, particularly in Tier 2 and Tier 3 markets. This dual approach recognizes both the scale of organized networks and the continued importance of decentralized healthcare delivery.

Globally, Sysmex holds a leading position in hematology,

urinalysis, and hemostasis within the IVD domain, supporting the health of people in over 190 countries and regions. In India, this commitment is reinforced by the establishment of a manufacturing facility in Sanand, Gujarat - strengthening local capabilities and responsiveness to market needs. Beyond commercial models such as reagent rentals, volume-linked pricing, and bundled solutions, clinical and scientific collaboration is emerging as a key differentiator. Labs increasingly value partners who can support evidence generation, publications, and clinical credibility.

Operational efficiency is equally critical. High-volume networks require optimised workflows, minimal downtime, and strong service support, making applications expertise and digital integration essential.

As the market consolidates, success will depend on a clear shift, from pricing to value, from transactions to partnerships, and from products to integrated solutions.

In a market defined by rising expectations and cost pressures, sustainable growth will come from being the most valuable partner - one that evolves alongside India's rapidly transforming diagnostics ecosystem.





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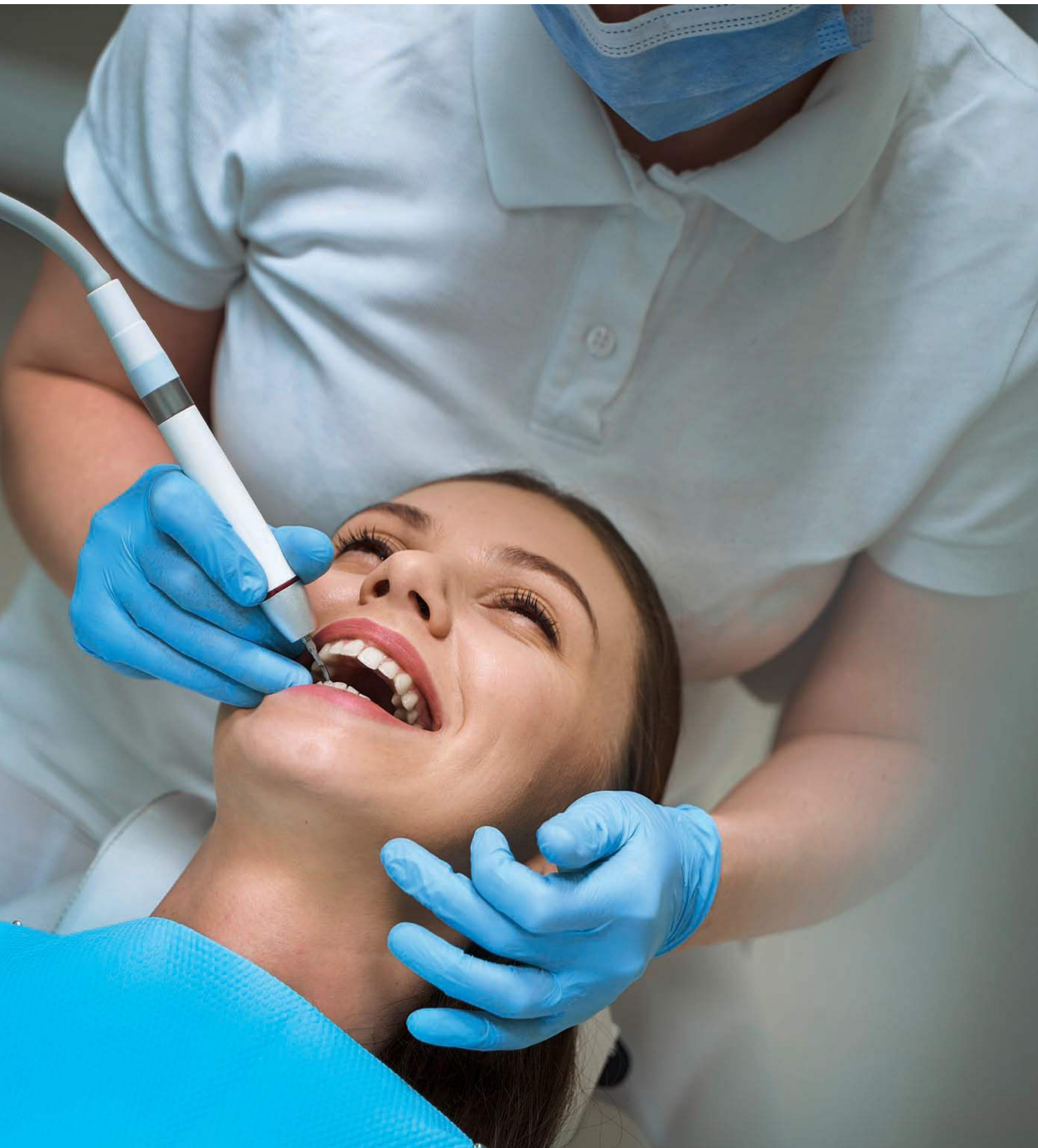
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# DRILLING DOWN CAN INDIA'S DENTAL SECTOR SCALE UP?

Structural shifts driven by standardisation and digital adoption are reshaping dentistry in India, even as affordability, insurance gaps and access challenges persist

**Kalyani Sharma**



India's dental sector, long dominated by standalone clinics and out-of-pocket spending, stands at an inflection point. The rise of organised chains, digital technologies, and shifting consumer behaviour are rewriting the rules. But critical barriers like thin insurance coverage, uneven access, and weak systemic integration continue to hold back scale.

## A market on the move

For decades, India's dental sector operated quietly on the margins of organised health-care. The dominant picture was a neighbourhood clinic, a solo practitioner, and a patient walking in with acute pain. Today, that picture is changing, slowly but unmistakably. But today, that picture is changing, slowly.

As per Nexdigm Market Research, "India's dental services market is valued at USD 2.5 billion in 2024, growing at an approximate CAGR of 8 per cent from 2024 to 2030."

Sachin Katira, Co-Founder and CEO, Eka Dental Care mentions, "India's dental market is growing steadily, driven by rising awareness, expanding urban middle-class incomes, and increased insurance penetration. Yet, utilisation remains stubbornly low. A significant chunk of the population still treats dental visits as reactive, not routine, something you do when the pain becomes unbearable, not before."

The barrier, as Katira notes, is rarely ignorance. "India's middle-class consumer is aspirational, well-informed, and value-conscious. The barrier is perception, the deeply held belief that quality dental care is expensive. That belief, more than anything else, has kept preventive care out of reach for millions", he adds.

Sameer Merchant, MD and CEO, Laxmi Dental also believes that, "India's dental market is rapidly growing, driven by rising awareness about dental health and increasing demand for quality care in urban centres. The



India's middle-class consumer is aspirational, well-informed, and value-conscious. The barrier is perception, the deeply held belief that quality dental care is expensive. That belief, more than anything else, has kept preventive care out of reach for millions

**Sachin Katira**  
Co-Founder and CEO,  
Eka Dental Care



The key factors necessary for the continued evolution of the dental industry in India will be greater standardisation and broader adoption of AI led workflow processes, and improved integration of the dental clinic with its associated laboratory

**Sameer Merchant**  
MD and CEO,  
Laxmi Dental



Dental care in India is still largely dependent on out-of-pocket spending, with limited insurance coverage acting as a major barrier to timely intervention. This often leads to delayed treatments and higher long-term costs for patients

**Udiya Sharma**  
Co-Founder,  
Clockwork Rituals

long-term outlook for growth remains strong."

## The organisation imperative

The most important shift underway in Indian dentistry is structural: the gradual transition from a fragmented, standalone-clinic model to an organised, chain-based ecosystem. While solo practitioners still account for the overwhelming majority of dental touchpoints, organised

chains are gaining ground steadily, particularly in metro and Tier 1 cities.

Udiya Sharma, Co-Founder, Clockwork Rituals shares, "There is a visible, albeit gradual, shift towards organised dentistry in India. While standalone clinics continue to dominate, organised chains and branded networks are steadily gaining ground, particularly in urban centres. This transition is largely being driven by increasing con-

sumer preference for standardised, hygienic, and reliable care, along with greater trust in branded healthcare experiences. Additionally, the integration of technology in diagnostics and treatment planning, coupled with growing investor interest in scalable healthcare models, is accelerating the move towards a more organised ecosystem."

The drivers of this transition are multiple. Consumers, particularly younger and ur-

ban ones, are seeking clinical environments that feel safe, standardised, and transparent. They want upfront pricing, professional ambience, and the assurance of consistent care.

Dr Achuth M Baliga, Medical Director, Happiest Pearls, observes this from the clinical front, "Yes, there is a clear and growing shift towards organised dentistry, particularly in metro cities. The sector is gradually transitioning from standalone clinics to corporate dental chains, driven by the need for standardisation, quality assurance, and scalability. Accreditation frameworks such as NABH are further reinforcing this shift by promoting consistent clinical and operational standards."

As Laxmi Dental operates at the intersection of clinical and manufacturing ecosystems, Merchant views the organised shift as a business opportunity. "From our viewpoint, this has been accomplished by the increasing demand for consistency in services, and therefore more structured dental networks, with quicker uptake of technologies for the treatment planning process. All these changes will help build more standardised and efficient processes throughout the entire value chain."

## What's driving demand?

India's dental demand is not uniform. It cuts across three distinct segments i.e. preventive, curative, and cosmetic; each with its own growth dynamics and consumer profile.

Historically, curative care has dominated. Patients came in only when pain was unbearable, and procedures like root canals, extractions, and fillings drove the bulk of revenue. That model, while persistent, is being complemented by newer demand patterns.

Dr Baliga highlights, "High-growth segments include implantology, cosmetic dentistry (such as aligners and teeth whitening), and restorative procedures like crowns and bridges. Together,

these contribute to nearly 65 per cent of overall revenue. Consumer behaviour is evolving towards elective and aesthetic treatments, reflecting increased awareness, aspirational value, and willingness to invest in dental care."

The cosmetic segment deserves particular attention. Driven by social media visibility, increasing aesthetic awareness, and the mainstreaming of procedures like aligners and teeth whitening, cosmetic dentistry is seeing some of the sharpest upticks in urban markets. Meanwhile, preventive care like dental check-ups, cleanings, scaling is growing among younger, more health-aware consumers who are beginning to treat oral health as part of a broader wellness routine.

Sharma contextualises the broader demand shift, "The demand landscape in India's dental sector is evolving from being predominantly curative to a more balanced mix of preventive, curative, and cosmetic care. While curative treatments continue to account for a significant share due to historically unmet needs, there is a clear rise in preventive care adoption, especially among younger and urban consumers who are becoming more proactive about oral health. At the same time, cosmetic dentistry is witnessing strong growth, driven by increasing aesthetic awareness and lifestyle aspirations. Overall, consumer behaviour is shifting from a reactive approach to a more proactive and lifestyle-oriented view of oral care."

