Medical Technology
Shaping Healthcare For All In India
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Foreword

Challenges in access to quality and affordable healthcare persist in large parts of the country despite several positive developments in the recent past.

The Medical Technology industry plays a crucial role throughout the healthcare lifecycle and has been instrumental in transforming healthcare ecosystems across the world. For India too, the MedTech industry offers the potential to address the healthcare issues by using a mix of nascent as well as advanced technologies.

However, the sector has not been able to realize its full potential on account of multiple challenges being faced by the industry. This untapped potential, if unlocked, could help Indian healthcare ecosystem leapfrog over its constraints and provide the required impetus that India needs in realizing its vision of achieving ‘Healthcare for All’.

CII and Deloitte have partnered to undertake a study to map the role of medical technology industry in India’s healthcare journey, identify key constraints in the sector’s current landscape and propose methods to realize its true potential.

This report is an outcome of an extensive research and several rounds of deliberations with medical device industry experts. We hope that this report will catalyse further discussion and appropriate action by stakeholders to facilitate growth of the medical devices industry and ultimately move towards a healthier India.

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Setting the Context

**Importance of Healthcare for an Economy**
Economic health of a country is strongly dependent on the health and wellness of its citizens. In order to ensure adequate levels of health and wellness, an effective healthcare ecosystem is a prerequisite.

World Health Organization (WHO) has defined basic building blocks of a healthcare system as “delivery of effective, safe, quality interventions; adequately trained and distributed workforce; a health information system that analyses and disseminates reliable data; safe and efficacious medical technologies that are cost effective and accessible; a financing system that raises adequate funds to ensure coverage to the population from any financial catastrophe; and a good governance system to oversee administration of these building blocks.”

With ~17% of world population and its citizens. In order to ensure adequate levels of health and wellness, an effective healthcare ecosystem is a prerequisite.

**Reality check for Indian healthcare**
While the Indian healthcare industry has been growing at a double digit rate and has matured significantly in the last few years, it still faces a number of challenges.

The Indian healthcare sector grew at a rate of 18% per cent from 2010 till 2016 and is expected to advance at a rate of 15 percent during 2016-20 to reach USD 280 billion by 2020. The key factors that have been and will continue to be responsible for growth in the healthcare market include increase in disposable incomes, expansion of health insurance coverage, rising burden of lifestyle diseases due to sedentary lifestyle and increased stress levels, increasing life expectancy, and a boom in medical tourism in India.

However, despite such high growth levels and a growing demand, the healthcare industry in India is still plagued by lack of accessibility, unaffordability, and variable quality of care.

**Access to healthcare services**
While the metro cities and increasingly other Tier 1 cities have healthcare infrastructure that competes with the best in the world, the tier 2/3 cities and rural areas do not get sufficient care of good quality. With more than 65% of its population residing in rural areas, India cannot boast of a comprehensive healthcare system unless it satiates the healthcare needs of all strata of the society in all geographies. Several measures have been taken by the government of India over the years to strengthen the healthcare infrastructure and human resources for health but India still falls short on several key accessibility measures:

- India has 0.7 beds per 1,000 people, which is well behind the 3.5 beds per 1000 people recommended by the WHO. In comparison the USA has a ratio of 2.9, and China a ratio of 3.8. The healthcare delivery system will need additional 3.6 million beds to reach the recommended capacity.

<table>
<thead>
<tr>
<th>Number of hospital beds per 1000 people in 2014</th>
<th>India</th>
<th>China</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.7</td>
<td>3.8</td>
<td>2.9</td>
</tr>
</tbody>
</table>

- Lack of skilled service providers is still a constraint in India and the condition deteriorates further in rural areas. The number of physicians in India per 1,000 people is at 0.7 as compared to China at 1.9 and USA at 2.5. India is at half of the global average of 1.5 physicians per 1000 people.

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The share of healthcare expenditure in GDP over the years has been very low and was at 4.8% in 2015. Moreover, the government’s expenditure on healthcare in India, at less than one-third of the total, is also quite low when compared to other countries. For example, China and Russia’s public share of total healthcare expenditure is more than half.

