Growth Opportunities in China
Healthcare Industry

Sophia Wang
Consulting Director
Frost & Sullivan China
2012
The Chinese Healthcare System & Industry
Aging Society Brought Huge Demand For Healthcare Services

The Gap Between Demand vs. Supply for Healthcare Services (China)

Aging problem driving the growing demand for better healthcare

Chronic illness correlates with a higher death rate

Chinese Mortality from Chronic Diseases

<table>
<thead>
<tr>
<th>Year</th>
<th>1975</th>
<th>1991</th>
<th>2000</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>55%</td>
<td>73.80%</td>
<td>80.90%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Proportion of population aged 60 or over, (China)

Population aged 60 or over, (China)

National Health Expenditure as a percentage of GDP, 2010

Source: Frost & Sullivan
Developed Areas On East Coast Have Higher Per Capita Healthcare Expenditure

Expenditure
- >1,200 RMB
- 1,000~1,200 RMB
- 800~1,000 RMB
- 600~800 RMB
- <600 RMB

Urban Population Per Capita Expenditure on Health and Health Related Areas – by Province, 2010

Bohai Bay Economic Region
Beijing, Tianjin, Liaoning, Hebei & Shandong
- 24% of total China’s GDP
- GDP per capita: USD 2,083

Yangtze River Delta Economic Region
Shanghai, Jiangsu & Zhejiang
- 21% of total China’s GDP
- GDP per capita: USD 3,029

Pearl River Delta Economic Region
Guangdong
- 11% of total China’s GDP
- GDP per capita: USD 3,541

Source: China MOH
Overview Of The Chinese Healthcare System

Chinese Healthcare System

Hospitals

Private Hospitals (10%)
• With implementation of economic reforms, the Chinese government is gradually liberalizing the development of private hospitals and clinics;
• The government has plans to privatize 50% of the country’s state-owned hospitals as part of economic reforms, however, the process is very slow.

Governmental Hospitals (90%)
• Public hospitals are further divided into 3 different tiers by China Ministry of Health (MOH) with Tier I being the lowest tier and Tier III as the top tier in terms of facility, level of service provided and type of hospital administration;
• Military and teaching hospitals are usually tier III hospitals, Corporate hospitals are usually tier II hospitals.

Military
Public
Teaching
Cooperate

Other HC Institutions

Source: Ministry of Health of China, Frost & Sullivan
Healthcare Institutions in China

Types of Health Institutions (China), 2009

- **Hospital** (20,291)
  - Consist of:
    - General Hospitals (13,364)
    - TCM Hospitals (2,728)
    - Specialized Hospitals (3,716)
    - Others (483)

- **Health Center** (39,627)
  - Consist of:
    - Urban (1,152)
    - Township (38,475)
    - Mostly similar function as community health service centers

- **Health Service Center for Community** (27,308)
  - Services include:
    - Basic education on disease prevention, rehabilitation, health promotion, medical education and family planning
    - Provides diagnosis and outpatient treatment
    - Usually consists of GPs, multi-skilled nurses, and public health personnel

- **Outpatient Department & Clinic** (182,448)
  - Consist of:
    - Private Clinics (130,428)
    - Public Clinics (44,381)
    - Outpatient Departments (67,639)
  - Services include:
    - Providing diagnosis and treatment of maternal and pediatric diseases

- **Maternal and Child Health Center** (3,032)
  - Consist of:
    - Centers for Disease Control & Prevention (3,536)
    - Specialized Disease Prevention & Treatment Institutes (1,291)
    - Sanatoriums, health supervision institutes and others (6,280)

- **Others** (11,107)
  - Consist of:

Source: Ministry of Health of China, China Statistical Digest 2010
Healthcare Industry Overview in China

OVERVIEW

– China has an over 20,000 hospitals plus an approximately 67,000 community healthcare centers, as well as 175,000 clinics.

– Public hospitals dominate China’s hospital industry, accounting for 70% of the number of total hospitals. Even so, privately-owned hospitals grew rapidly in last 5 years, and increased from 17.2% in 2005 to 33.8% in 2010. In the future, private healthcare service are expected to continue to increase rapidly, driven by private hospital investment stimulus policy launched by China’s government at the beginning of 2011.

*All the data is rounded.

Chinese Healthcare Industry is Benefitting from the Investment along with Healthcare Reform

• With the Healthcare Reform and government investment of US$124 billion, Chinese healthcare industry had experienced high growth in the past three years, period 2008 to 2010, and it is expected to maintain its double digit growth in the period 2011 to 2015

• Chinese healthcare market in 2010 was US$ 127.2 billion, increased from US$ 45.7 billion in 2006

• It is expected that the Chinese healthcare market will continue to grow rapidly to reach US$341.4 billion by 2015

Source: Frost & Sullivan
US Is China’s Largest Trading Partner For Medical Devices

- The revenue of Chinese medical technology market is USD 17.8 billion in 2008.
- Domestic production accounts for 49.2% of the China medical technology market.
- US is the biggest trade partner of China medical device market.
- If we consider EU countries as a whole, this economic body will be the second largest trade partner of China medical device market.