There is also an epidemiological dimension to demand growth. Rising rates of lifestyle diseases like diabetes and gut disorders, combined with widespread tobacco use, are contributing to increased dental morbidity. This creates baseline demand though it also points to a public health challenge that the sector must engage with.

### Technology as key enabler

Across every conversation



High-growth segments include implantology, cosmetic dentistry (such as aligners and teeth whitening), and restorative procedures like crowns and bridges. Together, these contribute to nearly 65 per cent of overall revenue

### Dr Achuth M Baliga

Medical Director,  
Happiest Pearls



The gap between intent and affordability is where a large share of potential revenue is lost. EMI-based payment options help address this by converting a one-time expense into a predictable monthly outflow

### Gaurav Gupta

Co-Founder and CEO,  
CarePay

about scaling India's dental sector, technology emerges as the key enabler. From diagnostics to patient management, from chair-side to lab, digital tools are changing what is possible and what is efficient.

Outlining the technology stack that is reshaping clinical care, Dr Baliga says, "Key enablers include Electronic Medical Records (EMR), which enable seamless data portability and better patient management; CAD-CAM technology for precise and efficient dental restorations; AI-powered diagnostic imaging software, improving accuracy and speed of diagnosis; and teledentistry, expanding access and enabling remote consultations. Together, these innovations are helping standardise care, reduce turnaround times, and support multi-location scalability."

According to Merchant, "Technology is having a dramatic impact on dentistry by improving both scalability and

efficiency. At Laxmi Dental, we have seen how much more quickly, and accurately digital impressions, CAD/CAM processes and AI-enhanced design systems provide us with the results we need. Ultimately, these technologies are helping to link clinics and laboratories in new ways, creating a far more connected and expandable ecosystem."

The implications for scalability are significant. When clinical protocols are digitised and standardised, a dental chain can maintain consistency across dozens of locations without relying solely on individual practitioner judgment. AI-assisted diagnostics reduce the margin for human error. Cloud-based management systems allow real-time performance monitoring across a network. The result is an operational model that can genuinely scale.

Sharma notes the broader systemic value of this technology integration, "Advances in digital diagnostics and imag-

ing are improving accuracy and reducing treatment timelines, while AI-led tools are enhancing treatment planning and patient outcomes. Additionally, the rise of teledentistry and digital patient management systems is helping expand access and streamline operations. Collectively, these innovations are reducing dependence on individual practitioners, enabling standardisation of care, and improving overall efficiency across the value chain."

For Katira, technology is not just a clinical tool but it is part of the business case for making dental care more accessible. "Technology helps clinics use their resources wisely and see patients without any problems. This means that people can get care no matter where they go. Technology is also helping clinics get bigger and better."

### The affordability gap: Insurance and financing as the missing link

If technology is the sector's enabler, affordability is its most stubborn bottleneck. Majority of adults in India have dental caries, yet treatment rates remain low. The reason is straightforward: dental care in India is almost entirely out-of-pocket, and for a large segment of the population, it is simply too expensive.

Sharing his opinion, Katira shares, "India's dental sector has problems with access and affordability. This is mainly because insurance does not cover much. Most dental treatments are to be paid by patients without any cost support, which makes them costly for many. This is especially worrying since over 90 per cent of adults in India have caries. Yet many put off treatment because it is too expensive and not easily available outside big cities. Making dental insurance cover more treatments will be key to making dental care cheaper. It will also encourage people to take care of their teeth before problems start."

The insurance gap in dental care is one of the most-cited structural problems in the sector. Unlike medical insurance, which covers hospitalisation and a growing range of outpatient services, dental insurance remains a peripheral offering typically excluded from standard health policies, rarely purchased as standalone cover. The result is that millions of Indians who have health insurance effectively have no dental coverage.

Merchant flags both the problem. He added, "Most dental treatment continues to be paid out-of-pocket which leads to people being delayed from getting dental care when they need it. At Laxmi Dental, we are also enabling more accessible care through EMI-based options via partnerships like Fibe, while broader insurance inclusion will be critical to improve affordability and shift focus on preventive dentistry."

The EMI model, as a bridge solution, is attracting significant attention. Gaurav

Gupta, Co-Founder and CEO, CarePay, explains the precise problem it solves, "“For most clinics across the secondary healthcare industry, from dermatology to IVF, the biggest revenue leak does not come from lack of demand, it comes from drop-offs after consultation. Patients often reach the decision stage with clear intent, but hesitate when faced with a high upfront cost. This gap between intent and affordability is where a large share of potential revenue is lost. EMI-based payment options help address this by converting a one-time expense into a predictable monthly outflow. When patients see a treatment broken down into manageable instalments, the decision becomes easier and more immediate.”

“As we’ve seen at CarePay partnered clinics, structured financing at the point of care tend to see higher treatment acceptance and more consistent cash flows. It also shortens the cycle between consultation and payment, which improves operational efficiency. In that sense, EMIs are not just a payment tool, they act as a conversion layer that helps clinics capture demand that would otherwise remain unrealised”, Gupta added.

“The real growth opportunity in Indian dentistry isn’t in serving those who were already coming. It’s in unlocking the massive latent demand among those who have been opting out. Affordability paired with accessibility doesn’t just grow a business — it grows the entire category”, says Katira.

The broader insurance inclusion question, however, remains unresolved. Experts agree that expanding insurance coverage to dental care is essential for the sector to cross the affordability chasm at scale. But doing so requires parallel progress on digital adoption; clinic management systems, EMRs, and digitised billing to enable seamless data sharing and claims processing.

As Dr Baliga notes, “The major barriers to access and

## Affordability is one dimension of the access problem. Geography is another. The concentration of quality dental care in metro and Tier 1 cities means that a large proportion of India's population in Tier 2 and Tier 3 cities, and in rural areas has effectively no access to organised dental services

affordability include the rising cost of dental treatments and persistent patient concerns such as pain anxiety or phobia. Insurance inclusion will be a critical enabler for future growth, particularly as it can significantly improve affordability and drive patient volumes. However, for insurance to be effectively integrated, widespread adoption of digital systems across clinics will be essential to ensure seamless data sharing and claims processing.”

### Access beyond urban India

Affordability is one dimension of the access problem. Geography is another. The concentration of quality dental care in metro and Tier 1 cities means that a large proportion of India's population in Tier 2 and Tier 3 cities, and in rural areas has effectively no access to organised dental services.

Sharma stresses, “Despite the growth momentum, access and affordability remain significant challenges. Dental care in India is still largely dependent on out-of-pocket spending, with limited insurance coverage acting as a major barrier to timely intervention. This often leads to delayed treatments and higher long-term costs for patients. Furthermore, access to quality dental care remains uneven, particularly beyond metro cities. Expanding insurance inclusion will be critical in addressing these gaps, as it can improve affordability, drive early adoption of care, and support the overall formalisation of the sector.”

For organised chains, ex-

pansion beyond metros is both an opportunity and a challenge. The opportunity is clear: vast unserved markets with growing incomes and rising awareness. The challenge is operational like maintaining quality, managing talent, and achieving unit economics in markets where purchasing power is lower and infrastructure is thinner.

Technology particularly teledentistry and digital diagnostics could play a role in bridging the geographic gap, enabling remote consultations and preliminary diagnostics that reduce the need for in-person visits for certain use cases. But physical infrastructure, trained dental professionals, and accessible clinic networks remain indispensable for actual care delivery.

### The road to investment-readiness

All the growth dynamics converge on a central question: when will India's dental sector become truly investable at scale? The ingredients are visible with large latent demand, organised players gaining traction, technology enabling standardisation, and consumer behaviour shifting. But the structural scaffolding like insurance, regulation and capital is still being built.

Sharma frames the conditions for a sector-level transformation, “For India's dental sector to evolve into a scalable and investment-ready healthcare vertical, a combination of structural and behavioural shifts will be required. Greater integration of dental care within mainstream healthcare, improved insur-

ance coverage, and standardisation of treatment protocols will be essential. At the same time, increased adoption of technology and a stronger focus on preventive care can help create more sustainable and predictable demand. As organised players continue to expand and consumer awareness deepens, the sector is well-positioned to transition from a fragmented, treatment-led model to a more integrated and growth-oriented ecosystem.”

Dr Baliga mentions, “The evolution of dentistry into a scalable, investment-ready healthcare segment will be driven by a combination of factors—including the shift towards organised care, adoption of advanced technologies, standardisation through accreditation, and integration with insurance ecosystems.”

Merchant points to several concrete enablers, “The key factors necessary for the continued evolution of the dental industry in India will be greater standardisation and broader adoption of AI led workflow processes, and improved integration of the dental clinic with its associated laboratory. Expanding outside of metropolitan areas and increasing the availability of affordable types of insurance will contribute to this growth. Some of the changes necessary to achieve these goals have already begun and collectively will enhance the dental profession in India creating a more organised, scalable and investment-ready industry.”

For Katira, “The biggest reason for growth will be the

rise of large dental chains. They make dental care more accessible and standardised, which builds trust. At the same time, technology is improving how dentists diagnose and treat patients, making everything more efficient. Insurance is another factor, it reduces the cost burden, so more people are willing to seek treatment. Additionally, with increasing awareness about preventive care, people won't wait for serious issues before visiting a dentist. And ultimately, all of this combined will drive the sector forward in the coming years.”

### Way forward

India's dental sector is not yet a fully organised, investment-ready healthcare vertical. But it is moving in that direction, faster than most observers expected a decade ago. The entry of organised chains, the integration of digital technologies, the emergence of new financing models, and the gradual shift in consumer behaviour are collectively laying the groundwork for a more scalable and structured sector.

The barriers are real and significant: out-of-pocket dependence, thin insurance coverage, geographic concentration, and the inertia of a generation of patients who have never made dentistry a habit. Overcoming these will require coordinated action from providers, payers, policymakers, and technology companies.

But the market opportunity, if unlocked, is enormous. With over a billion potential patients and oral health prevalence rates that make the treatment gap staggering, India's dental sector does not lack for demand. What it lacks is the systemic infrastructure to convert that demand into accessible, affordable, and high-quality care at scale.

The drill is running. The question is whether the sector can move fast enough to fill the cavity.

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## Technology can expand reach while strengthening quality and confidence in healthcare delivery

From shaping national health policy to guiding digital healthcare, **C.K. Mishra**, now Independent Director at Practo, reflects on governance, technology, and patient-centric care in an exclusive interview with **Neha Athavale**

**Having spent decades in public health policymaking, how do you see your policy and governance experience shaping your role at Practo?**

Building healthcare is not a project, it is an ongoing national effort. Even the most well-designed systems require continuous strengthening, because the scale and diversity of India make this one of the most complex sectors to manage. Over the years, I have been involved in building and overseeing systems at national scale, where multiple stakeholders and very different realities must work within a shared framework. In such a context, governance is not just about oversight but about ensuring that systems remain aligned, accountable, and capable of delivering outcomes over time.

