Karlstad Business School

Analysis on Opportunities and Challenges of Chinese Medical Device Industry under New Health Care Reform

Reference of Sweden, USA and UK

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Degree Project of 30 credit points

Master of Business Administration with a Profile of Service Management

Supervisor: Lars Haglund
Purpose and Execution – The purpose of this paper is to seek feasible suggestions and recommendations to the Chinese medical device industry under the new current market situation—Chinese health care system reform. In order to achieve this aim, we will start with introducing the background of current status of related issues. The next part will be the preparation of further analysis, which contains the theory and descriptions of the health care system reform histories of China, Sweden, the USA and UK. We will consequent present the environmental potential influential aspects. The main discussion will take place around medical device market analysis, together with three representative company case studies. After identifying the opportunities and challenges of the industry, we will draw the conclusions which are the recommendations for Chinese health care industry and also some suggestions for the Chinese government.

Design/Methodology/Approach – To explore these issues, besides literature reviews on market analysis (five forces, SWOT analysis), this paper applies generic competitive strategy, value-based service and service innovation as well. In addition, it also illustrates with 3 mini cases. We acquired both secondary data from related databases and primary data through questionnaires.

Limitation – Due to the restricted access to the specific database, the acquired information is limited to analyze the paper. Furthermore, according to the fact that the data we obtained is mostly on the basis of the whole medical device industry and it is quite difficult to be classified into particular parts, we decided to limit our research to the medical device industry that caters to both medical equipments and disposable tools when doing the analysis. In addition, since the design of questionnaire includes open questions, the research quality is heavily dependent on the individual skills of the researcher.

Findings – The new health care system reform will definitely boost the growth of medical device industry, but also create fiercer competition. Chinese Medical device companies need to enhance abilities of marketing, research and development, and aim at meeting customer needs to exploit new profit alternatives.

Keywords – Health Care System Reform; Medical Device Industry; Opportunities and Challenges; China; Sweden; USA; UK
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1 INTRODUCTION

1.1 Background

In recent years, New Public Management becomes an increasingly global trend, as the governments using it to improve public sector management. The shifting relationships among state, market and civil society institutions require not only management changes but also changes in governance – the way state authority and decision-making power are allocated, and how these arrangements maintain constitutional values over time. (Docteur & Oxley, 2003)

Furthermore, as the development of global medical science and technology, no matter it is East or West, developed or developing country, currently the system design from the aspect of health-care reform has become a hot topic among social public issues even as the most sensitive area. At the same time, the implementation and development of new health-care reform also put forward higher requirements for medical science and technology particularly bring new opportunities and challenges for medical device industry.

- The United States

The core of new health care system reform in the United States is that the government intervention explores the ways of market competition in order to ensure the economy’s health. (Xie, 2009) It carries out a private health insurance policy, which is the only country without universal insurance system among the developed countries. According to this health care system, both the financial resources and medical suppliers are mostly private. In addition to individual health insurance, besides personal purchased insurance, the employers also provide the employees and their dependents group health insurance. (Social Science Report, 2008)
The United States’ medical device market, regarded as the largest in the world, accounted for more than 50% of share. It is the main place for global research and development of medical device, and as well as clinical trials. In addition, due to the strict supervision and control of medical device market, the fare of marketing operation is quite expensive, but it is transparent and acts based on the regulations. Nevertheless, in recent years, the import of medical device is becoming an increasingly critical part of the market, which takes up 34% of GDP. This increase is partly due to it uses cheap foreign manufacturers, such as Ireland and Mexico, and then imports those products to the United States. (Jiangxi Association for Medical Devices Industry, 2010)

- The United Kingdom

According to the British National Health System (NHS), all the residents are free to access the medical services. The health care system is a typical vertical system form the top to the bottom, and is also a two-way referral system. In addition, more than 80% of medical expenses come from the governmental tax revenues, and the rest is from private health insurance. (Social Science Report, 2008)