Source: China General Administration of Customs
Enhanced Healthcare Infrastructure Along With Healthcare Reform
MOH Policies & Regulations Regarding Healthcare Reform

- New Cooperative Medical System
- National Essential Drug List
- Healthcare Safety Surveillance system
- Health IT Requirements
- Price Control and Monitoring Policy
- Government Involvement and Financial Support Plan
- Intellectual Property Protection Policy
- Hospital Mass Purchasing Policy

Source: Ministry of Health of China
Snapshot of China Healthcare Reform

In April 2009, China passed a Healthcare Reform plan with USD 125 billion investment from 2009 - 11

1. Medical insurance system
   - Basic Medical Insurance of the Employees
   - Basic Medical Insurance of Residents (unemployed population)
   - New Cooperative Medical System
   - Medical Relief

2. Medical service system
   - Urban Hospital
   - Urban Community Health Institution
   - Rural: Three-level Rural Health Network

General targets of Healthcare Reform

- To construct a basic healthcare system, with focus on widening coverage of the rural and un-insured urban population;
- To increase government expenditure on healthcare and strengthen responsibility of government in basic healthcare system

Construction of the National Basic Healthcare System

Focus of Healthcare Reform

Based on the Healthcare Reform investment allocation plan, where are the new opportunities?
Increasing Medical Insurance Coverage and Reimbursement Level

2008 ...From ...To 2011

**Width of medical insurance**

- 74% (200 Million of total 270 M population)
- ~42% (100 M of total 240 M)
- 91.5% (814 M of total 890 M)

**Urban employee basic medical insurance**

- 90% (243 M)

**Urban unemployed population/residents basic medical insurance**

- 90% (240 M)

**New Cooperative Medical System (NCMS)**

- 90%* (845 M)

**Depth of medical insurance**

- Increasing subsidy per capita for urban resident basic medical insurance and New Cooperative Medical System from RMB 80 to 150 (US$11.7 to US$22.1);
- Increasing reimbursement rate (e.g. 35% to ~ 50%).

* Government want to maintain NCMS population coverage rate above 90 percent in 2010.
Construction of Comprehensive Healthcare Service System

**Function**

- **Common and chronic disease**
  treatment and management

- **Realize the first/early diagnosis**
  in community institutions as well as smooth integration with urban hospital

**Widen coverage of medical service**

- There should be at least one community health center or station for every 30-100 thousand population

- New construction or renovation of **3,700** community health centers and **11,000** community health stations

**Strengthen three-level rural health network construction**

- Support construction to 2,000 county hospitals (CH)
- Renovation of 5,000 central township health centers (CTHC)
- Renovation of 29,000 township health centers (THC)

*Source: MOH China Healthcare Reform Plan*
Key Opportunities in The Chinese Healthcare Industry

Medical Technology Segment
- Medical Imaging
- In-vitro Diagnostic
- Consumer Medical Electronics

Pharmaceutical Segment
- Biotech Drug
- Generic Drug
- Modern TCM

Medical Services Segment
- Private Hospital
- Independent Lab
- Private Preventive Healthcare Services

Source: Frost & Sullivan Analysis
Case Study: Government Investment Promises Huge Potential For Medical Device Markets

USD 1.2 billion of Healthcare Reform investment was invested in medical devices purchasing in 2011

Breakdown of Investment Plan by Investment Segment

A. Subsidies for new rural healthcare
B. Subsidies for low income families
C. Investment on basic healthcare institutions
D. Investment on public health
E. Others

*Government investment for basic healthcare institutions' infrastructure building, physician education and others.
Case Study: Target Devices Purchased For Basic Health Institutions

Medical Imaging Products
- B/W ultrasound
- Or color ultrasound
- Analog X-ray machine
  200-500mA

Medical Electronics Products
- Patient monitor
  Single/dual/multi parameter
- Defibrillator
- Cardiographer

In-Vitro Diagnostic Products
- Biochemistry analyzer
  (Auto/ Semi-auto)
- Hematology analyzer
  (Auto/ Semi-auto)

Source: Frost & Sullivan interviews, Ministry of Health, Frost & Sullivan analysis
Case Study: Related Players In Target Devices

<table>
<thead>
<tr>
<th>Medical Imaging Products</th>
<th>Medical Electronics Products</th>
<th>In-Vitro Diagnostic Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philips</td>
<td>Philips</td>
<td>Roche</td>
</tr>
<tr>
<td>Siemens</td>
<td>Siemens</td>
<td>Bayer</td>
</tr>
<tr>
<td>GE Healthcare</td>
<td>GE Healthcare</td>
<td>Abbott</td>
</tr>
<tr>
<td>Hitachi</td>
<td>Spacelab</td>
<td>Beckman</td>
</tr>
<tr>
<td>Aloca</td>
<td>Nihon-Kohden</td>
<td>J &amp; J</td>
</tr>
<tr>
<td>Medison</td>
<td>Fukuda Denshi</td>
<td>Hitachi</td>
</tr>
<tr>
<td>Mindray</td>
<td>Mindray</td>
<td>Olympus</td>
</tr>
<tr>
<td>Landwind</td>
<td>Goldway</td>
<td>Sysmex</td>
</tr>
<tr>
<td>Shinva</td>
<td>Biolight</td>
<td>Mindray</td>
</tr>
</tbody>
</table>
## Case Study: Global Medical Technology Players Are Launching Local Strategies in China

