Re-engineering Indian health care

Empowered patient (consumer), enhanced outcome and efficient business

September 2016
Disruptive and innovative technologies are revolutionizing how healthcare is delivered today in India and has brought in a tremendous growth to the sector. We have seen a 15% growth in CAGR for health sector since 2011, which is expected to reach USD 280 billion by 2020. However, providing access to quality healthcare for 1.2 billion plus population is a huge challenge that the country has to deal with. Our total health spend is only ~4.7% of GDP and out of pocket expenditure (OOP) is 62% of the total health spend. This is very high when compared to other countries such as Brazil 25%, China 32%, South Africa 6%, USA 11%, UK 9%.

As India joins many other nations in debating how best to reform the health care sector, it is critical that we engineer these reforms very thoughtfully. This calls for radical improvement of healthcare delivery processes that enhances the quality of care and dramatically lower costs, while also greatly expanding patient accessibility to this improved, more affordable care.

We would need a completely new approach for achieving these reforms, which should involve three pillars: people, process, and technology. When these pillars are reengineered, we envision a system of care that is patient-centered, free from cumbersome administrative processes that overcomes inefficiencies, barriers and distractions from the real work of delivering the highest quality of care.

This process of “Re-engineering Indian Healthcare” will need a collaboration between all the stakeholders of the sector, who must innovate beyond their traditional processes to evolve the sector and rise to the challenge of rapid digitization and technology advancement to deliver efficient healthcare.

**Federation of Indian Chambers of Commerce and Industry (FICCI)** as a change agent has been working diligently with the government to bring about requisite policy changes that can provide impetus to the growth of health services sector in reaching out to the masses. This joint study by **FICCI** and **EY** evaluates various aspects of re-engineering our healthcare ecosystem and the role that the government as well as the private sector will play in bringing in this transformation, while keeping the patient at the centre.

We are grateful to **Ministry of Health and Family Welfare, Government of India** for supporting **FICCI HEAL 2016** on the theme **“Re-engineering Indian Healthcare”** on August 31 & September 1, 2016 at FICCI, New Delhi. We are sure that the deliberations in the conference will help us in coming up with concrete recommendations that will be submitted to the Government at the highest level for consideration.
In recent years, health care has been a subject of much debate and discussion across the globe — more specifically in developed economies, where health care costs are burgeoning. If the current trend continues, these costs are likely to become prohibitive, despite the health needs of significant sections of the populations remaining unmet and disease burden continuing to increase because of longevity and non-communicable diseases.

Hence, it is imperative that a new paradigm is evolved in health care policy, program and practice that aims to rationalize costs while expanding access and reducing the need for advanced care. In fact, at a fundamental level, the focus is shifting from “sick” care to “health” care in its true sense. Considering that this is the only solution to the current situation, this trend is expected to continue and strengthen in the times to come. In this context, health outcome, efficient care and health consumerism are the new buzzwords characterizing the emerging health systems, which are being driven by tools and capabilities provided by the digital revolution.

India, in terms of healthcare cost and expenditure, is a complete contrast when compared to the developed world, having one of the lowest per capita healthcare spend, total health care cost as a percentage of GDP and cost of health services in the world. Consequently, issues of access and capacity have been a reality for a long time and even affordability has been a challenge for the large majority with meagre means, just enough or struggling for subsistence.

However, the context has been changing for the better in recent years and the eEco system seems to be poised for a transformation in the days to come. This report focuses on understanding what will be the key change drivers and what should be the key tenets of the future health system. Interestingly, the deliberations of this report, also find an alignment with the global context discussed above, in terms of the challenges and imperatives facing the country in achieving its agenda of universal health access and right to health. Of course, the specifics of solutions will have to be customized for the local context.

It is also pertinent to clarify that in the chapter 2 of the report, related to improving the health outcome, we have not followed a first-principle approach but rather focused on new insights, especially with regard to the potential of technology to change the paradigm of health care and sick care delivery in the country. The key reason for this approach is our belief that several reports in the past, including High Level Expert Group on Universal Health Coverage for India, 2011 (HLEG), EY-FICCI reports1, have already addressed the fundamental issues such as that of capacity creation, ramping up human resource for health, distribution of capacity, health financing, in great detail and made robust recommendations for structural and systemic correction. Much of the recommendations are still relevant and also in active consideration by the policy makers for implementation. While some recommendations have already been adopted for implementation, the speed of change can be significantly improved. In addition, we also recognize that the agenda of health outcome will need a broader cross-sectoral approach covering aspects such as nutrition, sanitation, hygiene, water, environment, which are not the focus of this report.

We are grateful to FICCI for this opportunity to partner with them on developing this report and the excellent support provided by them in facilitating the discussions with industry stakeholders and providing valuable inputs from time to time. We are also deeply grateful to everyone who gave us time to deliberate on the various aspects of this report and shared their valuable views and insights, which has positively shaped the form and content of this report.

It has been an enriching experience for us to work on this report, and we sincerely hope it further strengthens the mood, motivation and mandate for a health system where health care and not just sick care is the core focus.

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Indian health care is a story of great contradictions: it has one of the lowest cost health care systems in the world, yet it is unaffordable to the large majority of its population. While we have institutions and providers, both private and public, that are comparable to the world’s best in secondary, tertiary and quaternary care, we have a long way to go in providing basic primary care beyond the urban limit where 70% of the population resides. While the Government of the day, during the last decade, has been speaking the language of “Right to Health” and “Universal Health Cover,” yet the public expenditure on health at around 1% of GDP is one of the lowest in the world. For 16% of the world’s population we have a disproportionately high share of global disease burden at 20% coupled with one of the fastest growing non-communicable disease incidence. At the same time, we have one of the weakest health infrastructures at around 1.3 beds per 1,000 people.

Many of these contradictions can be explained by few facts – the most important being the state of the Indian economy during the last seven decades after independence. For the most part, we were among the poorer nations of the world, struggling to fulfil the subsistence need of its populace, with meagre resource allocation to the development of social infrastructure such as education and health. At the same time, much of the population, struggling for basic necessities of ‘Roti, Kapda and Makaan’, was not discerning enough in matters of health.

### 1. Clear preference for private sector care

As a result, it became a politically irrelevant subject and hence did not receive priority in allocation of public funds.

The silver lining has been the private sector. Several corporate provider chains have emerged in the last two decades with the ambition, resources and commitment to bring the best-in-class health care to India at one of the lowest costs in the world, even though much of it is restricted to urban areas.

However, the situation is changing and changing rapidly. India is no longer a subsistence economy, and with the economic transformation witnessed during the last decade, it is steadily moving on its way to becoming a developed economy; however, at a per capita level, there is a long way to go.

Along with it has changed the aspiration and demands of the population in matters of health. Health care is no longer politically irrelevant; it has found a place in the manifestos of both national and regional parties at the Central and state level. Government-sponsored health insurance for the poor is a reality in several states today, in addition to national schemes such as RSBY. These schemes account for the largest share of the covered population.

At the same time, as is evident from the results of our survey done as a part of this study, the aspirations of the middle and upper classes are evolving and their demands for convenience, participation and transparency in the health care delivery process are indicative of the shift from being a docile patient to an informed “health consumer.”
2. Trust deficit between providers and patients is a concern

![Bar chart showing the percentage of respondents who agree or disagree with the statements:]
- I believe that hospitals act in my best interest: 63% agree, 37% disagree.
- I believe that doctors act in my best interest: 72% agree, 28% disagree.

3. Clear aspiration to “participate” intimately in care process

- Indians are actively looking for peer group and social network for support: 90%.
- Comparing treatment success rates of hospitals: 70%.
- Crowd sourced (TripAdvisor like services): 60%.

- Successful treatment
  - Doctor addressing all your questions (Rank 1, 90%)
  - Good nursing care (Rank 2, 70%)
  - Comparative treatment success rates of hospitals (Rank 3, 60%)

- Want to act an equal partner in shared clinical decision making...
- Want to become more health literate...
- Likelyhood of use device that connects to your smart phone for managing health parameters (e.g., temp., BP or heart rate): 70% likely, 30% unlikely.
However, we cannot undermine the fact that given India's population and disease burden, providing health care to all will be a huge economic burden, even for a nation with the means of a developed economy. The following table is an attempt to explain the magnitude of the challenge India faces in providing sick care to all, given its disease burden and the size of the individual pocket. It also highlights the risk that health expenditure alone does not result in better health outcome, as evidenced by the inordinately high hospitalization rates and DALY (for non-communicable) of the US and the UK, as compared to the top 5% (by MPCE) urban population of India (essentially this segment has been used for assuming a hospitalization need which is not constrained by affordability or accessibility reasons), Brazil and China.

<table>
<thead>
<tr>
<th>Country</th>
<th>India</th>
<th>The US</th>
<th>The UK</th>
<th>Brazil</th>
<th>China</th>
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<tbody>
<tr>
<td>Disease burden (DALY per 100,000 people)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Non-communicable</td>
<td>22,020</td>
<td>24,443</td>
<td>24,616</td>
<td>21,642</td>
<td>20,687</td>
</tr>
<tr>
<td>Communicable</td>
<td>16,184</td>
<td>1,699</td>
<td>1,614</td>
<td>4,521</td>
<td>2,811</td>
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<tr>
<td>Expenditure on health</td>
<td></td>
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<tr>
<td>Health expenditure as a percentage of GDP (2014)</td>
<td>4.7</td>
<td>17.1</td>
<td>9.1</td>
<td>8.3</td>
<td>5.5</td>
</tr>
<tr>
<td>In bracket – per capita spend on PPP basis in International $</td>
<td>(267)</td>
<td>(9403)</td>
<td>(3374)</td>
<td>(1334)</td>
<td>(731)</td>
</tr>
<tr>
<td>Out-of-pocket expenditure as a percentage of total health expenditure</td>
<td>62%</td>
<td>11%</td>
<td>10%</td>
<td>25%</td>
<td>32%</td>
</tr>
<tr>
<td>GDP per capita on PPP basis (International $) (2015E)</td>
<td>6,200</td>
<td>55,800</td>
<td>41,200</td>
<td>15,600</td>
<td>14,100</td>
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<tr>
<td>Hospitalization rate</td>
<td></td>
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<tr>
<td>Hospitalization rate</td>
<td>4.5% (6**)</td>
<td>12.5%</td>
<td>13.6%</td>
<td>5.8%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Hospitalization due to communicable diseases (#) as a percentage of hospitalization rate (approximate)</td>
<td>~30%</td>
<td>7% to 9%</td>
<td>~10%</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Sources: WHO, Global Health Expenditure Database, CIA World Fact Book; OECD, “Health at a glance 2013: OECD indicators”

(*) Estimated hospitalization rate of top 5% of India’s population

(#) Includes infections and respiratory diseases
A sick care–based health system, primarily funded by institutions and focused on health services and not health performance, manifests itself in a vicious cycle of health expenditure, where most stakeholders are beneficiaries of sickness and not health. This leads to spiraling costs, which even the most advanced economies of the world are struggling to cope with. Hence, it is imperative for us to avoid this pitfall and target for a hospitalization rate of around 6% and overall health expenditure of less than 6.5% of GDP (this means per capita healthcare expenditure growing at 1.3 times the GDP growth in real terms) to provide and sustain quality health service to all.

This will undoubtedly require a health system that is committed in its policy, program and practice to transform health outcomes through preventive, promotive and accountable care. There are two things that will be critical for this agenda to be achieved:

- Personal accountability of the individuals towards their health
- Effective use of technology

The good news is that with the advent of the digital age and the investments and innovations happening in health care–focused technologies and applications, individuals and the institutions have an unprecedented opportunity to avail of affordable and effective tools and capabilities to shape the health behavior of consumer and enhance the quality and accessibility to care. This will essentially require innovative technology–enabled solutions that can transform the point-of-care capabilities and patient engagement platforms.

It is here that a new class of stakeholders, the health care start-ups, may have an edge over the traditional players, and their role in the new health system will gain significant strength in times to come. In the last decade, 70% of the new bed capacity additions were in the private sector. It is prudent to expect this trend to continue, with public expenditure getting split between capacity creation and health financing as payor. Therefore, considering the critical role of organized private sector providers in meeting the in-patient health demands of the country, it is imperative that India has a robust and thriving private health care business that can deliver quality care at affordable costs to the populace and yet manage profitability to sustain investor interest. However, the hospital business, particularly the multi-specialty tertiary care business (which is the segment of maximum scarcity), is capital-intensive with a long gestation. Several of the current operating assets are not delivering the expected investor returns, and we believe that capital and operating efficiency will be a critical imperative for keeping the hospital business healthy.

In summary, there are three key factors that will catalyze the “reengineering of the current health care system.” The effectiveness of our response to these will define the contour, capability and capacity of the future health system to deliver on the health needs of a billion plus people with the unique challenge of high communicable and non- communicable disease burden and limited resources both at an individual and institutional level.
Factor 1: Emerging consumerism in health care – emergence of patient as a health care consumer necessitating a focus on patient experience and not just care

Given below are the key imperatives and actions needed for building a holistic patient experience using our ‘5E’ framework – Empathy, Efficiency, Empowerment, Ease and Environment

<table>
<thead>
<tr>
<th>Key Imperatives</th>
<th>Proposed actions</th>
<th>Actions by</th>
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<tbody>
<tr>
<td><strong>1 Empathy</strong> Address issue of trust deficit</td>
<td>Clinical community must respect the aspiration of patients and their family to be better informed and participate in the care process. Health care providers should respect the need for transparency and accuracy in financial matters</td>
<td>Health care provider</td>
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<td>• 38% of the respondents believed that hospitals do not act in their best interest, while 24% believed that doctors do not act in their best interest</td>
<td>▶ Institute process and systems for more precise estimation of patient bill</td>
<td>Medical education administrators</td>
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<td>• 40% of the respondents believed that their bills and financial estimates were not correct</td>
<td>▶ Institute robust service-costing system capable of providing financial estimates within acceptable confidence levels</td>
<td>Health care providers</td>
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<tr>
<td>▶ 40% of the respondents were not happy with the quality of staff interactions</td>
<td>▶ Implement the MCI-proposed Attitude and Communication (AT-COM) module across all medical schools in the country</td>
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<td>▶ 43% of the respondents were not happy with service parameters linked to process efficiency</td>
<td>▶ Make effectiveness of patient communication a key performance criteria and support employees in improving through structured training programs</td>
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<tr>
<td><strong>2 Efficiency</strong> Make patient facing processes more efficient (processes such as admission, discharge and transfer, billing, diagnostics) to reduce waiting times and improve responsiveness</td>
<td>▶ Embed patient centricity in design and execution of core operating processes and system: It would require an aspiration to excel and a common definition of success for both consumers and health care providers, which is then internalized across the providers’ organization structure and in processes and systems</td>
<td>Health care providers</td>
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| 3 Patient empowerment - give patients a voice                                   | Social media platform for patients to express their feedback in an impactful way  
• Develop patient portals that crowdsource posting of ratings, reviews and experience feedback from patients — similar to sites like TripAdvisor for hotels | Entrepreneurs                    |
| 60% of the respondents expressed the need for data sources that provide reviews and feedback by peers (other patients) while selecting their providers |                                                                                                                                                                                                              |                                 |
| 4 Ease: Make availing health care convenient                                   |  
• Develop “convenience centered” health care models that can be delivered at the “third place” — i.e. at patient's home or through the use of technology wherever they are — away from the traditional two places: hospitals and clinics | Home healthcare providers and entrepreneurs |
| • 50% to 70% of the respondents expressed strong preference for home health care services |  
• Promote home healthcare as a clinically safe choice for post-surgery recovery by both the hospitals and the payers  
• Improve scalability of business through use of technology, for example, through remote patient management solution |                                 |
| • On similar lines, 66% to 80% of the respondents expressed willingness to try technology-enabled services centered around providing convenience, such as appointments scheduling, reminders and connected personal medical devices |  
Digitally enabled consumer interactions  
• Adopt digital technology enabled solutions and services to make consumer interactions more convenient | Health care providers |
| 5 Environment: Address environmental aspects such as look-feel-touch, cleanliness, noise levels and food quality |  
• Listen to voice of customer: Get guided by what customers would have to say on patient review and feedback portals  
• Learn from other similar service industries: A good industry to learn from can be the hospitality industry considering that hospitals build in the core aspects of that industry | Health care providers |

Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business
## Factor 2: Need to focus on health and not sickness

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<tr>
<td><strong>1</strong> Focus on robust primary care system and integrated care</td>
<td>Develop ‘Health Management Service’ that has aligned incentives for all participants and builds on two key building blocks:</td>
<td>Entrepreneurs and health care ecosystem participants</td>
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<tr>
<td>Evolve a new service focused on effective measuring, monitoring and management of health-</td>
<td>▶ <strong>Personal health cloud</strong>: An individual’s health- and wellness-related data and health experiences are captured through a network of connected personal devices, and electronic health records, maintained securely on a digital cloud, which can then be shared with care providers in the network</td>
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| ‘Health Management Service’ enabled by digital technologies and a virtually integrated network of care providers |  ▶ **Service delivery model**: For preventive care and disease management: Remote Health Management  
  ▶ Remote patient monitoring using AI diagnostics to identify patterns in the data on the personal health cloud that require intervention  
  ▶ Consumer’s case managers to engage with the consumer to guide and advise on necessary interventions and lifestyle modifications through a suite of communication tools, such as messages, tele calls and video calls  
  We estimate the opportunity size to be between INR 8 to 14 billion over next 5 years (*) |                                               |
| The new health management service would re-envision health care beyond episodic and facility-based care to: |  ▶ **For in-person encounters and hospital care**: Evolve digitally connected virtual health care chains of empaneled home health care providers, general practitioners (GP) and hospitals, sharing patient records and acting as one to ensure best care in a transparent way |                                               |
| ▶ Help individuals achieve their own personal health goals and manage lifelong health and wellness |  ▶ Standalone general practitioners organize themselves into primary care networks  
  ▶ Adopt electronic health records (EHR) and IT systems across respective primary care networks  
  ▶ Launch attractive insurance products covering out-patient products  
  ▶ **Develop robust claim-management practices** for faster clearance of basic claims and robust analytics to identify likely fraudulent claims |                                               |
| ▶ Bring in the capabilities of a connected health ecosystem to deliver best care early so that hospitalizations and complications are minimized |  |                                               |
| **Cover out-patients services** under insurance so that individuals seek timely primary care. |  |                                               |
| For example, India has a poor detection rate with only 20-30% of cancers being diagnosed in stages I and II, which is less than half of that in China, the UK and the US |  |                                               |

(*) The estimate only considers the geriatric population more than 60 years of age. However, the opportunity could expand with the service maturing and younger population with chronic ailments also starting to use it.
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| Develop and deploy AI based systems for enhancing effectiveness in primary and preventive care | ▶ Consider investing in developing an AI based clinical decision support system, which could aid a primary care doctor with its own analysis of potential diagnosis and alternative courses of action. This system should then be offered to all primary care physicians (including AYUSH) in public and private setting for use.  
▶ Once the AI system matures, consider involving trained health workers (e.g., three-year registered medical practitioners), aided by the AI system, in the delivery of primary care | Government                           |
| ▶ Minimize the use of chemical drugs for basic primary care use                  | ▶ Leverage wealth of wisdom on traditional home remedies to enable their use for basic primary care through a health app which is enabled by an AI based system (similar to one suggested above), validated by a government appointed panel, to recommend home remedies based on natural products for prevention and first line of treatment | Government or entrepreneurs          |
| ▶ Promote development of technologies to aid point of care                      | ▶ Promote made in India technologies to radically value engineer cost, reduce operator dependence and increase consumerization potential of point of care devices. Typical thrust areas for low-cost indigenous research aligned to the country’s disease burden could include lab on chip platform technologies for pathology tests, X-ray/USG machines, non-invasive screening technologies, glucose monitoring, imaging biomarker development and surgical technologies | Government, academia and entrepreneurs |

2 Promote adoption of healthy behavior among individuals  
Some of the biggest opportunities for improving health outcomes lie in better prevention and management of chronic diseases  
▶ Individual behavior gives rise to 30% of the chronic conditions. As the chronic disease burden escalates, the biggest challenge of all to tackle will be behavioral change  
People make promise related to such behaviors in rational and logical “cold” states, but they function completely differently when they are in “hot” states – for example, under the emotional sway of a tempting treat. People fail to appreciate how different their behaviors and preferences will be in hot states, and significantly overestimate their ability to resist temptation  
Good intentions don’t count for much – what matters are not our cold-state intentions but our hot-state disregard for those intentions

Nudge individuals toward positive health behavior  
▷ Build services that leverage principle of behavioral economics to positively influencing patient behavior through the use of technologies, social networks, games and contracts in innovative ways. Understand,  
▶ What drives patient behavior?  
▶ How patients can be nudged toward better health outcomes?  
▶ What can be the revised commercial models?  