Nowadays, the United Kingdom implements the way of Payment by Results, which is a huge change on the financial burden in national health insurance system, and is also the critical measure of the plan to the governmental modern health care. In addition to the patients can choose the hospitals, this kind of payment by results means that there is a strong competition among the hospitals, as not only is an opportunity to improve the medical standards, but also brings unprecedented financial risks to the primary healthcare department and the civil health insurance system. (Jiangxi Association for Medical Devices Industry, 2010)

The United Kingdom, regarded as one of the largest medical device market, the total value in 2009 is 7.8 billion dollars. On the basis of the domestic market, it is the third consumption with 125 dollars per capita among European countries, after Germany
and France. Due to many domestic manufacturers cannot quickly adjust products according to the customer demands, there is no doubt that the import of medical device will continuously increase. (Jiangxi Association for Medical Devices Industry, 2010)

- **Sweden**

Sweden has an advanced publicly-funded health care system. From the purchase aspect of new equipment, Sweden is desire to develop the technology and is eager for top technological position. In the year of 2008, the import of medical device achieved 2.1 billion dollars, with the amount increasing by 11.2% than previous year. During 2004-2008, the compound annual growth rate was 12.2%, and the main imported products are orthopaedic products, which dominated 33.7% of the total imports. Nevertheless, the allocation of health expense is still the primary task for Swedish government. In addition, with an increase of the elderly, the cost control also becomes a quite significant issue. (Jiangxi Association for Medical Devices Industry, 2010)

- **China**

As there is a big gap of the health care system between China and the developed countries, also the experiences are quite limited, it is imperative that China should design a medical health system which contains advanced international experiences and is suitable for its own national situations based on the reference of public health care experience from the developed countries.

Since 30 years of Chinese economic reform, the health care insurance reform has basically completed triple steps change from public health services and labour insurance to social medical insurance system. In addition, under the background of building a harmonious society, the social insurance system has been given a new definition, from the services to enterprises transferred to people-oriented services. (Zhao, 2009)
Nevertheless, at the same time of achieving a series of positive results, due to some misunderstandings on the basic medical insurance and thinking the health care services cannot create economic benefits, there occur some problems when making healthcare system reform, which mainly performed in the following two aspects: lack of trust between doctors and patients and irrational allocation of health resources. (Li M., 2010)

Furthermore, along with the reform and development of health care system, Chinese government should pay significant attention to the following four problems (Li Y., 2010):

- Implementation of the basic healthcare system
- Positioning of the government and marketing
- Consideration of social factors
- Understanding of the medical technology

Therefore, in recent years, China is continuously to explore and innovate the healthcare system, and put efforts to establish a universal health care insurance, which is the fundamental approach to solve the problem of “difficult to see a doctor, and expensive to see a doctor”. (Fei, 2009)

During the past 20 years, China has already become an important part of the world's medical device market and there is no doubt that China has quite huge potential market of medical device. Furthermore, besides the factors of economic development and population, the aging and urbanization also drive the expansion of the medical device market. The high-tech products are mainly depending on the importing or produce by multinational companies and Sino-foreign joint ventured to the local Chinese companies are generally relatively small. (Jiangxi Association for Medical Devices Industry, 2010)

Furthermore, under the global financial crisis, there is a significantly shrink in international medical device market. Nevertheless, in China, due to the
implementation of a new health care system, the medical device industry needs to face up a new round of opportunities and challenges. In addition, along with the promotion of the reform, the perfect and sound health care insurance system will definitely provide a huge market space for the medical device industry.

1.2 General Purpose of the Study

Since China is continuously carrying out the health care system reform during recent 30 years and has brought numerous impacts to the economic development and social progress as well, the thesis aims to analyze the opportunities and challenges of the Chinese medical device industry under the new current market situation of health care system reform and then seek feasible suggestions and recommendations linking with the performance that best matches the capabilities of medical device industry and Chinese government.