What is equally important is recognising that governments alone cannot solve all aspects of healthcare. New-age platforms and entrepreneurs are bringing fresh thinking to long-standing challenges particularly in areas like access, information, and decision-making. What Practo is building is not healthcare delivery itself, but an enabling layer, one that helps organise information, connect stakeholders, and support more informed choices. In a system as complex as healthcare, such neutral and credible platforms can play an important role in strengthening trust.

I see value in supporting such efforts. When ideas like these are built with scale and responsibility, they can meaningfully improve how people experience and navigate healthcare in India.

Different states having different levels of achievements, therefore the interventions will be different. (also worked in state, hence)

**From your perspective, how can technology-led healthcare infrastructure help bridge existing gaps in India's healthcare delivery system?**

India's healthcare system has always had to balance two realities. A) The need to serve at very large scale, and B) the need to ensure that quality is not unevenly distributed. Reaching the last mile, while maintaining standards of care, has been a constant priority.

Technology-led infrastructure can act as a force multiplier by extending access beyond physical limitations; enabling patients, even in remote or underserved areas, to access information, seek consultations, and explore options that may not exist locally. Equally important is the role technology can play in bringing transparency into the system. When information on providers, treatments, and outcomes becomes more visible and structured, it empowers patients to make informed choices. At the same time, it naturally encourages greater accountability across the system - not through enforcement, but through visibility. The real opportunity is to use technology to not only expand the reach but to strengthen the quality and confidence with which it is delivered.

**As health-tech companies scale, how important is governance and institutional credibility in building trust and ensuring**



The real opportunity is to use technology to not only expand the reach but to strengthen the quality and confidence with which it is delivered

**long-term sustainability?**

"Trust is built in drops and lost in buckets." In healthcare this holds most meaning. The system itself is interconnected between patients, doctors, hospitals, insurers. Each depends on the other, and in many ways, each holds the other accountable. When this balance is maintained, the system works in the interest of the patient.

As organisations grow, governance ensures that this balance is not disturbed. It

brings discipline, keeps intent clear, and ensures that growth does not come at the cost of fairness or quality. For platforms that sit across the ecosystem, neutrality becomes important. They must be seen as enabling decisions, not influencing them. That is what builds confidence over time. Ultimately, sustainability in healthcare comes only from one thing - doing right by the patient, consistently, and at scale.

**How do you view the strategic timing of your appointment, especially as Practo expands into global markets like the US and UAE?**

I have interacted with Shashank over time and have been impressed by his clarity of thought and his commitment to building for the long term. There is a clear intent to position Indian healthcare capabilities on the global map, and that is something we should take collective pride in. Healthcare is a complex sector in any country, and building a platform that can operate across geographies requires both conviction and discipline. Practo is among the first from India to take a healthcare platform of this nature to global markets, and that itself is a matter of significance.

This is also reflective of a larger shift. Our entrepreneurial ecosystem today is resilient and ambitious like no other. We have the ability to solve for scale and complexity here, and increasingly, to take those solutions to the world with confidence. This journey, therefore, is not just about one

company. It reflects the growing confidence that solutions built in India can stand up to global expectations when pursued with the right intent and responsibility.

**Looking ahead, how can policy, technology, and patient outcomes be better aligned to drive the next phase of healthcare growth in India?**

The next phase of healthcare in India must be defined by outcomes. Access and capacity will always remain important, but the real measure of progress is whether care leads to better health for people. Policy, technology, and delivery systems must work in alignment to achieve this. Policy provides direction and sets the framework. Technology enables reach, transparency, and the ability to measure outcomes at scale. Providers remain central to delivering care with consistency and responsibility.

One of the key shifts required is towards greater use of data, not just for reporting, but for improving how care is delivered. When outcomes are visible, the system becomes more accountable, and over time, quality improves. India has both the scale and the capability to build a healthcare system that is accessible, accountable, and outcome-driven. The focus now should be on strengthening alignment across all parts of the system, so that the benefits of progress reach every citizen.

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# Is healthcare in India's corporate hospitals designed for patients or processes?

**Air Marshal Rajesh Vaidya, AVSM, VSM (Retd), Regional Director- Hospital Operations, PB Health** examines how India's rapidly corporatising healthcare ecosystem balances efficiency, scale, and clinical excellence with empathy, transparency, and patient trust highlighting both the strengths and the structural tensions shaping care delivery across the country

## Introduction

Indian healthcare exists in two parallel universes. On one hand, it is a global hub for medical tourism, offering world-class clinical outcomes at a fraction of Western costs. On the other, it is a system defined by sheer volume—public hospitals where a single doctor may see 100 patients in a morning, and private corporate hospitals where billing cycles often feel more streamlined than the bedside manner.

The most reliable national data on where Indians actually seek healthcare comes from the NSS 75th Round (2017-18), the latest comprehensive household survey on health utilisation. It distinguishes public/government facilities, private hospitals (any facility with inpatient beds, including small nursing homes), and private doctors/clinics (outpatient-focused, no inpatient). For more current times (2024-25), it is estimated that the private sector overall handles almost 52 per cent of inpatient care in rural areas and approximately 61 per cent in urban areas.

No national survey categorises 'corporate hospitals' (large organised chains) separately, as they form only about 15 per cent of private hospitals overall but dominate revenue, beds, and complex/tertiary cases particularly in large metros. Private providers account for nearly 60-70 per cent of healthcare spending, with large chains with multiple hospitals leading the charge through scale, technology, and standardised operations. Hence the focus of this article on corporate

hospitals

## Process and patients

Corporate hospital chains have transformed Indian healthcare since the 1990s liberalisation. However, beneath the five-star facades lies a fundamental tension: Are these institutions built primarily for patient well-being, or for optimised processes that drive revenue, compliance, and operational scale? The evidence points to a system that excels at processes yet often treats patients as inputs in a high-volume, fee-for-service machine.

## The process-driven machine

Corporate hospitals thrive on standardisation. NABH (National Accreditation Board for Hospitals) accreditation, now in its 6th edition, mandates detailed protocols for admission, assessment, discharge, infection control, and quality indicators. These rules ensure consistency: every knee replacement follows the same checklist, every ICU shift adheres to SOPs, and every bill is tracked through centralised systems.

This process focus delivers real benefits. Hospital chains invest in robotic surgery, AI diagnostics, and electronic health records that smaller nursing homes cannot afford. Occupancy rates hover at 60-70 per cent in the more efficient players, with average revenue per occupied bed (ARPOB) climbing steadily. Doctors operate under predefined care pathways that reduce variability and medical errors. Insurance empanelment and cashless claims further streamline billing on paper.



Yet these processes are calibrated for throughput and margins. Full-time consultants and visiting doctors receive monthly revenue targets. Missing them triggers memos; sustained shortfalls risk contract non-renewal. A 2020 study of doctors in corporate settings documented how clinical autonomy has given way to management-defined protocols optimised for billing codes rather than individualised care. Fee-for-service payments incentivise volume: more tests, longer stays, higher-end implants. Private equity investors and listed chains demand predictable returns, pushing hospitals toward high-margin specialties while de-emphasising preventive or primary care.

The result? A system where efficiency metrics—bed turnover, ALOS (average length of stay), and ARPOB—take precedence over softer outcomes like patient trust or long-term wellness. As one doctor interviewee in a corporatisation study noted, hospitals have become "faceless,

impersonalised and less accountable."

## The patient experience: Wins, woes and warnings

Corporate hospitals score high on infrastructure and technology, with patients praising shorter waits for diagnostics and access to cutting-edge equipment. International accreditation (JCI) and hotel-like amenities reassure affluent and NRI patients.

Yet, patient feedback reveals cracks. Billing disputes are rampant. Surveys show only about 47 per cent of hospital bills are fully itemised; others arrive as opaque packages or handwritten sheets running into lakhs. Unnecessary tests, over-treatment, and inflated rates for insured patients are common complaints. A 2015 analysis of second opinions found nearly 44 per cent of recommended surgeries potentially avoidable—figures echoed in recent reports on C-sections, knee implants, and cardiac procedures driven by financial incentives.

Insurance-driven care exacerbates the issue. Hospitals sometimes charge cash patients lower rates while inflating bills for insured ones, prompting insurers to push back with deductions or higher premiums. Medical inflation hit 13 per cent in 2025, outpacing global averages and straining families. Patients report feeling like revenue generators rather than partners in healing.

Doctors feel the squeeze too. Revenue targets clash with ethics, leading to burnout and defensive medicine. Public discourse, including physician forums and media,

increasingly highlights how corporatisation has shifted priorities from "patient-first" to "ROI-first." The Lancet has warned that unchecked privatisation can worsen health outcomes by prioritising volume over value.

## Can processes serve patients better?

The critique is not that processes are inherently bad. Standardisation saves lives through infection control and evidence-based protocols. The problem arises when processes are engineered solely for financial and regulatory efficiency without balancing patient outcomes, affordability, and empathy.

Promising shifts are emerging. New BIS standards for itemised billing (IS 19493:2025) aim to improve transparency. IRDAI and government moves to tighten claims oversight signal growing regulatory pushback against overcharging.

## Conclusion: Time for a patient-first reset

Corporate hospitals in India are marvels of process engineering. They have expanded access to world-class care, created jobs, and attracted investment. Yet the design remains tilted toward processes that maximise utilisation, compliance, and returns—often at the expense of affordability, transparency, and human connection.

True patient-centricity would require deeper changes: value-based payments that reward outcomes over procedures; public reporting of clinical outcomes and costs; stronger doctor-

patient shared decision-making; and incentives for preventive care. Integrated models where insurers and providers share risk could align incentives toward keeping patients healthy rather than treating them expensively.

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**Corporate hospitals thrive on standardisation. NABH (National Accreditation Board for Hospitals) accreditation, now in its 6th edition, mandates detailed protocols for admission, assessment, discharge, infection control, and quality indicators. These rules ensure consistency: every knee replacement follows the same checklist, every ICU shift adheres to SOPs, and every bill is tracked through centralised systems**

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## India's healthcare system today is clinically capable but culturally uneven

**Dr Nikhil Mathur**, Group Chief of Medical Services, CARE Hospitals, shares that as healthcare scales rapidly, the real challenge is ensuring that growth strengthens clinical quality and patient safety. He also opines that India's next leap will depend on shifting from volume to value, with outcomes, transparency and trust at the centre of care, in an interview with **Lakshmipriya Nair**

**CARE Hospitals has scaled significantly over the years. As a clinical leader, how do you ensure quality keeps pace with growth?**

As CARE Hospitals continue to grow, our approach has been anchored in a simple principle: scale should never dilute quality; it must strengthen it. Expansion, in our view, is meaningful only when it enhances consistency and reliability of care.