Payors and start-ups, The individual
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<tr>
<td>3</td>
<td><strong>Bring focus on health performance and not just services</strong>&lt;br&gt;Reporting of patient outcome both at the hospital and the clinician level at least for secondary and tertiary care providers</td>
<td>▶ <strong>Adopt patient outcome reporting standards, which:</strong>&lt;br&gt;- Provide relevant patient-outcome-reporting metrics at the hospital and the clinician level&lt;br&gt;- Spare technical obscurities so that they are easy for patients to understand, access and use&lt;br&gt;▶ <strong>Payors should incentivize providers based on outcome</strong>&lt;br&gt;- Assure credibility through <a href="#">audit of reported outcomes</a> by independent third parties&lt;br&gt;▶ <strong>Adopt advance technology tools</strong>: AI-based decision support systems, system-driven treatment protocol and good clinical practice compliances&lt;br&gt;▶ <strong>Use knowledge management tools</strong>: to share clinical learnings and good practices within own networks – an area that is currently suboptimal and neglected by most providers within the country</td>
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<td>Proposed actions</td>
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<tr>
<td>4 Improve access to provide sick-care to all</td>
<td>• Develop telemedicine models that are sustainable and commercially attractive, by addressing some of the key issues as under:</td>
<td>Government</td>
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<tr>
<td></td>
<td>▶ Establish credibility of the solution and establish patient trust</td>
<td>Telemedicine solution providers</td>
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<td></td>
<td>▶ Engage local trusted doctors, individuals or the Government's own participation</td>
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<td></td>
<td>▶ Establish an accreditation and evaluation framework for standard of care and technical standards</td>
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<td>▶ Manage legal and safety issues</td>
<td>Government</td>
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<td></td>
<td>▶ Establish clarity for confidentiality and legal responsibility under medico legal rules so that everybody has clarity, including patients</td>
<td>Government</td>
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<tr>
<td></td>
<td>▶ Develop a sustainable commercial model</td>
<td>Government</td>
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<td></td>
<td>▶ Evolve PPP models in telemedicine</td>
<td>Government</td>
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<td></td>
<td>▶ Setting up a telemedicine consultation centre can cost up to INR 5 lacs, which could be a big amount for a local entrepreneur - the stakeholders involved can explore tie-ups for financing and EMI options</td>
<td>Government</td>
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<tr>
<td></td>
<td>▶ Promote PPP in health care with the aim of:</td>
<td>Telemedicine solution provider</td>
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<td></td>
<td>▶ Better utilization of existing assets</td>
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<td></td>
<td>▶ Delivering quality health care at affordable costs</td>
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<td></td>
<td>▶ Achieving faster expansion of health care services</td>
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<td></td>
<td>▶ Develop a national framework for PPP in secondary and tertiary care in a time-bound manner</td>
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Factor 3: Making the business of health care healthy

The efficiency agenda for the health system is driven by two key requirements:

1. Private health care providers are in the “business of health care” and expect a typical project IRR of 15% to 18%. For this return, cash flow has to be positive before the third year of operation and EBITDA in the range of 23% to 25% in the fourth to fifth year of operations. However, in reality, very few assets are able to achieve and sustain the desired financial performance.

2. The public health system is plagued with scarcity of capacity and hence, efficient use of available capacity must be a key imperative for constrained public health settings.

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<thead>
<tr>
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| **Plan hospital projects to be successful** | • Test the practicality of key assumptions and their sensitivity to overall project feasibility  
• Align capex cost per bed to planned revenue per occupied bed at steady state (typically two years after operation). For example, if capital expenditure per bed exceeds revenue per bed by 10%, project IRR gets strained by 40%-50% | Health care providers |
| **Finance the projects realistically** | • Conduct robust data-driven business planning involving a multi-stakeholder review, which takes an outside-in perspective as well and assessment of market data – market and market share data is essential to test the practicality of key assumptions of the business model, business plan and its achievability in the context of the hospital’s capability and positioning  
• The industry body should take initiative to create awareness about the benefits of the infrastructure status and engage different stakeholders (the RBI, finance ministry and commercial banks) to avail favorable financing | Industry bodies |
| **Robust cash flow planning which assume impact of realistic business environment** | • Objectively assess the quantum and period of operational loss and account for it in the funding plan  
• Account for the delayed receivables in the working capital  
• Fixed operating costs (typically 30% to 40% of the total cost) should be planned commensurate with capacity ramp up | Health care providers |
| **Execute projects on time** | • Plan and execute projects efficiently, possibly by availing the services of professional project management agencies | Health care providers |

A year of delay can reduce the project IRR from 18% to 15%
<table>
<thead>
<tr>
<th>Key imperatives</th>
<th>Proposed actions</th>
<th>Actions by</th>
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</table>
| Undertake operational improvement programs | **Undertake targeted EBITDA improvement program with focus on achieving and sustaining commercial excellence in operations.** This will require a three pronged approach covering cost, culture and capability Key focus areas include:  
  - **Manpower:** focus on three key aspects that drive productivity in provider’s operations  
    - **Capacity:** Alignment of allocated manpower with work demand  
    - **Composition:** Right roles and appropriate staffing structure  
    - **Capability:** Skill and will of the hospital staff  
    - Improving manpower productivity  
    - (value unlocking potential of up to 20% of manpower costs)  
  - **Material:** Optimize material costs through:  
    - **Procurement cost reduction** including formulary design and commercial effectiveness (value unlocking potential between 15% and 25% of material costs)  
    - **Material consumption rationalization in key surgeries** (scope of a 30% to 50% reduction in the cost of materials consumed in select surgeries by eliminating waste)  
  - **Machine:** Optimize utilization of assets by minimizing:  
    - Point and flow inefficiencies  
    - Planning related inefficiency (relevant for mature assets reaching peak utilization -potential capacity release of 10%-20%) | Health care providers – both private and public |
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<tr>
<th>Key imperatives</th>
<th>Proposed actions</th>
<th>Actions by</th>
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<tr>
<td>Sustain operational efficiency</td>
<td><strong>Develop a detailed “Management Insight System” on cost and operational performance enabled through a robust business intelligence system</strong></td>
<td>Health care providers</td>
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<td>Manage efficiencies</td>
<td><strong>Deploy a holistic approach to compensation for both clinicians and non-clinicians</strong>, which recognizes not only growth and revenues, but also places due emphasis on operational and cost efficiency, clinical outcomes, compliance to quality management procedures and patient feedback</td>
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<td>Have a balanced scorecard approach for key personnel including clinical and non-clinical personnel</td>
<td><strong>Invest in nurturing talent in-house</strong></td>
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Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business
Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business
Contents

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EY Survey: As part of this study, we conducted a survey to understand health consumers’ current satisfaction levels, expectations and willingness to explore newer models of health care delivery. This was an online survey covering 19 questions (50 aspects) and 1,000 respondents Pan India.
The very definition of the word “patient” has a notion of dependency of the person undergoing treatment on the doctors or the health care providers. The doctor-patient relationship is critical for patients as they rely on the physician’s competence, skills and goodwill. Hence, for long, there has been a supply-side dominance of health care, which has defined the way health care systems have evolved and care has been provided. The result has been an asymmetrical relationship between the providers and consumers of health care.

### Reasons for asymmetric relationship

<table>
<thead>
<tr>
<th></th>
<th>Sharp information asymmetry between care providers and patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Providers, for example, have typically guarded how much information they give a patient – the belief has been that patients would not have enough knowledge to interpret the information to make good decisions, or they would simply be overwhelmed.</td>
</tr>
<tr>
<td></td>
<td>Easy access to clinical information in a patient-friendly format was not available, especially prior to the penetration of the internet. This resulted in a wide information gap.</td>
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<table>
<thead>
<tr>
<th></th>
<th>Limitation of choice</th>
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<tbody>
<tr>
<td>2</td>
<td>Traditionally, supply-side deficiency has limited the access to talent and health care infrastructure. With no real alternatives, the patient is forced to go back and seek care from the same group of providers irrespective of the patient experience.</td>
</tr>
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</table>

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<thead>
<tr>
<th></th>
<th>Lack of power to make yourself heard</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>For patients, the circle of influence to convey opinions about their experience with a health care provider has been limited to their acquaintances and mostly through conversations beyond the formal patient feedback.</td>
</tr>
<tr>
<td></td>
<td>Because of limited influence, the importance attached to such customer feedback becomes restricted, thereby maintaining the imbalance in the relationship.</td>
</tr>
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</table>

### Winds of change

The notion of consumerism – the consumer as an informed, active and engaged decision maker – is slowly maturing in health care. The following are the key aspects driving this change.

#### Availability of choice

As far as health care is concerned, consumers have seen their options growing with increase in health care infrastructure and better distribution.

- **Increase in health care facilities in urban areas:** Over the last decade, the hospital bed density per 1,000 people, an indicator of access to hospitalized care, is estimated to have increased from 2.26 to 2.77 for urban India. At the same time, at the country level the number of beds remains ~1.3 per 1,000 people.

<table>
<thead>
<tr>
<th>Year</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>1.09</td>
<td>2.26</td>
</tr>
<tr>
<td>2014</td>
<td>1.55</td>
<td>2.77</td>
</tr>
</tbody>
</table>

Source: National Health Profile 2015, 2004
Assumptions - Of the private beds, the distribution between urban and rural has been assumed to 80% and 20%, respectively.

The distribution of public beds in urban and rural is 75% and 25% respectively. (National health profile 2015)
This increase in bed density is reflected in key urban agglomerates as well. Increasing competitive intensity and growth aspirations of private health care providers has led to increased focus on attracting customers, thereby giving customers the power of choice.

<table>
<thead>
<tr>
<th>City</th>
<th>2007</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delhi</td>
<td>2.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>2.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Chennai</td>
<td>2.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Mumbai</td>
<td>1.6</td>
<td>3.2</td>
</tr>
<tr>
<td>Bangalore</td>
<td>2.2</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Source: CRISIL Hospital report 2008 (Pg. 24-27); Estimates for 2015: EY analysis

**Awareness**

- **Seeking information to make the right choice**
  
  Increased internet penetration and awareness are driving customers to seek additional inputs to make the right choice. Moving beyond social and GP references, customers today seek objective outcomes and pragmatic experience-based feedbacks for making the choice.

  Our survey highlights that consumers seek online resources to help them make a more informed choice.

<table>
<thead>
<tr>
<th>% of Respondents</th>
<th>Doctor credential</th>
<th>Comparative rates of treatment success in hospitals</th>
<th>Crowdsourced collective consumer experience (TripAdvisor like services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>70%</td>
<td>60%</td>
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</tbody>
</table>
Online engagement

Consumers are increasingly seeking value and better outcomes from self-management of health and wellness. A 2015 survey conducted in Mumbai, Delhi and Bangalore by Via Media Health showed that half of regular internet users seek health-related information. The most commonly searched information was regarding exercise and fitness, followed by details about preventive measures and hospitals.

A significant proportion of the Indian population already uses the internet, and the numbers are likely to double (from 2013 to 2020). At the same time, the number of smartphone users is likely to triple from 2015 to 2020, which will further bring into its fold many more informed and aware consumers.

This awareness, which we expect to further increase over time, reflects a maturing health consumer with a different set of expectations.

As consumerism has been an unstoppable force for change in other industries, it can be expected to do so in healthcare as well. The customers have experience with other industries e.g. Hospitality, telecom, retail, banking where the industries are more evolved in their customer satisfaction journey. Since the customer is the same; his/her expectations get consequently modulated. The shift is emerging as people expect healthcare to deliver what they have in other areas of their lives such as connectivity, mobility, agility, immediacy and tool for self-direction.

The health care consumer now expects a holistic experience beyond clinical care as shown in the exhibit below.

![Smartphone users (In m)](chart1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>167</td>
<td>213</td>
</tr>
<tr>
<td>2017</td>
<td>350</td>
<td>293</td>
</tr>
<tr>
<td>2020</td>
<td>520</td>
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</table>


![Internet subscribers (In m)](chart2)

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban</th>
<th>Rural</th>
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</thead>
<tbody>
<tr>
<td>2015</td>
<td>112</td>
<td>213</td>
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<tr>
<td>2020</td>
<td>358</td>
<td>293</td>
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</table>

2. India Health Online Survey, Via Media
Our 5E framework for improving patient centricity

Empathy
- Transparency
- Billing clarity
- Patient communication
- Dignity in conduct

Efficiency
- Waiting time
- Responsiveness
- Coordinated care

Empowerment
- Patient rights
- Voice of consumer

Environment
- Look and feel
- Cleanliness
- Noise levels
- Food quality

Ease
- Digital technology
- Home care
- Tele-health

These five aspects have been detailed to highlight underlying issues and key recommendations.
Our survey highlighted the skeptical response of health care consumers, who alluded to “trust deficit” as a key issue that should drive re-engineering of the health care system. As expected, trust deficit with hospitals was significantly higher as compared to treating doctors.

The issue of trust deficit in health care has resulted from two key changes in the recent times:

- The emergence of private corporate groups as the major health care providers (perceived to have greater emphasis on commercial success) over government and missionary/trust hospitals.
- The emergence of health-aware “consumers,” empowered by the internet, as against docile “patients” who held the doctor in reverence.

Because of the vulnerability of the trusting party, any feelings of deception or perceptions of even minor betrayals are given weight disproportional to their occurrence.

However, the reality is that both these trends are here to stay and will strengthen with time. Equally true is the fact that both can become a significant catalyst in improving the cause of health care in India. Private corporate players have a key role to play in bridging the supply–demand gap in health infrastructure even while advancing the standards of care. At the same time, corporate hospitals must aspire for high standards of transparency, honesty and accountability to mitigate the lack of trust.

Similarly, the effective synthesis of the clinical wisdom and experience of doctors and the insight of patients living the sickness is a win-win situation for both. At the same time, the tendency to view the consumer’s interest as intrusion will further widen the trust deficit. The clinician community’s ability to accept this changing aspiration of the health consumer will go a long way in creating a vibrant doctor–patient relationship in the times to come.

In our interactions with health care providers and consumers, both acknowledged the current state of trust deficit as their top area of concern.

The following are some pain areas contributing to the feeling of mistrust:

**Lack of transparency, specially in financial matters**

Our survey has revealed a deep mistrust among patients on matters related to financial estimates and billing. It has revealed three key issues:

- **Patients believed they were incorrectly charged**
  
  Around 40% of the respondents believed that they were not correctly charged. The issue is further complicated by terminologies and representation used across bills that are not understood by consumers and raise possibly avoidable doubts.

- **Financial estimates given by the hospital were not correct**
  
  Only 40% of the respondents believed that the financial estimate given by the hospital was more or less the same as the final amount. Hospitals often fail to provide reasonably precise financial estimates because of the following reasons:
Reliable cost estimates are not available: The final patient bill may vary based on multiple factors such as the treatment being undertaken, the patient's risk profile and disease condition, the treating doctor and the associated co-morbidities. In our experience, most hospitals do not record the relevant clinical data based on which patient bill may vary and do not have costing systems designed to compute an estimate that can be shared with the patient with reasonable confidence levels, thereby leading to a significant variation between the bill estimates conveyed to the patient and final bill.

Cost department is not adequately trained to arrive at reliable cost estimates

Many a times, hospital staff understates the estimated costs to avoid the risk of losing a patient to another hospital.

Timely communication not provided

Only 40% of the respondents said they were informed on time if the final bill was higher than the estimate provided. Either this is a process failure or hospitals did not accord enough priority – a reflection on the need for improving patient centricity.

Recommended solutions

- Institute a robust service costing system capable of providing information at the granular level so as to provide estimates with acceptable confidence levels
  
  Hospitals need to institute a robust service costing system and develop an enterprise data model with the rigor and respect akin to more mature industries. Given the complexities involved, hospitals would also need to invest in appropriate IT tools to churn out analysis that can help the staff convey the most realistic estimate for the patient and the key factors that may impact the final bill.

- Provide appropriate training to patient counselling staff and establish an effective communication mechanism
  
  Hospitals need to make the correctness of the estimate as the key priority, provide the staff with information that is correct and accessible, and train them to convey that information in the right manner. Hospitals can easily avoid scenarios that adversely impact the patient experience.

Black sheep in the industry

With many media articles highlighting negative and undesirable events of overcharging by hospitals, doctors prescribing unnecessary procedures to meet revenue targets and pricing policies that are not consumer friendly could contribute further to consumer skepticism.
Lack of effective patient communication

Patients and their attendants go through a lot of anxiety during their stay at a hospital. There are many queries on the patient’s condition, course of treatment, hospital rules and policies, etc.

Furthermore, over 40% of the respondents were unsure or unhappy with the quality of staff interaction (politeness, ability to address issues, etc.)

Recommended solutions

While technical or clinical quality has been given significant focus within the health care system, rising consumer expectations and an increased focus on patient experience have given rise to institutions focusing on “experiential quality,” a measure of the extent to which caregivers consider the specific needs of the patient in care and communication.

Trust deficit occurs when patient’s anxieties and queries are not addressed effectively and in a timely manner. Effective patient communication is an issue and also the potential solution for bettering patient experience.
Recommended solutions for improving communication skills: for aspiring clinicians (include teaching and assessment of interpersonal skills in curriculum)

- Medical schools in the US have included teaching and assessment of interpersonal skills as part of their curriculum since 2002. The curriculum uses various methodologies of assessing interpersonal skills, such as classroom assessments, role-play assessments and standard patient (SP) assessments.

- Even in India, in 2015, the Medical Council of India (MCI) decided to implement an “Attitude and Communication” (AT-COM) module across all medical schools in the country. The proposed module suggests courses on the foundation of communication in the first year, bioethics in the second year, medicolegal issues and the doctor-patient relationship in the third year, and medical negligence and dealing with death in the fourth year.

While, this is a welcome step, implementation should happen immediately in an effective manner.

Through our analysis and discussions with industry experts, we believe that there are three keys to improve the communication skills of health care personnel:

E-P-R frame work for disseminating interpersonal skills amongst healthcare workforce

- **Educate**
  - Introduce customer service and interpersonal skills as integral parts of the undergraduate and postgraduate courses. Clearly articulate the goals and objectives of the courses by defining learning objectives.
  - Develop a relevant curriculum template to address these learning objectives – with the understanding of the Indian cultural context.
  - Utilize proven learning tools. Go beyond lectures and reading material to inculcate role-plays, video-graphic reviews and team-plays.
  - Modernize assessment strategies. In addition to essays and tests, the usage of a standardized patient and group discussions seem to be proven assessment methodologies.
  - Encourage specialist non-clinical faculty to tutor students on aspects of team building and interpersonal skills.