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Major Activities</th>
<th>Successful Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand Builder</td>
<td>• Strong capability and investment on the brand building and strategic marketing</td>
<td>Johnson &amp; Johnson</td>
</tr>
<tr>
<td></td>
<td>• Selling flagship products by leveraging brand and reputation</td>
<td></td>
</tr>
<tr>
<td>Market Maker</td>
<td>• Creating a new category or popularize an out-of-the-ordinary value proposition</td>
<td>Philips</td>
</tr>
<tr>
<td></td>
<td>that addresses an unmet local consumer need</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Acquisition of Goldway to <strong>expand its value product line</strong></td>
<td></td>
</tr>
<tr>
<td>Scale Generator</td>
<td>• Build leading position by leveraging scale and operational know-how</td>
<td>GE Healthcare</td>
</tr>
<tr>
<td></td>
<td>• “In China For China” project to develop localized products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• JV with Shinva to distribute value products</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Frost & Sullivan Analysis*
## Case Study: Chinese Companies Are Leveraging The Capital Market To Seek Scalable Development

<table>
<thead>
<tr>
<th>Company</th>
<th>Stock Market</th>
<th>Ticker</th>
<th>Company Location</th>
<th>Date of IPO</th>
<th>Capital Raised (Million RMB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>andon九安</td>
<td>SHSE</td>
<td>002432</td>
<td>Tianjin</td>
<td>Jun 10, 2010</td>
<td>601</td>
</tr>
<tr>
<td>IMPROVE</td>
<td>ChiNext</td>
<td>300030</td>
<td>Guangdong</td>
<td>Dec 25, 2009</td>
<td>465</td>
</tr>
<tr>
<td>MicroPort</td>
<td>HKEx</td>
<td>00853</td>
<td>Shanghai</td>
<td>Sep 24, 2010</td>
<td>1,357</td>
</tr>
<tr>
<td>KANGHUI</td>
<td>NYSE</td>
<td>KH</td>
<td>Jiangsu</td>
<td>Aug 11, 2010</td>
<td>458</td>
</tr>
<tr>
<td>乐普医疗</td>
<td></td>
<td>300003</td>
<td>Beijing</td>
<td>Oct 30, 2009</td>
<td>119</td>
</tr>
<tr>
<td>金科医疗</td>
<td></td>
<td>00853</td>
<td>Shanghai</td>
<td>Sep 24, 2010</td>
<td>1,357</td>
</tr>
<tr>
<td>金科医疗</td>
<td></td>
<td>00325</td>
<td>Jiangsu</td>
<td>Jun 29, 2010</td>
<td>659</td>
</tr>
</tbody>
</table>
Case Study: Opportunity Analysis Of Chinese Private Preventive Healthcare Service Market


- **Beijing**
  - Population: 19.61M
  - GDP: 1377 B
  - Private PHS Market Size: 570.0 M

- **Nanjing**
  - Population: 8.00M
  - GDP: 501 B
  - Private PHS Market Size: 203.6 M

- **Shanghai**
  - Population: 23.01M
  - GDP: 1687 B
  - Private PHS Market Size: 625.8M

- **Hangzhou**
  - Population: 8.70M
  - GDP: 595 B
  - Private PHS Market Size: 272.0 M

- **Guangzhou**
  - Population: 10.33M
  - GDP: 106 0B
  - Private PHS Market Size: 425.1M

- **Shenzhen**
  - Population: 10.35M
  - GDP: 951 B
  - Private PHS Market Size: 205.8 M

- **Chengdu**
  - Population: 14.04M
  - GDP: 555B
  - Private PHS Market Size: 205.8 M

Source: Frost & Sullivan Secondary Research

At present, the private preventive healthcare service is mainly concentrated in large cities in China. In 2010, the market in 7 largest cities, including Beijing, Shanghai, Guangzhou, Shenzhen, Nanjing, Hangzhou and Chengdu, was worth 2,664 million RMB, representing 62.1% of total 4287 million RMB of China’s private preventive healthcare service market.
Top Predictions For 2015 Chinese Healthcare System

2011

• Inhomogeneous development of the economy and healthcare infrastructure.
• Aging population become a major group demand for high quality healthcare
• Urbanization and disposable income increase enhance the affordability of advanced healthcare services
• Healthcare reforms investment bring opportunities for local medical device and healthcare service industry.
• Government regulatory and policy along with the reform creates challenges to the pharmaceutical industry