We have achieved this by standardising clinical protocols and embedding them within our digital systems, ensuring that evidence-based care is delivered uniformly across all our units. This is further strengthened by our shift towards data-driven clinical governance, where key outcomes such as mortality, infection rates, and re-admissions are monitored in real time, allowing us to move decisively from reactive interventions to proactive care management.

Equally critical is the governance framework we have built. Continuous audits, peer reviews, and clearly defined accountability at every level ensure that quality is not dependent on individuals but institutionalised across the system. Alongside this, we are consciously fostering a culture of patient safety and transparency, where reporting is encouraged and learning is continuous.

We are also investing significantly in clinical leadership and digital innovation, including AI-driven risk scoring and



The real gap today lies not in capability, but in consistency and culture. While protocols are increasingly well-established, the deeper embedding of a safety-first mindset is still evolving

decision-support systems, to improve precision and strengthen clinical outcomes.

Ultimately, as we scale, patient-centricity remains non-negotiable. Every patient, regardless of where they access CARE Hospitals, must experience the same standard of care, trust, and empathy. Our commitment is clear: growth with uncompromised clinical excellence.

**Patient safety is as much about culture as it is about protocols. Where do you think India's private healthcare system truly stands? What are the gaps that still concern you?**

India's private healthcare system has made significant strides in patient safety over the past decade, particularly within large hospital networks that have adopted robust clinical protocols, accreditation standards, and digital systems many of which are aligned with global benchmarks.

However, the real gap today lies not in capability, but in consistency and culture. While protocols are increasingly well-established, the deeper embedding of a safety-first mindset is still evolving. In many settings, hierarchical structures and a residual blame-driven environment continue to discourage open reporting of incidents, limiting the opportunity for systemic learning and improvement.

There is also a pronounced disparity across the ecosystem. While leading institutions have achieved a high degree of standardisation

and clinical rigor, smaller setups often face challenges in areas such as workforce training, adherence to protocols, and infection control practices. This variation impacts the overall reliability of patient safety outcomes.

In addition, structural constraints such as fragmented data systems, workforce pressures, and the absence of strong, national-level reporting and benchmarking frameworks continue to hinder progress.

In essence, India's healthcare system today is clinically capable but culturally uneven. The next phase of advancement will depend on how effectively we can institutionalise transparency, strengthen accountability, and embed patient safety as a shared responsibility across every level of care delivery.

**We often talk about outcomes but rarely see that data in the public domain. Is India ready for greater transparency in clinical outcomes?**

India is at an inflection point when it comes to transparency in clinical outcomes there is clear intent, but execution is still evolving.

On one hand, we are seeing a steady rise in patient awareness and a growing willingness among clinicians and institutions to move towards outcome-based accountability. On the other hand, most clinical outcomes are still not consistently available in the public domain, with reporting remaining

fragmented and non-standardised.

The challenges are both structural and perceptual. The absence of uniform reporting frameworks, fragmented data ecosystems, and legitimate concerns around how data may be interpreted or misinterpreted have slowed progress. There is also an underlying hesitation linked to reputational risk, particularly in a system that has not yet fully aligned on benchmarking standards.

That said, the direction of travel is clear. With increasing digital adoption and a more informed patient base, transparency will soon transition from being a differentiator to becoming a baseline expectation.

At CARE Hospitals, we see this as an opportunity to lead from the front. We are in the process of building a structured clinical outcome reporting framework for the public domain one that is designed to enhance trust, drive accountability, and enable more informed patient decision-making.

In summary, India is ready in intent but still maturing in execution. The future will belong to organisations that embrace transparency and build credibility through outcomes, not just reputation.

### **Hospitals are under constant pressure to grow volumes. More patients, more procedures, more growth. In that environment, how do you protect clinical judgment when business priorities start to weigh in?**

Growth is an inherent part of healthcare expansion, but clinical judgment must remain non-negotiable. The real balance lies in ensuring that while institutions scale, decision-making at the bedside continues to be guided solely by patient need and clinical evidence.

This begins with strong governance and clearly aligned incentives. At CARE Hospitals, clinical decisions are anchored in evidence-based protocols and

## **We have also consciously shifted our internal metrics from volume-driven indicators to outcome-based measures moving the conversation from “how much we do” to “how well we do it.”**

reinforced through peer oversight mechanisms such as audits, second opinions, and outcome reviews. These structures act as critical safeguards, ensuring that decisions are not influenced by volume targets or commercial considerations.

Equally important is maintaining a clear separation between clinical autonomy and business imperatives. When clinicians are empowered to act without pressure and in the best interest of the patient, the integrity of care is preserved.

We have also consciously shifted our internal metrics from volume-driven indicators to outcome-based measures moving the conversation from “how much we do” to “how well we do it.” This not only strengthens accountability but also aligns the organisation around quality rather than quantity.

Ultimately, culture is the defining factor. When leadership consistently reinforces that ethics and patient interest come first, it sets a clear tone across the system.

In the long run, sustainable growth in healthcare is built on trust, and protecting clinical judgment is fundamental to earning and maintaining that trust.

### **With AI, robotics and digital tools entering healthcare, how do you decide when a technology is truly ready for patient care?**

In healthcare, adopting technology is not about being first, it is about being right, and above all, being safe. Innovation must always be anchored in its ability to meaningfully improve patient outcomes.

Our evaluation begins with clinical validation. Any technology we consider must

be supported by strong evidence, peer-reviewed data, and demonstrated effectiveness in real-world settings not just controlled pilots. This ensures that its benefits are both credible and replicable in everyday clinical practice.

The next critical lens is patient safety and regulatory alignment. Every tool must meet established standards and clearly demonstrate that it enhances care without introducing new risks or uncertainties.

Equally important is how seamlessly the technology integrates into clinical workflows. Technology should augment clinicians, not disrupt them. If its adoption increases complexity or adds to cognitive burden, it is simply not ready for deployment.

We also assess measurable impact whether it improves diagnostic accuracy, reduces variability and errors, enhances clinical outcomes, or drives operational efficiency. Without tangible benefits, innovation remains theoretical.

Finally, we follow a disciplined, phased approach pilot, validate, and then scale ensuring continuous monitoring and feedback before wider implementation.

In essence, a technology is ready for patient care only when it is clinically proven, operationally seamless, and demonstrably beneficial not merely because it is advanced.

### **Preventable errors continue to be a challenge. What deeper, structural changes are needed to meaningfully improve patient safety in India?**

Reducing preventable errors in healthcare requires a shift from incremental improvements to systemic

transformation. Protocols alone are not enough what is needed is a fundamental redesign of how safety is embedded across the care continuum.

The starting point is culture. We must move decisively towards a non-punitive, learning-oriented environment where incident reporting is encouraged and viewed as an opportunity for improvement rather than blame. Without this cultural shift, even the best systems will fall short.

This needs to be supported by standardisation at scale. Uniform clinical pathways, checklists, and safety protocols must extend beyond leading institutions and become consistent across all levels of care. Standardisation reduces variability, which is often at the root of preventable errors.

Digital integration is another critical enabler. Structured electronic medical records, clinical decision support systems, and real-time alerts can significantly reduce human error and improve reliability in care delivery. However, technology must complement strong processes, not replace them.

Equally important is workforce strengthening. Adequate staffing, continuous clinical training, and addressing fatigue are essential to ensuring that care is delivered safely and consistently.

At a broader level, India needs robust national reporting and benchmarking frameworks that enable transparency, accountability, and shared learning across institutions. This creates a system where best practices are not isolated but disseminated.

Finally, strong clinical governance must underpin all

of this through audits, peer reviews, and continuous outcome monitoring to ensure accountability at every level.

Meaningful improvement in patient safety will come from building reliable systems, empowering healthcare professionals, and embedding safety as a core cultural value across the entire healthcare ecosystem.

### **Looking ahead, what is the one shift that could most significantly improve healthcare quality in India, and why?**

If there is one shift that can fundamentally transform healthcare quality in India, it is the transition to value-based, outcome-driven care.

Globally, there is now a clear consensus that volume is no longer a proxy for quality. The most advanced healthcare systems have moved beyond measuring success by activity, and instead focus on patient outcomes, safety, and long-term impact. This is a shift India must accelerate.

For our healthcare ecosystem, this change is particularly critical because it realigns incentives at every level clinicians, hospitals, and payers towards doing what is right for the patient, rather than what drives volumes. It brings clarity to decision-making and places clinical outcomes at the center of care delivery.

At the same time, an outcome-driven approach naturally drives transparency, enables benchmarking across institutions, and helps build much-needed patient trust. It also accelerates the adoption of digital systems, data-driven practices, and clinical standardisation all of which are essential for delivering consistent, high-quality care at scale.

When healthcare shifts from focusing on “how much we do” to “how well we do it,” quality ceases to be a separate initiative it becomes embedded within the system itself.

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# The intergenerational impact of investing in women's health

**Rajeev Sibal**, President-India Region Formulations, Lupin draws attention to a persistent yet under-recognised gap in women's cardiovascular health. Despite heart disease remaining the leading cause of mortality among women globally, it continues to be underdiagnosed and undertreated, particularly in India where risk is significantly higher and symptoms often present atypically

**H**eart disease continues to be the leading cause of death among women worldwide—yet awareness, screening, and clinical responses are far from adequate.

Research shows that Indian women face a 25 per cent higher risk of developing heart disease compared to men, yet their symptoms are more likely to be overlooked or misdiagnosed because they are often present atypically.

In India, cultural norms, caregiving responsibilities, low health-seeking behavior, and limited access to preventive care often cause women to prioritise the well-being of everyone else before their own.

The well-being of women has a ripple effect spanning families and communities. This is why investing in women's heart health is not just a medical necessity—it's an intergenerational imperative.

## Maternal health conditions affect the child's long-term health

It is important to recognise that a woman's heart health strongly impacts maternal and child outcomes. Conditions such as hypertension, obesity, gestational diabetes, and preeclampsia can significantly elevate a woman's long-term cardiovascular risk. These conditions also increase the child's risk of developing chronic diseases later in life. Establishing simple, structured follow-up pathways such as annual blood pressure, sugar, and cholesterol checks can ensure early detection and long-term protection.



It is important to recognise that a woman's heart health strongly impacts maternal and child outcomes. Conditions such as hypertension, obesity, gestational diabetes, and preeclampsia can significantly elevate a woman's long-term cardiovascular risk

## The cost of delayed diagnosis

Women often experience cardiac symptoms that are different—fatigue, breathlessness, nausea, or back pain instead of the classic chest pain. When left unattended, it leads to delayed diagnosis and poorer prognosis.