1.3 Research Questions

1. What kinds of problems currently exist in the Chinese health care system? And what can we learn from other countries (Sweden, UK and USA)?

2. What impacts will the new Chinese health care system reform have on Chinese medical device industry?

3. How should Chinese medical device companies compete in the new market environment?
1.4 Explanation of Terminologies

1.4.1 Health Care System

Among the various discourses, there often appears “health system” and (health care system” two terminologies. From the analysis point of view, "health system" (and the “health care system " is different. The former is wider extension and the latter is narrower. The latter only include a variety of medical services, commonly known as "doctor", "medical treatment". While the former does not contain a lot of treatment but at the same level of maintenance is closely related to people's health services, including public health, environmental health, occupational health, health maintenance (health-cultivation) and so on. Of course, the two are linked closely, especially some of the public health services (such as immunization) are generally provided by medical service institutions. (Gu, 2007)

1.4.2 Medical Device & Medical Device Industry

Medical devices refer to the products that are used for medical purposes in patients, in diagnosis, therapy or surgery. In China, the medical device market consists of many different tiers, ranging from high-end (includes the latest diagnostic and treatment technologies) to mass-market equipment (incorporates older technology used for basic screening and treatment, as domestic manufactures produce competitive technologies at relatively low costs). (Zakreski, 2010)

According to this thesis, we defined high-end equipment and mass-market equipment separately as followed:

- Mass-market equipment: disposable medical devices (such as once off gloves)
- High-end equipment: all the other medical equipments expect disposable medical devices (such as surgical shadow-less lamp)
1.4.3 State Owned i, ii, iii Hospitals

According to the *Hospital hierarchical management approach* published Nov. 29th 1989, the hospitals are ranked based on their function, task, equipment configuration, medical care service quality and comprehensive technical management levels. The ranking i, ii, iii are considered differ from the lowest requirements to the highest one. The iii hospitals are the top ranked, with the most resources and capabilities. (Chinese Ministry of Health, 1989)

1.4.4 Township

The “township”, it is a special administrative region level expression in Chinese. It is one administrative level lower than the “town”. And townships have less population or more farmers’ percentage of the population. In another word, townships are more “rural” than “town”. Ministry of Civil Affairs State Council approved in *The Town Built Adjustment Standard Report* (Ministry of Civil Affairs State Council, 1984) that: the administrative region with less than 20 000 residents but with more than 2000 non agricultural population can be built up to township; also the administrative regions whose residents are more than 20 000, with more than 10% non-agricultural population can be built up to township.

1.5 Motivation to Chose Sweden, UK and USA as Reference

As health care reform is a worldwide problem, whether developed or developing countries have not found a system model to satisfy the public at large, almost all governments have been suffered a lot of blame for this without exception. It could be said that the health care system reform is a social reform with high risk. (Liu, 2009)
According to this paper, in order to better analyze Chinese health care system reform and discuss its influences on medical device industry comprehensively, as well as the future development of this industry, we chose Sweden, UK and USA as the reference. The reasons why we chose these three countries are as followed:

- **For Health Care System Reform**

  - **Sweden**: With the location in north Europe, Sweden, quite famous for its high welfare and as well as high tax, has always been seen as a model for national welfare state. The government implements a medical isolation system, in which the task of doctors is to give medical services to patients, but not to sell drugs. This is the most direct way to avoid the problem of medical collusion.

