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FICCI

Indian Medical Electronics Industry

Outlook 2020



December 2011

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Foreword from FICCI



Medical Electronics Forum

The role of Electronic components, devices and products has been on a positive growth path in the healthcare sector during the last decade. The influx of Medical Electronics technology has reinforced the existing Healthcare infrastructure in various ways right from digitizing medical test, diagnostic and therapeutic procedures to enhancing the reach of Healthcare through telemedicine and Health IT. With the fast pace of growth in this domain, need for a common platform where doctors, experts from technology providing industries, key decision makers from various government bodies, academician and other stake holders can together deliberate on the way forward, was recognized.

A brief outline of FICCI – Medical Electronics Forum mission is:

- Working closely with all stakeholders towards building a robust and effective regulatory framework for Medical Device & Medical Electronics industry.
- Working towards Indigenous Product development and manufacturing leading to development of Technology solutions developed by India, for India and Sought by the world.

Working towards a dedicated mission FICCI – Medical Electronics Forum along with its Industry partners has evolved and has come to be known as a Thought leading forum of key persons and decision makers from Medical Electronics and Healthcare Fraternity. It is known globally through the event of "International Conference on Medical Electronics" which is held once in two years and is very well attended by key decision makers and stakeholders from the domain. With a long term mission of making Industry self-reliant, our forum works towards the creation of an Ecosystem for Manufacturing, Product Development, Research, Testing and Validation Infrastructure as per global standards.

Taking this initiative further, FICCI MEF & Deloitte together present this Thought paper which is intended to serve as a VISION document for the path ahead towards Accessible , Affordable & Acceptable Medical Healthcare , for Indian scenario through technology solutions. It's foreseen that India in near future will be on the cutting edge of technology in this domain which won't be possible without multilateral collaborations between Governments, sharing of Research & Development effort, Joint Product Development and simultaneous launch to achieve economies of scale.

FICCI would endeavour to facilitate setting up of world class testing labs in Industry – Government partnership to encourage growth of Medical Electronics/Medical Devices Industry. FICCI is working with Department of Information technology (DIT), Ministry of Health & Family Welfare and all other stakeholders to promote Indigenous Manufacturing customised to the needs of Indian masses. This will also act as a spring board for developing India as a Global manufacturing Hub. Demand generation and formation of the Right policy framework are expected to catalyze the required growth scenario in Indigenous Manufacturing and Product Development.

One of the prime Objectives of this thought paper is to create Value Generation through awareness about Situational response , Asset Optimization with an outlook towards the future 2020 shaping the Interventions required for a self-reliant and efficient healthcare system for India through technology solutions for the larger good.

Message from Deloitte

The Medical electronics industry has witnessed double digit growth in recent years and this growth trajectory is expected to continue due to the rising incidence of chronic diseases, increased urbanization and a growing elderly population. In 2010, the Indian medical electronics industry constituted sales of US $1Billion out of an approximately US $2.5Billion medical devices industry market of an overall $50 billion health care market. Although available statistics project a growing and improving healthcare infrastructure in the country, affordability and accessibility barriers impede penetration of medical technology and equipment within vast majority of the population.

The current product affordability of medical technology is a major barrier for the market to be able to achieve its anticipated potential growth. However, prudent innovation methods can reduce manufacturing costs and eventually lower market prices. Additionally, an increased focus and reliance on domestic manufacturing of medical electronics, as opposed to the current dependence on the import market, will also help to improve this overall condition. Products customized and designed to match Indian patient requirement, have the potential to increase market penetration rate in Tier II/III cities. Enablers such as strong management information systems and innovations in telemedicine can allow for medical technology to be scaled to the masses in a cost effective manner.

Enabling adequate access to medical electronics within a socio-economically diverse context such as India is challenging due to the fact that healthcare facilities in Tier-II/III cities and rural India are underdeveloped and do not have adequate infrastructure to adopt the latest technological advancements. While health insurance coverage has been an enabler for enhancing access to care, coverage is limited to those who are covered by the private sector (roughly 5%) or fall within one of the national government sponsored schemes such as RSBY (Rashtriya Swasthya Bima Yojana) or state sponsored initiatives such as Aarogyasri.

Finally, we believe that for medical electronics to create a meaningful impact on the healthcare system, collaboration between key stakeholders including government, industry, healthcare providers, and health insurance companies will be important in order to come up with the right success strategy and improve overall health care access and delivery in the country.

The Federation of Indian Chambers of Commerce and Industry (FICCI) hosted the 3rd International Conference on Medical Electronics with a focus on "Partnering for Access and Affordability" where the way forward in medical technology was discussed. Deloitte, as the knowledge partner for thoughtpaper, has prepared this thought paper to provide a future perspective on the industry in terms of how roles of value chain players will need to evolve in order to overcome challenges and spur the appropriate market drivers to impact growth in the industry.

Roopen Roy
Managing Director,
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Executive Summary

Following the economic reforms in early 1990s, India has enjoyed strong growth in its economy. The Indian healthcare industry has also witnessed its share of high growth rates and the current market size is pegged at USD 50 billion[1]. Medical Electronics, which is a segment of medical devices, grew at an impressive rate of 17% CAGR in recent years[2]. Though the growth has been impressive, Indian healthcare industry presents contrasting perspectives. On one hand, India has world class health-centres providing best in class facilities, and on the other hand, there is a section of population that struggles to meet basic healthcare needs. Several challenges abound. Providing high quality and affordable health care, anywhere and anytime, is now a bigger challenge than ever.

In addition, systems are expected to interoperate without compromising on accuracy. Sustained Growth can be achieved by providing access to affordable medical electronics solutions. A key question, therefore, is how to address accessibility, affordability and awareness gaps to increase penetration. Medical electronics is now under global focus, more than ever, for combating such challenges and developing innovative products that offer better quality care at reduced costs. We analyze market drivers / triggers, challenges and value-chain stakeholder dynamics to assess the market potential and the future outlook of the industry.



Introduction

The Indian Medical Electronics industry is currently valued at around USD 1 billion and has been growing at an average rate of 17% for past couple of years[3]. It is strongly believed that growth will outperform the pace, resulting in the Indian Medical Electronics market reaching close to USD ~6.5 billion by the year 2020. In this paper, the present and future landscape of the industry in India has been explored with particular focus on growth drivers, systemic challenges and stake-holder evolution. Various market triggers have been assessed to identify growth drivers. The framework for unleashing full future market potential is hinged on recommendations for removing market constraints. Awareness and adoption status of our country are assessed and ways are analysed to improve these by enhancing accessibilty and affordability. Outlook 2020 forms the final section of the research, delving into "trends 2020" and beyond, emerging future market drivers and evolution of stake-holders to assess the trajectory and sustenance of growth of the medical electronics industry in future.

There are varied understandings of what constitute "Medical Electronics". For the purpose of this report, the term medical electronics encompasses a wide range of healthcare products (personal medical devices, bio-physical monitoring, life support systems, implants, bionics in rehabilitation of physically challenged, embedded technology in neuro sciences (ASIC and Stroke Recovery) and cardiac sciences and lately telemedicine) which require some external energy source to be operational. In this section the current industry size, the major market segments and product categories are highlighted.

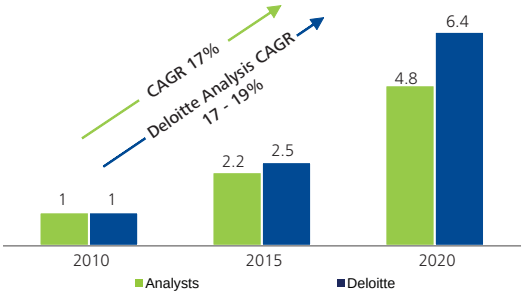
Market Size

Various sources expect the Medical Electronics industry to reach around USD 2+ Billion in 2015 growing at a CAGR of 17% for the last five years from a size of USD 850+ Million in 2009.[3] It is believed that the growth will not only sustain but increase beyond 17%. The hypothesis is based on positive market and non-market factors as listed below.

- Market Factors – Growing population, ageing, income base and asscoiated disposable income, increasing socio-economic inclusion of rural and deprived in mainstream economy, hightened manufacturing innovation to create customized products to meet the needs of all income segments, changing disease prevalence pattern (e.g. early onset of diabetes and heart diseases) and growing awareness among the middle class to focus on early detection and disease prevention
- Non-market Factors – Development of infrastructure, favorable regulations, FDI inflow, outsourcing of manufacturing and R&D activities to India, government initiatives to improve healthcare access through insurance schemes such as RSBY (Rashtriya Swasthya Bima Yojana), Aarogyasri, etc.

The drivers (listed above) and challenges, both are discussed in details in subsequent sections. In Figure 1, the current market projection beyond 2015 is shown. Assuming that the current growth rate is sustained, the market is projected to be around USD ~5 Billion for the year 2020. However, it is believed that there is a strong possibility that the growth may outperform market estimates.

Figure 1: Indian Medical Electronics Market (In USD billion)



The following frameworks are utilized to validate the hypothesis. The first framework highlights the thinking that the realization of upside potential for an addressable market is dependent on how effectively market growth potential can be tapped.