To address this, we need systemic responses that include:

- Gender-aware clinical protocols that train healthcare providers to recognize atypical symptoms in women
- Integrated screening for diabetes, hypertension, cholesterol, and cardiovascular risk
- Strengthening awareness at the community level, enabling women to understand risk factors and seek timely intervention
- Strengthening prevention, treatment and care through inclusive data that represents women across ages, backgrounds, and health needs

According to the World Economic Forum, timely interventions could help 3.9 billion women live healthier lives and boost the global economy by \$1 trillion every year by 2040 making it one of the most high-impact public-health investments of our time.

## Empowering women empowers communities

With cardiovascular diseases posing a growing threat to productivity and well-being, workplaces play a pivotal role in advancing women's heart health by offering gender-sensitive wellness programs, stress-management support, and accessible screening.

At the community level, equipping frontline health workers, such as ASHAs, with tools and training to communicate heart-health risks can accelerate early identification, especially in rural India.

## The role of industry in building a heart-healthy future for women

As an industry, we must continue collaborating with policy-makers, medical associations, and civil-society partners to ensure that women's heart health becomes a public-health priority. The goal must be to shift from reactive treatment to proactive prevention—making screening easy, education widespread, and care equitable.

Our work in cardiovascular therapies, patient-centric programs, and community-level initiatives is grounded in the understanding that when we invest in women's health, we invest in the health of families and the future of our nation.

## A healthier tomorrow begins with healthier women

The intergenerational impact of women's heart health is clear: when women thrive, families flourish.

The path to a healthier nation begins with recognising women's heart health as a shared responsibility. When we come together—healthcare providers, families, workplaces, and communities—we give every woman the chance to lead a longer, healthier, and more empowered life, laying a strong foundation for generations to come.

## INTERVIEW

# Improvement in non-tariff barriers will create more strategic long-term value than tariff cuts alone

**Scott Wang**, Vice President-Asia Pacific, WTCA and **Dr Jitendra Sharma**, Managing Director and Founder CEO, World Trade Center AMTZ speak with **Kalyani Sharma** on how tariff advantages, regulatory alignment, and ecosystem-driven manufacturing are positioning India as a strategic hub in global MedTech value chains

**India's MedTech sector is gaining momentum through Free Trade Agreements (FTAs) such as the UK-India agreement and EFTA partnerships. How do you see these agreements strengthening India's integration into global MedTech value chains?**

**Scott Wang:** India has achieved major milestones in its external trade development by completing FTA negotiations with the European Union (EU), UK and EFTA recently. The upgraded trade relations will bring significant reduction in both tariff and non-tariff barriers for India's MedTech sector to enter into these important markets. Specifically, preferential tariffs will make Indian MedTech companies and products more competitive, which enhances market penetration and growth. The easing of non-tariff barriers such as standard compliance, quality certification and regulatory approval means fast market entry and lower regulatory threshold. Together, they'll facilitate cross-border investment and production in both directions and integrate India's MedTech industry further with global value chains.

**The World Trade Centers Association (WTCA) spans over 300 locations**



Scott Wang

**worldwide. How can Indian MedTech companies leverage this ecosystem to access buyers, distributors, and strategic partners in FTA markets like the UK and Europe?**

**Scott Wang:** With its global trade ecosystem covering more than 300 major cities in nearly 100 countries and territories, WTCA is uniquely positioned to

empower India's MedTech industry to access buyers, distributors and strategic partners in FTA partner markets such as the UK and EU. WTCA's reciprocity model allows members to use facilities and services of worldwide membership such as meeting spaces, business lounges, and introduction desks-often at discounted rates or free through



Dr Jitendra Sharma

membership. The local WTC teams in these markets can provide critical services in business connections, market intelligence and communication assistances through various programs such as business matchmaking, trade missions, market research, corporate training, trade shows, as well as events and conferences.

**Beyond tariff reductions, FTAs bring non-tariff advantages such as regulatory alignment and ease of doing business. In your view, what are the most critical of these benefits for Indian MedTech exporters targeting regulated markets?**

**Scott Wang:** In highly regulated markets such as

the UK and EU, non-tariff barrier advantages enabled by these FTAs could be more significant than the preferential tariff. For example, the mutual recognition of certain conformity assessment procedures can avoid the duplication of testing and other processes. The alignment of technical standards provides greater predictability in regulatory requirements. The improvement of transparency and due process can reduce regulatory delays and compliance obstacles. Dispute resolution agreements can offer better protection and lower entry risks for India companies. Overall, improvement in non-tariff barriers will create more strategic long-term value than tariff cuts alone.

**Andhra Pradesh MedTech Zone (AMTZ) is often positioned as a globally benchmarked MedTech hub. What differentiates AMTZ from traditional manufacturing clusters in terms of infrastructure, innovation, and ecosystem support?**

**Dr Jitendra Sharma:** AMTZ stands out as India's first dedicated MedTech manufacturing hub in Visakhapatnam, spanning 270 acres for over 200 units, unlike traditional clusters that mix industries without specialised MedTech focus.

● **Infrastructure:** AMTZ offers shared, capital-intensive facilities like NABL-accredited labs for EMI/EMC, biocompatibility, 3D printing, molding, sterilisation, and radiation testing, slashing individual capex by 40-50 per cent. Traditional manufacturing clusters lack these MedTech-specific, plug-and-play setups, forcing standalone investments.

● **Innovation:** It integrates innovation centers like Kalam Institute of Health Technology, Medi Valley, Bio Valley, and incubation hubs, supporting full product

## Indian companies are increasingly aligning with global regulatory standards such as EU MDR and US FDA, strengthening their ability to access multiple international markets with credible, clinically validated products. This is complemented by a rising focus on quality systems and regulatory science, enhancing global trust in Indian MedTech

development from ideation to commercialisation. Unlike generic clusters, AMTZ aids innovators with regulatory affairs, tech upgrades, and prototyping without isolation.

● **Ecosystem support:** AMTZ creates a collaborative cluster with policy incentives (PLI schemes, subsidies), WHO Collaborating Centre, World Trade Center access, and export enablers for global markets. This contrasts traditional hubs' siloed operations by fostering shared scientific, commercial, and social infrastructure.

**As India aims to become a global manufacturing hub for medical devices, what key capabilities must domestic MedTech companies build to fully capitalise on opportunities created by FTAs?**

**Dr Jitendra Sharma:** India's aspiration to emerge as a global MedTech manufacturing hub under FTAs will depend on how effectively domestic companies build three core pillars:

● **Regulatory excellence:** Indian companies are increasingly aligning with global regulatory standards such as EU MDR and US FDA, strengthening their ability to access multiple international markets with credible, clinically validated products. This is complemented by a rising focus on quality systems and regulatory science, enhancing global trust in Indian MedTech.

● **Manufacturing competitiveness:** On the manufacturing front, India is rapidly advancing as a competitive MedTech hub, with a growing focus on design-led innovation and high-quality production. The success of the AMTZ established in a record 342 days and now home to over 100 companies highlights the strength of integrated manufacturing ecosystems. Its large-scale indigenous production during the pandemic underscores India's capability and resilience. Building on this, the proposed replication of such clusters across multiple states combined with improvements in automation, precision engineering, and cost efficiency positions India as a strong and reliable partner in global medical device supply chains.

● **Strategic market integration:** Strategically, Indian MedTech companies are strengthening their global competitiveness by leveraging FTAs. India has concluded multiple preferential trade agreements including landmark pacts with the UAE, Australia, and the UK through expertise in rules of origin, tariff optimisation, and market access, enabling more competitive global pricing and expanded international reach. This capability is reinforced by a growing talent ecosystem supported by initiatives such as the Indian Biomedical Skill Consortium (IBSC) at AMTZ, which in 2025 has certified 131 professionals,

trained 381 individuals, facilitated 50 specialised nominations, signed 64 MoUs with various educational institutions and provided hands-on exposure to over 11,000 students. Complementing these efforts, AMTZ is advancing MedTech education with plans for India's first dedicated MedTech university ecosystem, bridging academic learning with industry needs. Together, these initiatives are enhancing human capital, fostering innovation, and positioning Indian MedTech companies to confidently expand and thrive in global markets.

**With increasing interest from global OEMs to diversify supply chains, how is AMTZ enabling India to attract these players and position itself as a preferred destination for FTA-led manufacturing and exports?**

**Dr Jitendra Sharma:** AMTZ strongly aligns with the global shift towards supply chain diversification and resilient manufacturing ecosystems. Our model is designed precisely to address this opportunity and position India as a preferred destination for FTA-led manufacturing and exports. At the core, AMTZ has built a cluster-based manufacturing ecosystem where multiple companies operate within the same value chain. Instead of depending on a single partner or supplier, we encourage multi-partner participation within the

ecosystem, ensuring redundancy, competitiveness, and continuous innovation.

**This approach enables:**

- Reduced supply chain risk, as dependency is distributed across multiple manufacturers
- Healthy competition within the ecosystem, leading to better quality and cost efficiency
- Faster product development cycles, driven by proximity and collaboration

Additionally, AMTZ is actively working towards deep localisation of components and raw materials. By promoting domestic sourcing and indigenous manufacturing, we are reducing reliance on imports, mitigating tariff-related risks, and insulating the ecosystem from global supply chain disruptions.

**For global OEMs, this translates into:**

- A plug-and-play manufacturing environment with ready infrastructure and regulatory support
- Access to a complete value chain within a single ecosystem — from design to production to testing
- Cost competitiveness driven by localised sourcing and shared infrastructure
- Strategic advantage in leveraging India's FTAs for exports to global markets

**Furthermore, AMTZ plays a facilitative role by:**

- Supporting technology transfer and co-development partnerships
  - Enabling joint ventures between global OEMs and Indian manufacturers
  - Providing regulatory, testing, and certification support under one roof
- In essence, AMTZ is not just creating manufacturing capacity — it is building a resilient, collaborative, and globally competitive MedTech ecosystem where global players can confidently invest, manufacture, and export from India.

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INTERVIEW

# Ultrasound is set to enter a transformative phase in which AI will be an intrinsic part of the imaging ecosystem

**Anup Kumar Ramachandran**, Business Head-Ultrasound, GE HealthCare South Asia in an interaction with **Express Healthcare**, discusses how advancements in artificial intelligence, automation, and portability are transforming ultrasound into a real-time clinical decision support tool

**Ultrasound has evolved significantly over the past decade from a diagnostic imaging tool to a strategic enabler of precision and predictive healthcare. How is advanced ultrasound helping clinicians deliver with precision?**

With increasing emphasis on specialised care in cardiology, obstetrics, musculoskeletal imaging, and point-of-care settings, ultrasound is playing an increasingly critical role in enabling deeper clinical insight across diverse care pathways. Over the past decade, ultrasound has moved beyond being just an imaging modality to becoming a strategic driver of precision-led healthcare. The integration of AI and automation has been central to this transition, enabling capabilities such as cardiac strain imaging, early foetal anomaly detection, and point-of-care assessments that support earlier diagnosis and more confident clinical decisions. AI-driven automation also helps reduce variability and enhance reproducibility, leading to more standardised and higher-quality care.