    Nevertheless, since the late 60s of the last century, due to the depression of market, national economy grew quite slow, the population with unemployment continuously increased, fiscal deficit raised year by year, and as well as came up with the phenomenon of low inflation. In addition, the policy of Swedish national health insurance emphasized so much on high welfare, high protection that neglected or less considered the cost of medical services and people’s ability to pay, which increased the burden of expenditure in health care. Furthermore, the imperfect medical management system, deficient health insurance policy, lack of cost control, and as well as the continuously increased development of medical new technology and new drugs and social growth in demand for medical services, result in sharp increase of national health care costs. (Li G., 2007)

  - **UK**: The medical insurance system including health care and social insurance system began to be gradually established among western countries since 100 years ago. For instance, in UK, France and Germany, the health care services had a strong character of social welfare, in addition to plastic surgery, dental and a few other medical projects, the governments implemented free universal medical
services. Particularly in UK, the government implemented a universal health plan – National Health Service (NHS), which is a publicly funded health care system for all the citizens. This kind of health insurance model with a major guarantee of “supply side” is quite similar with Chinese medical insurance under the planned economic system.

It seems from the aspect of UK that the health care with more reliance on the government could solve the problem of “expensive and difficult to get medical services”. Nevertheless, new problems come up. On the one hand, public grievances rise, while on the other hand, due to the increasingly population especially in aging, the public finances become too unsustainable to continuously bear the added gap in the inputs of health care.

➢ **USA:** USA, ranking the first economic status in the world, is the only country among the developed countries without universal health care protection, which provides public health care insurance only for the people of retirement and the poor. From its point of view, the medical services have a high dependent degree of the market. The competition among private hospitals is actually the competition for the patients’ money, as forming the physician groups with world’s first living wage level and the pharmaceutical industry of lucrative practice. Nevertheless, this kind of competition did not bring needed safe and effective medical services to the patients. Although its health care services are on the basis of the market, the financial burden of government is not light. Many non-medical insurance people usually take the approach of routine way as pathologic emergency or drag on the chronic diseases after the retirement, which bring a heavy financial burden to the government.

**Summary:** As far as it concerned, according to these three countries’ practice of health care system, whether more depend on the government or the market, achieve
the same following results: 1. People are not satisfied and blame the government; 2. the government worried about the heavy financial burden.

To some extent, the health care systems in these three countries are quite typical and different. Therefore, when it comes to the analysis part of China, it is significant and helpful to take advantage of their good points and avoid similar problems during reform progress based on actual national conditions in China.

- **For Medical Device Industry**

USA, European Union, Japan and China are the world’s largest medical device market, while USA is the largest producer and consumer of medical devices in the world with over 40% and 37% of medical devices separately. In addition, as the most mature market of medical devices, European Union owns strong economic strength; the expenditure of medical services has a relatively high ration of GDP; the aging population is continuously growing; and as well as the demand for new technological products is rising, all of which are the main factors to promote the development of European Union’s medical device market. Furthermore, USA and European countries are the important base for research, development and production of high-end medical devices, such as MRT, CT, high-resolution X-ray equipments and so on.

Nevertheless, China is one of the largest producers of medical devices, but not powerful due to its most exports of medical devices are low-end products with relatively low added-value. At the same time, Chinese small and medium sized medical devices have an obvious competitive advantage with relatively low cost across the international market.

**Summary:** Therefore, it is quite essential for China to reference the advanced technologies from developed countries especially in USA and European Union countries to promote the domestic development of high-end medical devices.
1.6 Description of the Questionnaires

In order to better analyze the thesis and get a general understanding of people’s opinions on health care system reform and medical device industry, we designed four different types of questionnaires for Swedish citizens, Chinese citizens, the personnel involved in Chinese medical device industry, and as well as Chinese medical service personnel. Gratefully we achieved 10, 12, 12 and 10 responses separately. (See Appendix 1)

1.7 Structure of the Thesis

1.7.1 Analysis Route of the Paper

In order to achieve the general purpose of the study, the paper starts with introducing the background of current status of related issues.

The next part will be the preparation of further analysis, which contains the theory and descriptions of the health care system reform histories of China, Sweden, the USA and UK. The information provided starts around the problems existed in Chinese health care system. Then references of the health care system reform form the other three countries are used. We consequently presented the environmental potential influential aspects. The clue from the analysis preparation part is the logic behind Chinese new health care reform and its impacts on the Chinese medical device industry.