2015

• Primary care system play a major role in the Chinese healthcare delivery system.
• Chronic disease management become one of the largest business area in China
• Collaboration between Chinese hospitals and foreign hospitals will bring huge opportunity
• High end medical service become popular to service the new middle class
• Private hospitals will compete public ones in a fair play environment
• The third round of Healthcare Reform
• Universal medical insurance system for all citizen

Source: Frost & Sullivan
Leading Players Analysis
Mindray: World 3rd Largest Patient Monitor Manufacturer

Founding of Mindray

1991

First Chinese medical device company to enter international markets in 2000

Strong R&D talents resulted in continually being the first to introduce new products

No.1 market share in patient monitoring devices in China

2003

IPO on NYSE, ticker “MR”

Over 30 new products introduced since 2003

2006

The 3rd largest patient monitor manufacturer in the world after acquisition ofDatascope PMD

Datascope

Four R&D bases, over 5,500 employees worldwide

2008

2008
Mindray’s aggressive sales strategy is based on its solid sales revenue in low end market. Patient monitor, biochemistry/hematology analyzer and ultrasound make up 80 percent of its annual sales in 2010. Its huge margins were re-invested into high-end device development.

The CAGR for Mindray is more than 30 percent since 2003. With this growth, it will soon compete directly with the international MNCs in the high-end market.
In April 2008, Philips Medical acquired Goldway Inc., the second largest patient monitor manufacturer in China. Through this acquisition, Philips Medical successfully expanded its product line to low end patient monitors, and gained competitive advantage in the low end PM market – one of the hottest markets in the next few years.
In December 2008, GE-Shinva Medical Device Co. Ltd., which was co-funded by GE Healthcare and Shinva Medical Group, started its business. This new company focuses on manufacturing low end medical imaging products (Analog X-ray machines and accessories), and targets the basic health institutions market. Basic health institution market was created by new health reform, and GE is expected to receive huge benefits from the joint venture.

<table>
<thead>
<tr>
<th>Shandong Shinva Medical Instrument Co. Ltd.</th>
<th>GE-Shinva Medical Instrument Co. Ltd. (Low End Medical Imaging Products)</th>
</tr>
</thead>
<tbody>
<tr>
<td>51% Shares</td>
<td>49% Shares</td>
</tr>
</tbody>
</table>

Joint Venture (December 2008)

High-end Hospitals
Mid-range Hospitals
Basic Healthcare Institutions (Rural/Community)
A Healthcare Perspective on Key Growth Economies

India

By: Sandeep Sinha
Director – Healthcare Life Sciences Practice
South Asia & Middle East

17th Annual Medical Devices 2012: Executive MindXchange
March 11-13, 2012
Indian Healthcare Market – The way the cookie crumbles

**Total Healthcare Industry: US$ 66-69 Bn**

- **Healthcare Services**
  - US$ 46-48 Bn growing at 14-15%
  - Growth Drivers
    - Increasing penetration of health insurance
    - Rising awareness for health and paying capacity
    - Increase in disease burden
    - Increasing presence of organized sector

- **Pharmaceuticals**
  - US$ 12-13 Bn growing at 15-16%
  - Growth Drivers
    - Increasing per capita/consumption of medicines
    - Growth in lifestyle diseases like CVD, Diabetes leading to consumption of high value products
    - Increase in penetration of healthcare insurance
    - Increasing inpatient services

- **Devices and Equipment**
  - US$ 4-4.5 Bn growing at 17-18%
  - Growth Drivers
    - Increase in the total number of hospitals esp. private hospitals (tertiary care)
    - High rate of technology adoption
    - Increasing penetration of insurance schemes

**Forecast: Total Healthcare Industry:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>45</td>
</tr>
<tr>
<td>2009</td>
<td>51.7</td>
</tr>
<tr>
<td>2010</td>
<td>59.5</td>
</tr>
<tr>
<td>2011</td>
<td>68.4</td>
</tr>
<tr>
<td>2012</td>
<td>78.6</td>
</tr>
<tr>
<td>2013</td>
<td>90.4</td>
</tr>
</tbody>
</table>

CAGR – 14-15%
Healthcare Market Drivers

**Demographic Profile:** In 2050, India’s population is expected to have 308 million elderly

**Heavy Disease Burden:**
- According to WHO projections, India needs to develop facilities for another 1.5 million cancer patients, estimated to grow up by 1.4 million by 2026
- Cardiovascular disease and diabetic cases are increasing at a rate of 8 to 11 percent per annum
- Non Communicable Diseases = 50%; Communicable diseases = 40%; Others : Around 10%. Opportunities in both diagnosis and prevention

**Private Health Insurance:**
- Only 230 – 240 million of the Indian population has some form of health insurance. This means there is a tremendous scope for growth
- Fastest growing segment – 5 year growth rate of 37%. Health insurance was valued at $5.75 billion in 2010-11

**Income Levels of Awareness:**
- Increasing income levels = increased spend on healthcare
- Increasing literacy -> increase in HC awareness -> increase in demand for healthcare facilities