At the same time, advancements in portability and miniaturisation have expanded where and how ultrasound can be used. What was once limited to bulky, cart-based systems has evolved into lightweight, highly portable, and even pocket-sized scanners that deliver the performance previously seen



only on premium platforms. Modern transducer technology and high-resolution displays now enable rapid, targeted assessments even in resource-constrained environments, widening access to diagnostic excellence across the care continuum.

**AI is rapidly reshaping medical imaging. How is GE HealthCare leveraging**

**artificial intelligence to move beyond automation and toward real-time clinical decision support in ultrasound?**

GE HealthCare is moving AI in ultrasound far beyond simple automation by building intelligent tools that support clinicians in real time at the point of care. We offer a broad suite of AI-enabled ultrasound applications,

including FDA-cleared solutions, designed to simplify workflows, reduce skill dependency, and deliver consistent, high-quality imaging across clinical settings.

Our AI applications are designed to guide clinicians through every step of the exam. Tools like SonoBiometry help automate fetal measurements by placing calipers accurately and consistently, supporting reproducible assessments even in busy clinical environments. In parallel, technologies such as Ultrasound-Guided Attenuation Parameter (UGAP) offer non-invasive quantitative liver fat assessment, enabling clinicians to perform highly specialised and accurate diagnostics with greater ease and efficiency. What this means for clinicians, especially in India's high-volume setups? It helps them reliably capture high-quality images, perform accurate measurements, and identify abnormalities sooner, even in demanding environments.

**In a country like India, where access and affordability remain critical challenges, how can portable and connected ultrasound technologies bridge the gap between Tier 1 hospitals and rural or semi-urban healthcare settings?**

India's diverse healthcare landscape demands

technologies that can travel where the patient is. With advancements in miniaturisation, today's compact and handheld ultrasound systems deliver image quality that was once limited to larger, hospital-based platforms. This enables high-quality diagnostics to move closer to the patient, whether in primary health centers, district hospitals, outreach screening camps, or even home-care environments. Connectivity further strengthens this impact. When portable ultrasound systems are integrated with cloud platforms and hospital information systems, scans performed in remote locations can be shared instantly with specialists in tertiary centres. This enables remote guidance, second opinions, and faster clinical decisions, reducing delays in diagnosis and treatment. In emergencies, AI-enabled platforms also help standardise imaging and reduce operator variability, ensuring more consistent quality even in resource-constrained environments.

**Wipro GE Healthcare recently expanded its multi-city Health Yatra initiative to showcase advanced imaging technologies across key cities. How do such initiatives help strengthen regional healthcare ecosystems and accelerate adoption of specialised and AI-enabled solutions?**

We are committed to the vision

of an Atmanirbhar Bharat, and the Health Yatra initiative reflects that commitment in action. Launched in Sept. 2024 'Health Yatra' traversed 160 districts across UP, Bihar, Jharkhand, West Bengal, Northeast, Odisha, and parts of Andhra Pradesh and Telangana. The initiative is designed to strengthen regional healthcare ecosystems by creating greater awareness and understanding of modern healthcare technologies among clinicians. By engaging directly with frontline clinicians across multiple cities and regions, Health Yatra provides hands-on exposure to advanced ultrasound and patient-care technologies.

Through interactive product demonstrations, informative sessions, and direct engagement with

**Our AI applications are designed to guide clinicians through every step of the exam. Tools like SonoBiometry help automate fetal measurements by placing calipers accurately and consistently, supporting reproducible assessments even in busy clinical environments**

experts, the initiative helps clinicians better understand how newer imaging and patient-care technologies can support diagnostic confidence and streamline clinical workflows. We will continue to engage with clinicians across India to build awareness and understanding of advanced healthcare technologies.

**As we look ahead to the next phase of ultrasound innovation, what major**

**shifts do you anticipate in 2026, and how will AI-driven intelligence redefine clinical workflows and patient outcomes?**

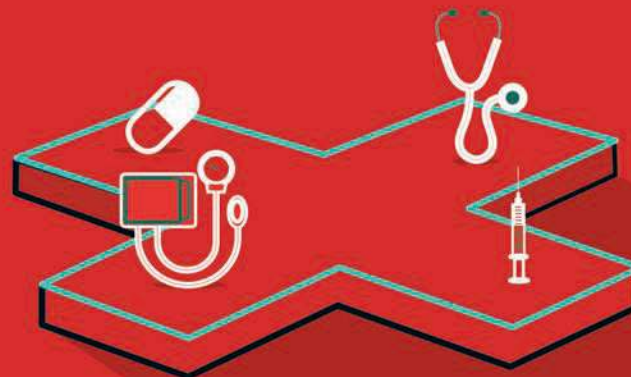
As we move further into 2026, ultrasound is set to enter a transformative phase where AI will no longer function as an add-on, but as an intrinsic part of the imaging ecosystem. We will see AI and ultrasound evolve from complementary tools to fully integrated systems, where automation

becomes a core enabler of clinical precision.

Advances in intelligent automation will support clinicians by guiding probe placement, capturing optimal views, and generating instant measurements and preliminary assessments, significantly reducing operator dependency. AI-driven predictive diagnostics will also begin identifying early risk markers for conditions such as

preeclampsia and cardiac dysfunction, shifting care models from reactive treatment to proactive intervention. These capabilities will be strengthened by connected care ecosystems that link AI-enabled ultrasound devices to secure cloud platforms, enabling telemedicine, remote mentorship, collaborative consultations, and large-scale population health analytics. Such connected intelligence will expand access to quality imaging even in tier-3 towns, ensuring that advanced diagnostics are no longer limited by geography.

Together, these shifts signal a future where ultrasound becomes smarter, more accessible, and deeply integrated into clinical workflows, elevating both efficiency and patient outcomes.



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## INTERVIEW

# Early childhood is not just about survival, it is about building the future workforce

**Dr Subodh S Gupta**, Professor and Head-Department of Community Medicine, Mahatma Gandhi Institute of Medical Sciences, Sewagram in an interaction with **Kalyani Sharma**, underscores how investing in the first 1,000 days of life is critical to shaping India's long-term economic productivity and social well-being

**How do gaps in early childhood development, particularly in the first 1,000 days translate into long-term economic losses for India, and what evidence supports the link between early interventions and improved productivity outcomes?**

If we look at the first 1,000 days from conception to around two years of age—this is the period when the brain is developing at an extraordinary pace. During this time, simple things like talking to the child, playing, and responding to their needs actually shape how the brain is wired. These early interactions help build strong neural connections, especially those related to language, emotions, and thinking ability. When this stimulation is missing, the foundation becomes weak, and it is very difficult to fully compensate later.

Over time, these early gaps translate into real economic consequences. According to the WHO Nurturing Care Framework report, for every \$1 spent on early childhood development interventions, the return on investment can be as high as \$13. Children who do not receive adequate nutrition and stimulation are more likely to struggle in school, achieve less in education, and earn less as adults. At a larger level, this affects the productivity of the country.

Estimates from global work by organisations like the World Bank and the The Lancet Early Childhood Development Series suggest that countries may lose up to 2–3 per cent of their GDP due to poor early childhood development. For India, with its large child population, this

translates into a very significant economic loss. At the same time, UNICEF highlights that early childhood development directly influences adult productivity and wages, and that when children miss out on this critical period, it affects their ability to learn and later earn a living. It also emphasises that investments in early childhood bring strong returns, with several dollars gained for every dollar invested.

Beyond these direct economic gains, there are important indirect benefits as well. Children who grow up with responsive care are more likely to become emotionally secure and socially responsible adults. This can contribute to a more peaceful society, with lower costs related to conflict and social disruption. Similarly, early nurturing care influences lifelong habits, including eating and stress management, which may reduce the risk of lifestyle-related diseases and the long-term cost of healthcare. In that sense, investing in early childhood is also an investment in a healthier, more harmonious, and more satisfied society.

We also have strong long-term evidence. The Jamaica Early Childhood Stimulation Study showed that children who received early stimulation through play and communication had significantly higher earnings as adults—nearly 25 per cent higher than those who did not receive such support.

So, in simple terms, early childhood is not just about child survival or development—it is about building the future



workforce and the social fabric of the country. When we invest in these early years, we are actually investing in the productivity, health, and overall well-being of the nation.

**India's child health discourse has traditionally focused on malnutrition. How critical is the integration of stimulation and responsive caregiving in early childhood programmes, and what systemic shifts are required to embed these elements at scale?**

The importance of stimulation and responsive caregiving becomes very clear when we look at the evidence. One of the most influential studies from Jamaica—The Jamaica Early Childhood Stimulation Study—showed that even among stunted children, those who received early psychosocial stimulation through play and communication did much better in later life. They had better cognitive outcomes and even higher earnings as adults. This tells us that while nutrition is important, it is not sufficient by itself. Love, play, communication, and responsive caregiving are

equally critical in shaping a child's future.

In fact, there is a strong synergy between nutrition and caregiving. When caregivers are responsive, feeding improves; they are able to understand the child's cues, feed with patience, and create a positive feeding environment. At the same time, a well-nourished child is more active and engaged, which further promotes interaction and learning. So, stimulation is not an "extra"; it actually strengthens nutrition outcomes. Very often, when we see a happy, engaged child, we also see better feeding and care practices.

Another important aspect is that this idea of play and connection is very natural to us. Nature has made us this way. Whenever we see a young child, even while walking on the street or travelling in a bus, we feel an instinct to smile, talk, or play with the child. It comes effortlessly. Sometimes I feel that in our quest for scientific knowledge, our counselling has become too technical, and we have not built enough on what is already natural to human beings. When we bring this natural instinct back into our programmes, parents connect with it immediately. They do not see it as advice, they experience it as joy and bonding, which becomes a very powerful driver for change.

Coming to the question of scale, I strongly feel that India already has a strong foundation. There are multiple existing platforms—like ICDS, the health system, and community networks—where these ideas can be integrated.

We do not need parallel systems; we need to build on what already exists and use these everyday opportunities to support families.

However, this requires a broader shift in how we design our programmes. We need to move from a purely service delivery approach to one that strengthens relationships—between caregivers and children, and also within the system. The focus should be on making these interactions more meaningful and using existing platforms in a more integrated way, so that nurturing care becomes part of routine engagement with families.

So, integrating stimulation and responsive caregiving is not just important—it is essential. It brings together child development, nutrition, and human relationships in a way that is both scientifically sound and deeply meaningful for families.