The main discussion takes place in the Chinese medical device market analysis, together with two representative company case studies. The two cases we choose represent three groups of companies currently competing in the Chinese medical device market. Comparisons were made among medical equipment manufacturer, disposable medical device manufacturer and international invested company, to identify both of the advantages and disadvantages of Chinese medical device
companies. In addition, we also chose one Swedish medical device company as a comparison.

After identifying the opportunities and challenges of the industry, we will draw the conclusions which are the recommendations for Chinese health care industry and also some suggestions for the Chinese government.

1.7.2 Framework of the Paper

![Framework of the Paper](image)

*Figure 1: Framework of the Paper*
2 THEORY

2.1 Porter’s Five Force Model

Porter’s Five Force Model is a market analysis tool in which Porter described five forces on company competing in the market. As it is shown in the figure above, the five forces come from five groups of entities, which all give the companies the pressure and threats. Following paragraphs will discuss the five forces separately.

1. Threats of Potential Entrants

New entrants in a market are eager to gain market share and often bring important resources. By entering under certain conditions, price competition is caused or cost
inflation that might reduce profitability. The extent to which potential entrants are threatening depends on the entry barriers in a market that are combined with the expected reactions of established competitors. According to Porter (1980), there are different barriers to be considered: economies of scale, product differentiation, capital requirements, switching costs, access to distribution channels, cost disadvantages independent of scale, and government policy. As the barriers are connected to the expected retaliation of existing competitors, that means whether the competitors respond more or less aggressively, the extent to which an entry might be menacing will be low, if the barriers are high and the retaliation is forceful.

2. **Rivalry among Existing Firms**

These are permanent threats caused by already existing, established firms in the market. This kind of competition will arise if competitors aim to improve their position by using the common tactical instruments like price competition or advertisements. If one competitor moves and takes an advantage, the response of others will be quick to counter the rival.

3. **Pressure from Substitute Products or Services**

Threats of other industries caused by the offering substitute products are confining the profits of the own industry. This might be a fast process when the substitute already exists and its applicability for another purpose is simply to be identified. The substitute fulfils then the same function as the original product of the own industry. A solution offered by Porter (1980) to counter this pressure from other industries is seen in acting synchronously with other competitors of the industry in terms of advertisement for example, to improve the whole industry’s position.
4. **Bargaining Power of Suppliers**

Suppliers are powerful in terms of prices and quality. They can put the industry under pressure by using these factors. The fewer suppliers there are on a market, the more powerful the existing suppliers are. Although the supplier can be powerful if the industry is reliant on it, the supplier still wants to sell its products. As soon as there are substitute products or the industry is regarded as an important one to push the products on the market, the suppliers have a less powerful position. The conditions that enfeeble the supplier are supporting the buyer’s position.

5. **Bargaining Power of Buyers**

Buyers are acting mirror inverted to the suppliers using the same factors to put them under pressure like forcing down prices because of the ambition to buy products cheap but with high quality and service. There are also certain circumstances that enforce their position. For example, the higher the volume of purchase is, the more important gets the buyer for the supplier.

### 2.2 SWOT Analysis

Distinguishing between the external and the internal environment of the firm is common to most approaches to strategy analysis. The best known and most widely used of these approaches is the “SWOT” framework, which classifies the various influences on a firm’s strategy into four categories: Strengths, Weaknesses, Opportunities, and Threats. The first two – strengths and weaknesses – relate to the internal environment; the last two – opportunities and threats – relate to the external environment. (Grant, 2008)

From the marketing point of view, SWOT analysis is a powerful technique that could help a firm to carve a sustainable competitiveness in a business context. Furthermore,
strengths refer to a firm’s resources and capabilities used as a basis for developing a competitive advantage, while the absence of certain strengths could be viewed as weaknesses. In addition, when it comes to the external environment analysis of the firm, it may reveal certain opportunities for profit and growth, but its changes may present threats as well.