**Medical Tourism**
- With an increasing number of foreign patients opting for India as their treatment destination, medical tourism is projected to contribute revenue of USD 2 billion and 360,000 patients in 2012

**Privatization of Healthcare:**
- Over the past two decades, a number of Indian private sector companies have set up hospital facilities and clinics
- Prominent examples include Apollo, Max, Fortis, Global, Manipal, Care, Columbia Asia and Narayana Hrudayalaya. An estimated total of 150 facilities cater to those seeking top-of-the-line medical treatment
- 70% - 75% of total health care is provided by private health care
Healthcare Delivery Pattern

Tertiary Care Hospitals
- Super Specialty Services
- Mostly in Metros and Tier 1 Cities
- 15% = >300 beds
- 80% = 200 to 300 beds
- 5% = Avg 75 beds
- Mix of colleges, single and multi-specialty facilities

Secondary Care Hospitals
- General Hospitals
- Absence of super specialty service offerings
- Present in Metro, Tier 1 and Tier 1 cities
- Patients shift to Tier I for advance treatment
- OT & ICU usually are present
- Mostly 25-100 beds
- Some cases up to 100 – 200 beds

Tertiary Care Hospitals
- Government
  - Teaching Institutions / Medical Colleges
- District Hospital
- CHC = Community Health Center
- PHC = Primary Health Care

Secondary Care Hospitals
- Private
  - Corporate Hospitals / Trust Hospitals
- Mid Size Secondary Care Hospital
- Nursing Homes
- Clinics

Primary Care
- CHC = Community Health Center
- PHC = Primary Health Center

Government

Private

Teaching Institutions / Medical Colleges

District Hospital

CHC

PHC

Mid Size Secondary Care Hospital

Nursing Homes

Clinics

Primary role to treat ailments that do not require surgical intervention or advance care
- Services vary across cities
- May have ICU and minor OT
- Up to 30-40 beds
- Located in smaller towns
- Also located in Metro, Tier 1 and Tier 2 cities
Developments in Indian Healthcare

<table>
<thead>
<tr>
<th>From Medium sized hospitals to Tertiary Healthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Traditionally, the hospitals in the country have been small or medium sized. With the advent of Apollo Hospitals (1983) and Manipal Hospitals (1991), the concept of tertiary healthcare started in India.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Horizontal Integration (Acquisition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Horizontal Integration</strong>: An increasing trend of horizontal integration is evident in the Indian private healthcare delivery market: participants are expanding via acquisition of a competitor or by adding more hospital beds at multiple locations. Example, Fortis-Wockhardt deal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From Greenfield to Brownfield Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In recent past, corporate hospitals are exploring brownfield models. Manipal (Vijayawada, Bangalore), Wockhardt (Hyderabad, Surat, Rajkot) and Apollo hospitals (Bangalore, Indore, Ahmedabad) have adopted this model</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shifting base to Tier 2-3 Cities from Tier 1 cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Key participants such as Fortis, Vasan, Dr. Agarwal are rapidly opening up facilities in various tier-two cities because of low infrastructure cost and high demand in these cities. Players like Vaatsalya are exclusively catering to Tier 2+3 cities in the country</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From Tertiary Care Hospitals to Health City</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Integrated healthcare facilities of more than 1,000 beds catering to many specialties. Narayana Hrudayalaya (Bangalore, Jaipur, Kolkata), Fortis (Gurgaon, Lucknow), Apollo (Hyderabad), Moolchand (Delhi), Medanta Medicity (Gurgaon), Frontier Lifeline (Chennai) follow this model</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State of the art hospitals to Low Cost hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Upcoming trend of low cost hospitals targeted towards middle and lower middle classes, especially in Tier 2-3 cities. Functionally focused hospitals that eliminate extraneous costs - a 'Ginger' hotel model. Example Apollo Reach Hospitals, Narayana Hrudayalaya plans to start in Mysore, Siliguri</td>
</tr>
</tbody>
</table>

*Source: Frost & Sullivan Analysis*
Developments in Indian Healthcare

Hospitals entering into Integrated Townships

- Columbia Asia Hospitals, has entered into an agreement with DLF Home Developers for the development of hospitals upon lands situated in DLFH townships in India to leverage the industry leading expertise and experience of DLFH in the development and construction of commercial properties.

Strategic Tie Ups

- In order to reduce high infrastructure and rental expenses, various single speciality centers like Bloom IVF, Axiss Dental, and International Oncology have set up their centers within Fortis hospitals on revenue sharing basis.

Unbundling of Medical Specialities

- Instead of providing multi specialities under roof, various healthcare providers are offering end to end solution for single speciality. For example Cradle (OBG Care), Vasan (Eye Care), Nephro life (Nephrology and Urology), RG Stone (Urology), Bloom IVF (IVF Care)

Long Stay to Day Care Surgery

- An estimated 60-70 percent of surgical procedures in developed countries are done as day care surgical procedure. There is an increased adoption of the concept in India, healthcare chains like Nova Medical Centers, Beams hospitals, few hospitals opening an exclusive wing for short stay or day care out patient procedure

Source: Frost & Sullivan Analysis
PE investments in India have witnessed significant growth in recent years. In 2010, the total PE and venture capital investment in Indian healthcare was nearly USD 600.0 million as compared to nearly USD 300.0 million in 2009. There are a total of 180 registered venture capital funds.