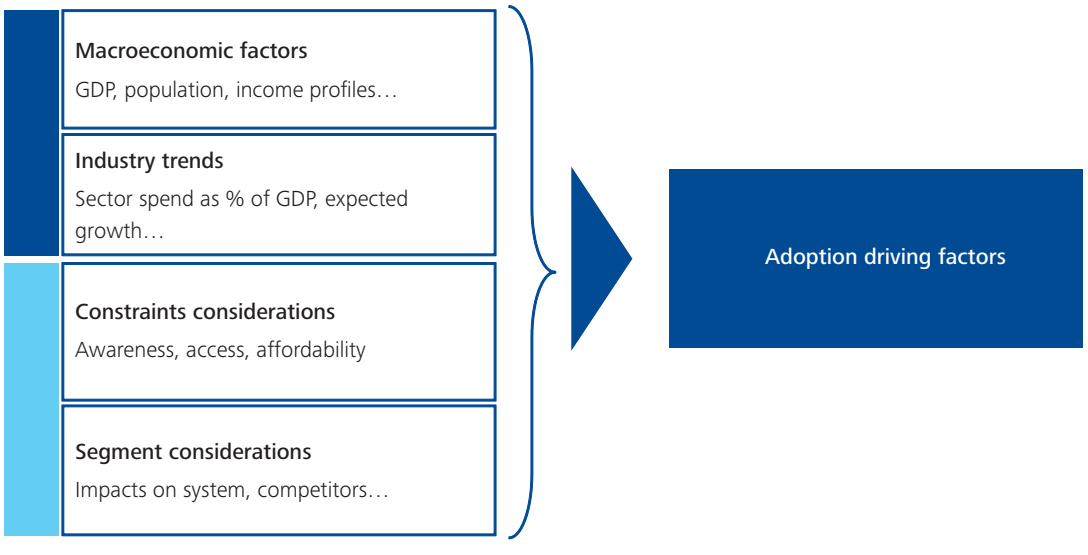
As illustrated in Figure 2, the framework highlights how companies can put into use or capitulate on one or many positive market/non-market drivers to their

Figure 2: Unearthing Market Upside Potential



advantages to beat market growth expectations. In the other basic framework, depicted in Figure 3, the drivers are evaluated and each positive trigger assessed to provide their relative strength in shaping the future of the industry. Issues relating to both these frameworks are discussed throughout this paper and the frameworks are summarized in the Outlook 2020 section.

Figure 3 Factors shaping the industry



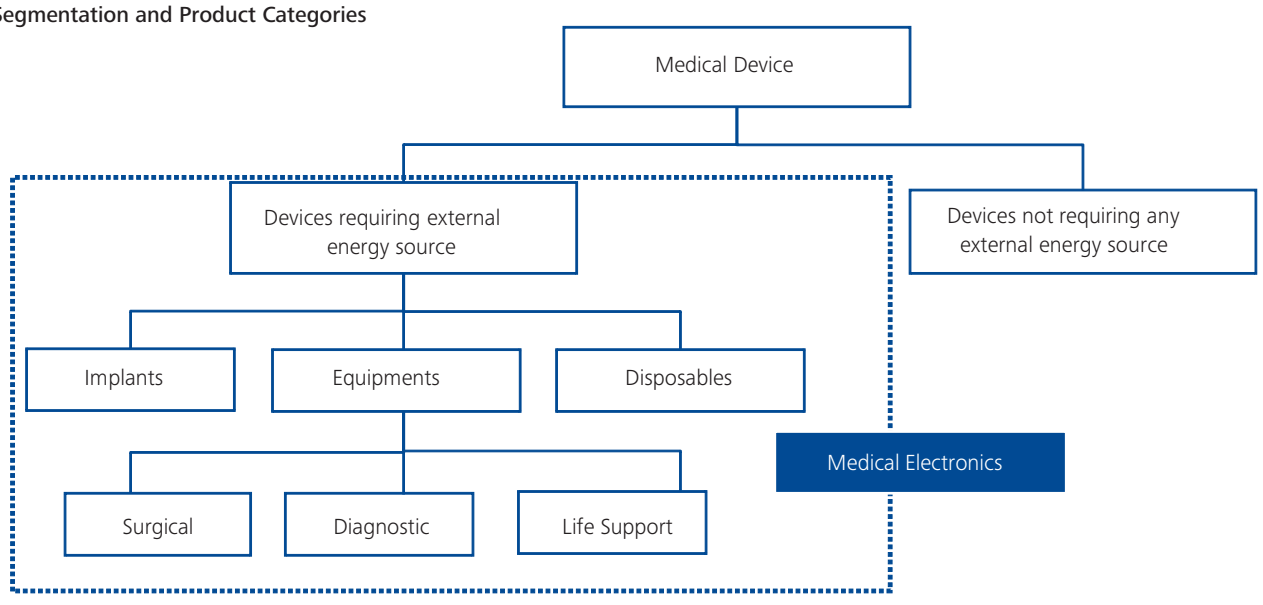
Market Segmentation

Medical Electronics market is a sub-segment of the entire Medical Devices market. The Medical Devices market can be classified in two major categories – Devices that require external energy source to be operational (powered) and those that do not require any external energy source. In this paper, only the segment on powered devices is analyzed.

Powered devices are divided into three product categories-Equipments, Implants and Disposables.

- Equipments – This segment accounts for the largest pie of the total market followed by medical implants and disposable segments respectively. The 'Equipments' segment is also the fastest growing segment and is largely dependent on imports. This can be further segmented into the following categories
  - Surgical Equipments Prominent factors that drive the demand are advancements in surgery and surgical device designs, availability of high skilled surgeons, growing breed of corporate hospitals

Figure 4 Segmentation and Product Categories



– and advanced surgical facilities. Advanced robotics, minimally invasive surgical techniques, and imaging are expected to be key enabling technologies for developments.

– Diagnostics – Increase in the prevalence of diseases, their complexity and the need for quick diagnosis has created high demand for diagnostic services and devices in the country. Other important driving factors are health awareness and education and increasing disposable income of the Indian population. Advances in diagnostic categories such as Cardiac imaging, CT scans, X-ray, Molecular Imaging, MRI, and Ultrasound-imaging including hand held devices are market movers.

– Life Support – As life support technologies evolve and improve, their use outside of the hospital environment has increased. For example, patients with ventilator support are increasingly staying at home with the device, increased presence of automated external defibrillator in nursing homes and residences, etc. As consumer spending power increases demand for such systems are expected to grow.

- Implants – The market for implants is witnessing some amount of innovations in terms of catering to large unmet needs in certain disabilities e.g. Blindness. A microchip retina implant is under trial which will allow blind patients to read letters & recognize foreign objects.
- Disposables – Medical disposable products for medical electronics equipments are used by all hospitals and private nursing homes in the country, including diagnostic and pathological laboratories. The market is becoming increasingly competitive due to low entry barriers (for MNCs), increasing number of players and an expanding consumer base. Examples include disposable medical and electronic probe assemblies for minimally invasive applications, disposable catheter cables, disposable EEG sensors/leadwires, disposable SpO2 sensors, panel mount receptacles, etc.



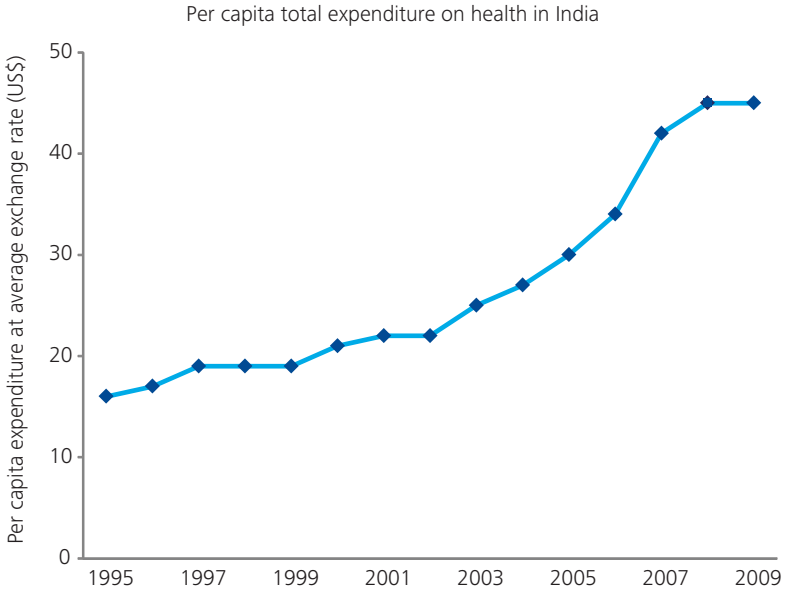
Triggers

Demographic Factors

Various parameters of Indian demography offer opportunity for tremendous growth in Medical Electronics due to general demand for healthcare.

- Ageing Population – The proportion of aged population is increasing in India. The number of people in the 60-plus age group in India in 2009 was 89 million and is expected to increase to 316 million by 2050[4]. Health Ministry has rolled out the National Program for the Health Care of the Elderly (NPHCE) in India and a provision of INR 288 Crores (around USD 60 million) has been made during 2010-2012[5].
- Change in Disease Profile – Non-communicable diseases (NCDs) have emerged as a major public health problem in India and is the leading cause of death in India accounting for over 42% of all deaths.[3] Sedentary lifestyle, pollution, high stress levels, etc. have led to increase in lifestyle/non-communicable diseases such as diabetes, cancer, cardiovascular diseases, etc. Lifestyle diseases such as cardiovascular diseases, obesity and diabetes are also projected to become more pervasive. The Government of India has initiated National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS). Under this program a provision of INR 1230 Crores (around USD 270 million) has been made during 2011-2012.[4] District Hospitals will be upgraded by setting up NCD Clinic, District cancer facility and Cardiac care units and Tertiary cancer centres are planned to be set up to provide comprehensive treatment to common cancers.
- Increase in Income – The per capita disposabe income and healthcare expenditure has increased 3 times over the past decade. The trend is not only expected to sustain, but is expected to grow at a higher rate in future. Key drivers are rising income base, growing awareness (information availability), reduced accessibility barriers and changing disease profile.

Figure 5: Expenditure on health trend



Health Trend: WHO India Health Profile

Macroeconomic Factors

Several factors in the macroeconomic environment are expected to boost growth of the industry as well as the value gain for its stakeholders/participants. This section discusses the positive implications of macroeconomic dynamics.