According to (Bradford & Tarcy, 2000), in order to develop strategies with the consideration of SWOT profile, the SWOT matrix (also known as TOWS matrix) can be constructed.

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-O Strategies</td>
<td>W-O Strategies</td>
<td></td>
</tr>
<tr>
<td>Threats</td>
<td>S-T Strategies</td>
<td>W-T Strategies</td>
</tr>
</tbody>
</table>

*Figure 3: SWOT Matrix / TOWS Matrix* (Bradford & Tarcy, 2000)

- **S-O Strategies:**
  
Pursue opportunities that are a good fit to the firm’s strengths

- **W-O Strategies:**
  
Overcome weaknesses to pursue opportunities

- **S-T Strategies:**
  
Identify ways with firm’s strengths to reduce the vulnerability to external threats

- **W-T Strategies:**
  
Establish a defensive plan to prevent the firm’s weaknesses from making it highly susceptible to external threats
2.3 Generic Strategy

Porter claimed three best generic strategies for companies to compete in the market in his Competitive Strategy: Techniques for Analyzing Industries and Competitors, 1980. The three strategies are cost leadership, differentiation strategy and focus (or segmentation) strategy (Porter, 1980).

- **Cost Leadership Strategy:**
  Cost leadership strategy targets at cost-conscious or price-sensitive customers. Firms sell the products either at average industry prices to earn a profit higher than the competitors, or below the average industry prices to achieve market share. Normally they provide large volume of standardized products to customers by taking the advantage of economies of scale. In order to succeed in this strategy, firms usually own the following internal strengths: access to the required capital for a significant investment; high level of expertise and skills in efficient manufacturing process; and efficient distribution channels as well.

![Figure 4: Porter’s Generic Strategies (Porter, 1980)](image-url)
Nevertheless, due to require strictly control all along the process, cost leadership strategy is relatively fragile to market change. Furthermore, large volume production would result in low mobility, as may make firms response for market change slowly. In addition, it also had the disadvantage of low customer loyalty since target customers easily switch to lower price suppliers or product substitutes.

- **Differentiation Strategy:**
  This strategy seeks to win certain customer group by offering differentiated products or services that are perceived to be better or different from competitors’ products or services. So that the perceived uniqueness may bring high customer loyalty and also the firms are able to charge a certain amount of premium.

  This strategy is applicable in the non-price sensitive staturated market, otherwise, it will be associated with the risks of competitors’ imitation and changes in customers’ preferences or tastes.

- **Focus Strategy:**
  It concentrates on a narrow market segmentation and with that segment attempts to achieve relatively broad either a cost leadership or differentiation. In general, firms with a focus strategy often have a high degree of customer loyalty.

  No matter in adopting a narrow or broad focus strategy by offering low prices or differentiated products or services, the firm should depend on the needs of selected segment and its resources and capabilities. A successful focus strategy can make a firm be able to tailor a broad range of product or service development strengths to a relatively narrow market segment.

  Nevertheless, this strategy also has some risks including imitation and changes in the target segments. Furthermore, it may be relatively easy for a broad-market cost leader to adapt its products or services to compete directly.
**Summary:** As far as it concerned, it is of importance to realize that generic strategies are the ways to gain competitive advantage and are closely related to the capabilities and resources the company posses and uses. Nevertheless, each generic strategy has its own risk. In addition, although these generic strategies are not necessarily compatible with one another, firms are able to succeed at multiple strategies with creating separate business units for each strategy. Whereas to be successful in the long term, Porter (Porter, 1980) argued that a firm must select only one of these three generic strategies, otherwise the firm will be “stuck in the middle” and will not achieve a competitive advantage by selecting more than one single generic strategy.

