



Summary

India's population is 1.1 billion and growing.¹ Significant, consistent growth of the Indian economy over the last decade has made it the fourth largest economy in the world, with a GDP of \$4 trillion in terms of purchasing power parity (PPP). Furthermore, India is the world's leading destination for information technology and related services. Nevertheless, it is still a low-income country, and while pockets of extraordinary innovation exist, its national HIT infrastructure and basic infrastructure continues to lag.

¹ The WHO country report, 2006, <http://www.who.int/countries/ind/en/>.

HIT Adoption

Despite India's recent ascendancy as the hub of the IT and IT-enabled services industry powered by a vast pool of skilled manpower, it has lagged tremendously behind other countries in HIT adoption. Large corporate hospitals in India spend under 1% of their operating budget on IT, while spending is closer to 3% in the West. Barring a few preliminary attempts to computerize basic hospital administrative and some clinical functions, there has been little appreciation or impetus given to HIT adoption.

Government Policy

Currently, official HIT adoption or implementation policies are almost nonexistent. However, HIT is on the government's radar and serious exploratory initiatives are underway to explore coordination of a national health IT infrastructure and network.

<p>Framework for Information Technology Infrastructure for Health</p>	<p>In consultation with Apollo Health Street Limited, the Department of Technology (within the Ministry of Communication and Information Technology) created the ITIH Framework in 2003. The Framework is a guideline document and comprehensive roadmap that prescribes IT standards and guidelines for each stakeholder across diverse healthcare settings in India with the goal of building an Integrated Healthcare Information Network.</p>
<p>National Knowledge Commission (NKC)</p>	<p>Established in 2005 with a three-year mandate, the NKC is a high-level advisory body to the Prime Minister of India, with the objective of transforming India into a knowledge society. It covers sectors ranging from education to e-governance, with a working group focused on health information technology.</p>

Who Drives and Pays For HIT?

In the last 4 to 5 years many positive developments have set the tone for potentially much greater HIT adoption in India. With a maturing private healthcare sector, the private hospital chains have become the

primary consumers and financiers of HIT. The aggressive IT sector in India is slowly managing to move large government hospitals toward HIT adoption.

Challenges

Policy	Absence of clear, coordinated government policy to promote HIT adoption
Government funding	Almost non-existent government funding for HIT has resulted in lack of HIT adoption in government health facilities and a lack of trained medical informatics professionals
Computer literacy	Low computer literacy among the government staff, and to a large extent in the private provider community
Infrastructure and coordination	Lack of supporting infrastructure and coordination between public and private sector.
Legacy systems	Except for a very few privately owned large hospitals, most patient records are paper based and very difficult to convert to electronic format.
Standards	Local HIT systems that do not adhere to standards for information representation and exchange. This could be further complicated because of the use of multiple local languages by patients and some health workers
Privacy	Patient confidentiality is an open area. The Supreme Court of India has not addressed the specific right of privacy issue with respect to health information.

Current Exemplars

Private Sector

- The private sector has seen the entry of established HIT vendors like GE and Siemens, and homegrown vendors have begun implementing IT solutions in private healthcare facilities such as Wockhardt Hospitals, a tertiary care hospital group throughout India.
- The Apollo Hospitals group, the leading private hospital group in India, plans to integrate all its systems across 42 hospitals with a common platform. It is introducing HIPAA standards across all its EMR implementations and has a core IT team of 30 people and a growing IT budget that makes up about 4.5% of its operational budget.

Government

- The central government has announced projects to build a national disease surveillance system called the Integrated Disease Surveillance Project (IDSP) sponsored by the World Bank, making it the largest such project in the nation. Two of the authors (SK, VK) directed the design of an informatics engine behind a short-listed proposal for IDSP.
- The Indian Space Research Organization (ISRO) has taken the initiative to establish telemedicine centers across India.
- Efforts are underway by the Ministry of Health and Family to computerize basic information systems at the top public tertiary hospitals.

Future Direction

The privatization of medical insurance will become a major driver of HIT adoption in the future, which will create a big push for comprehensive patient information and consequently the use of HIT. Regarding education and awareness, several small medical informatics and related organizations have become extremely active and have grown in membership. In 2006 one such organization, the Indian Association for Medical Informatics, became the official medical informatics body representing India at the International Medical Informatics Organization.

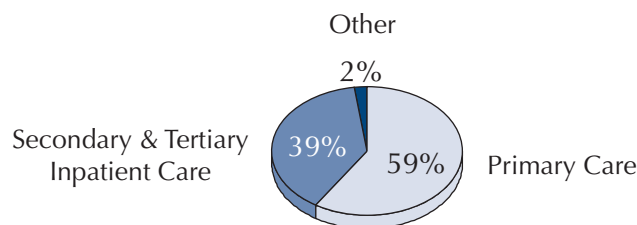
Healthcare Landscape

Expenditure

The Indian healthcare system is mainly funded by out-of-pocket payments, followed by government spending and a small contribution from insurance coverage.

- Individual households bear 70–75% of healthcare costs.
- Total national spending on healthcare in 2006 was close to 5.3% of GDP (approximately \$45 billion).¹ Private spending accounts for 82% of this expenditure with public spending constituting the remaining 18%, which turns out to be abysmally low (1.3% of GDP). However, the total spending is expected to rise to 5.7% of GDP by 2009.

Where the Money Goes



Coverage

No national community health insurance model exists, though some NGOs are trying to collaborate with hospitals to introduce such services at a local level. Acceptance and availability of private health insurance was very limited until a few years ago, when the government permitted foreign direct investment in this economic sector. The entry of several established western insurance companies has contributed to the sector's rapid growth in the last few years; only 4 to 5 million people were covered under insurance a few years ago but this number has jumped to 12 million by 2006.² Nonetheless, much of the population works in informal jobs or is self-employed and is thus extremely unlikely to have access to employment-related plans.

The Indian healthcare services industry is composed of both public and private entities. The Union Ministry of Health and Family Welfare is the umbrella body for formulating and implementing various health programs and setting policies. The state governments are the major providers of healthcare and the Directorate General of Health Services (DGHS)

¹ The India Brand Equity Foundation. The Healthcare Sector Report. 2006, available at www.ibef.org.

² Ibid.

provides technical advice on all medical and public health matters and implementation of health schemes. Organization of the public and private healthcare sectors is as follows:

- **Public Sector.** The government provides and manages the majority of the services through a hierarchical network of hundreds of thousands of rural village, primary, and community health centers and more than 5,000 hospitals. The primary health centers refer the complex cases into secondary and tertiary centers. Public health services are provided at no cost to patients, with the state taking responsibility for service delivery.
- **Private Sector.** A fee-levying private sector co-exists with public healthcare. It accounts for 82% of the overall health expenditure. The private sector provides services through Allopathic, Ayurvedic, Homeopathic, and Unani practitioners. Most in-patient services are delivered through 1–10 bed nursing homes, which are usually staffed by a single physician.

Infrastructure

In 2005 there were close to 5,000 hospitals with an average of 89 beds per 100,000 people for a total of approximately 870,000 beds.³ The population to bed ratio in India is one bed per 1,000 people while the WHO average is one bed per 300.

³ The India Brand Equity Foundation. The Healthcare Sector Report. 2006, available at www.ibef.org.