Growth

India ranks amongst the fastest growing countries of the world in terms of GDP growth and is expected to have significant growth for the next 10 years[6]. The growth is fueled by increased globalization, rising work-force productivity and per capita income, intensifying information exchange fueling awareness, and positive attitude of government to develop the general health of the population.

Figure 6: Health Expenses as percentage of GDP

Source: WHO Global Health Observatory Data Repository 2009

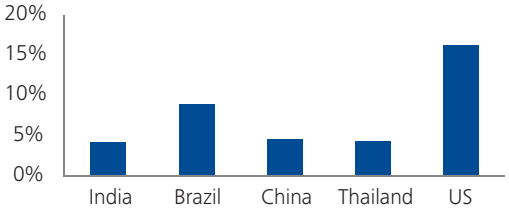


Table 1: Healthcare Spending per Country

Country	Out of pocket expenditure as % of private health expenditure	Private Insurance as % of private health expenditure
India	74.4	2.3
Brazil	57.1	41.2
China	82.6	6.2
Thailand	68.1	24.2
US	24.2	69.3

Source: WHO Global Health Observatory Data Repository 2009

Percentage of GDP spent on healthcare

The total healthcare expenditure is around 4% of GDP. Government expenditure on health as a percentage of total expenditure on health stands at 32.8%, which is around 1% of GDP, combining the allocations by the central and state governments[7]. The government is aspiring to take the total allocation on healthcare to 2-3% of GDP by 2012[8].

In addition, currently out of pocket accounts for ~75% of healthcare expenses in India, ~2.3% of which comes from private health insurances. Recent growth in health insurance in the country is leading to increased coverage of high cost medical procedures, enabling the demand for medical electronics from a larger part of the population

Disease Burden

Communicable disease burden remains significant in India. There are over 1.8 million[9] new cases of tuberculosis every year, more than five million people living with HIV, 550 million people living in areas endemic to filariasis and many such similar statistics for other diseases. Past decade has witnessed improvement in the health of women and children in India but a lot still needs to be achieved. India accounts for a quarter of the global child mortality, with over 2.4 million[7] deaths annually of children under five years[7]. Noncommunicable Diseases (NCDs) has also emerged as major public health problem. NCDs most widely prevelent in India are cardiovascular diseases, diabetes, cancer, stroke and chronic lung diseases. Contrary to popular belief, the poor population is more vulnerable to NCDs. Main reasons for this are material deprivation, stress, unhealthy living conditions and limited access to quality health care.

A basic drive of such proportions is expected to generate demand in medical electronic equipment devices and disposables, examples X-Ray and imaging equipment, pathological analyzers, probes, etc.

Ecosystem Development

Socio-Economic Inclusion of Rural and Deprived

Rural and deprived constitute close to three - quarters of the total population in India. Majority of them, 70 – 80%, either are less aware of medical advances or cannot afford modern medical amenities. In order to reduce the affordability barriers, the government has been taking proactive measures, for example, intro

duction of schemes where government buys health insurance for poor people, private/government health providers provide care at pre-determined prices. Some of the schemes are Rashtriya Swasthya Bima Yojana (RSBY, National Health Insurance Scheme), Yashaswini, Aarogyasri and Kalaignar (state led health insurance schemes). Inclusion of this segment is believed to have the potential for ushering in high volume demand for healthcare equipment and electronics.

Manufacturing and Resource Prudent Innovation

This constitutes manufacturing innovative products at increasingly lower costs. Manufacturers are innovating to create value added and customized products to meet the needs of all income segments. This initiative is expected to lower barriers for consumers and fuel adoption across various income levels. Some products currently present in market and some future innovations are captured in Table 2.

Table 2 Prominent Examples of Resource Prudent Engineering

Product	Unique Value Proposition
Affordable Glucose meter	Affordable and simple to use Glucose meter designed for Indian market
Mobility Assistance for stroke patients	Battery operated wearable, robotic rehabilitation tool enabling stroke patients to regain impaired leg mobility.
Human Body powered Batteries	Hand-held electronics will harvest energy from body movements which will help devices like insulin pumps to run on Nano generators
Portable Ultra-sound machine	Reduces overall cost of diagnos-tics increasing affordability
Phone offering a built-in ECG monitor	A smart phone with ECG monitor which can send regular feed to care giver.

Health Insurance

Health insurance industry in India is one of the fastest growing segments. Although at present, insurance companies cover a small share of the population (~10%), coverage is growing at an exceptional rate. In addition, government initiatives such as Employee State Insurance Scheme, Central Government Health Scheme, Rashtriya Swasthya Bima Yojana (RSBY, National Health Insurance Scheme) and NGO programs to support various poverty groups, have boosted coverage. With increasing medical coverage, the demand for healthcare services will increase, which in turn will stimulate demand for healthcare electronics and acccessories.

Healthcare Providers

New business models are emerging within the healthcare providers. Prominent models span licensing to those that involve joint ventures. Apollo Hospitals Group has a program to offer greater secondary care services under the Reach initiative in tier II cities. In addition, large number of hospitals are under operate and manage contracts e.g. Escorts HCR, Raipur. Fortis has a tie up with DLF, to jointly develop hospitals. Vatsalya group are building hospitals focused on Tier II and III cities. Such business models will drive penetration and expansion fueling the need for investment in medical electronics.

Development of testing and calibration infrastructure

The potency to attract manufacturing needs a well developed ecosystem which involves clusters, doping facility for semiconductor through nuclear technology, testing ,calibration and accreditation for high-end products in line with quality acceptance of international technical standards. The Medical Devices Safety Bill 2008 provides recommendations in this regards with specific guidelines on testing and calibration requirements for medical devices.

Regulatory Factors

Need based regulatory dynamics are in play in the Indian Medical Electronics industry. There are two important regulatory initiatives being taken in India. A) Separate status to medical devices industry and B) Formation of Regulatory body looking into the standards, accreditations, etc. to facilitate quality healthcare.



Health Minstry has taken the initiative to include a separate chapter on medical devices which is considered as a proposed amendment in the Drugs & Cosmetics Act, and may include a clear definition for medical devices. In addition, tax and import duty exemptions are expected to encourage manufacturing sector and lower market list prices. Examples include uniform concessional basic duty of five per cent, countervailing duty (CVD) of four per cent and full exemption from special additional duty on all medical equipment, increase in weighted deduction on R&D expenditure up to 200 % on in-house R&D.

Foreign Investment

The total FDI investments made in the medical and surgical appliances in India have amounted to USD 115.3 million between August 1991 and April 2007[10]. We believe that FDI inflow will spur R&D and manufacturing innovations, in turn increase the efficiency and effectiveness of medical electronic products. Furthermore, FDI inflow will usher in newer and innovative technologies of global standard. Advancement of medical electronic product quality and associated successful diagnostic rates is expected to spur adoption.

Emerging Segments

Medical Tourism

India is fast becoming the preferred destination for medical tourism. Patients from across the globe have been increasingly flying to India to avail of cost-effective and quality healthcare. Hospitals are working towards getting Joint Commission International (JCI) and National Accreditation Board of Hospitals (NABH) accreditations which will help them achieve a safe environment for patients, staff and visitors and will also help them gain a larger share of the medical tourist market. Accreditations open a new growth window for medical electronics as it helps hospitals in achieving their desired quality standards.

Wellness and Prevention

Wellness industry is growing in India due to growing awareness of disease prevention. In addition, Quality Control of India (QCI) accreditation standards for wellness centres in 2010 will improve credibility of wellness institutions. The resultant awareness and adoption of healthy lifestyle and preference for preventative healthcare will drive growth in wellness and prevention market.

Information Infrastructure

Information through traditional (TV, radio, print) and non-traditional media (word-of-mouth, viral marketing, and social networking), have been instrumental in increased awareness of standard healthcare and disease prevention, in various classes of consumers.

Outpatient care technologies and telemedicine

Escalating health care costs and limited resources have increased the emphasis on outpatient care. Telemedicine is gaining acceptance amongst both providers and patients. Enabling technologies, such as home telemetry systems, wireless device communication technologies, and remote monitoring technologies will witness spur in demand. Integration of medical technologies with communication devices like mobile phones has the potential to solve the issue of accessibility and make health care more affordable.

Challenges

Although there have been many areas of improvement in the Medical Electronics space, a lot of work still needs to be done before it can reach maximum growth potential.

Current Regulatory Regime

A concrete regulatory framework for the Indian Medical devices industry is under development. Ministry of Health and Family Welfare (MoHFW), Drug Controller General India (DCGI), Bureau of Indian Standards (BIS) and Atomic Energy Regulatory Board (AERB) regulate various aspects of the medical electronics sector. However, "Medical Devices" have no separate regulatory status in India, and CDSCO (Central Drugs Standard Control Organization) is principally responsible for its regulation. Medical Devices are high on innovation and hence appropriate framework for IPR protection is required to promote innovation and R&D.

Current Healthcare Spend

Indian medical electronics sector is growing but the per capita spend is still lower than most other economies. For the year 2009, per capita total expenditure on health was $45[11]. A growth in overall healthcare spend will lead to better access to medical solutions and also will encourage medical electronics manufacturers towards spending on R&D and innovations.

Infrastructure

The healthcare Infrastructure of India has to keep pace with the economic growth. Some key examples :

Manufacturing incentives

The medical electronics industry is largely dependent on imports. Nearly three quarters of India's demand for medical devices is being met by imports[12]. Most hi -tech Innovative products and technologies originate from a well – developed ecosystem and innovation cycle, which needs to be developed in India. Incentives must be given to achieve an indigenous manufacturing ecosystem which over a period of time will reduce our dependence on imports.

Human Resources in Healthcare

The number of healthcare workers per 10,000 poulation in urban areas is 42 and that in rural areas is roughly 12. Technicians are critical for proper use and operation of medical electronics equipments. There is a huge potential for increase in the numbers of skilled healthcare professionals and meeting this requirement will lead to higher reach of medical electronics based solutions in India[13].