**Bowen’s Strategy Clock**

<table>
<thead>
<tr>
<th>Value/Price</th>
<th>Low Price</th>
<th>Medium Price</th>
<th>High Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>Low cost base and reinvestment in low price and differentiation</td>
<td>Perceived added value by user, yielding market share benefits or allowing price premium</td>
<td>Perceived added value to a particular segment warranting a premium price</td>
</tr>
<tr>
<td>Cost leader</td>
<td>Low added value</td>
<td>Perceived value to increase market share</td>
<td>To get high margins. Woks in de facto industry standard position. Risk losing market share to competitors.</td>
</tr>
<tr>
<td>Segment specific</td>
<td>Low added value</td>
<td>Increase price &amp; low value</td>
<td>Risks losing market share: only feasible in monopoly position</td>
</tr>
</tbody>
</table>

*Figure 5: Bowen’s Strategy Clock Framework* (Bowman & Faulkner, 1996)

Bowan developed Porter’s generic strategy into Bowen’s Strategy Clock. It suggested eight possible strategies in four quadrants defined by the axes of price and perceived added value. As it is shown in the Figure above, the star shape in the middle is reminiscent of a clock face, which is the root of the theory name.
3 SWEDISH HEALTH CARE SYSTEM

Sweden has been world-famous for high taxes and high welfare. An important aspect of high welfare embodied in the free medical services. However, after several years of implementation of this system, it gradually reveals the disadvantages of low efficiency of health care. Huge medical expenses have become a heavy burden on economic development in Sweden.

3.1 Introduction of Private Hospitals

In 1991, the Moderate Coalition Party in power changed Swedish government the history of Sweden since World War II entirely by the government-run health system. It firstly introduced in the private hospitals and clinics in Sweden. Medical companies and individuals were allowed to provide primary medical services hospital local health clinic contracting in the form of stock or collective ownership – mode of enterprise management, profit objectives. The income is linked to the number of patients treated. (Fan, 2007)

The amount of government subsidy for state owned medical institutions depends on the population in the region. At the same time, the subsidy for private medical institutions equals to half of their won operation cost. The other half cost need to be earned by the private medical institutions themselves.

Private hospitals can get SEK 160 from the government every patient they treat. In addition, private hospital can earn income from the insurance companies by treating patients that are not with the national welfare system. They can also earn some income by providing special vaccine services, such as the anti-flu vaccines when winter approaches; special vaccine for the anti-mosquito bites in summer, as long as the vaccines against infectious diseases injection before going to tropical areas or
other underdeveloped countries. Swedish citizens need to pay for all of these vaccines on their own expense.

Although since the 1994 election, moderate coalition party never had been in charge, Social Democratic Party has not suspend the right to moderate the party launched the health care system reform. They continued and improved the reform measures instead.

3.2 More Choices for Patients

Health care reform increased the patients’ freedom of choice. Before the reform, physicians were designated by health authorities. After the reform, citizens can freely choose family health doctor. If not satisfied with the attendance of doctors, the patients can also replace the doctor. If the citizen moves to a new community, he will soon receive a letter from the local health clinic, from which he can understand what the medical services he could enjoy and also select family health doctor.

3.3 Separation of Medical Care and Medicine Provision

Swedish health care reform also influenced the Swedish system of publicly funded drugs. Swedish social welfare system insures citizens’ medical expenses under SEK1800 each year. The drugs over the amount are free to receive.