**Can you share measurable outcomes or behavioural shifts observed under the AARAMBH initiative in Maharashtra, particularly in terms of caregiver practices, child development indicators, and frontline worker engagement?**

Under the Aarambh initiative, we have been able to observe encouraging changes at multiple levels—caregiver practices, child outcomes, and frontline worker engagement.

At the level of caregivers, there has been a clear improvement in how families are engaging with young children. More parents are now participating in structured home visits and parents'

meetings where comprehensive counselling is provided. For example, home visits with meaningful counselling increased from about 45 per cent to over 67 per cent, and participation in parents' meetings also improved. Along with this, we have seen a rise in child-caregiver interactions and, importantly, greater involvement of fathers as well. This indicates that responsive caregiving is gradually becoming part of routine family practices.

In terms of child outcomes, we have seen positive trends both in nutrition and development. There has been a reduction in underweight, stunting, and wasting among children in the implementation areas. The proportion of children with underweight, stunting and wasting declined from 39.1 per cent, 42.8 per cent and 17.4 per cent, respectively (November-December 2018), to 32.5 per cent, 41.0 per cent and 12.4 per cent, respectively in the corresponding period in 2019 [10]. During the same period, there was a significant improvement in the mean development quotient measured by Development Screening test from 107 (36) to 137 (26); and mean social quotient using the Vineland Social Maturity Scale from 152 (47) to 162 (54). We witnessed improvement in the nutritional and developmental outcomes of the beneficiaries. This is important because it shows that when nutrition and stimulation are addressed together, we begin to see improvements across multiple domains of child development.

From a programme perspective, what is equally important is the change among frontline workers. We have seen increased ownership and motivation. When they understand the larger purpose and experience the joy of engaging with children and families through play and communication, their approach changes from routine service delivery to meaningful interaction. The increase in coverage of key platforms—home visits, parents' meetings, and even participation in

community events like parents' fairs and social media engagement—reflects this shift.

Overall, these changes may appear simple, but they are very significant. They indicate a shift in behaviour, relationships, and outcomes—showing that it is possible to bring measurable improvements in early childhood development by working through existing systems in a thoughtful and integrated way.

### **How are platforms like ICDS and public health networks being leveraged to deliver integrated early childhood development services, and what operational challenges remain in ensuring consistency and quality at the grassroots level?**

According to the Final report for the World Health Organization's Commission on the Social Determinants of Health 'ECD - a powerful Equaliser', the nurturant qualities of the environments where children grow up, live and learn - parents, caregivers, family and community - will have the most significant impact on their development. However, in most situations, parents and caregivers cannot provide strong nurturant environments without help from local, regional, national, and international agencies.

Platforms like ICDS and the public health system provide a very strong foundation that can work in concert with families to provide equitable access to strong nurturant environments for all children in India.

The Aarambh initiative has tried to build on exactly this strength. Aarambh is implemented in close partnership with the Department of Women and Child Development, the Public Health Department, and is supported by UNICEF. The idea has been simple—rather than creating a parallel system, we work through existing human resources like Anganwadi workers, ASHAs, and ANMs, and use their routine contact points with families.

Under Aarambh, we have

tried to reorganise these existing opportunities in a more meaningful way. Platforms such as growth monitoring and promoting sessions, home visits, parents' meetings, Village Health and Nutrition Days, and community events are used to deliver integrated messages on nutrition, health, and responsive caregiving. For example, home visits allow customised, one-to-one engagement with families, while parents' meetings promote peer learning and dialogue. At the community level, initiatives like parents' fairs (Palak Melawa) help in building social norms around positive parenting.

What is important is that these approaches complement each other. Home visits provide personalised support, group meetings create shared learning, and community events help build a larger movement. This fits very well with behaviour change principles—customised counselling, peer influence, and norm building—all working together to support families.

We have also seen that when frontline functionaries understand the why and feel part of a larger vision, they take ownership of the programme. Establishing supervisors as trainers through an incremental learning approach has helped build long-term capacity within the system. The programme has been designed in a participatory manner, with space for autonomy and flexibility, which further strengthens ownership and sustainability.

Before talking about challenges, I would like to acknowledge that both the Department of Women and Child Development and the Public Health Department have truly owned the programme. There is a clear recognition of the importance of early childhood, and a supportive ecosystem has been created within the system.

At the same time, there are some operational challenges. One major challenge is vacancies at different levels—frontline workers, supervisors, and mid-level managers—which affects the reach and

consistency of implementation. Another challenge is related to scale. In a large system with more than a lakh frontline workers, there is continuous turnover—people retire and new staff join. While initial trainings have been conducted, there is a need to establish a strong system for induction training of new appointees and regular refresher training for all, to maintain quality and consistency.

In addition, frontline functionaries are often given multiple administrative and programmatic responsibilities that are not always aligned with their core role of supporting families. This additional workload can dilute their time and focus, making it difficult to consistently deliver quality engagement with caregivers.

Overall, the experience shows that integration is very much possible within existing systems. The key lies in strengthening how we use these platforms, building ownership within the system, and continuously supporting the workforce to sustain quality at scale.

### **Frontline workers are central to influencing parental behaviour. What strategies or training models have proven most effective in enabling Anganwadi workers and ASHAs to drive sustained change in caregiving practices?**

Anganwadi workers and ASHAs are the pillars of behaviour change. What we have learnt is that the way we work with them is as important as what we expect them to do with families.

First, training has to be in the "language" of the learners. By this I do not mean spoken language, but the way they learn best. We have seen that practice-based, experiential learning works far better than classroom teaching. When frontline workers actually see, feel, and practice play, communication, and responsive caregiving—through demonstrations, role play, and real interactions with children—they internalise it. Only then are they confident to take it to families.

Second, the content itself has to be simple and relatable. When we talk about play, talking to the child, or responding to the child's cues, it connects immediately. These are not seen as additional tasks, but as something natural and enjoyable. This makes it easier for frontline workers to communicate with parents and sustain behaviour change over time.

A third, and perhaps the most important aspect, is the overall system environment. We have seen the power of an appreciative approach. I often describe appreciative inquiry as trusting each other's intent and capacity. When frontline workers feel trusted and valued, they take ownership. Instead of a rigid, protocol-driven system, we need to create an environment where they are given autonomy and flexibility. They should clearly understand why something needs to be done, and then be given the space to innovate on how to do it based on their local context.

This also requires a shift in how supervisors engage with them. Moving from fault-finding to encouragement, from monitoring to mentoring, and from control to support makes a big difference. When this kind of trust-based system is created, frontline workers are not just implementers—they become problem-solvers and change agents within their communities.

Finally, continuity of engagement is important. Regular follow-up, peer learning, and opportunities to share experiences help sustain motivation. Over time, this builds a community of practice where frontline workers learn from each other and continuously improve.

In summary, sustained change happens when frontline workers are not just trained, but are respected, trusted, and supported. When they experience responsiveness within the system, they are much more likely to promote responsive caregiving in the families they serve.

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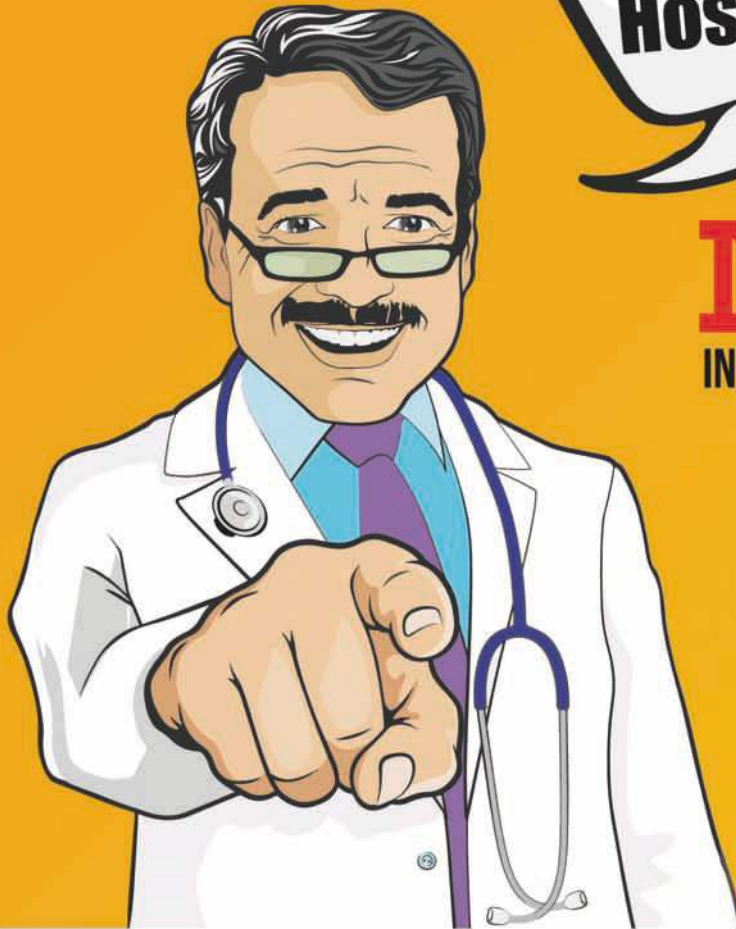


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## Reimagining access to advanced imaging in India

Truevis Technologies is building a future-ready diagnostic ecosystem by combining advanced imaging technologies, local manufacturing, clinical expertise, and integrated service capabilities to improve access to high-quality diagnostics across India

### The growing need for advanced diagnostics

India's healthcare sector is undergoing a major transformation where advanced diagnostics are becoming central to modern clinical care. The rising burden of cancer, cardiovascular diseases, neurological disorders, and chronic illnesses has significantly increased the demand for early and accurate diagnosis. Technologies such as CT, MRI, PET-CT, DSA, and advanced radiology systems are now essential tools for improving patient outcomes.

However, access to advanced imaging remains uneven across India. While metropolitan hospitals continue to expand capabilities, many Tier-II and Tier-III regions still face significant gaps due to high capital investment, dependence on imports, complex installation requirements, and long-term service challenges.

At the same time, the global MedTech industry is facing growing uncertainty. Supply chain disruptions, geopolitical tensions, and rising logistics costs have highlighted the risks of overdependence on imported medical technologies.

This has accelerated the need for stronger domestic manufacturing and more resilient healthcare technology ecosystems in India.

### Moving beyond equipment supply

Truevis Technologies Pvt Ltd is positioning itself at the center of this transformation by moving beyond the traditional role of an equipment supplier. The company is building a comprehensive imaging ecosystem designed to simplify adoption, improve operational efficiency, and expand access to advanced diagnostics.

Its portfolio includes CT, MRI, DSA, PET-CT, and other advanced imaging systems. However, the company's key differentiator lies in its integrated approach that combines technology deployment, installation, clinical application support, training, and lifecycle service management into a unified model.

This approach enables hospitals and diagnostic centers to adopt advanced imaging solutions with greater confidence while reducing the operational and technical complexities that often act as barriers to entry.