Due to the health infrastructure being skewed heavily in favour of urban centres, rural areas suffer from an acute shortage of both health centres as well as resources such as specialist doctors. For instance, there is a 22% shortage of primary health centres (PHCs) and 32% shortage of community health centres (CHCs) in rural India. As a result, majority of the beneficiaries in rural India are forced to travel large distances to access quality care.

Out-of-pocket expenditure is 62.4% of the total health care expenditure in the country as compared to the world average of 18.2%. It can prove catastrophic by putting significant burden on families. It was estimated that around 60 million people are pushed below the poverty line per year.

Affordability of healthcare services
For a country like India, where 1 in every 5 citizens is still below the poverty line, affordability of healthcare services is a major concern. Low insurance coverage and a weak public healthcare system are driving up the average cost of healthcare to families and creating a burden for those with limited resources.

Despite several financial schemes launched by the government in the past few years the overall health insurance penetration is low. Total number of persons covered under any form of health insurance (public or private) are around 359 million which is ~27% of the total population of India. In comparison, China has more than 95% of its population covered under insurance schemes while USA already had around 91% of population covered under various schemes by the first quarter of 2016.
In the public sector, the 'National Quality Assurance Guidelines' prescribe a minimum set of standards that each of the states should meet in order to improve the quality of service delivery in public facilities. However, the adoption of these quality standards in public health facilities has been sluggish and variable across the country.

These challenges are widely acknowledged by the government, healthcare fraternity, providers, payers as well as medical device manufacturers. The government over the years has articulated these issues and has attempted to tackle it through various strategies. The government has also recently released the National Health Policy 2017 where it has emphasized on the vision of ‘Healthcare for all in India’.

**Healthcare for All in India and the National Health Policy**

Government defines Universal Healthcare Coverage (UHC) as “ensuring equitable access for all Indian citizens, resident in any part of the country, regardless of income level, social status, gender, caste or religion, to affordable, accountable, appropriate health services of assured quality (promotive, preventive, curative and rehabilitative) as well as public health services addressing the wider determinants of health delivered to individuals and populations, with the government being the guarantor and enabler, although not necessarily the only provider, of health and related services”. The revised National Health Policy of 2017, has refreshed the goals and principles in the context of UHC. The key principles emphasized in the policy include equity, universality, affordability, care quality, leveraging technology / digital health and focus on preventive and promotive health among others.

The vision of ‘Healthcare for all’ is an ambitious one but also an essential one for India. However, the problems of accessibility, affordability and quality are deep rooted and emanate from factors that are structural in nature. Accordingly, solutions that are linear and incremental will take forever to address these challenges. On the other hand, disruptive technological solutions have the potential to leapfrog over some of these issues and push the country towards a more accessible, affordable and reliable healthcare systems in the foreseeable future.
Medical Technology: A Crucial Link in India’s Healthcare Ecosystem

Role of Medical Technology in healthcare
Medical Technology is indispensable to healthcare delivery
Medical technology is an integral part of the entire healthcare lifecycle, from the stage of screening/diagnosing to treatment/care; from restoring patients to normal lives and monitoring their health post treatment. For decades, with advancement of technology and increasing sophistication of medical devices, the industry has played a major role in bringing down the incidence of disease and improving the overall healthcare system across the globe.

Remote Diagnosis
Easy to operate machines can diagnose the patient sitting in a village and transmit data to be read by physician in the city

Telemedicine
Based on the data received from diagnosis, a physician sitting anywhere can study the case, consult a specialist if required and give advice to the patient located remotely via video conferencing

VR for surgeries
With virtual reality, a surgical specialist can perform surgeries all over the world remotely. Surgeons perform the operation through remote controlled robots

Patient care cycle
Screening and preventive care
Diagnosis and consultation
Treatment and restoration
Continuous health monitoring

Internet of Medical Things (IOMT)
Reducing cost of maintenance through remote preventive maintenance – all machines being monitored centrally triggering preventive maintenance