- **Practice**
  - Utilize the internship period as a training ground to help graduates practice their learnings. Structure the evaluation to assess their progress through the course of their education.
  - Create communication skills assessment as an integral part of an exit review before the completion of a course.
  - Educational strategies could include bedside rounds, structured materials, direct observation and feedback, and maintenance of a self-reflection journal.
  - Encourage multi-disciplinary team functioning with trainee nurses and allied healthcare workforce. This is an opportune stage in the clinical lifecycle to inculcate mutual respect across cadres.
  - To train using clinical experience instead of theoretical focus.

- **Reinforce**
  - Studies have shown that the ability of a doctor to communicate effectively tends to decrease as the doctor gains more experience & practice expands.
  - Hence reinforcement of skills is as important as the training itself.
  - Regulatory approaches such as specialty credit requirements could be made mandatory within the Continuing Medical Education (CME) credit system. These special credits could be earned through seminars or courses aimed to improve physician-patient communication.
  - Within the hospital, include soft skill training sessions for staff as mandatory events in the training calendar. Use adherence to these sessions as a metric for appraisals.
  - Regulatory pressure and hospital focus could create demand for third party trainers and quality modules.

Improving the communication skills of doctors is only one fragment of this problem. The evolving disease burden from acute to more chronic illnesses requires that health care be delivered through a multidisciplinary team (including nurses and other professionals), rather than only through a doctor. Additionally, since nurses and other allied health professionals spend considerably more time interacting with patients on a daily basis, their ability to communicate effectively is paramount.

The E-P-R Framework should be tweaked and adapted to the education curricula of nurses and allied health professionals in order to address the magnitude of this problem.

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4. Harvard Business review - The Impact of Conformance and Experiential Quality on Healthcare Cost and Clinical performance
**Recommended solutions for improving communication skills: for existing pool of clinicians and health workforce**

Health care providers should also take active initiatives to improve the interpersonal and communication skills of the large existing pool of clinicians and health workforce who did not go through a formal training during their education. At an organizational level, the awareness of its importance and impact on patient experience needs to be imbibed through a focused approach. Management institutes and professional agencies can design-special courses considering work situations faced by care providers and offer them to all doctors and other healthcare workers.

<table>
<thead>
<tr>
<th>Symptoms of inadequate communication skills</th>
<th>Identifying specific training needs</th>
<th>Setting up the training calendar</th>
<th>Incorporating it into the performance appraisal system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient complaints regarding service quality/staff behavior</td>
<td>The HR team compiles and tracks incidents to identify a trend</td>
<td>Identify and define clear cadre specific objectives of the exercise</td>
<td>Incorporate compliance to the training calendar as a key adherence metric</td>
</tr>
<tr>
<td>Staff grievances (inter-cadre issues/personality clashes)</td>
<td>Based on discussions with departmental heads, it segregates cadre based training needs:</td>
<td>Define a cadre specific training calendar</td>
<td>Define consequences for non adherence</td>
</tr>
<tr>
<td></td>
<td>- Staff nurses: basic communication skills and etiquettes</td>
<td>Identify &amp; engage third party agencies/trainers based on requirements</td>
<td>Ensure implementation and create examples</td>
</tr>
<tr>
<td></td>
<td>- Admin staff: customer engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Doctors: Interpersonal skills; conveying negative news to patients; empathy</td>
<td>Communicate the calendar within the organization</td>
<td></td>
</tr>
</tbody>
</table>

**Symptoms of inadequate communication skills**

- Patient complaints regarding service quality/staff behavior
- Staff grievances (inter-cadre issues/personality clashes)

**Identifying specific training needs**

- The HR team compiles and tracks incidents to identify a trend
- Based on discussions with departmental heads, it segregates cadre based training needs:
  - Staff nurses: basic communication skills and etiquettes
  - Admin staff: customer engagement
  - Doctors: Interpersonal skills; conveying negative news to patients; empathy

**Setting up the training calendar**

- Identify and define clear cadre specific objectives of the exercise
- Define a cadre specific training calendar
- Identify & engage third party agencies/trainers based on requirements
- Communicate the calendar within the organization

**Incorporating it into the performance appraisal system**

- Incorporate compliance to the training calendar as a key adherence metric
- Define consequences for non adherence
- Ensure implementation and create examples
Only 57% of the respondents were happy with the quality of service (waiting times, responsiveness etc.) in hospitals.

<table>
<thead>
<tr>
<th>Hospital Experience: Operational services</th>
</tr>
</thead>
<tbody>
<tr>
<td>57%</td>
</tr>
<tr>
<td>43%</td>
</tr>
</tbody>
</table>

### Aspiration: set aspirations that inspire actions
- Set the aspiration for the experience you want to deliver to your patients.
- Use an “outside-in” customer-centric view: Patient experience is a subjective outcome and differs by patient personas. An expecting mother may have different expectations as compared to a cardiac patient. Hence, understand which personas are important for you, what their explicit and latent expectations are, and what level of experience you want to deliver to them.

### KPIs (measures and target)
- Convert the aspiration in metrics and aspired targets, which are granular enough to facilitate the understanding of the root causes.

### System (organization structure, processes, IT, performance management) to achieve KPIs
- Develop “inside-out” capabilities to deliver the experiences.
- Define clear ownership across the organization hierarchy.
- Make performance reporting objective, automatic, transparent and timely.
- Design processes capable enough to deliver performance.
- Use analytics to listen to the customer.
- Focus on ensuring “input” activities are getting executed as designed — outcomes shall follow (activities needed to achieve the performance are being carried out at bottom most level).
- Empower frontline staff and develop proactive leaders who can solve problems and drive change.

### Results and review
- Hold regular performance-review meetings — objectively and in forward-looking way.
- Reward good performance and ensure consequence for poor outcomes.
- Learn and improve.
What will truly catalyze the transformation is the emergence of patient-portals, which will increasingly challenge and replace the existing trusted and authoritative systems.

These new platforms in virtual networks and communities provide a “social proof of similar voices,” and are founded on a trustworthy belief in peers and recognized experts or authorities, through crowd-sharing of experiences. These shape both consumer and provider behavior through ratings, reviews and feedback on experience. Regulators stimulate transparency through the release of comparative performance information and organizations step up to the task of increasing accountability for outcomes with increasingly transparent processes. Consumers seek retail-like experiences and increasing value.

In our survey, 60% of the respondents expressed the need for peer-reviewed data sources for selecting their providers. There are quite a few examples from around the world.

- Sites such as Why Not the Best (www.whynotthebest.com), Consumer Reports (www.consumerreports.com) and Healthgrades (www.healthgrades.com) enable consumers to compare patient experiences of physicians, hospitals, specific procedures and geographic localities based upon a combination of user feedback, performance data and evaluation.

- Healthcare Bluebook (www.healthcarebluebook.com) draws upon US national payment data to enable consumers and employers to shop around for the “fair price” of health care based upon cost and quality parameters.

- Guroo (www.guroo.com) – a health price comparison website of the Health Care Cost Institute (the US) – allows consumers to compare prices of around 70 common services drawing upon data from major insurers such as United Healthcare, Humana, Aetna and Assurant Health.

- In 2014, Physician Compare – a website of the Centers for Medicare and Medicaid Services (CMS) – released physician quality performance information on a set of quality measures, assigning star quality ratings as indicators of performance. (www.medicare.gov/physiciancompare)

- Consumers can access the experiences and opinions of others via crowd sourced collective consumer experience data in forums such as PatientOpinionAustralia (www.patientopinion.org.au), Healthtalk Australia (www.healthtalkaustralia.org) and CureTogether (www.curetogether.com), as well as comparator websites such as iSelect (www.iselect.com.au) and Helpmechoose (www.helpmechoose.com.au), which focus on insurance.

Government has recently launched a patient feedback platform which will be used to provide star ratings to hospitals

Recently, government has launched a facility using which patients visiting government and government empanelled hospitals across the country will be able to give their feedback on the quality of services, including cleanliness and availability of doctors. In the ‘Patient Satisfaction System’ to be rolled out in phased manner, patient feedback will be collected using a multipronged approach through an SMS service, web portal or IVRS (interactive voice response system), and incorporated in the star rating of the hospital. Government intends to give star rating to public hospitals based on aspects that would include infrastructure, service quality, availability of drugs, patient feedback. To improve accountability, performance ratings of superintendents and civil surgeons would be linked to the hospital rating. Further to prompt the states (since health is a state subject), central government also intends to link the rating of the hospitals in the state to the incentive amount to states under National Health Mission. While this is a welcome move, government should also design a plan to incentivize the empanelled private sector hospitals based on the star rating of the hospital and patient feedback.

A large Indian private sector general insurance company has created a platform where the patient is empowered to make decisions based on the reviews and ratings by fellow users and refined information on the cost, quality and infrastructure of health care providers.
The traditional model of care delivery within hospitals has been challenged in the recent past by newer “patient-centered” care models. Traditionally, health care has been delivered at either hospitals or clinics. Our survey has revealed that consumers are quite willing to explore “convenience-centered” health care models at the “third place” — their home — or through the use of technology wherever they are. Interestingly, the likelihood of using certain technology-based convenience services expressed by our respondents was not any different from that expressed by the respondents of a similar survey conducted by our Australia practice recently.

4: Ease — making health care convenient, from health care delivered in hospitals/clinics to delivered everywhere (wherever people are) — the “third place”
The demand for such services is likely to grow because of the following key reasons:

- **Change in community disease profile**
  As the disease profile shifts toward chronic conditions and NCDs, the level of interaction between the doctor and the health care consumers will shift from being “episodic” to “rhythmic”. The doctor’s role will change from delivering cure to helping patient manage their conditions, requiring doctors to be aware of patient’s progress outside of the hospital and also interact with patient in the most efficient way.

- **Ageing population**
  The percentage of elderly population (60 years plus) is likely to increase from 7.4% in 2001 to 12.4% of the population by the year 2026. This set of population will increasingly seek good but at convenience care.

- **Empowered customer**
  Today’s empowered customers, are demanding and participative in their care. They want to stay informed and manage their conditions in the most convenient model. They will prefer alternative models with similar clinical outcomes. With improving technology, many such solutions are now feasible, a latent need for which was always there.

- **Rising competition**
  Rising competition has necessitated that the hospitals change their business acquisition role from passive to active and one that is more patient centric. In the absence of any clear clinical superiority over relevant peers, operators will need to re-invent their customer value proposition through operational models that attract customers.

The consumer preferences and demand drivers imply focus on

- **Home health care as a segment**
- **Making customer interactions with care providers more convenient with use of digital technology**

**A. Home health care**

Home healthcare is a well established segment globally, driven by consumer’s need for convenience and payor’s focus on reducing the cost of care. A robust and well accepted home health care system not only reduces the load on hospital infrastructure through early discharges but also results in managing health so that expensive hospitalizations are reduced.

In India, this segment is still in its infancy and with players focusing on providing a wide portfolio of services:

- Services which are mostly offered
  - Rehabilitation – post intensive care rehabilitation, physiotherapy
  - Skilled nursing and unskilled care
  - Specialized services which could offer large potential
  - Home therapeutic segment – infusion and respiratory therapy, dialysis
  - Convenience oriented services – dental, teleconsultation

For the sector to truly realize its potential, focus on following areas would be required:

- **Promotion of home healthcare as a clinically safe choice for post-surgery recovery** by clinicians, payors and home health service providers. While consumers have expressed a need for such services, emphasis on clinical safety and a service model to address any emergency can provide the larger comfort.

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**Percentage of respondents in Australia using these services**

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consult a doctor by video on your computer</td>
<td>61%</td>
</tr>
<tr>
<td>Send a photo of your injury/health problem to doctor using mobile device or desktop</td>
<td>60%</td>
</tr>
<tr>
<td>Make an appointment online to see a doctor</td>
<td>87%</td>
</tr>
<tr>
<td>Purchasing medicines</td>
<td>70%</td>
</tr>
<tr>
<td>Use device that connects to your smart phone (such as for temperature)</td>
<td>66%</td>
</tr>
<tr>
<td>Using at home diagnostic test kits</td>
<td>74%</td>
</tr>
<tr>
<td>Communicating electronically with a doctor (email, text)</td>
<td>70%</td>
</tr>
<tr>
<td>Completing doctor/hospital registration forms online before the visit</td>
<td>83%</td>
</tr>
</tbody>
</table>

Source: EY Report “Health reimagined: a new participatory health paradigm”

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Incentive alignment: For episodic hospitalizations, hospitals have a misaligned incentive for early discharge as it leads to revenue loss. This would require hospitals and home healthcare service providers to develop a business model so that mutual interests are protected.

Health insurance products should cover home healthcare more widely. An insured patient is forced to avail treatment at a hospital, even though the treatment could be possibly delivered at home which would be more cost effective and convenient. This can be addressed through health insurance. Currently, some insurance products offer post discharge care for a limited period (up to 60 days).

Improve scalability of business through use of technology:
Home healthcare is a human capital intensive business where growth is quite linearly linked to people enrolled or empaneled. In addition to the core services, a technology based remote patient management solution (similar to the integrated health care model proposed in chapter 2 of this report) for longer term managed care can change the equation away from being linear to exponential. The model will have to go beyond the right technology platform into program design and implementation so that solution deployed is clinically relevant, technically feasible and cost effective.

B. Digital enablement of consumer interactions
Consumers have experienced the convenience that other sectors such as financial services, retail, travel and hospitality offer through use of digital technologies. At each touch-point of their interactions with a care provider, individuals compare how other sectors are using digital to make their lives convenient and expect the same from the care providers as well. These expectations will propel 'Digital Hospital' initiatives by care providers focused around consumer convenience and experience.

In digital maturity, health care sector lags far behind other sectors due to fragmented nature of the sector and also the technology solution providers. While few larger hospitals have invested in robust IT systems and also have started offering digital based convenience services to consumers in a limited way, a vast majority of smaller hospitals have only the basic IT systems in place.

As a first step, these smaller health care providers would need to augment their IT systems. Many of these smaller providers may not have the capacity or the inclination to invest in such systems. The scenario will lead to:

- Emergence of technology solution providers who will offer IT products and services to care providers, which can fulfill consumer’s expectations (such as appointments, payments, remote calls with doctors) without requiring care providers to invest in IT assets, possibly on pay-per-use or similar alternate revenue models
- IT companies offering robust hospital information systems on software-as-a-service model so that care providers get functionality rich applications with built in data security features to protect patient and business confidentiality
One in three of our respondents were not happy with the cleanliness of the hospital. Government hospitals and charitable hospitals fared relatively low. (Refer chart on the next page)

With changing exposure to other service industries (e.g., airlines, malls and hotels), consumer expectations around experiential aspects have changed and the standards expected have gone up.

For aspects such as cleanliness, consumers too have a large role to play in terms of observing basic hygiene and cleanliness etiquette standards. Also, societal expectations of cleanliness and hygiene widely vary across socio-economic strata, and hospitals need to intervene to define the expected etiquettes and their own aspirations.

**Recommended solutions**

- **Listen to the voice of the customer**
  Apart from the formal patient feedback within hospital settings, listen to what customers have to say on patient review and feedback portals. Use that voice to guide your focus and assess the impact of the actions undertaken.

- **Set aspiration and standards**
  Essentially the framework outlined in Focus 3 will need to be followed, starting with setting aspirations and operating standards.

5: Environment – focus on the softer but very important aspects such as look-feel-touch, cleanliness, noise levels and food quality

<table>
<thead>
<tr>
<th>Experience: Hospital cleanliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
</tr>
<tr>
<td>Unhappy</td>
</tr>
</tbody>
</table>

5: Environment – focus on the softer but very important aspects such as look-feel-touch, cleanliness, noise levels and food quality
Therefore, if a hospital aspires to not smell like a typical hospital, then this aspiration will drive the cleanliness standards. It would define, for example, how air ventilation is maintained and what are the expected outcomes while cleaning a rest room (all toilets are dry and free from bad odor, and there is proper drainage all the times and clean and neat accessories in the toilets).

Learn from other similar service industries
A good industry to learn from can be the hospitality industry, which has similarities in terms of consumer focus and certain operations such as patient service, housekeeping, and food and beverages.

<table>
<thead>
<tr>
<th>Provider Type</th>
<th>Happy</th>
<th>Unhappy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big private hospital</td>
<td>29%</td>
<td>71%</td>
</tr>
<tr>
<td>Charitable hospital</td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td>Government hospital</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>Nursing home</td>
<td>34%</td>
<td>66%</td>
</tr>
<tr>
<td>Other private hospital</td>
<td>32%</td>
<td>68%</td>
</tr>
</tbody>
</table>
Healthy outcomes - Changing emphasis from “sick-care” to “health”

Core purpose of the health care system is not only to provide treatment to the sick but to also to promote health and deliver healthy outcome. To achieve this objective, the chapter focusses on four key themes:

1. Prioritize focus to reduce the need for sick-care through integrated care and robust primary care system
2. Promote adoption of healthy behavior among individuals
3. Focus on health performance and not just services
4. Improve access to treatment to provide “Sick-care to All”

<table>
<thead>
<tr>
<th>Quartile of PHC usage</th>
<th>District hospitalization ratio %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>3.1</td>
</tr>
<tr>
<td>Highest</td>
<td>2.0</td>
</tr>
</tbody>
</table>

All other things that affect hospitalization (such as income, historical morbidity rates, sanitation practices, and quality of amenities) being equal, a district with 1% higher usage of primary care (as per DLHS) has 0.03% fewer hospitalizations1.

Essentially, it implies that assuming an average length of stay (ALOS) of 7.9 days, reduction in hospitalization rate by 1% would mean a reduction in need of 0.3 million beds, which will be one-third the current capacity or around 50% of the additional capacity required over the next decade.

In the Indian context, this becomes crucial considering that primary health care is known to be inadequate and ineffective in large parts of the country. A 2012 study2 on quality of care in primary care setting in urban Delhi revealed:

- 52% of providers in the sample, working in public and private sectors had medical degrees
- The rate of correct diagnosis was 21.8% and treatment was 45.6%
- Adherence to standard care checklist was 31.8%

The Government has been playing a significant role in preventive care through its vaccination programs and in primary care delivery in rural India by developing a network of 900,000 Accredited Social Health Activist (ASHA) workers under National Rural Health Mission and increasing the number of sub-centers (SC), primary health centers (PHC) and community health centers (CHC). While there has been a growth in infrastructure, there is a shortfall of 33,145 SCs (20%), 6,556 PHCs (22%) and 2,316 CHCs (32%) across the country according to the Rural Health Statistics (RHS) 2015. Moreover, there is shortage of manpower at both PHC (shortage of medical officers) and CHC level (shortage of specialists).

The Government has also taken significant initiative on tackling NCDs as part of National Health Mission. Key features include:

- Center will bear 60% of the costs, while states will bear the balance 40% of the cost.
- **Screening programs**
  - Door-to-door screening program covering non-communicable diseases such as cancer, heart disorders, hypertension and diabetes to start by end-2016 and cover 100 districts in the first phase
  - Strengthening of public infrastructure for care delivery
    - ASHAs and ANMs to be trained for collecting samples using mini-testing kits
    - Preventive cardiac clinics at primary and secondary care level
  - **Provide less costly medicines**
    - Discounted medicines for cancer and cardiac diseases to be provided

In addition, the Government has also launched mDiabetes program, which is an online portal for information on screening, prevention, complications, disease management about diabetes and to create awareness campaign via social media.