### Strengthening execution and service capabilities

A major driver of Truevis's growth has been its investment in multidisciplinary teams across engineering, clinical applications, installation, and service operations.

By bringing together experienced professionals from global imaging organisations, the company has developed a strong execution framework capable of supporting large-scale deployments across diverse healthcare environments.

These teams support healthcare providers throughout the imaging lifecycle, from site planning and commissioning to workflow optimisation, user training, and preventive maintenance. As hospitals increasingly prioritise uptime and reliability, strong service infrastructure is becoming one of the most important differentiators in the imaging industry.

### Driving "Make in India" through local manufacturing

One of the strongest pillars of Truevis's long-term strategy is its focus on localised manufacturing and system integration under the broader "Make in India"

initiative. The company is establishing its manufacturing and integration presence at the Andhra Pradesh MedTech Zone (AMTZ), one of India's leading medical technology manufacturing hubs.

This move reflects a strategic effort to reduce dependence on imported imaging systems while strengthening India's domestic MedTech ecosystem. In an era shaped by global supply chain uncertainty, local manufacturing offers several advantages including improved supply chain control, faster deployment, reduced logistics dependency, and lower total cost of ownership for hospitals.

By manufacturing and integrating systems within India, Truevis aims to make advanced imaging technologies more commercially viable for emerging healthcare markets while contributing to the country's broader healthcare infrastructure goals.

### Combining global technology with local execution

Truevis's capabilities are further strengthened through its collaboration with Neusoft Medical Systems, a globally recognised

imaging technology provider.

The partnership focuses on technology transfer, platform localisation, and structured technical training tailored for Indian clinical environments. By combining global technology with local manufacturing, execution, and service capabilities, Truevis is helping create a scalable and sustainable framework for expanding access to advanced diagnostics across India.

### Building the future of diagnostics in India

As India continues to invest in healthcare infrastructure, the role of advanced diagnostics will only become more critical. Bridging the gap between urban and emerging healthcare markets is essential to improving early detection, treatment planning, and overall patient outcomes.

With expanding operations, growing installations, and a strong focus on localisation and service excellence, Truevis Technologies is playing an important role in shaping the next phase of India's diagnostic ecosystem, one that is more accessible, resilient, and future-ready.

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## Three-part hematology analyzers: Smart, affordable diagnostics for everyday healthcare

Built on the electrical impedance principle (Coulter method), three-part analyzers deliver accurate blood cell counting and classification with remarkable speed

### Powering modern laboratories with efficiency

In today's rapidly evolving healthcare ecosystem, timely and accurate blood analysis is critical for diagnosis, treatment planning, and patient monitoring. Among the most dependable tools in routine laboratory medicine is the three-part hematology analyzer a practical, efficient, and cost-effective solution that continues to strengthen diagnostic capabilities across healthcare settings.

### Why three-part hematology analyzers remain essential

Complete Blood Count (CBC) testing is one of the most frequently prescribed diagnostic investigations worldwide. For clinics, diagnostic labs, and hospitals operating in cost-conscious environments, three-part hematology analyzers offer the perfect balance of affordability, speed, and dependable performance making quality diagnostics more accessible without compromising efficiency.

### The science behind the system

Built on the electrical impedance principle (Coulter method), three-part analyzers deliver accurate blood cell counting and classification with remarkable speed. These systems differentiate white blood cells into three key groups:

- Lymphocytes
- Monocytes
- Granulocytes

In addition, they provide essential CBC parameters including hemoglobin, red blood cells, platelets, and related indices enabling effective detection of anemia, infections, inflammatory conditions, and platelet



disorders.

### Where they deliver maximum value

#### Primary healthcare and rural clinics

Expanding access to reliable diagnostics in underserved and resource-limited settings.

#### Diagnostic laboratories and hospitals

Supporting high-volume sample processing with quick turnaround times.

#### Routine health screening and monitoring

Facilitating early detection and continuous management of common hematological condi-

tions.

For many healthcare providers, three-part analyzers are not just instruments they are foundational diagnostic partners.

### Key benefits that drive adoption

Delivering essential CBC diagnostics at a fraction of the cost of advanced analyzers.

Easy-to-use interfaces requiring minimal technical training.

Reduced reagent consumption and straightforward servicing.

Rapid results that support timely diagnosis and treatment

planning.

### Recognising the limitations

While highly effective for routine diagnostics, three-part analyzers do have certain constraints:

- Limited white blood cell differentiation
- Reduced suitability for advanced hematological disorders
- Dependence on proper sample collection and quality

For specialised diagnostic requirements, five-part analyzers or flow cytometry may still be necessary.

### The future of accessible hematology diagnostics

Continuous innovation is redefining the category with advancements such as:

- Reagent-free optical technologies
- Portable point-of-care hematology devices
- Improved accessibility for remote and underserved communities

These innovations are strengthening the role of three-part analyzers as an indispensable first step in diagnostic care.

### How Medikabazaar supports better laboratory infrastructure

Medikabazaar empowers healthcare providers, diagnostic centres, and laboratories by offering seamless access to a wide range of trusted hematology analyzers, consumables, and diagnostic essentials all through one integrated procurement platform. From sourcing reliable three-part hematology analyzers to ensuring timely delivery, competitive pricing, and dependable after-sales support, Medikabazaar simplifies laboratory setup and ongoing operations. By bridging technology with healthcare supply chain efficiency, Medikabazaar helps institutions build smarter, more accessible diagnostic ecosystems that prioritise both quality and affordability.

The three-part hematology analyzer continues to be a cornerstone of practical and inclusive laboratory medicine. By combining speed, affordability, and clinical reliability, it bridges the gap between advanced diagnostics and accessible patient care.

**In every CBC report, it quietly powers faster diagnoses, better decisions, and stronger healthcare outcomes.**

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- Scalability in Running Lengths: Ideal for OEM bulk supply and service requirements

This continuous extrusion process enables the production of breathing tubes in running lengths, offering OEMs flexibility for both manufacturing integration and aftermarket servicing.

## Validated Performance & Compliance

Patient safety and regulatory compliance are at the core of Ami Polymer's product development.

### Validated Parameters:-

- Biocompatibility: Tested as per medical standards for safe patient contact
- Leak Test: Ensures integrity under operational pressure conditions
- Autoclavability:
- Silicone Breathing Tube:



Validated for up to 110 sterilization cycles

### ■ Connectors & Components:

Sustain 50+ autoclave cycles  
These validations ensure reliability in both single-use and reusable respiratory systems.

## Comprehensive Component Offering

To complement the breathing tubes, Ami Polymer also offers a complete range of respiratory circuit components, including:

- Y Connectors (Polycarbonate / Polysulfone)
- Water Traps (High durability, autoclavable)

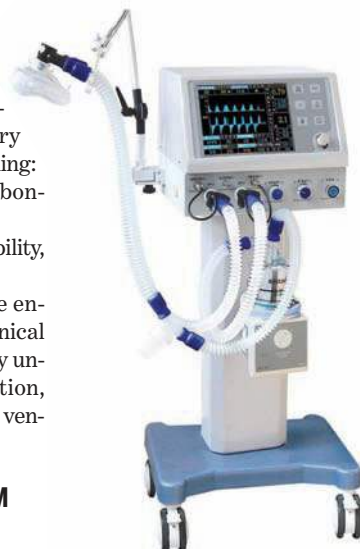
These components are engineered for: High mechanical strength, Thermal stability under repeated sterilization, Compatibility with diverse ventilator systems

## Customization for OEM Requirements

Understanding that OEM man-

ufacturers have unique design and performance specifications, Ami Polymer provides extensive customization capabilities, including:

- Tube inner diameter (ID) and outer diameter (OD)



- Length and corrugation design
- Connector dimensions and interface compatibility
- Color coding as per clinical or branding standards

## Partnering for the Future of Respiratory Care

As healthcare systems continue to emphasize infection control, durability, and cost-efficiency, the role of high-performance reusable components becomes increasingly important.

### Ami Polymer's commitment to:

- Innovation in extrusion technology
- Stringent quality validation
- OEM-centric customization

Positions it as a reliable partner for ventilator and respiratory device manufacturers worldwide.

## Conclusion

In an industry where precision and reliability are paramount, Ami Polymer delivers next-generation breathing tube solutions designed to meet the evolving needs of OEMs.

By combining advanced extrusion manufacturing, validated performance and custom engineering, Ami Polymer enables OEM partners to enhance their respiratory systems with components that ensure safety, durability, and operational excellence.



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# Human factors engineering in Anaesthesia workstation design: Reducing errors in high-stakes environments

Human factors engineering, is crucial to designing systems and equipment that align with the user's physical and cognitive abilities. With the growing number of features and parameters to manage, it becomes important to make everything intuitive to reduce the risk of user error

Operating rooms are where decisions are measured in seconds and their outcomes in lives. To exist in such chaos, a machine must have more than cutting-edge features and technical sophistication. Anaesthesia workstations must be a cut above the rest, machines that understands its users, their needs, and their movements. Recognising the interaction between the clinician and the machine is not often discussed, but it is of utmost importance when designing a workstation.

This aspect, known as human factors engineering, is crucial to designing systems and equipment that align with the user's physical and cognitive abilities. With the growing number of features and parameters to manage, it be-

**Training and simulation are tied closely to how well the machine performs when it has to. Clinicians must have time and access to habituate to these machines in a risk-free environment. We must also provide simulation modes and external training to ensure they are well-versed with all that it has to offer**

comes important to make everything intuitive to reduce the risk of user error.

Interface clarity is one such aspect. Complex machines such as anaesthesia workstations simultaneously monitor ventilation parameters, vital signs, gas concentrations, and drug delivery. Ambiguous cues or an unoptimised display do harm, leading to cognitive overload. This is the rea-

son why modern systems use consistent colour coding and provide information in a layered architecture. The number of alarms adds to this. The aim is to avoid desensitising clinicians to alarms by removing non-specific, low-urgency alerts.

Arguably, the most underrated side to a complex machine is its ergonomics. From the physical controls to the

knobs to gas meters and everything in between—all must be placed considering the natural hand movements of the user. Adjustable and quick-release elements further enhance versatility and usability.

However, even the most meticulously crafted workstations demand a degree of familiarisation. Training and simulation are tied closely to how well the machine per-

forms when it has to. Clinicians must have time and access to habituate to these machines in a risk-free environment. We must also provide simulation modes and external training to ensure they are well-versed with all that it has to offer.

Looking at it from a manufacturing point of view, this step up in the design lifecycle is no longer optional. The objective today is not to build machines but systems that work in tandem with their users. Systems that are connected to everything else in the healthcare setup, all working together to provide accurate results and reduce errors. By keeping human factors in mind, we can unlock technology that exceeds clinical capability and reinforces safety at every interaction.

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