E-ICU
The specialist sitting in the command center in a super specialty hospital can read vitals and trigger the treatment of a patient in a local hospital through this service thus making the service accessible and affordable to patients

m-health
Many self monitoring devices (iBE – breast examination) and wearables (Fitbit) can now sync data to patient’s smartphones via Bluetooth or internet enabling post care monitoring as well as early diagnosis of diseases

MedTech has the potential to address many of the healthcare issues of India
Globally, the healthcare sector is witnessing rapid advancements in how patients are diagnosed and treated and the Medical Technology industry is at the core of this transformation. The industry is well positioned to revolutionize healthcare in India as well. Using a mix of nascent as well as advanced technologies such as artificial intelligence, remote sensing, 3D printing, E-ICUs, virtual reality, telemedicine and others – MedTech has the potential to help India’s healthcare industry overcome many of the challenges faced by it - be it accessibility, affordability or quality.

Today medical devices can provide enhanced patient care in remote areas by leveraging video conferencing and embedded computing devices which can send and receive data via the internet. By implementing a hub and spoke model, the costly servers and processing units can be placed in a central location while the monitoring can happen remotely and data can be transferred to the central locations for processing.

Complex machinery and devices like MRI and CT scanner are susceptible to breakdown by a simple surge in voltage. Such devices can be remotely monitored to predict failure probability and trigger preventive maintenance action thus saving cost.

Advanced equipment leveraging on technologies such as artificial intelligence and robotics provide higher levels of precision thus increasing the success rate and improving overall quality of care. Technologies such as virtual reality and augmented reality can also be used to simulate real time healthcare environment to provide training to physicians, technicians, and doctors thus eliminating the need for presence of actual equipment for training purposes.

The market for wearables in the form of pedometers, activity detectors, etc. has also increased significantly in the recent past. Such devices when interconnected with other medical equipment, diagnostic equipment, and healthcare analytics platforms can transmit real time data related to a patient’s health and vitals which can be used for continuous monitoring of people’s health.

Through many such exciting technologies the MedTech industry is leading the way to address many of the healthcare challenges of India.
MedTech can assist in achieving the priorities set by National Health Policy (NHP)

Based on the priorities and broad principles of equity, affordability, quality etc. set by NHP 2017, medical devices can significantly accelerate India’s goal towards universal healthcare. For instance, in the preventive care segment, medical devices have a significant application in screening and early diagnosis of disease. Also, with the use of medical devices in complex procedures, with low success rates earlier, the clinical outcomes have now improved significantly and the overall quality of care has risen. This reduces the lifetime cost of a disease through early detection and reducing re-admissions resulting in improved affordability and reduced morbidity.

The untapped potential

With majority of demand coming from the metro cities, rural areas which consist of a significant chunk of the population are highly underserved. While India consists of one sixth of the world’s population, its domestic medical devices market represents only 1.7% of the global market.

Per Capita Consumption of medical devices (USD) 2016

A disproportionate percentage of current demand for medical devices emanates from the metro cities. There is significant untapped demand for medical devices in tier-2/3 and rural areas which presents a huge opportunity for driving growth. However, the key concern remains the huge disparity in the healthcare infrastructure in tier 2/3 areas in comparison to the metro and Tier 1 cities. For example, tertiary hospitals, arguably the biggest consumer of advanced medical devices, are concentrated in metro and tier 1 cities. Furthermore, ~70% of the hospital beds and health workforce are in urban areas where only ~30% of the country’s total population resides.

How can MedTech help?

Medical devices have the ability to reach masses in the absence of physical infrastructure through automation and providing virtual presence thus increasing reach and providing for equity and universality.

By improving clinical outcomes, early diagnosis of diseases and increased accuracy in treatment, medical devices have resulted in reduction of lifetime cost of disease burden. Through India specific frugal innovation, the price point of medical devices has also come down resulting in reduction of overall cost of care.