<table>
<thead>
<tr>
<th>Company Invested in</th>
<th>Investor</th>
<th>Estimated Deal Size (USD Million)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max India Ltd</td>
<td>GS Capital Partners LP</td>
<td>115.0</td>
<td>June 2011</td>
</tr>
<tr>
<td>Max Healthcare</td>
<td>Life Healthcare</td>
<td>108.0</td>
<td>October 2011</td>
</tr>
<tr>
<td>Apollo Hospital</td>
<td>Apax Partners</td>
<td>104.0</td>
<td>January 2007</td>
</tr>
<tr>
<td>Star Health and Allied Insurance Company</td>
<td>ICICI Venture, Carlyle Growth Fund, Sequoia Capital</td>
<td>100.0</td>
<td>March 2010</td>
</tr>
<tr>
<td>Metropolis Healthcare</td>
<td>Warburg Pincus</td>
<td>85.0</td>
<td>June 2010</td>
</tr>
<tr>
<td>Fortis Healthcare</td>
<td>GIC Special Investments</td>
<td>83.5</td>
<td>May 2010</td>
</tr>
<tr>
<td>Narayana Hrudayalaya</td>
<td>J P Morgan</td>
<td>45.4</td>
<td>2008</td>
</tr>
<tr>
<td>Manipal Hospital</td>
<td>Kotak PE</td>
<td>33.5</td>
<td>May 2010</td>
</tr>
<tr>
<td>Super Religare Laboratories Ltd.</td>
<td>Avigo PE Investments Ltd., Mauritius</td>
<td>23.0</td>
<td>April 2011</td>
</tr>
<tr>
<td>Diwanchand Medical Services</td>
<td>Asian Healthcare Fund</td>
<td>20.0</td>
<td>March 2010</td>
</tr>
<tr>
<td>Vasan Eye Care</td>
<td>Sequoia Capital</td>
<td>30.0</td>
<td>October 2010</td>
</tr>
<tr>
<td>Sudhir Srivastava Robotic Surgery Centre</td>
<td>Intel Capital</td>
<td>18.0</td>
<td>May 2011</td>
</tr>
<tr>
<td>Nova Medical Center</td>
<td>New Enterprise Associates &amp; GTI</td>
<td>16.0</td>
<td>May 2010</td>
</tr>
</tbody>
</table>
Healthcare Expenditure & Density of Medical Manpower

**Healthcare Expenditure**
- 5.2 percent of GDP
- Predominantly private/Out of pocket – ~70 percent of total healthcare expenditure
- Insurance and reimbursement account for around 11-12 percent of total expenditure

**Manpower**
- India has a ratio of 0.5 doctors and 1.3 nurses per 1,000 population as compared to the global average of 1.4 doctors and nearly 2.8 nurses per 1,000 population in 2010. Against the global average, this translates into a gap of nearly 1.0 million doctors and 1.8 million nurses.

*Source: WHO, Frost & Sullivan Analysis*
# The Indian Medical Device & Equipment Market Overview

## Market Size of Devices and Equipment

The market size of medical devices and equipment is $4-4.5 Bn.

### Market Share by Category
- **Consumables and other Devices & Equipment**: 55.1%
- **Implants**: 13.0%
- **Sleep and Respiratory Devices**: 13.0%
- **In vitro Diagnostics**: 9.8%
- **Patient Monitoring**: 6.1%
- **Medical Imaging**: 13.5%

## Measurement Parameters

<table>
<thead>
<tr>
<th>Measurement Parameters</th>
<th>Measurement</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market age</td>
<td>Growth</td>
<td>Young</td>
</tr>
<tr>
<td>Revenue (2011)</td>
<td>$ 4-4.5 Bn</td>
<td>Increasing</td>
</tr>
<tr>
<td>Projected revenue (2015)</td>
<td>$ 7– 7.5 Bn</td>
<td>Increasing</td>
</tr>
<tr>
<td>Base Year market growth rate</td>
<td>17%</td>
<td>Growing</td>
</tr>
<tr>
<td>Competitors</td>
<td>400-500</td>
<td>Decreasing</td>
</tr>
<tr>
<td>Market Concentration (Percentage of base year market controlled by top 25 competitors)</td>
<td>41%</td>
<td>Increasing</td>
</tr>
</tbody>
</table>
Imaging Market

Market Snapshot

- Market Size - $550 Million
- Expected to grow at 12-15 percent
- Marked by dominance of MNCs
- Major MNCs: GE, Siemens, Philips
- Indian companies only in the areas of General X-Ray and Interventional X-Ray
- Prominent Domestic companies in this market includes Allengers, Cura Medical, Picks Medical Systems and ME X-ray among others

Evolving Trends in Imaging Market:

- CT Guided Biopsy
- MRI – HIFU
- Image guided ablations

Medical Imaging Market in India
Market Size - ~$ 550 Million

CT 16%

MRI 23%

Cathlab 17%

Ultrasound 24%

X-ray 11%

Nuclear Medicine 9%

Other 31%

Competitive Landscape

International 85.0%

Local 15.0%

Source: Frost & Sullivan Analysis
Home Grown Success Stories: Allengers

Company Overview

- Year of Establishment: 1987
- Annual Turnover: $28 - 30 Million
- Total no. of Employees: 450 - 500
- Exports: To over 57 Countries

Product Range

- Radiology – Radiography (Analog and Digital), Mammography, C-Arm
- Cardiology – Cathlab and ECG Machine
- Dental – Dental X-ray System, Dental Chair
- Patient Monitoring – Multi-parameter Monitors, Pulse Oximeter

Key Success Factors

- Not feature heavy
- Aptly priced for the Indian market
- Ability to serve the length and breadth of the country
- Excellent after sales service
- Flexibility in pricing terms and services

Source: Frost & Sullivan Analysis
Patient Monitoring Market

- Market Size - $250 Million
- Expected to grow at 12-14 percent
- Marked by dominance of MNCs
- Major MNCs in patient monitoring and cardiac care: GE, Philips, Schiller, Draeger
- Major MNCs in Self Monitoring of Blood Glucose – Roche, Johnson & Johnson, Abbott
- Prominent Domestic companies in this market includes BPL Health management solution

**Growth Drivers:**
- Increase in number of hospitals
- Expanding economies and growing affluence increases purchasing power
- Raise in disease burden
- Increase in ECG and SMBG equipment in home healthcare

Source: Frost & Sullivan Analysis
Patient Monitoring and Cardiac Care Market

Market Snapshot

- Market Size - $130 - 150 Million
- Expected to grow at 11-14 percent
- Major MNCs in patient monitoring: GE, Philips, Draeger
- Major MNCs in cardiac care market: GE, Schiller
- Prominent Domestic companies in this market includes BPL Health management solution, Nasan Medical,

Growth Drivers:

- Improving healthcare infrastructure enables easier access to healthcare services
- Increased coverage under insurance policies allows better financial access to healthcare.
- Rising incidence of CAD & other lifestyle diseases and increasing public expenditure on healthcare create opportunities for growth.
- Increase in medical tourism attracts overseas patients for cardiac treatments.

Source: Frost & Sullivan Analysis
Self Monitoring of Blood Glucose Market

Market Snapshot

- Market Size - $80 Million
- Expected to grow at 16 – 18 percent
- Dominated by MNCs like Roche Diagnostics, Johnson & Johnson, Bayer Healthcare, Abbott Ltd.
- Prominent Domestic company in this market is Life line surgicals, Phoenix Healthcare, RMD Mediaids, Vertech Healthcare, Pulsatom, Delta India Electronics.
- **Evolving Trends:**
  - Exponential rise in the diabetic population
  - Expanding economies and growing affluence increases purchasing power of SMBG systems
  - Proactive use of SMBG systems in Tier I and Tier II cities due to active campaign
  - Efforts by Government to educate patients on the importance of self mgmt of diabetes
  - In hospitals, meters are usually given for free and the revenue from the hospital segment is generated from the sale of strips

Source: Frost & Sullivan Analysis
Home Grown Success Stories: BPL Health Management Solutions

Company Overview

- Year of Establishment: 1969
- Annual Turnover: $20 - 30 Million
- Total no. of Employees: 950 - 1,000

Product Range

- Patient Monitors
- Cardiac care Monitors
- Imaging (Ultrasound and X-rays), Oxygenators,
- Consumables

Key Success Factors

- Not feature heavy
- Aptly priced for the Indian market
- Ability to serve the length and breadth of the country
- Excellent after sales service
- Flexibility in pricing terms and services

Source: Frost & Sullivan Analysis
In-vitro Diagnostics Market

Market Snapshot

- Market Size - $400 Million
- Expected to grow at 17 - 19 percent
- Equal presence of MNCs and indigenous players
- Major MNCs: Roche, Abbott, Siemens, J&J
- Prominent Domestic companies in this market includes Transasia, Span Diagnostics, Tulip,
- Lower end of the spectrum, i.e., semi automated systems and kits, completely dominated by indigenous players

**Evolving Trends:**
- Market shifting towards completely automated solutions
- Closed systems gradually finding favor
- Molecular diagnostics is the most promising segment in the near future

Source: Frost & Sullivan Analysis
Home Grown Success Stories: Transasia

**Company Overview**

- Year of Establishment: 1979
- Annual Turnover: $40 - 45 Million
- Total no. of Employees: >1,000
- Exports: To over 50+ countries

**Product Range**

- Clinical Diagnostic Instruments and Reagents (Biochemistry, Immunology, Hematology, Critical Care, Molecular Diagnostics, Urine Analysis, Molecular Diagnostics)