Adoption

Major cities drive the demand for medical electronic devices however it is significantly lower for smaller cities/town/rural areas. As identified in the WHO Priority Medical Devices Project , lower adoption is a result of 4A's - Affordability, Accessibility, Appropriateness, and Awareness[14]. While some improvements have been observed in theses areas, there are still major challenges that need to be overcome.

Affordability

The overall reach of healthcare in India can be increased by offerring affordable healthcare solutions to the end customer , keeping in mind the wide range of income levels existing in the country. This challenge can be met by a joint effort from all stakeholders towards innovative development of solutions that fit well into the economic conditions varying from urban to rural India.

Accessibility

Penetration of public health infrastructure in lower tier cities and rural India can be increased by looking forward towards development of portable and easy to use , condition friendly systems for diagnostics and point of care therapy. Distribution of medical equipments and devices in harsh terrains and remote areas becomes challenging and the time to reach increases.



Appropriateness

A well directed effort towards innovation will lead to cost effective products that are made fit for different conditions by the medical electronics industry. The features and specifications for most imported products need to be customized for the Indian market.

Awareness

A large part of India's population remains less informed about the latest advancements in medical electronics. For example, the concept of Self-Monitoring Blood Glucose (SMBG) is still not well-known in India. In addition, most consumers are generally less aware about healthy lifestyle, disease prevention and hygiene.

Socio-Economic Inequality

Social and economic inequality is detrimental to the health of any society. The impact is more dominant in India due to the country's societal diversity, pre-set bias based on (economic, gender, religion, and cast), multicultural polyglot, and unchecked overpopulation. As a result several issues arise. Unequal distribution of healthcare still continues. Healthcare facilities available in India are currently skewed more in favour of the affluent class. Rural population and urban poor have a relatively lower reach to healthcare facilities. To address these concerns, Ministry of Health and Family Welfare has proposed to launch National Urban Health Mission (NUHM) to focus on the need of slum dwellers and other disadvantaged sections of society[15]. NUHM can bring in the required thrust in large private sector in cities- nursing homes, private clinics and smaller hospitals, by striving to improve the standard and quality of medical electronics products.

Stakeholder and Value Chains

Indian health sector is diverse and consists of multiple stake-holders. In the context of medical electronics, healthcare landscape is going through a paradigm shift of role and responsibilities of the concerned stake-holders resulting in redefinition of their respective influence on the dynamics of the industry. In this section relevant players and their influence on the current and future medical electronics industry have been analyzed

Major Value-Chain Players

Medical Device Manufacturers

Medical device manufacturers form the core of this industry, which has predominantly been import driven (accounting for over 65% of the entire medical equipment market, 85% of which is imported from the United States[16]). Domestic firms generally participate in the low priced, high volume market segment wherein competition is intense. MNCs do not operate in low tech device segment where local manufacturers are involved in intense price competition.

On the brighter side, some manufacturing companies are now shifting their focus from market share capture to market creation. They are discovering innovative products for market niches. In addition, if the regulatory environment improves, established players will also participate in low-end devices as they would be able to compete on quality and not only on price. On the other hand, low-end players (mostly domestic) are realizing the advantages of operating in the high end segment. In the long run, due to entry from established and domestic players, price stabilization can be expected in most of the device segments. Here a few key takeaways:

- Innovation – Companies will innovate on novel technologies, fulfilling unmet needs, to derive premium pricing.
- Product Adaptability to Indian market – Manufacturers will continue to adapt medical devices to be effectively used in local context. For example, designing devices which can withstand hot and dusty climate and operate effectively in areas with insufficient electricity supplies.
- Customer and post-sales services to provide competitive edge – Medical device companies will concentrate on service business as a logical avenue to drive sustainable and profitable growth. With less differentiation among manufactured equipment, companies will tend to differentiate from competition with unique customer and post-sales services.

Healthcare providers

India has both government and private healthcare providers. The growth in recent years has taken place mostly in private sector. Entry of corporate sector into Indian healthcare industry has improved infrastructure and raised the quality of services. Last few years has seen many domestic and international private equity firms showing interest in Indian healthcare providers. For example, AIG and JPMorgan acquired 25% stake in Narayana Hrudayalaya Pvt. Ltd (NHPL) for $90 M ($ 45 M each) in 2008, Oasis Fund invested $5 M in 2009 in Vaatsalya, chain of secondary hospitals in tier 2 and tier 3 hospitals. Consolidation and standardization is rife within big hospital chains like Apollo and Fortis. Smaller hospitals, mostly in tier II and tier III cities, have been improving quality of care bringing in patient volume and streamlining operations to become better acquisition targets. Key takeaways:

- Increased Leverage – Hospitals within the same network will have higher bargaining power to negotiate prices with manufacturers,
- Selective Spending – As hospitals are becoming more cautious in spending, it is expected that sales of small-ticket medical equipments will rise. This could result in access to affordable treatment with medical electronics at base level to the masses.
- Low-cost hospitals – There is an unmet need of healthcare in tier II and tier III cities. Heightened interest on this segment from both private and public sector players is expected in future.

Insurance Providers

With only 10% population of India currently covered under some health financing scheme , there is a big opportunity for insurance provider to mobilize revenue streams. They currently offer diversified portfolio of health solutions targeting healthy, at-risk, and chronically ill population. Employer group market represents large proportion of currently insured population. In addition, lot of traction is being witnessed in public-private partnership in terms of participation

in government insurance schemes like RSBY (Rashtriya Swasthya Bima Yojana) and Aarogyasri. Insurance companies are working with equipment manufacturers to develop cost effective and reimbursable diagnostic packages. This also strengthens WHO recommendations in the Priority Medical Devices Project which suggests development of affordable health packages containing simple technologies for measuring blood pressure, blood glucose and cholesterol levels. Another interesting trend is observed in the realm of OPD reimbursements. Traditionally, Indian insurance companies cover hospital stay only, but lately some innovative insurance policies have started covering OPD facilities as well. If this trend sustains and grows, it will lead to higher demand for confirmatory and diagnostics tests resulting in growth of diagnostic centres. In addition, it is expected that insurance companies are going to focus a lot on prevention and diagnostics in the coming years resulting in higher demand for medical electronics.

Some key implications:

- Increase in demand – With higher insurance penetration and government support, the demand for usage of medical devices will increase. Supplies will be expected to follow demand.
- Focus on wellness and prevention – Insurance company profitability is driven by lowering claim volume, hence insurance companies will encourage healthy living choices and reward behaviours leading to healthy lifestyle by lowering premiums. This in turn will trigger the need for preventative diagnostic
- Cost effective medical diagnostics – Insurance sector in India is most likely to follow an oligopolistic market with few big players. This will lead to strong bargaining power to lower healthcare provider service charges that they need to reimburse.
- Bringing quality and standardization – Insurance policies will bring about standardization of procedures in order to reduce recurrences of re-surgery and re-diagnostic procedure resulting from errors. This will eventually lead to better quality of products as healthcare providers will demand equipment with marginal error rate

Consumers

Patient profile has changed drastically over the years. They are more informed and avail of better health amenities. Burgeoning middle-class families with higher disposable income are tending to get quality healthcare. In addition, various national plans (like NRHM (National Rural Health Mission), RSBY (Rashtriya Swastha Bima



Yojana), Reproductive and Child Health (RCH) Program, Janani Suraksha Yojana(JSY) etc.) have triggered rural India population to opt for quality and affordable healthcare. Other factors include:

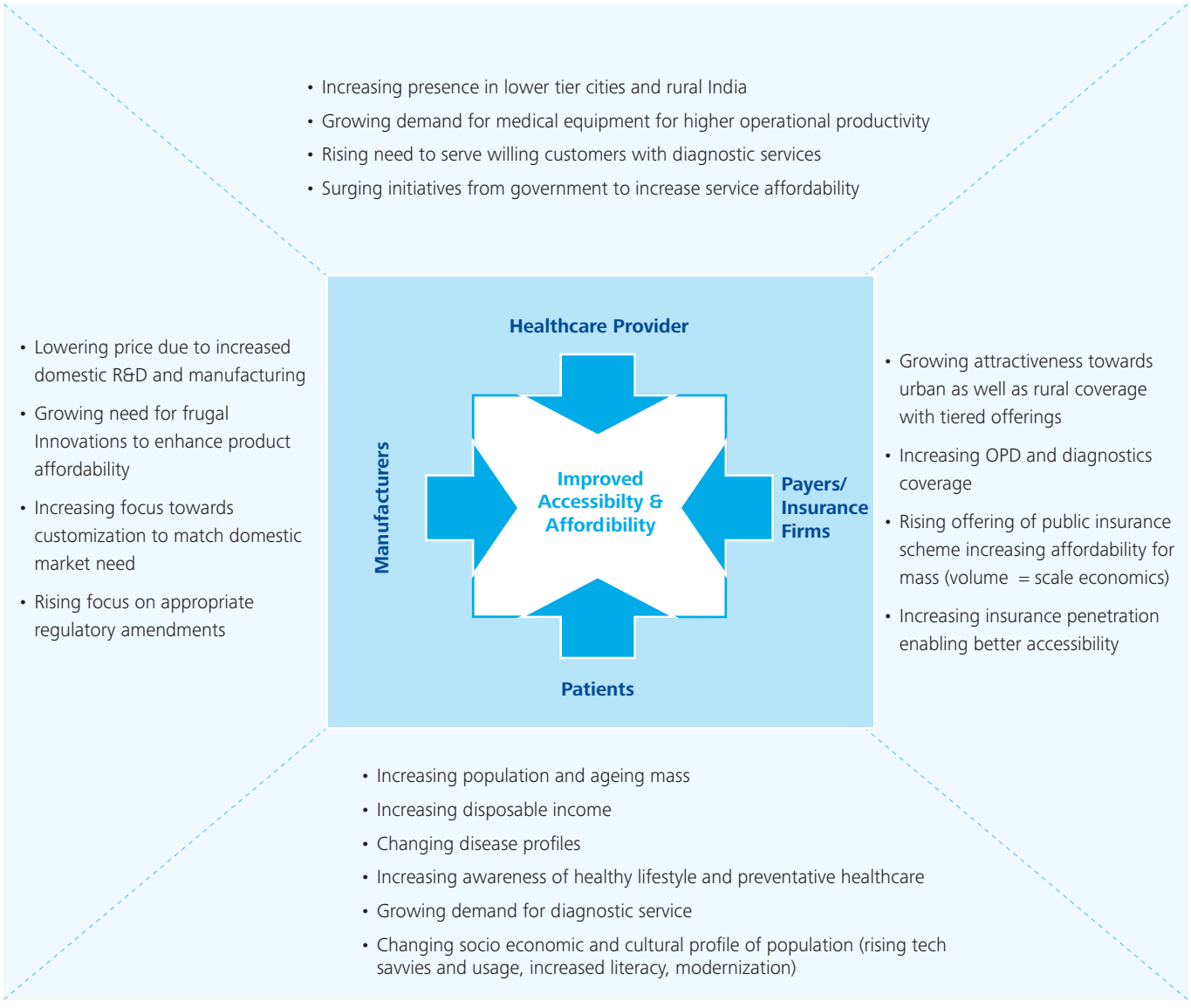
- Rising mobile usage trend which could become a powerful medium of telemedicine in the country.
- Increasing insurance penetration could result in patients demanding better quality and standards of healthcare services.
- Growing efforts of hospitals to maintain cost-effective and quality treatment to attract patients.