Medical Devices can improve quality of care by improving clinical outcomes and convenience of the patients. Many innovative products are now being designed keeping in mind Indian context – infrastructure and skillset.

Medical devices have extensive application in early screening and diagnosis resulting in early detection/prevention and management of diseases. With the help of wearables and mobile technology, people are now more aware and vigilant enabling them to lead a healthier lifestyle.

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Despite strong growth, the MedTech industry faces challenges on multiple fronts - be it regulation, lack of sufficient investments, insufficient talent base or low focus on innovation - which are hampering it from realizing the locked value and achieving the required levels of penetration.

**Regulatory challenges:**
Absence of an independent regulatory authority for medical devices act as a deterrent for the industry. Moreover, regulatory changes such as price control of medical devices with steep price cuts lead to an environment of uncertainty. This discourages development and introduction of advanced technologies in the impacted segments.

India ranks 130 out of 189 countries on the scale for 'ease of doing business' on account of complex bureaucracy, ambiguous labor laws, and high lead time for approvals and clearances. For instance, patent examination and grants process for medical devices can take a long time discouraging innovation.

**Small market size:**
Low public healthcare expenditure and low levels of health insurance penetration lead to subdued consumption of healthcare services and allied medical technology. This affects services involving high cost medical devices all the more as the challenge of affordability is more pronounced.

**Lack of trained professionals and clinical staff required for installing, operating, servicing and repairing medical devices is a critical limiting factor.**

**Insufficient talent base:**
High reliance on products designed for global markets leads to low suitability of such products for the Indian market.

**Immature ancillary industry:**
Medical devices have several components which require a manufacturing ecosystem of their own. Lack of local vendor base acts as a hurdle in the growth of the medical devices industry.

**Low focus on contextual innovation:**
High reliance on products designed for global markets leads to low suitability of such products for the Indian market.
Medical Technology: Realizing The Potential

The growing healthcare market in India presents a huge opportunity for the MedTech industry. But this potential cannot be realized until both the public and the private sector play their respective roles to overcome the challenges which are inhibiting growth of the industry.

Unlock value for the MedTech industry

Government must remove roadblocks by addressing the challenges for the industry...

Industry must customize its business models in line with requirements for the Indian markets....

Role of the Government

Government should remove roadblocks by addressing the challenges faced by the MedTech industry from a regulatory and business environment point of view.

A. Create an enabling regulatory landscape

Due to absence of a specific legislation for medical devices in India, in the past, the industry had been largely unregulated. Only 231 types of devices are considered “drugs” and are notified under the Drugs and Cosmetics Act including cardiac stents, catheters, intra ocular lenses, heart valves, orthopaedic implant among others. Product approvals, policies, clinical trials, and import licences of these notified medical devices are governed by the Central Drugs Standard Control Organisation (CDSCO) headed by the Drugs Controller General of India (DGCI). Moreover, various sub-segments of medical devices be it low tech consumables such as bandages or high end equipment such as MRI machines have been viewed with the same lens from a regulatory point of view.

However, the government of India has, over the last few years taken several measures to bring more focus on the MedTech industry. Most notable amongst these is the passing of the ‘Medical Devices Rules, 2017’ which define and set the standards, provide approvals, and establish monitoring mechanisms for medical devices.

While these steps have been appreciated by all stakeholders, the government may also consider the following:

- **Set up an independent medical devices authority and a separate legislation for medical devices:** which can define and set the standards, provide approvals, and establish monitoring mechanisms for medical devices.
- **Faster patent approvals:** The government should enable robust IP protection framework and fast track grant to eligible patents. Grant of patents in some cases can take more than 2 years which hampers the overall innovation process.

B. Support in creating a viable business case to attract investment

The sector has not been able to attract the expected levels of funding despite various initiatives taken by the government.

MedTech industry is capital intensive with a high gestation period for investment. Various facets such as bolstering the local manufacturing landscape, driving innovation through R&D, building the ancillary industry, and producing skilled staff for the industry require huge amounts of capital. Hence it is crucial that the government supports in creating an enabling ecosystem which draws investment from both domestic and international players.