According to the draft National Health Policy 2015, the Government intends to provide preventive, promotive, curative and rehabilitative services through the revamped rural primary care network, and use telemedicine for specialist consultations. These are welcome moves and the Government should continue to strengthen the rural primary care network.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of sub-centers</th>
<th>No. of primary health centers</th>
<th>No. of community health centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>145,272</td>
<td>22,370</td>
<td>4,045</td>
</tr>
<tr>
<td>2011</td>
<td>148,124</td>
<td>23,887</td>
<td>4,809</td>
</tr>
<tr>
<td>2014</td>
<td>152,326</td>
<td>25,020</td>
<td>5,363</td>
</tr>
</tbody>
</table>

**Promote use of traditional home remedies and AYUSH**

One of the core policy principles of the draft National Health Policy 2015 is ‘pluralism’, which states that patients who so choose and when appropriate, would have access to AYUSH care providers based on validated local health traditions. India has a very long and rich tradition of using natural products and herbs for prevention and primary treatment of several acute illnesses. These have been popular and practised extensively, as home remedies, across the country, with the family elders being the custodian of such wisdom. However, there is a risk of such traditions not finding its way to the coming generations as the traditional family structures are fast getting disbanded into nuclear and sub nuclear families. This will typically result in the home remedies, typically free of any side effects, getting replaced by modern allopathic drugs, which are essentially chemical based with varying degrees of side effects. This can manifest in additional health issues, in the short term and long term, much of which may not be well understood by the common population.

Given the size of our acute disease burden, it is imperative that we sincerely aspire for creating a system where these traditional remedies are integrated into the primary care programme and also made accessible to common people in an easy manner. It is also important that such an initiative is not corrupted by unscrupulous and ill-informed enterprise attempting to exploit this opportunity for commercial purpose in the absence of a regulatory framework.

Hence it is recommended that the “traditional health remedies” must be approved by an expert panel, mandated by the central or state government, before release to public use.

Apart from what the Government intends to do, there are three broad systemic changes that can facilitate the change in emphasis from sick-care to health.
1. Promote individuals to seek primary care early by covering out-patients services under insurance

While the obvious benefits of improved availability and appropriate consumption of primary care services on reduced need for high-end care are evident, in India, out-patient services are not widely covered under health insurance schemes. However, in most developed countries with strong third party payor systems, insurance coverage is secular across inpatient and outpatient services.

Several issues have inhibited implementation of true OPD coverage within health care policies

- **Low insurance penetration**: Low size of customer base, coupled with non-availability of robust data base regarding customer spend behavior, have inhibited insurance providers from being able to price the coverage efficiently.
- **Fragmented market of primary care providers**: Unlike tertiary care, primary care services are provided through stand-alone consultation chambers, diagnostic centers and small/medium-sized hospitals. Across this spectrum of providers, ascertaining basic quality and legal payor-provider engagement has been a challenge. Due to this variety of providers and significant presence of quacks beyond metro geographies, fraudulent claims and practices pose significant challenges.
- **High frequency of low value transactions**: The volume of back end transactions to deliver true cash less OP coverage will be exponentially higher than the ones required for IP coverage. Coupled with low technology penetration among primary care providers and non-standardization of data collection, the challenges get accentuated.
- **Potential risk of fraudulent claims**: The product has to be designed so that it is attractive for both insurers and insured. At the same time it should disincentivize or limit the possibility of fraudulent claims.
- **Delivering true OP coverage will require fundamental changes across the health care ecosystem**

- **Provider level changes**
  - **Data collection and management across providers**: Implementing OP coverage will entail monitoring and managing customer’s primary care behavior. This will necessitate a robust data base, which can connect the individual patient level movement across providers.
  - **Use of Electronic Health Records (EHR) among primary care providers**: Overall digital penetration across health care providers is quite low, especially in case of medical records, with usage of digital records among primary care providers being abysmal. Base medical record management will need to be developed at the provider end to ensure that the claim management at the insurance end is facilitated.
  - **Consolidation of primary care**: Standalone general practitioners organizing themselves into primary care network driven by common system and practices.

- **Payor level changes**
  - **Engagement models and transaction flow between payor-provider**: Traditional engagement models between payor and tertiary care providers will need to be revised to suit small providers. Small providers will expect rapid recovery of their pending reimbursements and least hassles.
  - **Wider network of empanelment**: Accessibility is the key choice driver for primary care. Considering this, the payors will have to empanel a significantly high base of providers for the customers to access these services. Initial ring-fencing of providers, could be a win-win situation as payors could potentially steer customers and consolidate volumes at select providers.
  - **Claims management practices**: Insurance providers will need to revise traditional claims management practices to suit large volumes of low value transactions. This will involve use of algorithm-based, fast clearance of basic claims and robust analytics to identify likely fraudulent claims.
  - **Strong regulatory framework to discourage malpractices**
    - All of these measures will require backing of a strong regulatory framework that act as a deterrent for fraudulent practices.

Apart from payor side facilitation, making the primary care robust will require making point of care more capable. It will require augmenting point of care (POC) diagnostics with enhanced skills and tools, broadly around three aspects:

- **AI based clinical decision support system for primary care for improving skills**: Primary care aims with the issue of disparity in knowledge and skill levels across primary care physicians. This issue of skills can be greatly levelled with use of artificial intelligence based clinician decision support system, which will greatly democratize healthcare delivery.
- **Sensors and digital technologies** which would revolutionize preventive care and disease management through remote monitoring and proactive management.
- **Point of care diagnostic devices**, which will make quick accurate diagnostic feasible for more precise evidence based line of treatment. It will be crucial to invest in local Indian technologies to radically value engineer cost, reduce operator dependence and increase consumerization potential, i.e., aid point of care delivery closest to the patient. Typical thrust areas for low-cost indigenous research aligned to the country’s disease burden could include lab on chip platform technologies for pathology tests, X-ray/USG machines, non-invasive screening technologies, glucose monitoring, imaging biomarker development and surgical technologies. To promote indigenous development of point of care medical technology, government should consider incentivizing through 250% deduction of approved expenditure.

There are many developments already taking place in this area with devices available which can conduct 30-35 tests covering rapid testing for infectious diseases, basic endocrinology and haematology, cardiac function tests, blood gas analysis.
2. Emergence of a new service class - “Health Management Service”

Available and ever increasing capabilities of technology and evolving focus on health by health care consumers, will lead to the emergence of new class of service referred to as ‘Health Management Service’ and also possible stakeholders. This will be an integrated health care service enabled by digital technologies and a virtually connected provider network. This service shall be based on principle of measure, monitor and manage.

The need for health management service, which goes beyond episodic and facility-based care, will be driven by two trends

- **Growing health-related awareness and willingness to manage own health:** Patients with chronic ailments will have to manage their chronic conditions over a long term, but they do not necessarily fathom the expenditure over a long term and propensity to adopt healthy behaviors is low. One of the reasons was lack of tools available with an average patient to efficiently manage their own health. However, with health information being easily available and adoption of digital, the scenario is fast changing. With growing health-related awareness and willingness to manage own health, more patients will seek support to realize their health goals.

- **Emerging imperative for payors (insurers and government):**
  - **Health insurers:** With long-term cost burden of managing chronic conditions being high, health insurance companies will need to consider undertaking initiatives to positively influence health behavior. This is due to:
    - **Need to keep the premium low:** With low private health insurance penetration, in the growing market, insurance companies will need to strive to keep premiums low, so that adoption rates are not hindered.
    - **Insured population progressing into an age where they are more likely to suffer from chronic ailments.**
    - With the Government providing health insurance to a majority of the population it will have to bear the financial burden of managing complications related to lifestyle ailments.
Health management service will not only complement but will also challenge existing systems

### Broad contours of ‘Health Management Service’

<table>
<thead>
<tr>
<th>Objective</th>
<th>Health management service will re-envision health care beyond episodic and facility-based care to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Help individuals achieve their own personal health goals and manage lifelong health and wellness</td>
</tr>
<tr>
<td></td>
<td>- Bring in the capabilities of a connected health ecosystem to deliver best care early so that hospitalizations and complications are minimized</td>
</tr>
</tbody>
</table>

#### Building blocks

<table>
<thead>
<tr>
<th><strong>Personal health cloud</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual’s health and wellness-related data and health experiences are captured through a network of connected personal devices and electronic health records, maintained securely on a digital cloud, which can then be shared with care providers in the network</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Service delivery model</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service delivery will happen through an integrated service model addressing different needs:</td>
</tr>
<tr>
<td>For preventive care and disease management - remote health management:</td>
</tr>
<tr>
<td>To systematize efficient and effective care delivery,</td>
</tr>
<tr>
<td>- Electronic data in personal health cloud will be structured for analysis and processed using clinical and decision supporting algorithms, artificial intelligence (AI) diagnostics to identify patterns requiring intervention</td>
</tr>
<tr>
<td>- Consumer’s case managers will use care delivery pathways to engage with the consumer to guide and advise them on necessary interventions and lifestyle modifications. They will also work with the consumer on ways and means to effect behavioral changes.</td>
</tr>
</tbody>
</table>

#### In-person encounters and hospital care: digitally connected network

Since in-person encounters and hospitals will always play a vital role in any health system, the traditional network will continue.

However, it will comprise an empanelled list of home health care providers, general practitioners (GP) and hospitals, which are digitally connected sharing patient records and ensuring best care in a transparent way so that:

- Hospitalizations and health complications are minimized
- Care variations and inappropriate demand is smoothened

#### Aligned incentives

<table>
<thead>
<tr>
<th><strong>Individuals</strong>: Lifelong health and wellness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Payors (individuals, insurance companies, government)</strong>: reduced cost of care</td>
</tr>
<tr>
<td><strong>Hospital systems</strong>: Increased patient volumes, enhanced customer engagement and satisfaction</td>
</tr>
<tr>
<td><strong>Home health care providers/ GP/ specialists</strong>: Increased patient volumes by participating in the network</td>
</tr>
</tbody>
</table>

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### Potential market opportunity for an integrated remote health management service over next five years

```
Customer size 0.17 to 0.34 Mn  x  Fee per month Rs3000 - Rs4000 pm =  Market opportunity Rs8–14 Bn
```

- Estimated population of top 20 cities by 2020
- Urban population > 60 years ~8.1%
- Proportion of urban SEC A households ~ 13.8%
- Likely adoption rate of integrated remote monitoring services

#### Sources:
- Census 2001, 2011
- Elderly in India, 2016 (CSO, MOSPI - Government of India)
- Socio-economic classification, IMRB
- Interviews with market participants
Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business

Schema of Health Management Service

D I G I S P H E R E

I choose to live well

Specialty hospital
Sensors and monitoring
Life Sciences/devices
Analytics
Electronic health record
Telcos/retailers
Ingestibles/implantables
Knowledge
Wearables
Artificial intelligence
Funders
Social media
Wearables

Care teams
Home

Hospital

Changing behaviours
3. Artificial intelligence systems for decision support in primary care

In India, although there is a shortage in number of doctors, the real issue is skill shortage. Vastness and complexities of health care do make a doctor's job very challenging. There are around 10,000 known human diseases, yet at any given moment human doctors are not likely to be able to recall more than few of them. There are around 7,000 rare diseases (according to US definition, rare diseases are one which affects less than 200,000 people) of which 350 rare diseases cover 80% of all rare disease patients. According to the Organisation for Rare Diseases India, around 70 million Indians could be suffering from rare disease. A study estimated that around 5% of US adult patients experience diagnosis errors in outpatient settings every year. Situation in India is not likely to be any better.

Example of AI based application for primary care

- A UK-based start-up is reportedly planning to launch an app, which can listen to patient's symptoms and provide medical advice. Users will report the symptoms of their illness to the app, which will check them against a database of diseases using speech recognition. After taking into account the patient's history and circumstances, the app will offer an appropriate course of action. Current regulations do not allow the app to make formal diagnosis. As a result, it is currently restricted to recommending what course of action patients should take in the immediate term. If a young person describes flu-like symptoms, the system might recommend picking up some over-the-counter medicine at a pharmacy or, if there are complicating factors in the patient's medical history, booking an appointment with a doctor. By contrast, if someone describes more serious symptoms to the app, it may recommend going straight to the hospital, or even dialling an emergency line.

Such systems bear a significant potential to improve clinical diagnosis and health outcomes by making primary care more robust and effective.

What can be done?

- The Government should consider investing in developing such an Artificial Intelligence (AI) system for primary care and offer it to all primary care physicians (including AYUSH) in public and private setting for use. This could be part of the “Digital India” initiative.
- Such an AI system, which will be self-learning, should be periodically evaluated for clinical effectiveness vis-à-vis primary care experts and at an appropriate time, the Government could consider involving trained health workers, e.g., three-year registered medical practitioners, aided by AI system in delivery of primary care.

- After the approval by an expert panel and relevant intelligence built in, the AI system will be developed to recommend home remedies based on natural products for prevention and first line of treatment to minimize use of chemical drugs, which are known to have an adverse impact over a longer period of use.

Much of medicine involves heuristic, rules-based problem solving based on symptoms and test results. This is fertile ground for artificial intelligence (AI).

The same vastness and complexity of medicine can be managed much easily with use of AI based clinical decision support systems, which could aid a doctor with its own analysis of potential diagnosis and alternative courses of action. The computing power of such a system can help it process millions of combinations of different symptoms and narrow down the diagnosis using patient's history, environment, behavior, genetics and biology.

While, in their current state of evolution, these systems will not be able to replace human intelligence; however, they could definitely be skilful companions and they are continuously improving (Refer box below for example).

5. "The global burden of diagnostic errors in primary care"; http://qualitysafety.bmj.com/content/early/2016/08/16/bmjqs-2016-005401.full; accessed on 08 Aug 2016
Simple behavioral changes by individuals can result in significant savings for themselves and to health systems. Non-communicable diseases account for 70% of global mortality and years lived with disability, and behaviors give rise to around 30% of chronic conditions. These diseases account for 75% of health care spending and is expected to cause a loss of US$47 trillion for the world GDP by 2030.

Non-communicable diseases will account for marginally less than three-fourth of all deaths in India:
- Deaths due to cardiovascular: ~ 4.0 million
- Deaths due to cancer: ~ 1.5 million

While a lot is being done and more is required to be done to create awareness among masses, screening and detection of NCDs, creation of capacities to treat non-communicable diseases, a large impact can be created by preventing and managing these diseases to reduce health complications. And since individual behavior influences the chronic conditions significantly, this will require nudging individuals toward positive health behavior.

Positively influencing patient behavior will be important for improving health outcomes

Since chronic diseases progress slowly and have a strong behavioral component, tackling them requires new approaches to driving desirable behavior change. These include physical inactivity, poor diet, tobacco and alcohol abuse, compliance to prescription and investigations.

9. EY report “Health reimagined: a new participatory health paradigm”
Individuals’ actions will be the single largest determinant of health outcomes. However, individual’s participation and engagement require complex action and motivation on behalf of both the individual and care providers. Strengthening the individual’s capability to self-manage is essential in an environment of increasing consumer engagement.

Gaps in patient behavior
Traditionally, microeconomic theory has assumed that individuals are rational actors – i.e., they behave in ways that balance costs against benefits to maximize utility or personal advantage. In recent years, behavioral economists have shown repeatedly that this basic tenet – the foundation of economic theory – is fundamentally flawed. We are irrational, but predictably so. And the predictability of our biases means that we can correct for them. Here “behavioral economics” play the game changing role.

We are irrational but predictably so

The ways in which patients behave sub-optimally can be grouped into two significant areas:

- Processing information
  Traditionally, one approach to shortcomings in patient behavior has been to view the problem as an information gap. If this was the extent of the problem, it would be easy to fix. Indeed, the internet has already made transparent considerable amounts of information that were once opaque, and has given patients ready access to the latest in medical thinking.
  The problem is more complex. For one, the issue is not information per se but relevant and actionable information. Research suggests that successful behavioral change requires a feedback loop based on personalized data.

- Opt-out organ donation
  - A pizza today
  - Displeasure from losing Rs1000
  - Opt-out organ donation
  - A longer, healthier life
  - Pleasure from gaining Rs1000
  - Opt-in organ donation

“Common sense” may not apply

<table>
<thead>
<tr>
<th>Initiative</th>
<th>“Common sense”</th>
<th>Behavioral economics</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vary health insurance premiums based on behaviors (e.g., smoking)</td>
<td>Financial pain → disincentive</td>
<td>Annual premium adjustments are too delayed</td>
<td>Immediate, tangible benefits (e.g., monthly rebate checks)</td>
</tr>
<tr>
<td>Unhealthy behaviors should decline</td>
<td>Annual premium reductions are too intangible</td>
<td>People are incented by immediate, tangible feedback</td>
<td></td>
</tr>
</tbody>
</table>

A positive feedback loop has three steps
- It starts with giving patients information that is personalized to their circumstances. Here, health care industry can borrow a page from the banking industry, which has made huge leaps in personal financial information in simple and engaging ways.
- Helping the patients understand how this information is relevant to them.
- Show patients what choices they have based on this information and the corresponding trade-offs.
If these elements are in place, patients feel empowered to take appropriate actions – resulting in behavioral change; the cycle then repeats leading to further changes in behavior, and so on.

A typical diagnostic report

A typical diagnostic report

Resisting temptation

Some of the biggest opportunities for improving health outcomes lie in better prevention and management of chronic diseases. In these disease areas, the biggest challenge is that individuals often have trouble making the relatively simple and well-known behavioral changes — eating a healthy diet, reducing body weight, exercising regularly, drinking in moderation and stopping smoking — that could drastically reduce the incidence of chronic diseases. Why does this happen? Why do people who know that these changes will help improve their health continue to procrastinate and fail to change their behaviors? One of the answers to this puzzle is that, in many cases, our conscious intentions are not the drivers of our behavior in the moment. Resisting temptation

A redesign of diagnostic reports: Empowered patient (consumer), enhanced outcome and efficient business

A redesign of diagnostic reports: Empowered patient (consumer), enhanced outcome and efficient business

Resisting temptation

Some of the biggest opportunities for improving health outcomes lie in better prevention and management of chronic diseases. In these disease areas, the biggest challenge is that individuals often have trouble making the relatively simple and well-known behavioral changes — eating a healthy diet, reducing body weight, exercising regularly, drinking in moderation and giving up smoking — that could drastically reduce the incidence of chronic diseases. Why does this happen? Why do people who are genuinely interested in living healthy lifestyles frequently have trouble following through on their intentions? The paradox is explained by the concept of hot and cold states.

People make promise related to such behaviors in rational and logical “cold” states, but they function differently when they are in “hot” states — under the emotional sway of a tempting cheesecake or cigarette. What is truly noteworthy, though, is the extent to which people fail to appreciate how different their behaviors and preferences will be in hot states, and significantly overestimate their ability to resist temptation.

For instance, diagnostic lab reports are normally a fairly incomprehensible jumble of acronyms and numbers. Converting them into an elegant and concise presentation using color, charts and graphics, providing context, personalized information on how to interpret the results and what actions can the patient take will guide the patient much better.