Key takeaways:

- Higher population under insurance coverage – Public sector health insurance schemes will provide coverage to a growing mass of the population. Rastriya Swathshya Bima Yojna (RSBY, National Health Insurance Policy) is a Government of India initiative which provides health insurance coverage for Below Poverty Line (BPL) families. At present, 24 million people are enrolled in RSBY. Beneficiaries under RSBY are entitled to hospitalization coverage of up to INR 30,000 (around USD 600) for most of the diseases that require hospitalization. On the other hand, manufacturers need to innovate and come up with customized affordable solutions to cater to this segment.
- Ageing population triggering innovation – To cater to the ageing population, new techniques and solutions are being developed. Examples include development of simpler medical kits for the home, less invasive treatments, restorative treatments, and approaches for early diagnosis of disease that can lead to early intervention.

As highlighted above, key stakeholders will continue to mould the Medical electronics industry. Next decade will see a host of changes in the present dynamics. Figure 7 captures how stakeholders will/are driving the adoption of medical electronics by increasing accessibility and affordability.

Figure 7: Maturity of Ecosystem Driving Future Growth



Outlook 2020

The previous sections delved into the triggers, the challenges and a study of the various value chain players, in the Indian medical electronics industry, in an attempt to understand the current dynamics and how it's evolving to shape the future of the industry. Utilizing the findings and key takeaways from prior sections, next section weighs in on the outlook for Indian medical electronics industry for the year 2020.

Future drivers and trends

Awareness and Adoption are key factors for future growth. On one hand, there is substantial disparity in knowledge of medical equipment awareness across the various stakeholders. On the other, there is dependency of adoption on awareness. This section analyzes factors that have the potential to increase awareness and adoption in the market and drive growth in the industry.

Awareness

- Better Communication of Value to consumers – Effective communication (media and messaging) of value proposition to end consumers is critical. Value chain players are increasingly looking to traditional (print, TV, radio, billboards, and word of mouth) and non-traditional media (online, viral marketing, mobile) to communicate value to targeted segments.
- Government Initiatives – Public insurance schemes like RSBY (Rashtriya Swastha Bima Yojana) besides their primary goal of providing insurance coverage are also increasing health awareness amongst the beneficiaries. Each beneficiary family is issued a biometric enabled smart card containing their fingerprints and photographs, by which the beneficiaries can avail of the benefits of health insurance and treatment options at listed hospitals
- Literacy and Awareness – Education and literacy are key factors for not only increasing awareness but also, raising the capacity to use information effectively. As per Indian census of 2011, India's effective literacy rate stands at 74.0% with a recorded 9.2% rise from 64.8% in 2001. Growing literacy level is a significant driver of awareness level.

Adoption

- Economy and Growth – India has witnessed accelerated economic growth and as was mentioned before, government has planned to increase its outlay for healthcare in coming years to 2-3% of GDP. Investors have also shown interest in investing in the segment.
- Ageing Population – The incidence of disease tends to rise as people live longer. Older people are generally more prone than younger ones to contract chronic and degenerative diseases, and hence make up a large share of patients undergoing diagnostic imaging procedures, such as MRI and CT scan. Population above 60 years is increasing in India and it will be around 125 million by 2020, and is expected to fuel adoption further.
- Quality Enforcement – Reform in Indian medical device regulations is expected. It's anticipated that regulations will be in place to mandate quality of healthcare. Quality initiatives will provide people with trustworthy treatment and diagnostics, ultimately accelerating adoption
- Government Support – Indian government has a mandate to shape, strengthen, support and sustain a health system where every citizen has access to readily available, appropriate and adequately wide ranging health services at affordable costs (using programs like NRHM, RSBY Rashtriya Swasthya Bima Yojana etc.)[17]. However demand-supply gap continues to exist primarily in terms of availability of quality healthcare provider. To bridge this gap, the Indian government has started establishing new healthcare facilities and upgrading existing ones.
- Disease Burden – India is going through an 'epidemiologic transition', where the initial high burden of disease and mortality due to infectious diseases and maternal and child mortality, is declining, giving way to non-communicable diseases, injuries and geriatric problems as the main burden of disease[18]. India already has got the distinction of becoming the capital for Diabetes, Hypertension and hence, Coronary, Vascular and Cerebrovascular diseases. This trend is expected to fuel demand for diagnostic and imaging technologies and products
- Innovation and Affordability – Innovations in medical electronics to design more cost effective products and reduce out of pocket expenses for patients fuelling demand for healthcare services
- Early Diagnosis– Support a paradigm shift towards integrated, preventive health care. Early diagnosis will help in better disease management. Awareness

will drive adoption of diagnostics and prevention techniques like health monitoring, weight management, elder care, sports and fitness.

- Screenings for Long Term Affordability – Mass screenings organized during health camps will help in early and timely detection of diseases. This will create substantial cost benefits for all involved stakeholders freeing up finances to tackle the issue of affordability, resulting in lowering adoption barriers
- Healthcare Professionals – Increase in the number of healthcare professionals across the country (by establishing more medical colleges and training institutes) will increase future reach and service supply to meet demand, driving adoption via penetration.

Maturity of Value Chain and Stakeholders

Healthcare strategies can be effective in the long run if it is built around providing better patient care. A confluence of efforts from all stakeholders is required to achieve this goal. For an effective and healthy healthcare system for the future, evolution of key players is a necessity.

Insurance companies

Increased awareness and a healthy lifestyle reduce disease occurrence and less claim settlement for an insurance firm, which increases its profitability. OPD facilities and diagnostic services falling under the ambit of insurance implies additional expenditure but an early diagnosis of a disease will eventually save money for the insurance firm. Going forward, the market will see stiff competition with various domestic and international companies entering the industry to exploit the exponential growth expected in the market.

Key Takeaways

- Increased support for OPD. View diagnostics as a way to reduce long term claims
- Encourage healthy lifestyle enhancing awareness and adoption
- Push health care providers to procure equipment for better diagnostics and wider disease coverage

Healthcare Providers

Innovation in medical technology and early detection of diseases lower the risk of complicated cases and reduces patient stay in a hospital. Medical electronics also support faster recovery of patients and possibility of home based recovery system post an intervention which helps hospitals better manage the critical parameter of Average Length of Stay (ALOS) of a patient.

Key Takeaways

- Growing need for wider equipment inventory to attract wide-ranging insurance providers and consumer disease profiles
- Increased procurement of electronics equipment in urban areas for differentiation
- Growing belief in the revenue potential of distribution of home-care and other diagnostics equipment
- Increased penetration of lower tier cities and rural India for volume and economies of scale

Device Manufacturers

Device manufacturers will continue to face pricing pressure which will drive them to innovate and differentiate. In addition resource-prudent innovation continue

Public private partnership is expected to increase, providing opportunities for entry into new product categories. Government incentives and subsidy is expected to continue.

Key Takeaways

- Innovation will continue to increase wide-range of products increasing adoption
- Resource-prudent innovation will persist delivering affordable and cost-effective solutions
- Collaboration between providers and manufacturers to develop customized solutions to better match prevalent disease profiles
- Push by healthcare providers and insurance companies to develop quality products

Patients

Increased early detection of problems implies improved care and better patient outcomes. Product and process innovations are reducing the inefficiency of the system. Preventive healthcare will imply less doctor and hospital visits for a patient. Advances in home-care and tele-medicine will make patients more independent. Higher penetration of insurance coverage will encourage demand for health care and diagnostic services.