The government in the recent past has taken a number of measures to promote investment:

- Promoting Make in India (MII) for the medical devices industry;
- Allowing 100% FDI under the automatic route for medical devices;
- Correcting the inverted duty structure for select medical devices;
- Setting up of MedTech parks in three states and testing labs in two states.

In spite of these steps, the investment flow in the sector has been modest at best. Total FDI in the sector in the 9 months following the allowance of FDI (from Dec 2014 to Aug 2015) was just USD 85 million that is just 0.5% of the total FDI and about 5.4% of the healthcare FDI in India. Despite the increased emphasis on Make in India campaign, reliance of the sector on imports has reduced only marginally (from ~75% in 2014 to ~70 in 2016)

Learnings from successful MedTech investment countries

India can learn from some of the models adopted by other nations that have achieved success in attracting investments for their MedTech industries. While at one end of the spectrum China has achieved scale especially in high volume low tech devices backed by a huge domestic demand, Ireland at the other end, has positioned itself as an export hub in spite of a small domestic market.

Create an enabling regulatory landscape

Support in creating a viable business case to attract investment

Prioritizing and focusing on the right segments of medical devices

Focus on innovation to design products appropriate for India

• Setting up of MedTech parks in three states and testing labs in two states.
• Allowance of 100% FDI under the automatic route for medical devices.
• Correcting the inverted duty structure for select medical devices.
• Faster patent approvals: The government should enable robust IP protection framework and fast track grant to eligible patents.
• Promoting Make in India (MII) for the medical devices industry.

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Incentivizing exports for medical devices

- Weighted tax deductions for R&D
- Extended tax holidays for domestic investment. The Medical Device industry effective lever which could catalyze to ensure reasonable returns especially in
- Providing financial incentives is an effective lever which could catalyze investment. The Medical Device industry has been advocating for certain incentives to ensure reasonable returns especially in the initial few years such as:
  - Extended tax holidays for domestic manufacturing.
  - Weighted tax deductions for R&D investments, and
  - Incentivizing exports for medical devices.

Some common traits observed in the above models include:

- Significant public share of health expenditure,
- A high percentage of population covered with health insurance,
- Access to mature foreign markets, and
- Relevant financial incentives.

India could also adapt relevant features of successful models from these countries to help improve attractiveness of its business models.

Supporting local demand for medical devices by expanded provision of services in its public health and health insurance programs is another initiative that can catalyze investments in this industry. This will not only help in offsetting India’s low per capita usage of medical devices, but will meet latent demand for these services by making them affordable and available to a large number of hitherto untapped population; thereby overcoming some of the challenges of the public healthcare system and realizing the goals of access, equity, and universality as articulated in India’s National Health Policy, 2017.

The Government is already exploring avenues to collaborate with the private sector through Public-Private Partnership (PPP) models to extend healthcare services to its population which will indirectly give a fillip to the medical devices industry. Enabling these partnerships through flexible governance structures and operating models that work needs to be prioritized.

Public-Private partnership models impacting demand for Medical Devices

Government under the National Health Mission has announced ‘Free Diagnostics Service Initiative’ aimed at providing a minimum set of diagnostics to the underserved people in India. The program under the National Health Mission has also recognized an integrated approach for prevalent non-communicable diseases (NCDs) – hypertension, diabetes and cancer - wherein emphasis would be given to screening and testing for select chronic illness “all year round”. Such government mass screening programs will go a long way in giving a fillip to the In-Vitro Diagnostic (IVD) industry.

Role of the Industry

Industry should customize its business models in line with requirements for the Indian markets.

A. Prioritizing and focusing on the right segments of medical devices

Domestic manufacturing of medical devices can provide significant benefits to the economy. However, Indian MedTech stakeholders need to prioritize areas and have a segment wise strategy towards manufacturing.

Current structure of Medical Devices in India

The Indian medical devices industry can be classified into four broad segments – consumables and implants, diagnostic imaging, instruments & appliances, and patient aids & others with each segment having distinct characteristics in terms of category of players, usage of technology, target markets etc.