A redesign of diagnostic reports: Empowered patient (consumer), enhanced outcome and efficient business

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Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business

<table>
<thead>
<tr>
<th>Technologies – to manage behaviours in hot state</th>
<th>This involves using technology to help patients remember their cold state intentions even when in hot-state. For example, an individual who is diabetic and is on a diet watch runs a higher risk of giving in to temptation when on lunch or dinner meeting (the hot state). An app which integrates with the official calendar can read such meetings and alert the individual at the right moment during the hot state.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Networks – for feedback and reinforcement</td>
<td>Chronic diseases are often referred to as “non-communicable diseases.” However, research suggests that many health behaviors and outcomes – obesity, smoking and others – can actually “spread” across social networks. Research by Nicholas Christakis and James Fowler discovered that someone's probability of becoming obese increased by 57% if a friend became obese in the same time interval. An obese friend's friend increased someone's chance of being obese by 20%, and the probability went up by 10% for a friend's friend's friend who was obese. Much of the behavioral economics research on health finds that frequent feedback increases the odds of success. For example growing number of diet and fitness programs explicitly use social media for online feedback and reinforcement.</td>
</tr>
<tr>
<td>Gamification – to create motivation</td>
<td>Games have tremendous potential to influence human behavior. We enjoy playing games – they motivate us and give us feelings of accomplishment, purpose and social connectivity. The case for using games to improve outcomes is compelling. Health interventions – particularly for managing chronic diseases – must reach people where they spend time. Games can enable this by taking away the time share from sedentary activities such as watching television, and can channel these hours to address persistent behavioural challenges such as diet, exercise and adherence to therapy e.g. Pokemon Go mania has made many couch potatoes get up and go out in search of Pokemon and burn good amounts of calories in the process. Many players have complained of sore legs because they have had to walk too much.</td>
</tr>
<tr>
<td>Contracts – to lock behaviour</td>
<td>To make contracts (e.g. gym membership) work they need to be incorporated into more holistic approaches to influence the desired behaviour. It could us use several incentives to nudge an individual to lock-in the desired behaviour (see box).</td>
</tr>
</tbody>
</table>

**Example**

Many individuals take gym membership but do not use the gym beyond few weeks and then very occasionally. To transform the intangible future benefits of exercise into tangible and immediate payoffs, an app company used weekly financial rewards. The monetary incentive incorporated the possibility of forfeiting money to leverage the power of loss-aversion bias.

Members who signed up set their commitment, stating how many days per week they wanted to exercise (the minimum being one day per week) and setting the monetary stakes they would pay if they don’t work out (the minimum per day missed).

The commitments were flexible – members had until midnight on Sunday to change their commitments for the upcoming week. Using a smartphone app, members could then check in when they go to their gyms, and the company used GPS technology and its database of thousands of gym locations to verify members’ locations. Members who did not meet their weekly pacts forfeited their monetary stakes, which were used to reward those who met their weekly pacts. The company’s formula increased the pay-out for people who committed to (and adhered to) more days per week. The program had been extremely successful, and users made it on an average to 90% of the days to which they committed.

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15. [http://www.huffingtonpost.in/2016/07/15/5-location-based-games-like-pokemon-go/, accessed on 01 August 2016](http://www.huffingtonpost.in/2016/07/15/5-location-based-games-like-pokemon-go/)
While there may not be many examples in the Indian context, going forward all health care companies will need to be in behavioral change business. Business opportunities will arise from trends discussed above, which will necessitate existing and new players to come up with business models for the behaviour change business.

For companies in health care, insights from behavioural economics will be extremely relevant for patient centric, outcomes-focused future. Companies will increasingly find themselves in the behavioural change business and it will be important for them to understand what drives patient behaviour and how can patients be nudged towards better health outcomes – for themselves and consumers at large.

<table>
<thead>
<tr>
<th>Guiding principle for behavioural change business</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core principles</strong></td>
</tr>
<tr>
<td><strong>Communicate clearly</strong></td>
</tr>
<tr>
<td>It's not what you say – it's what your patients hear</td>
</tr>
<tr>
<td><em>Empower patients with relevant, focused information</em></td>
</tr>
<tr>
<td>► <strong>Be neutral</strong>: Identifying metrics that present information in neutral manner will be critical, so that patients can make decisions that are in their best interests and based on an informed understanding of complex risks and benefits</td>
</tr>
<tr>
<td>► <strong>Use technology</strong>: Decision-support tools could elicit patients’ preferences and give them options based on underlying risks and probabilities – freeing the average individual from having to navigate the daunting math involved</td>
</tr>
</tbody>
</table>

| **Account for preferences**                       |
| Consumers being different one size does not fit all |
| *Customize your offering for different customer segments* |
| ► **Mass customize**: Adopt approaches that address wide range of individual preferences |
| ► **Segment customers by “mind-sets”** and develop products/ services for different segments |

| **Learn from behavioral economics**              |
| Behavioral economics has actionable insights for health care companies |
| ► **Learn from external experts** as behavioural economics requires creative, interdisciplinary thinking |

| **Experiment and be flexible**                   |
| There's much to learn about patient behavior. Your customers are a trove of information |
| *Continuously learn about your customers, from your customers* |
| ► While behavioural economics has been around for decades, its application in influencing patient behaviours is relatively new. So, |
| ► **Experiment and adopt flexible approach** |
| ► Leverage the opportunity to **truly understand how your customers think** |

| **Extend your business model**                   |
| The behavioral change needs entirely new business models for a patient-centric future |
| ► While proof of concept using behavioural incentive programs is easy, scaling them up in sustainable ways would require relook at the business model – how to |
| ► **Create value** |
| ► **Deliver value** |
| ► **Capture value** |
| ► Successful patient-centric business models, to varying degrees, would need to **be data-centric, behaviourally savvy, experience-focused, holistic and revenue-flexible** |
3. Bring focus on health performance and not just services

Globally in many developed countries, there is already a transformation underway on how health care is delivered and paid for, rewarding those who improve patient outcomes and do so at lower costs. As part of the process, outcomes are already being reported both at hospital and clinician level.

However, in India reporting of patient or clinical outcomes is at very nascent stage with few leading health care chains in India having voluntarily started publishing clinical outcomes in select specialities. However this situation will rapidly change in the time to come where in reporting of patient outcomes will become an undeniable imperative for at least the secondary and tertiary care providers to meet the expectations of all concerned stakeholders. Factors that shall drive the change include:

- **Patients:** Patients are more aware and they seek information. In our customer survey, more than 70% of the respondents identified “treatment success compared to other hospitals” as one of the top-three information requisites that would help them make a better choice of the hospital and doctor. Performance data will become a demand from the aware consumer.

- **Payors:** They will be direct beneficiaries, since poor outcomes increase the costs for the payors. As the health insurance penetration grows and like in other developed countries, payors will not only seek clinical performance data but also offer incentives for better patient outcomes.

- **Providers:** With increasing competitive intensity among the health care providers in mature markets in metros and other urban and sub-urban areas, *publicly reported patient outcomes will become an objective way for providers to differentiate.*

While currently there is no mandatory or regulatory need, but with payor and patient demanding it, publishing and reporting of patient outcomes will become a credentialing parameter for hospital/clinician’s reputation.

In digital age, voice of patients and their perception about hospitals and clinicians will become more public through “Tripadvisor” type patient opinion sites. It will be in provider’s own interests to formally and proactively publish health outcome information for more objective assessment by the patients rather than their choices being driven only by reported perceptions of hospital/clinician’s capabilities from patient feedbacks.

There are global case studies of these factors driving reporting of health outcomes.

### Case study 1: Clinician level outcomes reporting to improve overall quality - NHS

NHS is publicly reporting outcomes at individual physician level, an initiative unprecedented in a field that has globally resisted such transparency. The Health care Quality Improvement Partnership (HQIP), working with the Royal College of Surgeons of England, managed the release of the first national reports detailing care results from individual consultants across nine surgical specialities and one medical specialty: the first publication of its kind in the world. While clinical audits have been a part of the NHS performance management system, they weren't having the desired impact on quality of care. Thus in 2012, the NHS selected ten audits for open-access publication that would include complete data on the number of procedures carried out by consultants in England, as well as the survival rates of their patients. One of the greatest barriers to universal outcomes reporting in health care is physician culture: many doctors are uneasy about publicly reporting the results of their care, citing poor data quality and weak risk-adjusted algorithms.

**Approach to take the consultants along:** But within the NHS system, the approach of taking consultants along with them has worked wonders. HQIP asked for explicit consent before publishing the outcomes of their care, thereby giving the consultant the right to deny, throughout the process. HQIP organized open forums for clinicians to share views and ideas and corresponded openly about the progress of the project. Over 90% of the consultants contacted responded and 99% of those consented to reporting of their outcomes data. Most clinicians recognized how patients could benefit from transparency of information. Releasing results for each individual consultant also provides more precise feedback for how each can improve the care they give.

**Results:** Auditing and open publication of outcomes data unequivocally gives rise to higher quality care for patients. Following the first unofficial cardiac surgery publication of consultant outcomes in 2005, vast improvement in mortality rates has been seen.

*Source: NHS Breaks Barriers: Public reporting of individual physician outcomes; ICHOM*
Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business

Reporting of health outcomes will herald a much larger change since “What gets measured and reported gets managed.” Care providers will have to explore ways to improve the patient outcomes, and this will lead to another wave of transformation to continuously improve patient outcomes. This will include providers:

- **Adopting advance technology tools** - Artificial intelligence based decision support systems, system driven treatment protocol and good clinical practice compliances.
  
  For example, one such AI tool is IBM’s Watson, which is currently being used by oncologists. With 130 or so new research papers on oncology published daily, it becomes an impossible task for an oncologist to keep abreast of latest thinking and treatment protocols. But powerful, well curated IA systems can process millions of such research pages, combine with patient's health, condition and genetics information and come up with treatment recommendations including relative pros and cons of each.

- **Use knowledge management tools** - to share clinical learnings and good practices: currently we find leveraging of knowledge within their own network highly suboptimal and an area of neglect among most providers within the country.

**Case study 2: Payment model incentivizing better outcomes - Medicare USA**

While regulatory pressures have seen outcomes reporting in NHS, USA market has seen a different set of forces drive outcomes reporting. Though reporting of outcomes is not mandated by any national regulatory body, payor forces and accreditation requirements have made outcomes disclosure a provider wide practice. Payors have designed reimbursement models incentivizing better care outcomes:

- Re-admission reduction policy: As required by the Patient Protection and Affordable Care Act of 2010 (PPACA or Obamacare), hospitals that have excess re-admissions for selected conditions (acute myocardial infarction, heart failure and pneumonia) will have their DRG payments reduced. The penalty is capped at 1% of a hospital’s base DRG payments in 2013 and will increase to 3% by 2015.

- Hospital Quality Reporting Program: All hospitals empanelled under Medicare are required to report annually on 45 quality indicators, out of which some are clinical outcome measures, e.g., 30 day mortality rates for selected conditions. Failure to report measures attracts a penalty of up to 2% of base DRG payments.

**Source** - Centres for Medicare & Medicaid Services

**Case study 3: Payment model incentivizing better outcomes - Medicare USA**

In 2014, the Centers for Medicare and Medicaid Services (CMS) released physician quality performance information on a set of quality measures assigning star quality ratings as indicators of performance (www.medicare.gov/physiciancompare)
4. Improving access to provide “Sick-care to All”

Health care remains the biggest reason for overnight domestic travel

- Recently released results from the NSSO survey highlight that, health care (65%) is the topmost reason for overnight domestic travel in India. The disparity between urban and rural India is clear. Health appeared as the second reason (42%) to leisure in an urban area, but the top-most reason by a healthy margin (72%) for rural areas. This also highlights the skew in availability of health care infrastructure and talent.

<table>
<thead>
<tr>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>76%</td>
<td>57%</td>
<td>65%</td>
</tr>
<tr>
<td>23%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>1%</td>
<td>42%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Source - Key indicators of domestic tourism in India; NSS 72nd round, Pg 17-19

- Even our survey revealed that a little more than 50% of the respondents reported having to travel outside of their town/city to access in-patient hospitalization due to lack of quality facilities

Respondents who had to travel out of their town/cities for in-patient hospitalizations

Health care infrastructure

Increasing demand for health care services over the next decade will drive the need for building adequate physical and human resource infrastructure on the supply side. According to our estimates, for an hospitalization rate of 5.5% (increase from current rate of 4.5%), average occupancy of 72% and ALOS of 8 days, 6.4 lacs additional beds will be required over the next one decade. Even assuming INR2.5 million investment per bed at current value (mix of secondary and tertiary care beds), creating this infrastructure will require an enormous investment of US$22 to 25 billion over the next 10 years.

Over the same decade, around 2 lac specialist doctors will be required for secondary and tertiary care services. To ease the situation on shortage of primary care doctors, the Central Government has proposed to start a one year course for AYUSH doctors (around 6.86 lacs) and allowing them to practice modern medicine. Given the stiff opposition from non-AYUSH doctors, there has not been much progress on this front.

The challenge of building large physical and clinical infrastructure and quantum of investment required is significant and the lead time on effort to pragmatic impact will require at least a decade. Many medium and long-term initiatives have been highlighted in our earlier reports and by many other committees. Those recommendations still remain valid and are not deliberated in this report.

So this report is focused on short-term initiatives which can have a significant impact in bridging the supply demand gap:

1. **Leverage technology for remote health care to address the skew in access and distribution of health care expertise**

2. **Maximize utilization of available asset through public private partnership in health care and improvement in ALOS.**

   The Government could make optimal use of the existing infrastructure. Since ALOS in public facilities in general is much higher as compared to private health care facilities (ALOS of 4 to 6 days), a concentrated effort to decrease ALOS by at least one day in next five years could release around 75,000 hospital beds, which will be around 13%-15% of the additional bed capacity required over the next one decade, in turn avoiding capital expenditure of around US$3 billion

**1. Telemedicine – bridging the access gap**

As we go from major cities to small towns, the access to specialists reduce for two reasons:

- Active demand for a specialist service may not be enough for specialists to be present in each town
- Many specialists may not find relocating to and working in smaller towns aligned to their life’s aspirations. However, at the same time, they may be willing and have capacities available to consult additional number of patients.

---

There have been many attempts to bridge the gap particularly related to access to specialist advice with limited success. New AIIMS campuses that have been set-up in across six cities have found it difficult to fill faculty positions. Out of 1,300 posts advertised, only 300 could be filled.17

Technology, potentially, can bridge this gap by aligning the interests of the patients and specialists and holds a big promise to alter the landscape of Indian health care system.

Telemedicine in India is not new and has evolved over a period of time overcoming multiple challenges such as that of technological limitations (connectivity speed, quality of telemedicine infrastructure) and making health care providers appreciate the attractiveness of the concept with active support from the government. Telemedicine also has been a core focus area under the Government’s “Digital India” program. As a result, according to national health portal18 there are many active telemedicine initiatives delivering a wide gamut of service (refer box)

<table>
<thead>
<tr>
<th>Few examples of telemedicine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of service</strong></td>
</tr>
</tbody>
</table>
| Tele radiology services across various modalities including CT, MRI, PET-CT, Ultrasound etc. | Need served:  ▶ Lack of trained radiologists  
Technology solution:  ▶ Hardware/software for transferring radiology images to central team of radiologists, who review and develop reports |
| Tele-consultation services directly to patients or to other doctors | Need served:  ▶ Lack of specialists (and general practitioners) especially in smaller towns  
Technology solution:  ▶ Hardware/software and network for Video Consultation  
▶ Facility to upload reports and earlier prescriptions  
▶ Clinical decision support system with the central team of doctors (in case of GP consult) |
| Tele-ophthalmology: Going to the rural areas with equipment for testing & for real-time consulting with remote specialists | Need served:  ▶ Lack of specialists and equipment especially in rural areas and smaller towns  
Technology solution:  Hardware/software for Video Consultation & other medical equipment for basic ophthalmology diagnosis |
| e-ICU services | Need served:  ▶ 24x7 monitoring system designed to remotely treat critically ill patients in ICU  
▶ Overcoming shortage of critical care specialists  
Technology solution:  ▶ eICU setup - Electronic medical records, audio visuals, alert systems |

For telemedicine to play a transforming role and number of participants offering such services to increase manifold, few key issues would need to be addressed to make these models sustainable and commercially attractive

### Key issues

<table>
<thead>
<tr>
<th>Mind-set</th>
<th>Potential solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>In area of tele-consult, there are two categories of mind-sets which challenge the acceptance of the solution:</td>
<td>• Evolve a model where the local doctors have a meaningful role to play and their image in front of their patients is maintained. E.g. through training them on diagnosis of particular clinical area</td>
</tr>
<tr>
<td>► <strong>Mind-set of the doctor:</strong> Doctors at remote centres often feel an erosion of their competence in eyes of their patients if teleconsultation is done. And since doctors or the health care staffs at the consultation centre play a major role in explaining the concept to the patient and making them comfortable with this form of remote consultation, engaging them effectively is extremely important - “If doctor is ready, patient will be ready”</td>
<td>► Establish patient trust</td>
</tr>
<tr>
<td>► <strong>Patient to doctor / specialist doctor:</strong> It could be for second opinion or specialist advice on a case. This would normally be done in presence of a local doctor. Here the conceptual acceptance of the telemedicine solution by the patients is critical</td>
<td>• Engage local trusted doctors, individuals or reputed institutes or government’s own participation</td>
</tr>
<tr>
<td>Till the time doctor physically examines the patient, the patient may not be satisfied</td>
<td>• Establish accreditation and evaluation framework for standard of care and technical standards, which need to be objective and undertaken by independent third parties, especially for cases where the entity providing remote advice is not well established</td>
</tr>
<tr>
<td>There is a tendency of the patients to avoid taking proper and timely care of their health requirements. Individuals may not be willing to pay specialist consultation fees till the condition becomes critical and then their willingness to rely to remote consultation could be low</td>
<td>• Model could engage remote partners who excel in different specialities</td>
</tr>
</tbody>
</table>

### Legal and safety issues

- **Confidentiality and legal responsibility** under medico legal rules for telemedicine require clearer definition. For direct consultation, it is easy to fix responsibility but not in case of virtual consultation

- **Data security:** Telemedicine requires health information to be digitally maintained and shared across digital network implying need to strengthen data security

### Commercial model

- Telemedicine has largely evolved in a non-profit earning model with use of grants and as a complementary marketing activity by large hospitals to establish their brand presence and attract in-patients.

- However, for the growth of telemedicine as a solution to address access issues, it is important to incentivise all the stakeholders involved in terms of who will bear the costs of infrastructure, operating costs and how the revenue will be shared so that it is affordable to the patients but also sustainable over a longer period of time

- This will also incentivize participating specialist doctors to devote sufficient time

### Competence

- Profitability of such telemedicine solutions require individuals with multi skill – ability of handle technology solutions, have medical knowledge, patient centricity. Even at specialist’s end, a comfort need to emerge with well-defined protocols on how to effectively tele-consult

- Linguistic diversity becomes a major barrier in a way of a patient in one region being able to talk to a doctor in another region

- Since investment required for setting up telemedicine consultation centre can go up to INR 5 lacs which could be a big amount for a local entrepreneur, the stakeholders involved can explore tie-ups for financing and EMI options

- Establish health information exchange with proper access and control mechanism in place to securely maintain and exchange patient health related information

### Evolve models for PPP in telemedicine: e.g. government setting up telemedicine consultation centre in public health units (e.g. PHC and CHC, Citizen Service Centres) and engaging private specialists for remote advise

- Enhance revenue streams for local partners by providing point of care diagnostic devices

- Develop technology which is easily usable, has a well-qualified human interface to interact with in multiple languages
2. Promoting public private partnership in health care

The concept of PPPs is based on collaboration and a reciprocal relationship between participating entities. The Government and the private sector attempt to work towards a common cause while protecting their individual interests. However, more often than not, they have differing interpretations and motives for their participation.

“Coming Together is the Beginning; Keeping Together is Progress; Working Together is Success”

The aim of achieving equitable and adequate health care for the public has also often been emphasized. However, inadequate funds and lack of optimal utilization of existing assets have acted as barriers in realizing this objective. The private sector has been at the forefront of providing health care services; however, these are limited to those who have the capacity to pay. Moreover, for reasons of sustainability, the private sector has shown limited interest in investing into health care facilities beyond tier-I cities. Therefore, it would be appropriate to combine the strengths of the public and private sectors to develop a self-sustainable model for health care in India.