Key Takeaways

- Patient awareness will increase substantially
- Literacy and health education will grow
- Demand for preventative healthcare will grow
- Demand for early and sophisticated diagnosis will increase
- In home equipment and disease maintenance will increase

Unleasing The Market Potential

Breaking constraints will unleash true market potential

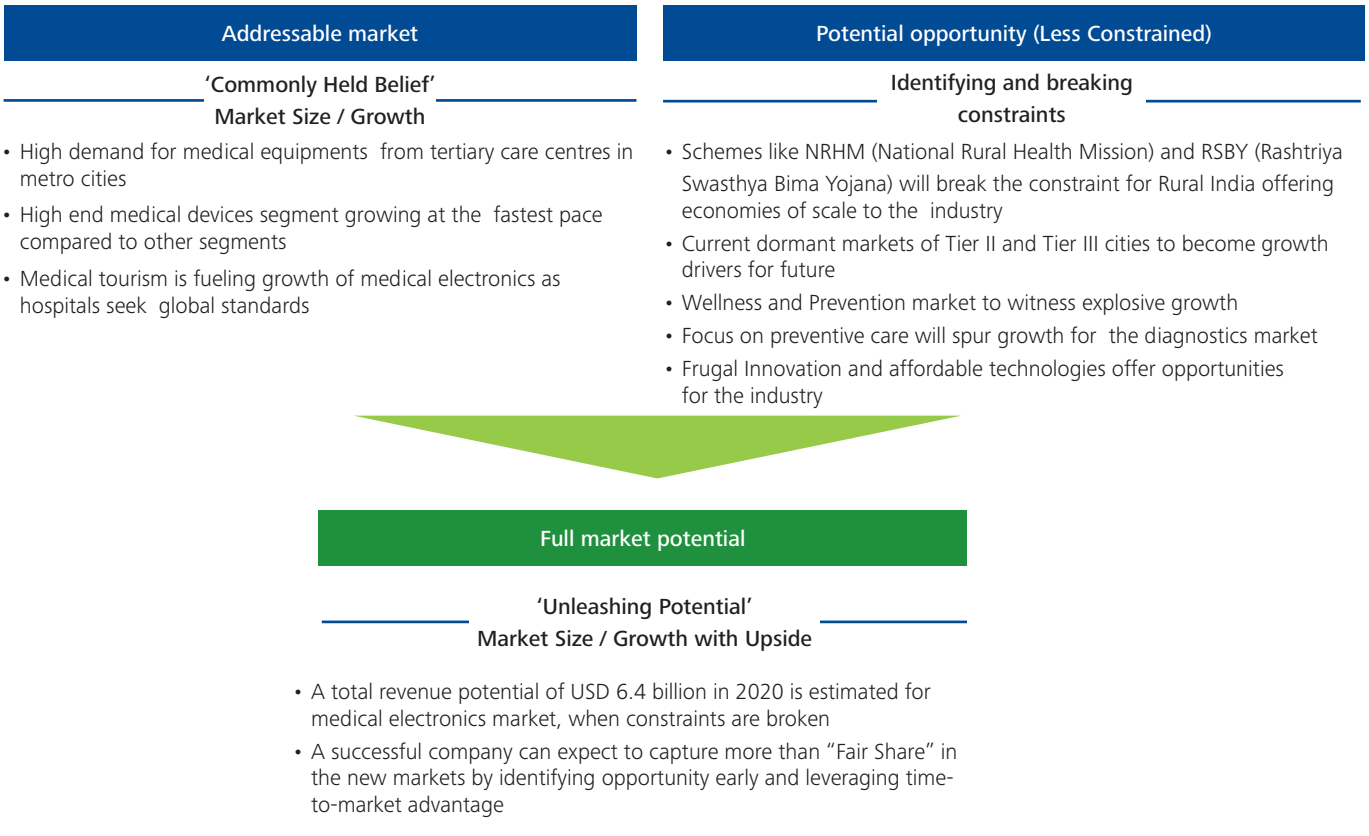
If the current constraints, as was discussed above, could be overcome, the industry could far surpass its current anticipated growth of 17%. However, the actual performance is dependent to a large extent on how well the current market constraints are identified in time and effectively overcome.

Figure 8 Unleashing Full Market Potential

Rapid technological innovation will dominate

High economic growth rate and increasingly westernized lifestyle will create a pull for technological innovations in healthcare. With the Indian regulatory framework getting strongly established along with a concrete IPR protection framework , companies from abroad and India will start viewing innovation for Indian market as profitable.

- Imaging and navigation – Requirement of improvements in minimally invasive techniques and therapy delivery technologies will result in advances in imaging and navigation technologies which will continue to improve diagnostic accuracy and enhance surgical capabilities.
- Technologies for chronic diseases – Need for cost-effective and accurate chronic disease management with focus on disease states, such as obesity and diabetes.
- Convergence of medical device and bioinformatics – This convergence will result in early and faster diagnosis, better prognosis, and tailored therapy.



- Outpatient-care and telemedicine – Healthcare providers will encourage telemedicine technologies, such as wireless device communication, and remote monitoring. Such patients could possess monitoring devices which havethe potential to make health care more affordable and reduce hospitalization costs.

Growth drivers

The Indian medical electronics growth trajectory is going to sustain. The rate of growth is dependent on various factors which have varying degrees of impact capabilities. As shown in the following framework, a combination of high and medium impact factors will continue to fuel adoption and increase market effectiveness.

Integrated preventive healthcare

Focus on wellness and prevention, to lower claims could provide incentives for stakeholders resulting in continued investment in their respective areas

Higher efficiency in the industry

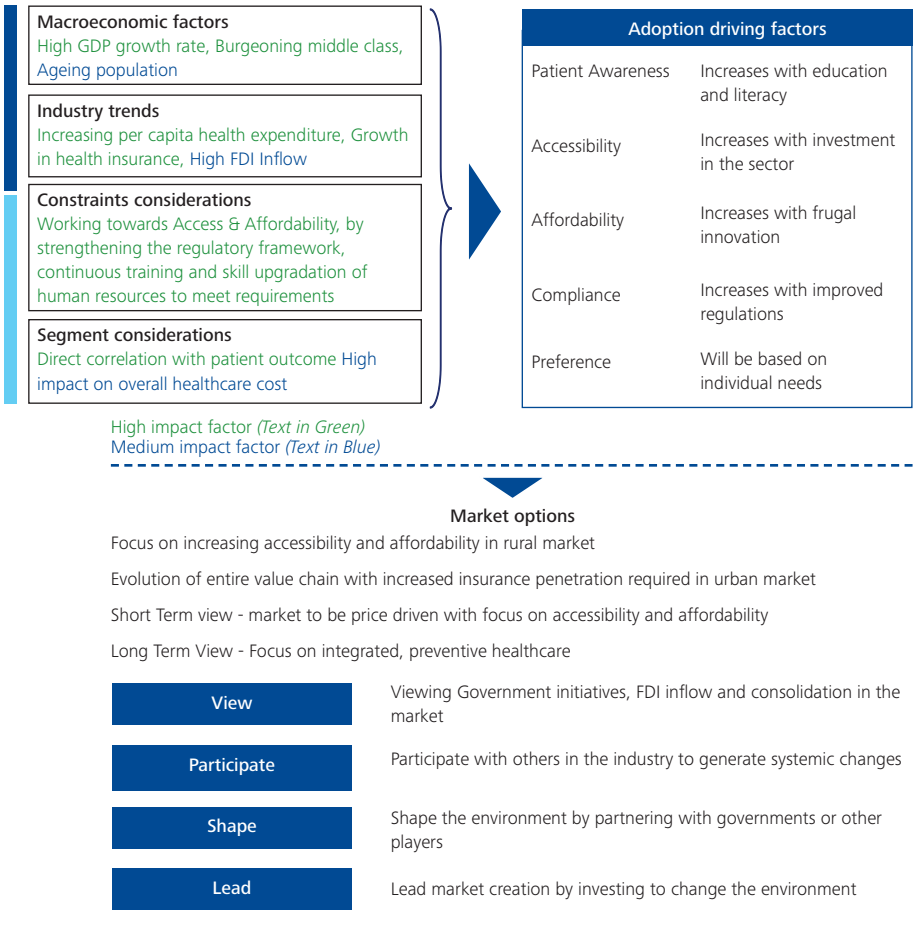
The growth in the sector will see increased competition at all levels. The pressure on margin will translate to more focus on operational efficiency, cost containment etc. which will drive efficiency through-out the system.

High growth disease segment

Certain disease will witness R&D investment. For example

- Cardiovascular – New technologies in diagnostics and monitoring that will improve the treatment and management of cardiac surgery, arrhythmia management, interventional cardiology, ablation procedures, and blood pump technology.

Figure 9 Evaluating market attractiveness



- Orthopaedics – Convergence of medical technologies with traditional devices and minimally invasive techniques for surgical procedures.
- Neurological disorder and diseases – Device-based treatments for neurological diseases will gain prominence. Neuromodulator and neurostimulation technologies are expected to improve treatment.
- General surgery – Robotics and minimally invasive surgical technologies will grow. Enabling technologies such as advanced robotics and imaging technologies will also witness growth.

Market Movers – Beyond 2020

Key trends expected to emerge and shape the industry going beyond 2020 are as follows:

Convergence across health care products and industry segments

Convergence of drugs, devices, and diagnostics is expected to introduce new technologies and products that will replace traditional medical methods. Convergence of medical devices with communications and information technology will give rise to a new generation of products and technologies, specifically in the areas of telemedicine, digitization and electronic medical records.

Emergence of home-based care

Outpatient and home-based care is expected to witness growth in the future. Demand for health care products which can be self-administered or administered with limited assistance in a home set-up will gain prevalence.

Disease specific research work and customization

R&D will focus more on disease specific research. For example, the diabetic population in India has specific requirements because of their genetic make-up. Starvation gene theory and central obesity paradigm affects Indians, which are not present in western countries. Consequently, instead of researching on techniques to cure diabetes, the research will focus how existing technologies could fit in Indian conditions.

Reduced Time Lapse to Critical Mass Effect

Medical electronics in India is going to witness the critical mass effect which is a natural phenomenon in adoption of technologies. It takes time for a specific technology to move out of care centres in Tier I cities and then spread across the general mass. Going forward such time lapse is expected to reduce.

The above trends indicate that the growth in Indian Medical Industry is sustainable beyond 2020. Market saturation is not expected; rather penetration in a growing population base will maintain the growth.