**Key Success Factors**

- Meaningful collaboration with MNCs: Sysmex
- Right product mix with flexible pricing terms
- Ability to serve the length and breadth of the country
- Gradual movement in the value chain
- Faster response time in launching new products

*Source: Frost & Sullivan Analysis*
Implants Market

Market Snapshot

- Market Size - $500 - 550 Million
- Expected to grow at 13-16 percent
- Dominated by MNCs in all sectors except opthalmic
- The Ophthalmic implants (IOL) market is dominated by local companies having over 80 percent share by volume
- Major MNCs in stents: Medtronic, Abbott, Boston Scientific
- Of the total stents market, cardiac stents has over 90 percent market share
- Major MNCs in orthopedic implants: Depuy, Zimmer, Stryker
- Prominent Domestic companies in this market includes SMTPL, Vascular Concepts, Sushrut Surgicals, Appasamy, Aurolab, Life Care Devices Pvt Ltd.

Source: Frost & Sullivan Analysis
Interventional Cardiac Implants Market

Market Snapshot

- Market Size - $280 Million
- Expected to grow at 15-16 percent
- Dominated by MNCs
- Major MNCs: Medtronic, Abbott, Boston Scientific
- Prominent Domestic companies in this market includes SMTPL, Vascular Concepts
- Indigenous companies have started giving a serious competition to MNCs

Evolving trends

- Market gradually adopting indigenous products
- Prices expected to fall
- High growth in cath lab numbers taking the cardiac intervention business to smaller cities and towns

Cardiac Implants Market
Market Size ~$280 Million

- Drug Eluting 80%
- Bare Metal 20%

Competitive Landscape

- International 55.0%
- Local 45.0%

Source: Frost & Sullivan Analysis
Home Grown Success Stories: Sahajanand Medical Technologies

Company Overview

- Year of Establishment: 1998
- Annual Turnover: $6 Million
- Total no. of Employees: 400

Product Range

- Coronary Stents

Key Success Factors

- In-house R&D
- Locally developed product with International certifications
- Good buy in from local customers at development stage
- Right pricing
- Innovative financing schemes to increase usage

Source: Frost & Sullivan Analysis
Orthopedic Implants Market

**Market Snapshot**

- Market Size - $100 Million
- Expected to grow at 25 –30 percent
- Dominated by MNCs
- Major MNCs: DePuy (J&J), Zimmer, Stryker
- Prominent Domestic company in this market is Sushrut Surgicals
- Very less presence of indigenous companies

**Evolving trends**

- Increasing awareness on benefits of joint replacement surgeries; Innovations are constantly introduced into the market; specialists follow innovations closely
- Waiver of Customs Duty for import of implants
- Opening up of private insurance sector
- Prices expected to fall

Source: Frost & Sullivan Analysis
Home Grown Success Stories: Sushrut Surgicals

Company Overview
- Year of Establishment: 1973
- Annual Turnover: $5-10 Million
- Total no. of Employees: 150-200
- Export to: 28 Countries

Product Range
- Prosthesis
- Bone Plate
- Bone Screw

Key Success Factors
- In-house R&D
- Locally developed product with International certifications
- Right pricing
- Good relationship with universities and senior professors
- Sushrut Learning Center for surgeon education

Source: Frost & Sullivan Analysis
### Other Home Grown Companies

<table>
<thead>
<tr>
<th>Consumables</th>
<th>Ophthalmic Products</th>
<th>Dental Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sutures India,</td>
<td>Appasamy,</td>
<td>Wadia Group (Dental Products of India Ltd.),</td>
</tr>
<tr>
<td>Udaipur Surgical,</td>
<td>Aurolab,</td>
<td>Sisco International,</td>
</tr>
<tr>
<td>Sabarwal,</td>
<td>Biotech Vision,</td>
<td>Remi Dental Products, Inc.,</td>
</tr>
<tr>
<td>Sisco,</td>
<td>Eagle Optics</td>
<td>Prevest Denpro Limited,</td>
</tr>
<tr>
<td>Sterimed Surgicals,</td>
<td></td>
<td>Novo Dental Products Pvt. Ltd,</td>
</tr>
<tr>
<td>Kanam Latex Industries,</td>
<td></td>
<td>Life Care Devices Pvt Ltd</td>
</tr>
<tr>
<td>HMD,</td>
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</tr>
<tr>
<td>Romsons,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gore and Associates,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St.Jude Medical,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centennial International Ltd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifelong Meditech Ltd</td>
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</tr>
</tbody>
</table>

Source: Frost & Sullivan Analysis
Key Take-Away

1. The Indian Medical Devices & Equipment market is on a growth path (~15 percent) and expected to open up opportunities across individual segments as against a predominant equipment market in the past decade.

2. The country offers immense potential for value chain optimization with respect to design / development and manufacturing – as a in-house base or an outsourcing destination.

3. Aggressive private investment in healthcare delivery and retail is expected to accelerate market expansion in addition to the current organic growth rate for equipments and home care market segments.

Source: Frost & Sullivan Analysis