# Why 'pharmacy of the world' can't copy the formula forever

Despite being a global drug supplier, India's healthcare sector leans heavily on imported ingredients and borrowed technologies. Sustainable success now needs original innovation — in medtech, biotech, and pharmaceuticals

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Access to healthcare for a population of 140 crore (1.4 billion) is a task that appears formidable. India has a relatively young population, which is often referred to as a 'demographic dividend'. However, the country is also undergoing a demographic transition, with the proportion of older people gradually increasing.

As of 2023, it was estimated that close to a quarter of our population is composed of children and adolescents (0-14 years). And 68% of our population is in the 15-64 age group, expected to rise for some time before starting to decline. Our elderly population (65 years and above) is currently the smallest group, but is projected to increase substantially in coming decades. A similar stratification can be done on economic lines, as well as state-wise.

Put simply, breaking down the nature of the target population for healthcare is feasible. Each section — rich, middle-income, or poor — has common and distinct requirements of healthcare access and delivery. How improvements in each category can be addressed can then be decided. Despite enormous challenges, India has addressed this formidable task squarely and reasonably. Yet, much remains to be done.

### Scaling Technology For Healthcare

How can we scale technology for healthcare delivery to low and middle-income families across this complex range of requirements? One aspect of this relates to the equipment and instruments required for diagnostics and delivery, and the other aspect refers to the chemistry, biology and biotechnology in healthcare. India stands on strong foundations in both aspects. Yet, these foundations are being shaken because of dramatic technological changes.

India's growing medical devices market is still heavily dependent on imports, particularly for high-end equipment. The Andhra Pradesh MedTech Zone (AMTZ) is making good progress in developing indigenous technologies. But achieving greater success in the market is still needed. India's dependency rate is frequently cited at 70-80% of our substantial market, valued at $12-15 billion in recent years and projected to grow to as much as $50 billion by 2030.

Our imports are dominated by high-value, low-volume devices and more complex equipment. These include devices like MRI machines, CT scanners and X-ray generators, and sophisticated devices for surgical, orthopaedic, and other specialised procedures. Domestic manufacturing in India is concentrated in the low-end, high-volume segment, which includes many of the standard diagnostic devices used for home monitoring and basic hospital care.

The govt is actively pushing to reduce import dependency through policies like 'Make in India' and the Production Linked Incentive (PLI) scheme. While we have extraordinary talent, capabilities and infrastructure in our universities and research laboratories, India's medical device industry faces several challenges.

India has a limited set of integrated R&D ecosystems for research and development of cutting-edge medical technologies. It lacks a robust domestic supply chain for key components, forcing manufacturers to import raw materials and parts. Although a new regulatory framework has been implemented, the approval process remains complex.

These concerns are remediable with speed, given our core engineering and chemistry capabilities. The AMTZ has developed a high-end research park where indigenous development of medical technologies can take place. More such places are needed. New products will have to be much less expensive, of the highest quality, and be able to compete with imported ones nationally and internationally.

### Pharmacy Of The World

As with devices, so with drugs. India is called the "pharmacy of the world". However, a deeper look reveals a critical and strategic dependency on imports, particularly for the raw materials used to make these drugs.

India is the world's third-largest producer of drugs by volume and a major exporter, supplying a significant percentage to the global generic drug market. Indian companies produce a wide range of generic medicines, including those for common and chronic diseases like diabetes, cardiovascular ailments, and infectious diseases. India is largely self-sufficient for a vast majority of our domestic needs, especially for finished drugs and formulations (tablets, capsules, syrups, etc).

In 2023-24, India's pharmaceutical exports were valued at approximately $26.5 billion, while domestic consumption was around $23.5 billion. India supplies over 60% of the world's vaccines, especially for diseases like polio, measles, and DPT (diphtheria, pertussis, tetanus). It is also developing its capabilities in biosimilars, a growing segment of the market.

Despite our strength in producing finished drugs, India is heavily dependent on the import of active pharmaceutical ingredients (APIs) and key starting materials (KSMs), the chemical compounds that give drugs their therapeutic effect. The dependency is often cited to be around 65-70%, with China being the primary source. This poses a significant strategic risk.

To address this vulnerability, Indian govt has launched a PLI and other schemes for pharmaceuticals. This initiative provides financial incentives to companies to boost domestic manufacturing of critical APIs and KSMs, with the goal of creating a more resilient supply chain.

### Is Reverse Engineering Of Discoveries Enough?

One stark common feature in our 'successes', both in the medical device sector as well as in drugs, vaccines and biologicals, is that we are either reverse engineering or mimicking inventions and discoveries made elsewhere. This, in itself, is not to be taken lightly. These are very complex areas, and India has done what only a few others can do.

But this cannot be a long-term strategy. In the future, an Indian model that allows for high-level investment in healthcare R&D is essential. Five steps are needed here. First, a scaling up of biomedical research. A prominent medical university in the US today has more clinical researchers of modest quality than all of India put together.

Second, the industry needs to increase its R&D substantially. Moving away from the attractive addiction to the 'generics' model is not easy, but not moving away can be suicidal for the industry. Third, industry-academia partnership in this broad sector needs to be made easy. The total number of such partnerships that our top labs together have currently can be counted on the fingers of very few hands. Just incentivising this will mitigate risk to the industry and spur innovation; the ANRF can play a strong role in catalysing this.

Fourth, India should further incentivise opening R&D labs of the global medtech, biotech and pharmaceutical industry; not just the big players, but also small and medium ones. Finally, the sector will need capital to be truly innovative. The 'one-lakh crore' RDIF fund that has been announced is a very positive step and it should help enable the deep-tech startup ecosystem. However, companies are reluctant to take on debt for R&D. Hence, we will need to find the right instruments for financing large companies to acquire or invest in innovative R&D.

We are already well on our way in some of these directions and less so in others. Watching and facilitating this new direction will yield new technologies that are frugal, scalable, effective and original.

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