A Case Study



Heart disease is a leading cause of death in India. ECG testing is the first step in early detection. For a large part of Indian population, accessibility and affordability of ECG testing has remained a challenge for long. To overcome this challenge, GE healthcare came out with two products- MAC 400 and MAC i, which were fully conceptualized, designed, sourced and manufactured in India. These products offered affordable solution, by being priced at one third that of imported ECG systems of similar quality. Product customization was done for better adoption in Indian market. These lightweight and portable devices facilitated better accessibility and easy serviceability, especially in remote areas. To deal with power outages and shortage of health care professionals in rural India, these ECGs are battery-operated and easy to use.

With the easy portability of the product, GE created a new marketing opportunity by moving ECG testing from the cardiologist's domain to that of a general physician anywhere in the country. Resource prudent innovation knows no boundaries and although the target consumer base was rural India, the product has been adopted in various countries across the world including US.

Views from Experts



A. Vaidheesh
Managing Director,
Johnson and Johnson Medical, India
Chairman, FICCI - Medical Electronics Forum

Over the last decade, medical electronics through various technological advances has been responsible for reshaping the way diseases are managed. Convergence of embedded technology and information technology has resulted in moving patient monitoring from the hospital to the patients' home and bedside. Bionic technology with the help of battery operated, wearable, robotic rehabilitation tool has allowed stroke patients to regain impaired mobility faster than before. Complex surgical operations can be performed through minimally invasive techniques allowing faster patient recovery and reduced post-surgical complications. The Indian healthcare environment has adopted some of these advances in recent times. However, for several reasons, access to prompt and affordable healthcare has remained a dream that large sections of the Indian population continue to aspire.

India has more than 5000 towns with 46% of patients having to travel more than 100 kilometers to access medical care. Availability of healthcare with 40% bed density and inadequacy of trained manpower is also a cause for concern. Affordability will also continue to be an issue where health insurance penetration is extremely low resulting in patients having to pay for their healthcare expenses and where large majority of Indians continue to earn their livelihood on a daily basis and cannot afford to be out of work for long. Hence, the need for medical technology is more for the common man than the economically well placed as faster recovery to health is economically critical. A four-pronged approach can be considered to tackle the issue of accessibility, availability and affordability head on and pave the way to move towards the medical ecosystem that is desired.

- Adopting convergence of technologies – Medical, IT and telecom
- Enabling technology adoption – Remote monitoring, Tele-medicine, Mobile applications, Point of care tests
- Local product design & development
- Collaboration amongst the various stakeholders for "Go to market" business model.

There is a need for change in the regulations for the industry as there is no single healthcare regulator monitoring the industry. In addition, focus is required on making local manufacturing/product/design development of medical electronic products financially attractive and internationally competitive. These measures will allow a local eco-system of innovation to foster, leading to development of affordable and relevant medical electronic products for Indian markets. This is achievable only if the industry and government work hand-in-hand, understand the key impediments and resolve them with conviction.



Gautam Khanna
Executive Director and Country Business Leader
Health Care Business-3M India ltd.
Chairman, FICCI- Medical Devices Forum

Healthcare in India is operating at multiple levels with some sections focused on preventive healthcare, some on diagnostic healthcare, whereas in future predictive healthcare will play an important role.

For India we need a new operational model of working – a new way to deliver healthcare. Following can be a few pointers, to explore in the direction of "Accessible and Affordable Healthcare in India":

- Hub & Spoke model
- Leasing of capital intensive machines
- Customized insurance

The medical technology industry will however evolve at a faster rate due to the following factors

- Paperless (IT Oriented) hospitals
- Increase in the push towards minimally invasive surgeries (MIS)

- Promotion of disease monitoring systems
- Increase of manpower to support doctors
- Increased emphasis on R&D and local manufacturing
- Public Private Partnership (PPP) for education, R&D for Indian healthcare system
- Automation in diagnostic technology
- Increased access due to telemedicine
- Rationalization and reduction of duty structures

With above & many such innovative strategies, we can hope to provide accessible & more affordable healthcare in India.



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Head, Dept of Hospital Administration & Medical Superintendent (Dr. R P Centre),
All India Institute of Medical Sciences, New Delhi
Lead Assessor for NABH and member of Hospital Planning Committee of BIS

Indian healthcare system has been developed as a tiered system encompassing preventive, promotive and curative modalities. The health care infrastructure in rural areas has been developed as a three tier system and is based on the population norms. Indian healthcare delivery is at crossroads due to inequitable distribution of resources both financially as well as human resources. Problem is of reaching out to common mass in deep interior villages to provide basic amenities of healthcare. India has approx. doctor to population ratio of one doctor for every 1676 population. The nurse to doctor ratio is about 1.3:1 compared to a ratio of 3:1 in most developed countries.

India's healthcare infrastructure is inadequate to meet the burden of disease. India has just 90 beds per 100,000 population against a world average of 270 beds. India also has just 60 doctors per 100,000 population and 130 nurses per 100,000 population against world averages of 140 and 280 respectively.

In India, expenditure on health amounts to 5.4% of India's GDP, as compared to an average of 9% for developed nations. Of this, the contribution from the private sector is more than 80%, and government spending at 19% of the total, compares unfavourably to other developing economies.

Government is playing an active role in providing quality healthcare to all. Amongst the various flagship programmes NRHM aims at providing holistic medical care. The main aim of NRHM is to provide accessible, affordable, accountable, effective and reliable primary health care, especially, to the poor and vulnerable sections of' the population. The other initiatives that can help us to provide accessible and affordable healthcare are:

- Rural corps of doctors: As per the SRS bulletin of 2011 the birth rate and death rate of rural India is 24.1 and 7.8 whereas in Urban India it is 18.3 and 5.8 respectively. This Rural urban health divide needs to be addressed on priority. The Health Ministry and Medical Council of India (MCI) have proposed a shorter medical degree for rural students who would exclusively serve the rural populace. This includes dedicated corps of medical practitioners drawn from among students raised in rural areas.
- Health Insurance: The majority of the Indian population is unable to access high quality healthcare provided by private players as a result of high costs. Many are now looking towards insurance companies for providing alternative financing options so that they too may seek better quality healthcare. The opportunity remains huge for insurance providers entering into the Indian healthcare market since 75% of expenditure on healthcare in India is still being met by 'out-of-pocket' consumers. Government should promote Health Insurers and a customised policy for rural India should be planned on priority. Accredited hospitals should be given preference by both insurers and insuring companies to provide quality treatment. Government should provide tax exemption up to 100% for tax payers buying medical insurance. This will encourage middleclass and underprivileged to opt for health insurance policies.
- Telemedicine and E chaupals: E-choupal can provide preventive primary, secondary and tertiary health care

services: Only 25% of India's specialist physicians reside in semi-urban areas, and a mere 3% live in rural areas. Telemedicine provides a solution in such a scenario by offering remote diagnosis, monitoring and treatment of patients via videoconferencing. Using broadband internet and video conferencing tools, combined with electronic health records, doctors in a city, will provide consultations to patients in the village. Some innovative technologies like RFID, barcode, smart cards, Dictaphones and speech-to-text software have been the driving forces of innovations in healthcare.

- Public private partnership: Public Private Partnership recognizes that both the public sector and the private sector have certain advantages relative to the other in the performance of specific tasks. The partnership objective is to establish a functional integration and a sustained operation of a pluralistic health care delivery system by optimizing the equitable use of the available resources and investing in comparative advantages of the partners' resource crunch.
- Corporate social responsibility and outreach services: Corporate bodies have to take on the onerous task of lending helping hand to government and providing accessible healthcare across the country. Mobile health units can be utilized to reach out to rural populace.
- Trade Related Intellectual Property rights (TRIPS) attempts to balance two complementary public health goals – making drugs affordable and providing incentives for developing new drugs. As Indian pharmaceutical companies move up the value chain, both objectives become relevant for the country. India will also need to explore how the provisions of TRIPS can be used to enhance public health in developing countries and work out how India can contribute to it.
- Health information and monitoring: The NRHM has provided for infrastructure, personnel and training for Health Management Information Systems. However, these are not optimally utilised. There is need to improve the information system as part of the process of monitoring health indices of populations and functioning of the public health care system. The NRHM already has a programme of community monitoring and social audit. This should be strengthened in order to monitor the use of funds and empower local communities.
- Quality Assurance Programmes (QAP) – Quality assurance needs to be monitored to improve quality of care of various hospitals and adhering to the global standards of accreditation will help in delivery of quality healthcare.
- Geographical mapping: Geographical mapping of existing health facilities & incidence of diseases, allocation of more resources to endemic areas, focused IEC Mapping coverage of services will help in optimal utilization of resources.
- Special Economic Zones: Special Economic Zones (SEZ) were introduced in 2000 to achieve three-fold objectives of attracting Foreign Direct Investment (FDI), increasing exports and accelerating the economic growth in India.SEZ allotment should ensure that hospitals are built in conformance to the regional needs and investors should be given incentive to reach out to rural masses.



Prof. Dr. Manjari Tripathi
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Additional Professor, Department of Neurology
Neurosciences Centre, All India Institute of Medical Sciences, New Delhi

Indian healthcare landscape is changing at a rapid pace. While it is important to address current challenges of poor accessibility and affordability we will need to ensure that the growth in healthcare is all inclusive and sustainable. Some of the initiatives which will help in achieving sustained and inclusive growth are listed below.

- Common standards for testing, calibration and accreditation: Courses covered by single entrance exam with uniformity in certification exam process for the entire country is essential.
- Partnership for continued skill up-gradation & enhancement: Two tier centres need to exist following a hub and spoke model in each area and city to cover the large geography of India.