To rapidly expand health care services, it is necessary to supplement public investment by private participation in the form of public private partnership (PPP) aimed at delivering quality health care at affordable costs. However, PPP in health care has failed to take-off in any meaningful scale due to:

- Absence of national framework to engage private players in health care
- Health being a state subject, lack of clarity on institutional arrangement to implement and manage PPP projects

We can learn from infrastructure sector which has seen many successful PPP projects. The learnings point to three key ingredients:

- **Robust institutional arrangement:** Clarity on how the PPP arrangement will work and role and responsibility of each party involved. It has been observed that correlation between robust institutional arrangement for PPP and number of PPP transactions is high.
- **Competitive bidding:** PPP program for infrastructure by design was transparent and non-discriminatory. Judicial challenges to the process have been few and far between, and the process and its perception is that of fairness.
- **Viability gap funding:** and its related institutional process was an innovation that pump primed infrastructure PPP

**Outline of proposed PPP architecture**

- **Strong philosophy of partnership:** equity, trust and autonomy
- Operational autonomy to be provided to the partner providing managerial services.

---

Normal return on equity to the private partner with upsides for efficiency (e.g. for infrastructure sector, the IRR is ~ 16%)

Independent institution to envision, manage and oversee the program at the national level

**Governance and leadership**

- National PPP policy that unambiguously commits itself to PPP in the sector — program to be created and funded in “mission mode” to achieve focused action and results
- Well-defined regulatory and governance framework (e.g. model concessionaire agreement, quality assurance mechanisms, outcome monitoring mechanism)
- Penal and termination clauses for contravention of key terms and conditions

**Financial viability – mobilization of resources**

- Viability gap funding and clear definition of the institutional processes required
- Payment capacity of patients enhanced for services availed through health insurance
- Mechanism for augmenting government funding — cess/surcharge/health tax levied for fiscal funding of programs

**Institutional arrangements ranging from identification to operationalization**

- Identification of PPP projects
- Initiation, negotiation, monitoring of preparation and execution of agreements
- Flow of funds from the government to private parties

**Transparency, accountability and performance benchmarks**

- Definition of Standards of Quality (SOQs) for adherence and effective monitoring
- Evaluation of private health care providers by an objective/independent agency
Way forward for operationalizing the proposed PPP architecture

- Creation of national commission for defining “National PPP Policy on Health care” with members from all concerned union ministries
- Articulation of vision for the commission through deliberations with the members from concerned stakeholders viz. private health care providers, insurance companies, medical associations
- Definition of implementation framework by national commission
- Selection of pilot states based on poorest health care outcomes
- Defining of tariff structure, based on standard diagnostic protocol and standard treatment protocol depending upon:
  - Standard definition of disease and procedures
  - Complicating factors – severity and co-morbidities
  - Location – Tier 1, 2, 3 cities & geographical regions (North, East, West and South)
  - Quality of care offered at the hospital
  - Robust costing framework and standards of service
  - Creation of information systems for measuring pre and post implementation impact
  - Bidding for “circles” by insurance companies based on lowest premium for identified set of ailments
- Creation of a monitoring agency for:
  - Defining minimum infrastructure, manpower and technology standards for accrediting participating hospitals
  - Yearly renewal of certification for participating hospitals

Both private health care providers and the public health system have been playing an important role in the delivery of care to the masses. Private players today account for nearly 60% of all in-patient care\(^1\), contributing to more than 70% of the bed capacity expansion in the last decade. At the same time, the public health system, which accounts for ~40% of the total bed capacity, is underutilized with a significant infrastructure deficit.

The efficiency agenda for the health system is driven by two key requirements underpinning this need:

1. Urban India is witnessing rapid private sector-led capacity expansion, resulting in high competitive pressure. It is an undeniable fact that private health care providers are in the “business of health care”. And as any private investor, they demand efficiency and expect a fair return on their investment. Given the longer gestation of health care projects, investors expect a project IRR of 15% to 18%, similar to the post-tax IRR expectations of 14% to 18% in other infrastructure projects such as road and power. For a typical hospital project to have an IRR of 18%, cash flow has to be positive before the third year of operation and EBITDA in the range of 23% to 25% in the fourth to fifth year of operations. However, in reality, very few assets are able to achieve and sustain the desired financial performance.

2. The public health system is plagued with scarcity of capacity. It is the first port of call for the middle-middle and lower-middle classes of the society for whom the high costs of private health care are prohibitive. Thus, ensuring effective utilization of available capacity must be a key imperative for the resource constrained public health system.

To make the business of health care healthy, hospitals would need to do three things right:

1. Plan hospital projects to be successful
2. Achieve optimum operational efficiency
3. Sustain operational efficiency

In this chapter, we deliberate on these three themes, exploring what could go wrong and what hospitals can do.
Hospital projects require careful planning and execution so that the ones that get commissioned have better chances of being successful. The following are a few of the common pitfalls that hospitals encounter and the ways to overcome them. Please note that the assumptions provided below relate to multi-specialty tertiary care hospitals.

1. Unrealistic business plans

Most business plans are drawn on emotions and ambitions of the promoter group and have biased capex decisions. The planned capital expenditure per bed far exceeds the revenue per bed that hospitals plan to earn in steady state. If capital expenditure per bed exceeds revenue per bed by 10%, project IRR gets strained by 40%-50%, making the project unviable. This issue becomes even more relevant in planning hospitals in tier 2 cities, where revenues per bed are 30%-50% lower than in metro cities. The funding of over-optimistic business plans leads to the creation of financially stressed assets.

The importance of a robust data-driven business planning exercise, which takes an outside-in perspective as well and leverages market data, is often overlooked because of the lack of readily available organized information.

What should be done?

To avoid biases creeping into the business plan, a transparent, multi-stakeholder planning and review approach should be followed. Focused primary research to understand the local market landscape and generation of credible insights are keys to testing the practicality of the key assumptions of the business plan and its achievability in the context of the hospital’s capability and positioning.

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**Key dimensions of market assessment**

<table>
<thead>
<tr>
<th>Catchment analysis</th>
<th>Demand analysis</th>
<th>Supply analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment definition</td>
<td>Capacity and occupancy trends</td>
<td>Competitive intensity (public and private)</td>
</tr>
<tr>
<td>Size of catchment and population trends</td>
<td>Hospitalization rate</td>
<td>Competitor profiling i.e. Operating and financial performance of peers</td>
</tr>
<tr>
<td>Quality of catchment i.e. Socio-economic variables (e.g. income, demographics, real estate trends)</td>
<td>Disease prevalence trends</td>
<td>New hospitals and beds likely to come up</td>
</tr>
<tr>
<td>Location attractiveness (population of local catchment, connectivity etc.)</td>
<td>Drain-in and drain-out trends (from/to other catchments)</td>
<td>Availability of clinicians and prevalent engagement models</td>
</tr>
<tr>
<td></td>
<td>Specialty wise market size and market share</td>
<td>Entry barriers in acquisition of doctors for new entrants - extent of concentration of business with few clinicians</td>
</tr>
<tr>
<td></td>
<td>Pricing</td>
<td>Sales and marketing initiatives of competition</td>
</tr>
<tr>
<td></td>
<td>Payor mix and insurance penetration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Treatment gap and sizing of potential - Indexing of demand versus similar market</td>
<td></td>
</tr>
</tbody>
</table>

---
As a quick check, the revenue planned to be earned per bed for a fully utilized hospital should match or be higher than the capex per bed. To arrive at reasonable revenue-per-bed assumptions, a structured evaluation that answers the following questions should be done:

- Who would the target patient groups be?
- What price points can the market afford?
  - For instance, a 10% decline in the ARPOB realization against the plan could reduce the project IRR by one-third and EBITDA by one-sixth in the year of maturity (i.e., the sixth year of operations)
- What should be the appropriate hospital configuration – specialties and clinical programs to be offered, number and category of beds, phasing of the project etc.?
- What would be the operating model for key revenue-generating services (in-house or out-sourced)?

<table>
<thead>
<tr>
<th>Levers</th>
<th>ARPOB/day</th>
<th>ALOS</th>
<th>BOR</th>
<th>Footfalls</th>
<th>OPD ARPP</th>
<th>Capex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Specialty mix, type of care</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Room mix</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pricing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Marketing strategy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor engagement model</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

2. Cash flows not planned effectively

Cash flow planning in many cases is done on an ad hoc basis, which leads to cash imbalance in the system. The key reasons for cash flow mismanagement are failing to schedule loss funding in the project cost, not incorporating the impact of delay in receivables from government and institutional payors on the working capital cycle, planning fixed operating expenses as a step function and not aligned to capacity ramp up, and frequently changing capital expenditure decisions on equipment driven by clinicians. This results in a vicious cycle of cash constraints, thereby impacting scheduled capital expenditure and operational expenses which in turn impacts the financial performance and subsequently cash generated.

What should be done?

- The business plan must objectively assess the quantum and period of operational loss and account for it in the funding plan. It is common to have operational losses in the first two years and they can be up to 10%-20% of planned capital expenditure.
- The working capital impact of delayed receivables should be accounted for appropriately to firm up the revenue cycle plan.
- Fixed operating costs, especially manpower and utilities, should be planned commensurate with capacity ramp up to ensure that the timing of operational leverage is correct.
- All capital equipment decisions should solicit early involvement of clinicians supported by a business case to manage any cost impact due to changes in specifications.
3. Projects are not realistically financed

At times, promoters fail to reasonably estimate project costs and funding requirements. The equity contribution at times also tends to be debt-financed through loans in the promoter’s personal capacity, which puts further burden on the cash flow. Financing benefits accruing from the infrastructure status are also not availed because of lack of knowledge on the promoter and the banker’s parts.

**What should be done?**

The suggested debt-equity ratio is 65-35 for capital expenditure, excluding land. The capital expenditure, loss funding, interest obligations and pre-operating costs should be incorporated in estimating the total project cost and determining the funding requirements. For a hospital project, which requires two years for construction and two to three years for cash flow to turn positive, debt should be of a longer duration with a moratorium period matching the time it takes to commission the hospital. Hospitals should avail the financing benefits of the infrastructure status: eligibility for longer term loans (12 years), longer moratorium period for principal repayment (3-3.5 years) and concessional interest for the commissioning period.

4. Projects are not executed on time

At times, projects are delayed because of cash flow issues arising out of financing not being appropriately tied up, poor project management and delays in securing operating licenses. For instance, a delay in construction by one year could have an impact of up to 2%-3% on the project IRR.

**What should be done?**

Business plans should assume up to 2-2.5 years of construction. Project finances need to be properly tied up before the construction commences. Project execution should be professionally managed, either by a robust internal project management team or outsourced to external project management consultants, to manage time and cost over-runs.
**Key sensitivities to test the impact of change in cost and revenue drivers on project return**

**Base case assumptions**
- 350-450 bed multi-specialty tertiary care provider in a tier I city
- Commissioning period of 2-2.5 years
- Debt: Equity ratio of 60:40
- Project IRR of 18%
- EBITDA positive in 2nd year of operations reaching 22% on maturity (6th year of operations)

### ARPOB

<table>
<thead>
<tr>
<th>ARPOB as a percentage of CAPEX/ bed</th>
<th>Project IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>18%</td>
</tr>
<tr>
<td>0.95X</td>
<td>15%</td>
</tr>
<tr>
<td>0.9X</td>
<td>12%</td>
</tr>
</tbody>
</table>

### Operational expenditure

<table>
<thead>
<tr>
<th>Operational expenditure</th>
<th>Project IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>18%</td>
</tr>
<tr>
<td>1.1X</td>
<td>8%</td>
</tr>
</tbody>
</table>

### Occupancy CAGR after ramp-up

<table>
<thead>
<tr>
<th>Occupancy CAGR after ramp-up</th>
<th>Project IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>10%</td>
<td>7%</td>
</tr>
</tbody>
</table>

### Hospital commissioning period (Years)

<table>
<thead>
<tr>
<th>Hospital commissioning period (Years)</th>
<th>Project IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>X + 1</td>
<td>15%</td>
</tr>
</tbody>
</table>

### CAPEX

<table>
<thead>
<tr>
<th>CAPEX</th>
<th>Project IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>18%</td>
</tr>
<tr>
<td>1.1 X</td>
<td>16%</td>
</tr>
</tbody>
</table>

**Source:** EY Analysis
2. Achieve optimum operational efficiency

Mounting health care spending is entailing cost containment measures globally

Globally, health care expenditure as a proportion of GDP is increasing, driven by the health needs of the aging population, increasing prevalence of chronic/lifestyle disease, emerging-market expansion, and treatment and technology advances. With rising expenditure, the pressure to reduce costs is also intensifying and cost containment has become a key agenda for most economies.

Health care providers, governments and other stakeholders world-wide are taking cognizance of the rising health care costs and introducing broad reforms to cut costs and improve the quality of health care delivery.

### Total Healthcare expenditure as a percentage of GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>2014</th>
<th>2004</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>The US</td>
<td>17.1%</td>
<td>15.1%</td>
<td>1.3%</td>
</tr>
<tr>
<td>The UK</td>
<td>9.1%</td>
<td>8.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Japan</td>
<td>10.2%</td>
<td>8.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Brazil</td>
<td>8.3%</td>
<td>7.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>China</td>
<td>5.6%</td>
<td>4.7%</td>
<td>0.9%</td>
</tr>
<tr>
<td>India</td>
<td>4.7%</td>
<td>4.2%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Source: WHO database, World Bank database

### Global cost-containment measures:

- Reimbursement model: fee for services → value-based payment
- Emphasis on value-based health care delivery
- Increasing use of generics and price regulation of drugs
- Incentives to optimize consumption for providers
- Focus on prevention

X% Difference between CAGR of Total healthcare expenditure and CAGR of GDP at market prices
Changing external environment is putting pressure on provider’s profitability

Governments and payors globally are struggling to keep cost in the health care system down; similarly, health care providers in India too are facing the margin squeeze.

**Revenue-side and cost-side pressures straining margins**

- Pricing: fee for service → fixed price packages
- Payer mix: individual → institutional
- Government sponsored subsidized health schemes

**Peers**

- Competitive pressure driving ‘Patient economics’

**Policy**

- Price controls on drugs and medical devices intensifying

**Revenue**

**Provider margin**

**Costs**

- Spiralling input costs
The following key changes in external environment are increasing the margin pressure on hospitals:

**A. Pricing pressures**

- Shifting pricing power from individual to institutional payors with high bargaining power leading to lower negotiated prices
- Change in pricing models from reimbursement based on “fee for services” to “episode-based payment,” which is at a significant discount
- Competitive pressures with increasing hospital bed density limiting pricing flexibility

The following key changes in external environment are increasing the margin pressure on hospitals:

**A. Pricing pressures**

- Shifting pricing power from individual to institutional payors with high bargaining power leading to lower negotiated prices
- Change in pricing models from reimbursement based on “fee for services” to “episode-based payment,” which is at a significant discount
- Competitive pressures with increasing hospital bed density limiting pricing flexibility

<table>
<thead>
<tr>
<th>Population coverage</th>
<th>Changing payor mix: individual to institutional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial insurance</td>
<td>4% 6% 12%</td>
</tr>
<tr>
<td>Employee schemes</td>
<td>5% 6% 9%</td>
</tr>
<tr>
<td>Government schemes</td>
<td>16% 25% 45%</td>
</tr>
<tr>
<td>Uncovered population</td>
<td>75% 63% 34%*</td>
</tr>
</tbody>
</table>

**Sources:**

- IRDA Annual report 2010-11, 2014-15 (Commercial insurance)
- National Health Profile (NHP) 2015 (Employee schemes)
- RSBY Government website (Government schemes)
- State sponsored health schemes – individual state health websites (Government schemes)
  - AP, Telangana, Gujarat, TN, Kerala, Karnataka, Chhattisgarh, Jharkhand, Goa, Maharashtra, West Bengal, Rajasthan, Uttarakhand
- Census, 2011
- EY analysis

**Assumptions:**

- Coverage under individual state health schemes adjusted for the overlapping BPL families also covered by RSBY
- RSBY, state government targets would be achieved by 2021

*Uncovered population to be much lower if universal health coverage as part of the draft National Health Policy scheme (2015) gets implemented*

**B. Price controls**

- Price controls on drugs and medical devices (impending) are reducing the margin for hospitals.
  - The National List of Essential Medicines (NLEM) constitutes 820 formulations and covers 17% of the pharmaceutical market. Around 30% of total drugs spend of a typical multi-specialty hospital is now under the NLEM. The NLEM is expanding and recently included bare-metal and drug-eluting stents in its price list.

<table>
<thead>
<tr>
<th>Price capping of drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPCO:1995</td>
</tr>
<tr>
<td>DPCO: 2013</td>
</tr>
<tr>
<td>DPCO: 2016</td>
</tr>
</tbody>
</table>

Source: repaindia.nic.in
C. Spiraling input costs

- Input costs are increasing, driven by an uptick in the prices of drugs and medical devices, as well as in wages and the cost of utilities.

### Input costs rising across the cost components

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Percentage Change</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>30 - 35%</td>
<td>Y-o-y price increase in drugs and medical devices</td>
</tr>
<tr>
<td>Manpower</td>
<td>40 - 45%</td>
<td>Wage inflation (6%-7%), High attrition and replacement cost</td>
</tr>
<tr>
<td>Replacement capex</td>
<td>4 - 5%</td>
<td>5% gross block reinvested every year to refresh technology</td>
</tr>
<tr>
<td>Power/Fuel</td>
<td>4 - 5%</td>
<td>7%-10% increases in electricity rates and overheads</td>
</tr>
<tr>
<td>Others</td>
<td>8 - 10%</td>
<td></td>
</tr>
</tbody>
</table>

Source: EY analysis

Minimum wages for ward boys, staff nurses and junior doctors increased across major cities at a CAGR of 6%-7%.

Faced with the prospect of containing health care costs and addressing financial vulnerability, driven by external changes, providers are at a turning point where increasing efficiency has become an existential concern.

Since manpower and material constitute 70% to 80% of the total operating expenditure, a comprehensive efficiency-improvement exercise would entail optimization across man and material.

Furthermore, improvement in the throughput of fixed assets (beds, labs, procedure rooms etc.) would bring in machine efficiency.
With rising manpower cost and increasing scarcity of health care workers, manpower productivity has remained an area of concern for most health care management teams.

Key barriers to productivity improvement in manpower are:

1. **Rule-of-thumb staffing instead of an information-based approach**

   Traditionally, workforce planning in hospitals has been done on the basis of the rule of thumb, using industry-wide established staffing ratios to guide staffing in individual departments. However, continuous changes in the hospital environment, such as improvement in hospital design, introduction of technology and streamlining of processes over time, necessitate a relook at the traditional staffing principles. Limited efforts have been made to review the staffing ratios on the basis of scientific first principle evaluation of work load and thus contextualize staffing principles in each hospital.

2. **Limited leverage of existing workforce**

   Limited efforts have been made to leverage the existing workforce by empowering the ground level staff through role development and up-skilling. This would significantly benefit the higher-skilled staff by reducing their effort on routine activities and helping them focus on core patient care activities. For instance, senior and high-performing nurses can be efficiently leveraged in wards for the supervision of two or three staff nurses along with direct administration of a few patient beds depending on shifts and acuity. This would ensure productivity improvement and capacity release of nursing supervisors, which, in our experience, have been to the tune of 20% to 30%.

   Alignment of the right skill to a task is another way of improving leverage. For instance, 15% to 20% of a staff nurse’s time is spent in activities such as bed-making and patient bath, which can be taken care of by patient assistants for most patients. Limited adoption of emerging tools and technologies such as RFID, robots and intelligent EHRs also acts as an impediment to productivity improvement.

3. **Perceived concerns around quality and patient experience due to change in staffing**

   Wherever improvement efforts have been made, management often gives in to the stiff clinician resistance with concerns around the perceived impact on quality and patient outcomes if traditional staffing principles are altered. However, there exists an objective method of testing out the applicability of an alternate staffing model through pilots to address the perceived impact, which is merely based on gut feeling and not an objective assessment.