### Key Products

- Consumables and implants: Stents, syringes, needles, catheters, suturing materials, bandages and dressing, implants
- Patient aids and Other devices: Hearing aids, prosthetics and orthotics, pacemakers & others
- Diagnostic Imaging: Electro-diagnostic apparatus, radiation apparatus, imaging parts and accessories
- Instruments and Appliances: Surgical & non-surgical equipment, other instruments & supplies

### Technology

- Low-medium technology segment: Mix of MNC and domestic players
- Medium-high technology segment: Mostly MNC players

### Industry Structure

- Domestic and MNC players
- Mix of MNC and domestic players
- Mainly MNC players with few domestic players with ‘local innovation’

<table>
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<th>Key Products</th>
<th>Technology</th>
<th>Industry Structure</th>
</tr>
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<tbody>
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<td>Consumables and implants</td>
<td>Stents, syringes, needles, catheters, suturing materials, bandages and dressing, implants</td>
<td>Low-medium technology segment</td>
</tr>
<tr>
<td>Patient aids and Other devices</td>
<td>Hearing aids, prosthetics and orthotics, pacemakers &amp; others</td>
<td>Medium-high technology segment</td>
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<tr>
<td>Diagnostic Imaging</td>
<td>Electro-diagnostic apparatus, radiation apparatus, imaging parts and accessories</td>
<td>Medium-high technology segment</td>
</tr>
<tr>
<td>Instruments and Appliances</td>
<td>Surgical &amp; non-surgical equipment, other instruments &amp; supplies</td>
<td>Medium technology segment</td>
</tr>
</tbody>
</table>

### Source:

Deloitte analysis, World Bank Data
Prioritization of segments

Various sub-segments of medical devices need to be treated differently as they involve varying levels of sophistication. Moreover, these segments also vary widely in terms of volumes and price points. Accordingly, the industry needs to have different strategic plans vis-à-vis each sub-segment. For instance, most products in higher technology segments usually have a long lead time for development, require large investments, and need a talent base with specialized skillset. On the other hand, low tech segments such as bandages, dressing etc. can be set up and scaled up rapidly with moderate capital.

Medical device manufacturing: play in the right areas

One of the ways India can select potential areas to focus on is to prioritize manufacturing of low and mid-tech products which have a significant scale (medium to high) such as Needles, Catheters, X-ray apparatus, Dental instruments, X-ray apparatus, Ophthalmic instruments, etc.

On the other hand, high-tech low volume devices such as CT scan and MRI machines would require a longer term outlook. Efforts should be made towards developing required capabilities and the necessary ecosystem for their manufacturing in the medium to long term horizon.

B. Focus on innovation to design products appropriate for India

India is a vast country with an uneven distribution of wealth and resources. Many parts of the country still lack basic amenities such as uninterrupted power supply, proper roads for transportation, and robust communication systems. Moreover, availability of skilled manpower remains a challenge in smaller towns and rural areas.

Across industries, companies that have accepted these realities and modified their products and services to suit these conditions have been successful. The medical device industry however has a high import dependence wherein products that reach the market may not necessarily be designed for Indian market conditions.

In recent years, both MNCs and domestic players have started driving innovation in complex areas such as patient monitoring, point of care screening, and diagnostics and have adapted their products to better suit the market needs. The focus has been on:

- Using frugal innovation techniques to create devices that are more affordable while meeting threshold quality requirements
- Designing products sans ‘bells and whistles’ resulting in cost reduction while retaining the core functionality
- Making devices that are easy to operate and hence can be deployed in areas with inadequate supply of skilled technicians
- Creating compact and energy efficient devices which can be deployed even in small centres in remote areas