- Standardisation of commercial specifications in Government purchase ushering in economies of scale: There has to be standardisation in the buying process of equipments by government institutions. The specifications should be decided by users rather than purchase committees, as users have detailed information on the products and its applications
- Managing chronic diseases through technology solutions: Effective simple diagnostic and monitoring solutions coupled with affordable treatment regimens should be considered for managing chronic diseases.
- Safety and ethical standards: Common ethics and safety standards should be implemented across the entire healthcare delivery continuum so that no exploitation takes place.
- Greater co-operation in preventive diagnostics, telemedicine and point of care therapy: There should be seamless integration across the healthcare delivery continuum from diagnosis to treatment to monitoring to prevention of future disease. In order for this to happen, the patient doctor ratio as well as the patient to nurse/technician ratio should be increased to meet minimum acceptable standard requirements.



Krishna Kumar
President, Philips Healthcare-South Asia

The healthcare industry in India is clearly changing fast and growing rapidly. Compared to the 1.5x GDP growth rates that we witnessed in the past, the industry is witnessing growth rates closer to 2x GDP this decade. The key driver of growth is the low healthcare access we have. India has only around 1.3 beds per thousand population, which is around half that in China or Brazil and one third that in the UK or US. If we take radiology, there is a lot of scope for improvement. India has only 0.4 MRI scanners per thousand beds, which is less than half that in China, less than one fourth that in Brazil, and 1/20th of that in the US. Our disease prevalence, though, is not substantially different from the rest of the world. Clearly, despite market growth, a lot of work and focus will be required in creating healthcare access.

There are however, two significant challenges that face us as a country. The first is that, India as a nation runs the risk of becoming the first superpower in the world which may get sick before we get rich. We are one of the few countries in the world that face the onslaught of both communicable diseases and non-communicable diseases simultaneously. The other potentially alarming one is the shortage of key clinical and managerial talent that is emerging given the rapid growth in the industry. If we as an industry don't address this issue head-on, we run the risk of derailing some of the progress being made. These two trends particularly pose a substantial challenge and how we tackle them in the coming years will determine the path India takes.

Challenges are many and the answer lies in modernization and advancement of health services not just with breakthrough solutions and technologies but also by shaping new care models. For e.g. on one hand technological advances will enable tele-radiology and tele-ICU models to expand health services to tier 2 & tier 3 cities; on the other hand models like "public-private partnership" across the country will accelerate modernize and expand healthcare access.



Sanjay Banerjee
Managing Director, Zimmer India Pvt. Ltd.
Co – Chairman, FICCI - Medical Devices Forum

The future holds multiple challenges for India – on the one hand aging population, dwindling resources, increasing incidence of lifestyle diseases like diabetes, hypertension and cancer, even as we continue to grapple with infectious diseases and the vast technological advances to counter these challenges on the other.

Accessibility and affordability of Healthcare must remain key to all initiatives as India comes to terms with its

increasing population. The May 2006 Report of the Technical Group on Population Projections, National Commission on Population, states that the Indian population is expected to increase to 1.400 billion by year 2026.

The penetration of health insurance in India has been abysmally low at about 3% to 5% of Indians covered under any form of health insurance. This needs to change by 2020. The success of state-government health insurance schemes can be emulated and targets set to achieve insurance cover for at least 80% population by 2020. Schemes also need to factor in the cost of technology and ensure optimal reimbursement. Healthcare providers must ensure that all the players contribute positively towards the success of these schemes.

38% of the population increase by 2026 is expected to be in urban areas; the active working age-group (15-59 years) will rise to 64.3% of the total population. The former necessitates prudent balance in terms of infrastructure, resource and fund allocation between the rural and urban healthcare facilities. It also highlights the need for creating right ecosystems for fostering healthcare technology and allied sectors in semi-urban and/ or rural townships as done for other industry sectors in India.

The rural-urban divide in Healthcare can be effectively bridged via Telemedicine, a tool which can be extended to successful continuing medical education of health care practitioners and to linkages of primary and tertiary healthcare set-ups in India and abroad.

Increase in active working population will have implication on the availability and productivity of labour going forward, highlighting the need for effective training, development and utilization of the human resources; a role that the healthcare sector must play effectively to its advantage in the next decade.

The Healthcare sector in India is poised for phenomenal growth and the need of the hour is to channelize current and future medical and technological breakthroughs to the benefit of the Indian population. All stakeholders including the Government and Industry will need to play appropriate facilitation roles for the development of this sector.



Vijay Simha
Chief Strategic Officer-BPL Limited
Co-Chairman, FICCI-Medical Electronics Forum

Medical technology now attracts public funding in the area of higher research in the Country. As a result, incentives for talent to take on biomedical engineering as a profession are on the rise, though still there is a migration of talent to the US, Europe or Japan where med tech innovation is a vibrant and honourable pursuit. Hence, India is in its infancy in building in its capability and capacity to innovate in such an interdisciplinary field.

India's geographical spread with large regions that lack infrastructural basics has thrown up unique requirements for the med-tech industry which sometimes cannot be comprehended by med tech companies in the more developed world. These constraints put pressure on med tech product designers to relook at their products and sometimes may even have to redefine the fundamentals of the applied science and technologies.

In order to successfully build a pipeline of products, med tech companies would need to scout around for possible and applicable technologies from countries that have a more developed med tech innovation ecosystem and translate them into products for the Indian healthcare use either through acquisition of the technologies or through exclusive and non exclusive licensing arrangements for the designs, technologies and its upgrades. Since medical technology does involve an array of IP protected components and many times complex mechatronic assemblies; a low cost manufacturing arbitrage strategy is not usually a long term option.

Medical Technology Product life cycles, unlike other consumer products, generally tend to be in the 4-6 year range. Most clinical professionals would prefer systems that do not feature a plethora of bells and whistles in

the products unless they functionally improve the speed for diagnosis and improve the overall workflow in the clinical environment without compromising on patient safety and clinical outcomes.

Uptake and absorption of disruptive technologies in Med Tech do take much longer than in other sectors and hence investors in this area need to possess greater staying power and patience.

Chronic Disease Management would be best carried out by the family physician. Technologies that would enhance the effectiveness and indirectly benefit outcomes through compliance would emerge to support a more effective dispensation of clinical services.

The Public Health System has to make it mandatory for effective screening of its population. This should be made a priority sector and substantial funds focussed on innovation and capacity building in this area should be earmarked. The innovation process needs to accommodate a breed of specially skilled managers that would bridge the knowledge creators and the industry through the translation process of taking a concept from bench to the bedside.

The framework for Public Private Partnership between Governments, NGOs and commercial profit driven companies should incorporate a long term developmental aspect that would stimulate the combined need to deliver better products and services through a process of joint learning, efficiency and technologies that promise better outcomes. Private participation in development of a human capital is inevitable besides they would also be engaged in the upgradation and recertification of this workforce to keep them current with the improved technologies.



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The 2 monsters of healthcare in rural communities are time and distance. Telemedicine, which essentially is interactive exchange of medical information between two sites using IT & CT, has the potential to overcome both. It is universally said that healthcare should be available, affordable, accessible & acceptable. Telemedicine is a great enabler for improving availability, access and affordability. Several studies have shown that there is very high acceptability of Telemedicine in rural communities in India and the level of satisfaction is very good to excellent .It also has the potential for 80-90% of financial and work – hour savings.

Telemedicine in India is generally seen as technologically on a par with the developed countries. Internationally, the Indian Telemedicine pilot projects are also largely being viewed as successful. The necessary infrastructure in the form of satellite or broadband connectivity is already in place in the country. We are now capable of setting up a Peripheral Telemedicine Centre in just a single day at an initial cost of just 1.5 - 3 lakh rupees.

The National Health Policy (2002) recognizes the immense potential of telemedicine in the delivery of health care. Various programmes like NRHM, 11th 5yr Plan, NeGP have earmarked funds for ICT implementation in healthcare. Infrastructure in the form of National Health Portal and National Telemedicine Grid are also being developed.

It is time that the industry should step-in in full force and passionately work towards and implementing solutions in support of the healthcare sector. The technical feasibility of Telemedicine based systems in bridging the urban-rural divide as well as its acceptability has been demonstrated many times over by various studies. We are past the stage of pilot studies. It is time that a complete state should be brought under cover of telemedicine. A state like Uttarakhand, with its population spread out over hills and separated from medical facilities due to geographical challenges, would be an ideal place for a successful and satisfying implementation of telemedicine.



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Chronic diseases are not restricted to the developed world alone anymore. India has gained a dubious distinction of becoming the capital for Diabetes, Hypertension and hence, Coronary, Vascular and Cerebrovascular diseases. Those affected, experience a significant impact on their productive lives. Indeed, these diseases also affect a nation's economic productivity and hence the GDP, directly through health care delivery costs, and indirectly through loss in productivity.

Another important player in this mix is the genetic makeup of our population which result in coronary and cerebrovascular diseases almost a decade earlier than the western counterparts. Even though, we boast of a younger population, we also have the threat of greater loss per person year when afflicted with the disease. Hence, it is important that we prevent and manage these diseases without much loss to both personal and national productivity. We also have a very high incidence of degenerative osteoarthritis which makes it difficult for patients to even perform acts of daily living, adding to the physically challenged population. All this will result in a greater burden on the country and its GDP than experienced by other developed nations such as USA and The UK.

Developing an ecosystem to deal with the current and ever expanding healthcare needs of our society such as chronic disease management needs to be developed soon. The main stakeholders are the patients, specialist and primary physicians, the technology providers, and the supporting organizations be it the government or the NGOs. A patient centric yet realistic prioritization of healthcare needs such as addressing current and growing diseases is important. A tripartite collaboration of healthcare providers, patients and technology, facilitated by decentralized governmental initiatives will be the best way to address the healthcare needs of India. After appreciating the gravity, the core to addressing the problem is to act on it. This can be performed not only by providing solutions to treat, but by expanding and impressing early detection and prevention as an important component of management and treatment. In the long run this would decrease the health care burden of our country significantly.

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