4. **Limited management focus**

   A key challenge in driving operational efficiencies is a strong focus on growth and revenue, ignoring departmental efficiency. This is primarily due to the way hospital departments are organizationally structured and the way incentives are aligned. As a result, concerns at the top management around manpower productivity do not get translated to the managerial level to drive efficiency improvement.

   Departmental heads also over-provision staff to create a cushion for attrition and absenteeism, leading to ballooning of costs. At least in a few situations, smarter staffing principles that account for a dynamic reliever pool can be deployed to manage such sudden demand for resources.

### Typical staffing distribution in tertiary care hospitals

<table>
<thead>
<tr>
<th>Area</th>
<th>Headcount distribution</th>
<th>Typical ratio (Headcount per Occupied bed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housekeeping and security</td>
<td>25% - 30%</td>
<td>1.3 - 1.7</td>
</tr>
<tr>
<td>Nursing</td>
<td>30% - 35%</td>
<td>1.7 - 1.9</td>
</tr>
<tr>
<td>Paramedics and techni-cians</td>
<td>~15%</td>
<td>0.7 - 0.9</td>
</tr>
<tr>
<td>Residents and registrars</td>
<td>~8%</td>
<td>0.3 - 0.4</td>
</tr>
<tr>
<td>Support staff</td>
<td>~15%</td>
<td>0.6 - 0.8</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>4.6 - 5.7</td>
</tr>
</tbody>
</table>

Source: EY analysis, Industry discussions

The staffing ratios are only indicative and vary based on multiple factors such as hospital layout, bed mix, market positioning and clinical services provided.

Increasing the output per unit of input should be the goal of health care providers, and this can be done by focusing on three key aspects that drive productivity in hospitals:

- **Capacity**: Alignment of allocated manpower with work demand
- **Composition**: Right roles and appropriate staffing structure
- **Capability**: Skill and will of the hospital staff, organizational performance

Our experience of working with multiple health care clients indicates that there exists a value unlocking potential of 15%-20% if workforce planning is done in a way that would maximize efficiency.
### Framework for manpower productivity improvement in Hospitals

**Dimensions**

<table>
<thead>
<tr>
<th>Demand</th>
<th>Supply</th>
<th>Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the work load optimized?</td>
<td>Is the staff supply aligned to work load?</td>
<td>Are the roles appropriately performed?</td>
</tr>
</tbody>
</table>

**Pitfalls**

<table>
<thead>
<tr>
<th>Wastes and non-value adding activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Transportation</td>
</tr>
<tr>
<td>• Multiple jobholding</td>
</tr>
<tr>
<td>• Waiting</td>
</tr>
<tr>
<td>• Motion</td>
</tr>
<tr>
<td>• Over-production</td>
</tr>
<tr>
<td>• Over-administration</td>
</tr>
</tbody>
</table>

**Typical improvement themes**

- Use lean principles to identify and eliminate wastes
- Reduce process redundancies
- Smoothen inter-departmental co-ordination
- Implement preventive measures to avoid errors/complaints
- Ensure efficient hospital design
- Improve efficiency of value adding activities by increasing the usage of tools and technologies*

- Supply and demand not always aligned leading to staff idle time
- Adopt a data-driven approach for staffing
- Plan staff deployment in alignment with intra-day load variation
- Staggered deployment
- Pooling/centralization
- Implement acuity-based staffing

- Role overlaps and role redundancies (design overlap/operational overlap)
- Clearly define roles for each staff group and provide clear segregation in case of potential overlaps
- Address operational overlaps through clear communication and removal of informal hierarchies
- Increase technological intervention to reduce role redundancies

**Case in point**

- **Housekeeping:** "Between the case" Operation Theatre (OT) cleaning: Lean principles to identify and eliminate waste
- Optimization of process flow
- Elimination of redundant activities
- Usage of right tools (eg., Caddy kits)
- Porter control system: Technology enablement
- RTLS through smartphone/Wi-Fi based porter management as against the traditional walkie-talkie system

- **Nursing:** Acuity based staffing in ICUs
- Staffing based on dynamic "nursing care requirement" tool
- Labs: Temporal load based staffing
- Alignment of staff deployment to intra-day variation of workload
- Residents: Pooling of resources with similar activities
- Forming a common pool of residents across different specialties for efficient utilization

- **Patient Assistants (PA):** Clear role definition
- Elimination of role overlaps of PAs with porters and cleaning staff through clear role definition and addressing informal hierarchies

---

*Barcoding, RFID, RTLS, EPR, Digital records, Infection control and detection devices, Self-service kiosks*
<table>
<thead>
<tr>
<th>Structure</th>
<th>Skill</th>
<th>Will</th>
<th>Organizational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the staffing structure optimal?</td>
<td>Is the staff appropriately skilled?</td>
<td>Are the staff motivated enough to improve performance?</td>
<td>Is the department/staff performance objectively evaluated?</td>
</tr>
<tr>
<td>▶ Multiple hierarchical layers of staffing</td>
<td>▶ Skill-task alignment lacking</td>
<td>▶ No incentive for department heads to drive efficiency improvement</td>
<td>▶ No objective staff assessment process</td>
</tr>
<tr>
<td>▶ Low span of control leading to sub-optimal staffing structure</td>
<td>▶ Variability in routine processes</td>
<td>▶ No staff motivation</td>
<td>▶ No departmental performance metrics indicating efficiency of the department</td>
</tr>
<tr>
<td>▶ Ensure alignment of span of control to the complexity of the area</td>
<td>▶ Align skills to the task (low-skill tasks are done by the lower-skilled staff)</td>
<td>▶ Initiate changes in the behavioral treatment of staff to instill a sense of pride and ownership</td>
<td>▶ Implement an ownership-based structure where individual department head owns department outcomes (KPI alignment)</td>
</tr>
<tr>
<td>▶ Optimize the supervisory layer</td>
<td>▶ Define process standards (SOPs and techniques)</td>
<td>▶ Institute a reward and recognition process for the best performers</td>
<td>▶ Define performance metrics and periodically monitor them</td>
</tr>
<tr>
<td>▶ Improve supervisory effectiveness aided by assessment tools and checklists</td>
<td>▶ Train staff for adoption of common process standards</td>
<td>▶ Incentive changes in the behavioral treatment of staff to instill a sense of pride and ownership</td>
<td>▶ Use the metric as a feedback to fine tune staffing and improve processes continuously</td>
</tr>
<tr>
<td></td>
<td>▶ Standardize internal best practices and introduce learnings from other industries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Manpower**

- **Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business**

- **Case in point**

- **Structure**
  - Is the staffing structure optimal?
    - Multiple hierarchical layers of staffing
    - Low span of control leading to sub-optimal staffing structure
    - Ensure alignment of span of control to the complexity of the area
    - Optimize the supervisory layer
    - Improve supervisory effectiveness aided by assessment tools and checklists

- **Skill**
  - Is the staff appropriately skilled?
    - Skill-task alignment lacking
    - Variability in routine processes
    - Align skills to the task (low-skill tasks are done by the lower-skilled staff)
    - Define process standards (SOPs and techniques)
    - Train staff for adoption of common process standards
    - Standardize internal best practices and introduce learnings from other industries

- **Will**
  - Are the staff motivated enough to improve performance?
    - No incentive for department heads to drive efficiency improvement
    - No staff motivation
    - Initiate changes in the behavioral treatment of staff to instill a sense of pride and ownership
    - Institute a reward and recognition process for the best performers

- **Organizational**
  - Is the department/staff performance objectively evaluated?
    - No objective staff assessment process
    - No departmental performance metrics indicating efficiency of the department
    - Implement an ownership-based structure where individual department head owns department outcomes (KPI alignment)
    - Define performance metrics and periodically monitor them
    - Use the metric as a feedback to fine tune staffing and improve processes continuously

- **Nursing: Span of control in wards**
  - Optimal span of control by leveraging the senior and high-performing staff for supervisory activities

- **Housekeeping: Staff training**
  - Continuous training of staff and usage of visual SOPs

- **Nursing: Rewards and recognition**
  - Institution of a monthly reward and recognition process to felicitate the top performers

- **Housekeeping: Quality indicator score**
  - Institution of a balanced score card for cleaning on the basis of parameters such as patient feedback and inputs from housekeeping supervisor, nurses and infection control
B. Material cost optimization

Material cost optimization in a hospital entails improvement at two levels:

1. Cost reduction of material purchase
2. Optimization of material consumed in surgeries without affecting the outcomes

Typical break-up of material cost optimization potential

1. **Material procurement cost optimization**
   
   Materials account for a high proportion (30%-35% in a typical multi-specialty tertiary care hospital) of health care costs, and efficiency improvement in material purchases can yield a cost reduction of around 25% as indicated by our experience of working with multiple health care chains.

   ![Material procurement cost optimization diagram](image)

   Source: EY analysis

   *Others include cost savings on account of volume discounts, payment terms and inventory management

<table>
<thead>
<tr>
<th>Area</th>
<th>Spend distribution</th>
<th>Optimization potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy</td>
<td>35-40%</td>
<td>20-30%</td>
</tr>
<tr>
<td>Medical consumables</td>
<td>30-35%</td>
<td>20-25%</td>
</tr>
<tr>
<td>Implants</td>
<td>15-20%</td>
<td>20-50%</td>
</tr>
<tr>
<td>Lab consumables</td>
<td>5-10%</td>
<td>20-30%</td>
</tr>
<tr>
<td>Non-medical consumables</td>
<td>5-10%</td>
<td>10-15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>~25%</strong></td>
</tr>
</tbody>
</table>

Source: EY analysis
### Typical barriers to achieve material cost efficiency

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Impact</th>
<th>What can be done</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Perception that one brand is superior than the other | Reduced sourcing flexibility         | ▶ Conduct fact-based company-qualification and brand-evaluation process involving assessment of technical, economic and patient criteria  
▶ Organize clinician workshops to sensitize clinicians on product value chain and cost structure  
▶ Organize supplier workshops/product pilots to address concerns around quality with change of brands |
| **Functional**                                |                                       |                                                                                 |
| Scope of improvement not known               | Poor commercial effectiveness         | ▶ Conduct scientific price discovery to identify the scope of improvement        |
| Internal data not used effectively           | Limited spend visibility impeding effective negotiations | ▶ Organize internal data to aid in developing negotiation tools and a product-specific negotiation strategy |
| Sub-optimal sourcing base                    | Lack of negotiation leverage          | ▶ Know your supplier through institutionalization of company and market data     |
| Negotiations conducted as “business-as-usual” | Poor commercial effectiveness         | ▶ Conduct structured, time-bound negotiation process with focus on TCO and not just purchase rates |
| **Structural**                                |                                       |                                                                                 |
| Limited system and process enablement        | Poor formulary compliance             | ▶ Implement system enablement to prevent non-compliance to formulary             |
| No performance monitoring                    | Value erosion due to poor formulary compliance | ▶ Institute a process of periodic review of formulary non-compliance and corrective action |

Given these challenges, material cost reduction requires a well-thought-through approach and sharp-focused execution with the top management’s total support. Almost 50% of the benefit can be achieved from products that require low to moderate clinician syndication. For items that require high clinical syndication, a strong business case design based on robust technical, economic and patient criteria can be used to solicit clinical buy-in.
Differentiated approach required for different product categories

- **High**
  - 30%
  - Quick wins
    - RFP process, negotiations
    - Brand consolidation
  - E.g., anesthesia drugs, ICU consumables such as syringes and cannula

- **Business Impact**
  - Parallel implementation
    - Blanket negotiations
    - Brand substitution
  - E.g., general consumables (underpads, diapers etc.), anesthesia and respiratory accessories

- **Low**
  - 20%
  - Benefit breakup

- **Need for clinical syndication**
  - 40%
  - Plan and syndicate
    - Tiered formulary
    - Clinician collaboration in negotiations
    - Supplier consolidation
  - E.g., anti-infectives, anti-cancer, cardiology drugs, stents, joints, sutures

- **High**
  - 10%
  - Policy guidelines for expensive drugs
  - E.g., B&C category drugs (orals etc.), pacemakers, endo-surgery consumables

**2. Material consumption optimization**

Material consumption optimization is a very sensitive area because it encroaches into the core domain of clinicians’ practice. Conditions, patients, ailments and surgeons vary, and as a result the consumption for procedure varies widely. While exploring efficiencies in material consumption is a complex exercise requiring intense analysis and change management, our experience of working with health care providers indicates that there exists a significant scope (30%-50%) to reduce wastage in consumption of material without affecting the quality and outcome of the procedure.

**Source:** EY analysis
Three levels of optimization of material consumption in a typical CT surgery

Illustration of variation in material cost per CABG procedure for patients with similar risk profile and the optimization journey

Given the variabilities, it is well recognized that optimal consumption would be a range and it will be difficult, if not impossible, to consistently perform at a fixed consumption value. Though there would be variations in the amount of material usage, the idea is to control wastage so that the variations fall in a narrow band.

The good news is that in our experience, 40%-60% of material waste does not clinician change management, so the task is not as daunting as it may appear.

**Stakeholder influence on benefit realization**

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiologist</td>
<td>35%</td>
</tr>
<tr>
<td>Surgeons</td>
<td>35%</td>
</tr>
<tr>
<td>Technicians/nurses</td>
<td>40%</td>
</tr>
<tr>
<td>Intensivist/anesthetists</td>
<td>25%</td>
</tr>
<tr>
<td>Intensivist/anesthetists</td>
<td>5%</td>
</tr>
<tr>
<td>Technicians/nurses</td>
<td>60%</td>
</tr>
</tbody>
</table>

Source: EY analysis

*Individual sub-categories include drugs, consumables and reusables
### Key barriers to consumption optimization and how to overcome them

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Impact</th>
<th>What can be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belief that clinicians know the best</td>
<td>No effort made to sensitize clinicians on variations</td>
<td>Measure disparity in consumption by user and sensitize clinicians on the economic impact of material-waste reduction</td>
</tr>
<tr>
<td>Belief that material usage in a procedure cannot be predicted</td>
<td>No process in place to monitor material usage</td>
<td>Develop IT system to measure material usage at the point of consumption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop analytical capability for granular analysis</td>
</tr>
<tr>
<td>Belief that all procedures are alike</td>
<td>No patient categorization based on risk stratification</td>
<td>Define norms and policies for each procedure and homogenous patient group</td>
</tr>
<tr>
<td>Belief that consumption optimization will lead to clinical risks</td>
<td>Skepticism from clinicians and medical staff</td>
<td>Establish sterilization and condemnation guidelines for reusables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Institute robust frameworks to monitor parameters of clinical outcome (before and after the change)</td>
</tr>
<tr>
<td>Poor pre-op material management</td>
<td>Wastage of unused material</td>
<td>Follow a checklist-based approach for pre-op material planning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use pre-defined procedure kits based on the procedure and homogenous patient groups</td>
</tr>
<tr>
<td>Lack of clinician incentive to implement change</td>
<td>No incentive for the clinicians and medical staff to reduce material wastage</td>
<td>Create a system of reward and recognition for leading practices</td>
</tr>
<tr>
<td>Lack of alignment to common clinical protocols</td>
<td>High variability in material usage within homogeneous patient groups</td>
<td>Recognize and share best practices to enable adoption across clinical groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct end-user training to adopt best practices and process improvements</td>
</tr>
</tbody>
</table>

### Key levers of consumption optimization and how can it be achieved

<table>
<thead>
<tr>
<th>Action points</th>
<th>Key attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>Have a compelling vision – what is to be achieved and why</td>
</tr>
<tr>
<td></td>
<td>Have commitment of the top management – it is a challenging and long journey; maintain perseverance</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Define responsibility to achieve performance across organizational hierarchy – clinician inertia needs to be negotiated, right people are needed to drive the efficiency improvement</td>
</tr>
<tr>
<td>Process improvement</td>
<td>Agree on consumption norms and work practices to achieve them</td>
</tr>
<tr>
<td>Governance and performance monitoring</td>
<td>Report performance objectively and transparently – auto reporting through IT integration (a poor IT system creates user fatigue and kills the initiative)</td>
</tr>
<tr>
<td></td>
<td>Hold regular performance dialogues with concerned stakeholders and share takeaways with clinical groups – drive healthy competition</td>
</tr>
<tr>
<td></td>
<td>Support change through regular trainings</td>
</tr>
</tbody>
</table>

**Standardization**
- E.g., norms on standard quantities per procedure for graft sutures

**Re-use**
- E.g., sterilization and condemnation guidelines to be followed for reusables

**Policy**
- E.g., drugs usage guidelines, including preferred molecules and dosage

**Spec rationalization**
- E.g., guidelines on right mix of MNC vs. Indian brands to be used

**Technique**
- E.g., sensitization of paramedic staff on judicious usage of consumables
In the context of health care, a machine refers to any fixed asset that a hospital deploys for delivering health care services.

Typically, for putting up a new tertiary care greenfield hospital in urban areas, the capital investment per bed could be in the range of INR 0.6–1cr. Therefore, in addition to planning the right level of investment and funding it appropriately, sweating the assets should be at the top of the hospital’s priorities.

Fixed (and semi fixed) operating costs for a private hospital can be anywhere in the range of 35% to 60% depending on factors such as doctor engagement model, manpower cost and speed of revenue ramp up. A 10% increase in throughput (number of patients discharged per day) can increase EBITDA by 5% to 7% of revenue.

Efficient operations can reduce the need for capital investments. The ALOS of public hospitals is typically three to four days higher than that of private corporate hospitals. While one contributing factor can be the type of cases and health levels of patients getting admitted, a reduction in ALOS even by a day can release 10%–15% of the capacity, leading to an increase in the number of patients treated and a reduction in investment for capital creation.

Ideally, a patient should be in a hospital for the minimum possible time, and the entire system should harmonize its operations to ensure so. Benefits are many folds: reduced risk of hospital-acquired infections, lower costs and a better experience for patients, and released capacity for the hospital to serve more patients.

**Typical challenges**

- **Low incentive to optimize:** Many hospitals that do not witness adequate patient footfall, do not find it financially attractive to design and deploy efficient operational processes as longer patient stay earns additional revenue. By the time volumes pick up, inefficiencies become engrained in hospital’s processes and change becomes difficult.

- **Lack of robust performance-management system (KPIs, scorecard and review process):** Due to lack of clarity on what operational standards to achieve, hospitals remain content with sub-optimal performance. Furthermore, due to high attrition levels, there is movement of people across hospitals. New hires come with their experience of how processes should be working, resulting in “no common definition” of success. Given this context, defining operational standards – a common definition of success, KPIs and scorecards – and a review process becomes critical.

### Hospitals will need to address two broad categories of inefficiencies

1. **Point and flow inefficiencies:** These refer to processes that can optimize the utilization of each asset individually – for example, processes within a department and patient-flow processes across assets. During the movement of patients through the hospital system from admission to discharge (or from arrival to departure in case of OPD), patients quite frequently either end up waiting at different touch-points or spend time in transfer (refer to the figure below).

   During the review of MRI utilization in a hospital, an opportunity to increase the efficiency by ~30%–35% was identified. Primary reason was inefficiency in processes within the department, such as high “between the scans” turnaround time and patient preparation time. Similarly, patient-flow processes across assets (ICUs, wards, labs, OT etc.) can be optimized to reduce waiting and transfer times, thereby reducing the length of a patient’s stay and releasing capacity, which can be used to serve more patients. An example of such an inefficiency is patients waiting in a ward beyond a reasonable time to get transferred for radiology test.
2. **Planning-related inefficiencies**: Such inefficiencies are particularly relevant for hospitals that run at high occupancy and have a queue of patients waiting to get admitted and treated—for example, public hospitals and private hospitals operating at full capacity.