Medical device players creating customized products for Indian market

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<thead>
<tr>
<th>Company</th>
<th>Case in point</th>
<th>Product description</th>
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<tbody>
<tr>
<td>GE Healthcare</td>
<td>Compact CT Scanners which consume less power</td>
<td>GE Healthcare developed a CT scan system that uses 40% less power, produces less radiation and is 40% cheaper than imported equivalents. It has a substantially smaller size (can fit in smaller clinics and hospitals) and a higher throughput (scan time is 28% faster).</td>
</tr>
<tr>
<td>Skanray Technologies</td>
<td>Affordable X-ray imaging systems</td>
<td>Skanray created a high frequency digital x-ray machine that can cater to the needs of both large hospitals as well as small clinics. The cost of the device is a fraction of that of the imported machines. This wireless device is extremely lightweight and can be easily manoeuvred in congested hospital settings.</td>
</tr>
<tr>
<td>Philips Healthcare</td>
<td>Accessible and affordable cardiac care in tier II &amp; tier III cities</td>
<td>Phillips Intuis, an advanced entry-level catheterization lab, is helping provide affordable cardiac care in smaller cities and towns in India. It has a live image guidance technology which can help vascular specialists to decide, guide and confirm the right therapy for their patients in real-time.</td>
</tr>
<tr>
<td>Cura Healthcare</td>
<td>Affodable digital radiology systems for all resource settings</td>
<td>Cura manufactures direct digital radiology systems that can be floor-mounted, ceiling-suspended, or retrofitted and are suitable for both small hospitals and large healthcare institutions. Moreover, it is powered by just 15 amp and can take up to 50 images without power.</td>
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Moreover, many start-ups have come up in the medical technology space which are creating market suitable offerings and disrupting the industry landscape.

Start-ups in MedTech playing an important role in addressing India’s healthcare challenges

<table>
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<tr>
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<tr>
<td>Sattva</td>
<td>Fetal Heartrate Monitor</td>
<td>Fetal Lite is a portable, lightweight device that can take an electrocardiogram of a foetus during labour. It can work in low-resource settings and can be operated by a layperson as it gives easy to understand alarms in case of foetal distress.</td>
</tr>
<tr>
<td>Ceeo Labs</td>
<td>Ventilators</td>
<td>Ceeo Labs has designed a device to tackle ventilator-associated pneumonia in premature babies and patients on ventilators, a major cause of death in roughly 40 per cent of patients on breathing support in India. Currently in the prototype stage, this device is set to be launched at a price point 30% cheaper than competing devices.</td>
</tr>
<tr>
<td>Wrig Nanosystems</td>
<td>Hemometer</td>
<td>Developed a mobile phone-sized device called TrueHb Hemometer to measure hemoglobin in a few minutes.</td>
</tr>
<tr>
<td>Forus Health</td>
<td>Neonatal retinal scanner</td>
<td>3nethraneo screens prematurely born babies who could potentially have a condition wherein abnormal blood vessels grow in the retina. This condition can result in permanent blindness of the child, if not detected and treated early.</td>
</tr>
<tr>
<td>Remidio</td>
<td>Retinal imaging system</td>
<td>Fundus connects to a mobile phone camera to take pictures of the central part of the retina to diagnose diabetic neuropathy. This device is battery operated and can be installed even in remote centers. The images can be transferred in real-time to a physician’s phone for consultation.</td>
</tr>
<tr>
<td>Cardiotrack</td>
<td>Cardiotrack sensors - Remote health diagnostic</td>
<td>A portable and digitized diagnostic solution which enables instantaneous cardiac monitoring and flow of information through Android-based smart devices between a physician and a cardiologist. This technology which costs less than half of an ECG machines solves the problem of accessibility as well as affordability.</td>
</tr>
<tr>
<td>Axio</td>
<td>Haemostatic emergency dressing</td>
<td>Traumatic bleeding is one of the biggest cause of death is road accidents in India. Axio’s haemostat works on adhesion rather than absorption technology and can be applied easily on external wounds to stop profuse bleeding. This product is robust, affordable and can be easily administered by a layman.</td>
</tr>
<tr>
<td>Tricog Health Services</td>
<td>Cloud based ECG machine for faster diagnosis</td>
<td>Tricog Health services has designed a cloud-based ECG machine which enables the doctor to takes a patient’s ECG, send the information to a centrally located hub where the results can be interpreted by a qualified expert. The reports are then transmitted back through mobile phone. This increases the speed of the diagnosis and increases access.</td>
</tr>
</tbody>
</table>

Indian entrepreneurs have realized that developing products and solutions that bridge the gaps in the Indian healthcare system can lead to long term financially viable businesses. However, researchers and entrepreneurs require an ecosystem which can support them through the early stages of discovery and development in order to successfully launch the products and go-to-market.