Patients who are in queue may require different surgical interventions. Each intervention puts a different quantum of demand on hospital resources, such as beds, operating room time, surgeon's time and volume load on the pathology and radiology departments. For example, a cardiac stenting procedure would require cath lab and cardiologist's time, while an orthopedic joint replacement would not need cath lab but ortho OT and joint replacement surgeon's time. Thus, with a forward view into the queue, it should be possible to estimate on a weekly/day basis, the load on each resource. With this visibility, it is possible to match the demand and availability of a resource to ensure optimal utilization of resources across the hospital. This way of planning, referred to as “tactical planning,” leverages supply chain planning principles that have proven their worth in other industries.

Supplementing “tactical planning” is “operational planning” (within-a-day plan), where demand and supply planning is done every hour in a dynamic way to minimize the patients’ waiting time.

To take a corollary, in manufacturing, different resources, capacities and skills are used to carry out different operations as a job (e.g., metal piece) moves ahead during the process of manufacturing. For a part to get manufactured in the shortest possible time, it is important that resources, capacities and skills are planned for and made available on time at the work station for work to get executed. Similarly, to treat a patient, different resources (such as cath lab machine), capacities (such as beds) and skills (such as clinicians and OT nurses) should be planned and made available at the time they are required, so that there is no delay in treatment and patients get discharged in the shortest possible time.

**What will truly catalyse the transformation... “Voice of Customer”**

- Reduce variation in utilization
- Optimize planning of bottleneck capacities simultaneously and in relation to each other
Tactical planning process cycle

1. Define care paths
2. Monitor trends
3. Create forward visibility
4. Optimize chosen resource elements
5. Introduce tactical planning processes

- Identify large patient groups
- Define service norms
- Redesign care paths
- Take action to prevent bottlenecks
- Focus on a tactical planning horizon (-8 weeks and +8 weeks)
- Resource availability
- Queues at each resource
- Variation of arrival rates
- Forecast resource utilization
- Ensure early entry of scheduled date for activities
- Calculate expected hospital-wide work load
- Optimize OR schedule to minimize peak bed utilization, resulting in reducing bed requirement
- Take action to prevent bottlenecks
- Focus on a tactical planning horizon (-8 weeks and +8 weeks)
- Resource availability
- Queues at each resource
- Variation of arrival rates
- Forecast resource utilization
- Ensure early entry of scheduled date for activities
- Calculate expected hospital-wide work load
- Optimize OR schedule to minimize peak bed utilization, resulting in reducing bed requirement
Impact of addressing planning inefficiencies:
Our studies across hospital chains have shown that efficient forward planning can yield the following potential benefits:

- Throughput increase: 10%-20%
- OT utilization increase: ~5%-25%
- Utilization of beds increase: ~20%
- 30%-35% increase in efficiency of medical equipment
- Capital avoidance: optimum use of the assets will ensure that hospitals can delay heavy capital investments and reduce stress on their balance sheet

The key enablers for such planning are a robust IT system capturing relevant information, a dynamic planning system sitting on top of the IT system, empowered planning teams, and commitment from the management and medical staff, which changes the way operations are managed and redistributes the individual authorities. Redistribution of individual authorities mean that planners would assume large control over operations and capacities such as beds, OT would get pooled except for cases where clinically a segregation is required.

Efficiency improvement in tier-2 cities
Smaller health care providers in tier-2 cities and towns face further challenges in being more cost efficient and effective due to lack of scale.

To overcome the challenge of scale, smaller healthcare providers would need to come together to pool their respective requirements and capabilities

Group purchase organisation

- For procurement, a solution can be to form Group Purchase Organisation (GPO)
  GPO as a concept is quite prevalent in US wherein group purchasing organization leverages the purchasing power of the member hospitals to obtain discounts from vendors based on the collective buying power. The GPO would also need to work with its member hospitals to adopt certain practices, such as standard formulary, to achieve brand and supplier consolidation for achieving best procurement prices

Affiliated network of hospitals

- Each hospital operates under its own brand name and quite independently, even though there could be some synergistic relationships like referring patients to each other.
- Smaller hospitals with complementary strengths can explore becoming affiliated networks under a common brand for mutual gains. For example:
  - Group branding and marketing: Together, the brand can be promoted in a way that each hospital gains wider and deeper market place visibility but branding and marketing costs get shared
  - Clinical affiliations and sharing of clinical resources
  - Pooling together to lease medical equipment on pay per use basis where minimum guarantee can be served through collective usage and not individually. For example, higher capacity, more cost efficient diagnostic lab

It will essentially mean moving from do-it-alone individual hospitals to more integrated partnerships within local areas or in a region. Similar examples are emerging in NHS, UK where the need for cost efficiency and consistency of care is driving trust hospitals of different sizes to come together to create affiliated networks under a new brand name.

Another example is AllSpire Health Partners in US, a consortium of seven health care systems (containing 25 hospitals) in New Jersey, New York, Maryland, and Pennsylvania that is sharing clinical practices, intellectual assets, refining best practices, and reducing costs

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3. Sustaining operational efficiency

In order to sustain efficiencies, two key changes are required:
A) Hospitals will need to have systems, processes and talent to “manage efficiencies”
B) Hospitals will need to ensure “teaching efficiency” to the clinical community to balance economy, efficiency and effectiveness.

A) Manage efficiency

Improving efficiency and remaining efficient is a continuous journey. In the absence of continuous focus and effort, there is risk of losing out on the efficiencies achieved. Our analysis of sustainability of cost reduction benefits within 115 multinationals has revealed that only one in three companies is able to sustain the benefits of cost-efficiency programs beyond the third year.

The following are three key areas that hospitals should focus on to manage and sustain efficiencies:

1. Institute a robust business performance management system

   What gets measured, gets managed, so the saying goes. Therefore, to sustain efficiencies:

   ▶ Define the right KPIs to be monitored and the levels of performance expected — aligned to the performance objectives and granular enough to be actionable

   Examples:

   1. **Material purchase:** While many hospitals monitor material cost as a percentage of revenue, very few actually monitor the in-patient pharmacy margins. Also, driver metrics such as compliance to in-patient formulary are not monitored and no review is conducted to understand the root cause of non-compliance on account of factors such as rate variation from the negotiated rate, brand variation in the use of non-preferred drugs or out-of-formulary consumption.

   2. **Material consumption in surgery:** Only a few hospitals track consumption per surgery with reasonable levels of accuracy. The KPI used is “material cost per surgery” and in fewer cases, it is detailed as “surgeon-wise material cost per surgery.” While relevant, the KPI may not provide actionable insights considering that the information is not available at a granularity to precisely pinpoint areas requiring intervention and improvement. The following are a few details that would be relevant for driving a root cause analysis to optimize consumption:

      ▶ Patient risk categorization, or categorization of procedures that are homogenous from the perspective of drivers of material consumption
      ▶ Where the deviation in consumption is more than the norm, is it pre-surgery, during surgery or post-surgery (ICU/ward)
      ▶ In which of the materials/diagnostics is the variation the highest

   ▶ **Deploy a robust business intelligence system to enable performance management:** Given the operational complexity and the use of multiple IT systems across hospitals, where complex data needs to be sourced from different IT applications or spreadsheet-based files, effective, timely and actionable business reporting is not possible without the use of robust business intelligence tools.
2. Design an appropriate organization structure with aligned incentives

Hospital operations across clinical and non-clinical areas need to be managed with a common objective of driving efficiencies. Many hospitals have clinical and non-clinical operations headed by two different individuals with few shared goals and priorities, and cost efficiency generally does not feature in this common list.

To continue the example of in-patient pharmacy margins, while the KPIs are reported by the operations team, to improve on pharmacy margins it is important to improve compliance to formulary by clinicians. The non-clinical operations team does not feel empowered enough to improve this compliance and clinical administrators do not see it as a significant priority requiring discussions with clinicians.

Evolving a more holistic approach to performance evaluation and rewards, especially for clinicians, that recognizes not only growth and revenue but also efficiency, clinical outcomes, compliance to quality management procedures and patient feedback would be important. For instance, measuring costs and rewarding cost efficiency would be a key enabler to positively drive behavior of people involved in healthcare delivery including clinicians. Examples of such metrics aimed at improving sensitivity towards operational excellence could be department contribution/profitability and efficient utilization of resources (e.g., relative ALOS, adherence to planned discharges, compliance to medical formulary and standard consumption norms).

3. Nurture management talent

The health care industry is witnessing rapid growth and changes in the operating environment. These trends have changed the scope and need of management in hospitals, and forced the players to seek and nurture management talent who possess more than mere administrative skills. The following are the key drivers of this change:

- **Increasing scale of hospital operations**: From an almost negligible existence a decade ago, private hospital networks have shown an impressive growth. Such growth brings newer complexities in managing institutional performance – the skills required to manage a multisite operation are not a simple
extrapolation of the skills required to manage a single unit operation.

- **Change in ownership and expectations:** With the advent of private and corporate hospitals, hospitals have a renewed focus on financial performance. This has created the need for executive leadership in hospitals in addition to clinical leadership.

- **Increasing competitive pressures:** Rising competition, increasing payor maturity (increase in private insurance penetration, GIPSA etc.) and regulatory pressures (drug price capping) have necessitated that hospitals continually strive to maintain their differentiated value for customers and efficiently manage operations to maximize institutional performance.

- **Changing consumer expectations:** Maturing consumers have an additional set of expectations from hospitals in terms of value (good outcome and lower cost), experience and convenience.

**Key issues resulting in limited managerial talent in healthcare**

1) **Fragmented provider environment:** The emergence of private players in the healthcare industry has been a recent phenomenon, picking up speed over the last decade. As a result, when compared to other industries with mature organizations, the healthcare sector is dominated by small standalone providers and mid-sized players. As a result, the industry doesn't present a lucrative career option for managerial talent.

2) **Lack of role clarity:** Due to the nascent stage of the industry, the non-managerial arm of healthcare organizations are still evolving. A typical hospital organizational structure is designed around clinical functions and the managerial roles and functions have mushroomed to support these clinical units, often leaving the managerial role holders with ambiguous productivity and efficiency ownerships.

3) **Lack of career growth opportunities:** Lack of clear role definitions, performance indicators that are at odds with the clinicians (profitability vs. patient care), reflects on the role...
holder’s capability to meaningfully impact operational and financial performance. With rising profitability pressures, non-managerial manpower cost is often an area of focus for healthcare leaders. As a result, the compensation offered, especially at mid-managerial levels, is often uncompetitive and unattractive.

4) Cocooned nature of the industry/belief that healthcare is unique: The dominance of clinical leadership in executive roles in hospitals has created the aura that hospitals are unique in their functioning. This has resulted in hospitals being unaware of or resistant to adopting cross-industry best practices – hence, hospitals are unable to attract cross sector managerial talent. Typically in mature sectors, the quality of managerial quality is enriched by cross movement of sector agnostic talent.

What can be done?

1) Build and deploy an effective organizational design that suits your organizational culture
   a. Define a time bound vision and strategy for performance
   b. Align managerial roles and responsibilities to pre-defined performance goals
   c. Define clear rules of engagement between clinical and commercial function
   d. Redesign compensation structure, incentivizing performance
   e. Create a mature performance-management system and define a predictable career trajectory

2) Provide a work culture where non-clinical executives feel empowered to contribute
   a. Encourage a constructive debate between clinician and non-clinical functions to have a balanced focus on clinical and commercial excellence
   b. Encourage data based diligence and arguments (discourage holy cows)
   c. Healthy respect for efficiency in operations along with clinical excellence

3) Nurturing of cross-sectoral talent infusion
   a. Develop roles and recruit cross-sector functional experts, especially in non-clinical corporate functions such as procurement, HR, finance, and sales and marketing
   b. Create opportunities for lateral entry for managerial talent, thus encouraging diverse talent turnaround
   c. Propagate role models as success stories to create awareness about career choice and lucrative prospects

4) Create a robust career and succession management process
   a. Invest in developing and retaining the internal talent pool through creation of career path frameworks
   b. Create opportunities for development and career movements for high potential talent
   c. Create succession plans for critical positions and actively engage with the successor pool

B) Teaching efficiency

With emerging focus on outcome- and value-based health care, it will be critical for clinicians to make the right choices to achieve the best outcomes at the least cost.

Traditionally, the deeply entrenched values in medicine have insulated doctors from the aspect of costs to patients – the thinking being that decisions should be made purely on clinical knowledge, and anything else could compromise care. However, today’s scenario demands an alternate strategy in which doctors must do what is best for patients by balancing the costs of treatments with their added medical value and including the patient in the decision process.

The US and the UK have already recognized this need and introduced institutional reforms to acknowledge and remedy it. In the US, the American College of Physicians (ACP) has created the High Value Care Curriculum (HVC), which aims to teach residents how to reduce costs by minimizing unnecessary procedures and tests, as well inculcate an understanding of the implications of decisions (such as ordering new equipment) on costs and finances. The curriculum involves interactive modules between the resident and faculty during which they review real patient cases. The HVC is also being adapted for medical students.

Another framework has been developed by Mitesh Patel, MD, a physician and Robert Wood Johnson Foundation Clinical Scholar - called the VALUE framework. VALUE is an acronym for i) validation and variability, ii) affordability and access, iii) long-term benefits and less side effects, iv) utility and usability and v) effectiveness and errors. The framework can be used to teach a medical resident to assess whether a medical intervention will provide value for his or her patient across the five parameters.

In the UK, one of the many initiatives of the National Health Service (NHS) was the publishing of a detailed guide titled A Guide to Finance for Hospital Doctors to help doctors understand the NHS financial system.

Unlike other course curriculums, medical pedagogy is solely focused on imbibing technical skills. A possible solution is to incorporate financial courses within the existing MBBS system. These courses should follow the NHS prescribed “3E” framework of Economy, Efficiency, and Effectiveness. This means that the curriculum should be designed such that students are able to achieve a balance between the 3Es while making decisions such as committing to new equipment or prescribing a line to treatment to the patient. An optimum balance between the three elements implies a situation of low costs, high productivity, and successful outcomes. The curriculum's aim must not be to cut costs, but rather to achieve outcomes at the lowest cost.

Re-engineering Indian health care: Empowered patient (consumer), enhanced outcome and efficient business
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>OOP</td>
<td>Out of Pocket Payment</td>
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<tr>
<td>PCI</td>
<td>Percutaneous Coronary Interventions</td>
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<tr>
<td>GP</td>
<td>General Practitioner</td>
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<tr>
<td>MCI</td>
<td>Medical Council of India</td>
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<tr>
<td>AT-COM</td>
<td>Attitude and Communications</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>CMS</td>
<td>Centre for Medicare and Medicaid Services</td>
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<tr>
<td>NCD</td>
<td>Non-Communicable Diseases</td>
<td></td>
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<tr>
<td>NHP</td>
<td>National Health Profile</td>
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<tr>
<td>IT</td>
<td>Information and Technology</td>
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<tr>
<td>RSBY</td>
<td>Rashtriya Swasthya Bima Yojna</td>
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<tr>
<td>PHC</td>
<td>Primary Healthcare Centre</td>
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<tr>
<td>DLHS</td>
<td>District Level Household and Facility Survey</td>
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<tr>
<td>ALOS</td>
<td>Average Length of Stay</td>
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<tr>
<td>ASHA</td>
<td>Accredited Social Health Activist</td>
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<tr>
<td>SC</td>
<td>Sub Centre</td>
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<tr>
<td>CHC</td>
<td>Community Health Centre</td>
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<tr>
<td>RHS</td>
<td>Rural Health Statistics</td>
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<tr>
<td>ANM</td>
<td>Auxiliary Nursing Midwifery</td>
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<tr>
<td>OPD</td>
<td>Out-Patient Department</td>
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<tr>
<td>OP</td>
<td>In-Patient</td>
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<tr>
<td>HER</td>
<td>Electronic Health Record</td>
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<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
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<tr>
<td>AYUSH</td>
<td>The Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>CVD</td>
<td>Cardio-Vascular Disease</td>
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<tr>
<td>INR</td>
<td>Indian Rupee</td>
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<tr>
<td>HQIP</td>
<td>Health Care Quality Improvement Partnership</td>
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<tr>
<td>NHS</td>
<td>National Health Service</td>
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<tr>
<td>ICHOM</td>
<td>International Consortium for Health Outcomes Measurement</td>
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<tr>
<td>PPACA</td>
<td>Patient Protection and Affordable Care</td>
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<tr>
<td>DRG</td>
<td>Diagnosis Related Group</td>
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<tr>
<td>AIMS</td>
<td>All India Institute of Medical Sciences</td>
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<tr>
<td>CT</td>
<td>Computed Tomography</td>
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<tr>
<td>MRI</td>
<td>Magnetic Resonance Imaging</td>
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<tr>
<td>PET-CT</td>
<td>Positron Emission Tomography- Computed Tomography</td>
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<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
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<tr>
<td>EMI</td>
<td>Equated Monthly Instalment</td>
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<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>IR</td>
<td>Internal Rate of Return</td>
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<tr>
<td>SOQ</td>
<td>Standards of Quality</td>
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</tr>
<tr>
<td>EBITDA</td>
<td>Earnings Before Interest Tax and Depreciation and Amortization</td>
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<tr>
<td>ARPOB</td>
<td>Average Revenue per Occupied Bed</td>
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<tr>
<td>ARPP</td>
<td>Average Revenue Per Patient</td>
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<tr>
<td>BOR</td>
<td>Bed Occupancy Rate</td>
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<tr>
<td>CAPEX</td>
<td>Capital Expenditure</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>IRDA</td>
<td>Insurance Regulatory and Development Authority</td>
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<tr>
<td>GIPSA</td>
<td>General Insurer Public Sector Association of India</td>
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<tr>
<td>NLEM</td>
<td>National List of Essential Medicines</td>
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<tr>
<td>DPCO</td>
<td>Drug price Control Orders</td>
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<tr>
<td>NPPA</td>
<td>National Pharmaceutical Pricing Authority</td>
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<tr>
<td>RFID</td>
<td>Radio Frequency Identification</td>
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<tr>
<td>EPR</td>
<td>Electronic Patient Record</td>
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<tr>
<td>OT</td>
<td>Operation Theatre</td>
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<tr>
<td>PA</td>
<td>Patient Assistants</td>
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<tr>
<td>RTLS</td>
<td>Real Time Location System</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedures</td>
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<tr>
<td>TCO</td>
<td>Total Cost of Ownership</td>
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</tr>
<tr>
<td>CABG</td>
<td>Coronary Artery Bypass Graft</td>
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</tr>
<tr>
<td>CT</td>
<td>Cardio Thoracic</td>
<td></td>
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<tr>
<td>CTVS</td>
<td>Cardio Thoracic Vascular Surgery</td>
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<tr>
<td>MNC</td>
<td>Multinational Corporations</td>
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<tr>
<td>ER</td>
<td>Emergency Room</td>
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<tr>
<td>Cath Lab</td>
<td>Catheterization Laboratory</td>
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<tr>
<td>HDU</td>
<td>High Dependency Unit</td>
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</tr>
<tr>
<td>ACP</td>
<td>American College of Physicians</td>
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</tr>
<tr>
<td>HVC</td>
<td>High Value Care Curriculum</td>
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## Countries and States

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<thead>
<tr>
<th>Country</th>
<th>Abbreviation</th>
<th>Full Name</th>
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<tbody>
<tr>
<td>US</td>
<td>US</td>
<td>United States of America</td>
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<tr>
<td>UK</td>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>AP</td>
<td>AP</td>
<td>Andhra Pradesh</td>
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<tr>
<td>TN</td>
<td>TN</td>
<td>Tamil Nadu</td>
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