The administration in the recent past has been instrumental in extending support for innovation in this space. In June 2017, the union cabinet has announced a USD 250 million initiative under the National Biopharma Mission to fund biotech start-ups in the area of medical devices, bio-therapeutics, etc. and create bio-clusters to help build next generation of healthcare technologies. The government could further consider setting up R&D incubation centres in collaboration with premier institutions to encourage innovation in the area.

Providing momentum to this wave of innovation bodes well not only for the growth of the Indian MedTech industry but also for progressing the overall healthcare landscape of the country.
Medical Technology Shaping Healthcare for All: Summary

For long, India has struggled to provide quality affordable healthcare to all its citizens. While the challenges in achieving this are well known, adopting the conventional route for creating adequate physical infrastructure, building a medical and paramedical resource base and achieving high quality standards would require huge investments and timelines that a developing country like India can ill afford.

The disruptive power of technology has completely transformed the landscape in various spheres of life. It has changed the ways humans communicate, travel, socialize, store, and access information and many more. Medical technology has the potential to do the same for healthcare by leapfrogging over the current infrastructural, skill-based, geographical and affordability constraints.

Medical Technology can bridge the distance between the care provider and the patient thereby helping patients in remote areas access specialist and specialized equipment present in large cities far away. Technological advancements in the fields of health monitoring and diagnostics can help in detecting health issues early on thereby reducing overall cost of care and enhancing wellness levels of the society. Similarly, technological interventions are rapidly increasing the precision and efficacy of treatment modalities thereby improving clinical outcomes.

However, to realize this opportunity at scale rather than as isolated, fragmented initiatives, both the government and the industry will need to make concerted efforts.

The government should streamline the regulatory and business ecosystem in a manner that makes operating in India more attractive and simpler for both the medical device players as well as investors. Some of the key areas where government could intervene include:

- Setting up an independent authority for medical devices and enabling faster grant of patents
- Supporting local demand of medical devices through public health and health insurance programs as well as by collaborating with the private sector through PPP models
- Providing relevant financial incentives for the industry
- Supporting innovation in India by providing capital and infrastructure support to MedTech start-ups

The industry needs to customize their business models to suit Indian markets. Medical devices segments which provide sizeable opportunities and require moderate level of technological expertise to produce should be prioritized for manufacturing in India. For High-tech low volume segments, efforts need to be directed towards developing the necessary ecosystem and capabilities for their manufacturing in the medium to long term horizon.

Finally, the MedTech industry in India should embrace the path of innovation so that its products and solutions are tailor-made for the opportunities and constraints of the country.

If India is able to be self-reliant in Medical Technology sector and capitalize on this Medical Technology revolution, by ensuring all stakeholders play their respective roles, it would stand a good chance of realizing its vision of providing healthcare to all its citizens.
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CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

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About CII Medical Technology Division

CII Medical Technology Division (MTD) has been proactively working on the key industry issues with the government, involving all the stakeholders of the medical electronics, devices, equipment and technology industry. The division has been a nodal point of reference, providing a forum for dialogue with the government and companies from the healthcare technology sector.

The CII MTD, which represents 70% of Med Tech manufacturers in India, has very active participation of medical technology companies from India and abroad. It is dedicated to the advancement of medical technology, improvement in patient care and driving high-quality cost effective health care technologies for India.

The division is working with a vision of expanding access to quality healthcare, generating employment, manufacture, boosting exports and increasing further foreign exchange inflows, thus advancing economic growth and social outcomes.
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