In the past, doctors liked to give a patient expensive drugs manufactured by big companies. After the health care system reform, the government health sector continuously increased variety of alternative medicine into publicly funded pharmacopoeia. The government encourage doctors to give patient low price medicines while ensuring the medical efficiencies.
Sweden applies the medical care and medicine provision separating system. Hospitals don’t have pharmacies. The patients use doctor's prescriptions to buy drugs in outside pharmacies. To prescribe whatever drugs from whichever pharmaceutical companies has nothing to do with the hospital management and doctors’ income. (Ministry of Health and Social Affairs, 2010)

Swedish doctors’ high income are to some extent inhibited the corruption. In Sweden, a doctor equivalent to a Chinese deputy director doctor monthly salary is up to SEK 60000-70000. It is much more than the 25 000 SEK Swedish average wage level. Of course, comparing with the European and U.S. counterparts, Swedish doctors’ wage is not high. (Government Offices of Sweden, 2010)

Sweden has 450,000 square kilometres of land, 9 million people. There are 9 major across-regions hospitals existing, 70 provincial hospitals, nearly 1,000 primary health care services providing local health clinic.

Hospitals and local health clinics division of task is different. Hospitals provide inpatient and outpatient medical services to patients who need hospital treatment specialist in the field. In addition to general specialist medical services, hospitals also provide psychiatric treatment, a, neurosurgery, thoracic surgery, plastic surgery and specialized laboratory services and services in other professional fields

3.4 Increased Service Efficiency

According to 2002 statistics, the Swedes spent on medical and health costs of SEK 196.8 billion, equivalent to 9.1% of the GDP. (WHO, 2000) Medical and public health cost accounts for 15% of household spending in Sweden. However, the household expenditures are mostly on purchase of the fitness nutritional. After the reform, Swedish citizens still do not need to spend much on health care. No matter in public hospitals or private hospital, per visit fee is SEK 140; emergency registration
fee is SEK 240, SEK 260 for specialist clinics. In addition, maximum total visit fee within one year is 900 kroner. Then the visit fee can be exempted in the rest of the year. Young people under the age 19 have free medical treatment in Sweden; elderly patients and patients with chronic diseases who need regular visits do not need to pay the per visit fee. Hospital charges nothing for those patients’ surgery, inspection.

3.5 Government Investment Not Reduced

Overall, the Swedish health care system reform didn’t reduce the government budget on health care. However, compared with the pre-reform period, it mobilized the enthusiasm of doctors, and greatly enhanced the efficiency of medical services. Taxes can be used on most important areas.

According to private hospitals, doctors must treat patients well. They need to improve the quality of medical care in order to attract patients, and to earn the subsidy allocated by the State.

In the annual budget discussions of Swedish Parliament, health care is always the most intense debating topic. Social Democratic Party still considers health care as a representative of the ideals and beliefs. Referring to the problems in the health care system reform, Health Minister Ylirva Johansson said: “The society always welcomes democratic forms of enterprise systems management organizations at all levels of medical care. However, the profitability of the medical enterprise should not be just to big bosses’ red envelopes at the end of the year, but should be reinvested in health systems development. Medical care should not be affected by the profitability amount. The health care should be equal rights for all”. (Xin Min Evening News, 2005)
4.1 Chinese Health Care System under Chinese Special Conditions

4.1.1 Chinese Health Care Reform History

Chinese health care system was being built up and developed step by step after the founding of new People’s Republic of China. Resulting from special historical and social reasons, China has separate health care systems for urban and rural areas. Both of the urban and rural health care systems have their own characteristics and evolution processes. For Chinese urban areas, the health care reform has been through mainly 4 phases since 1978. The four phrases can be respectively summarized as following: public expense medical care and labor insurance (1978~1998); urban health care insurance reform and pilot phrase (1998); nationwide basic medical insurance system established (1999-2006); and Multi-level medical security system and exploration stage. In the rural area, along with rise and fall of the cooperative medical system, the health care system reform has been in effort of constructing new cooperative medical system to further explore and perfect the rural medical security and insurance diversification. (Wang, 2008)

4.1.2 Chinese Current Health Care System

According to World Health Organization’s definition, a health system is “the sum total of all the organizations, institutions and resources whose primary purpose is to improve health”. One way of categorizing the health system believes that it is consisted by three parts (Zhang, 2004): 

1. The first part is the Health insurance system, including such as medical insurance and medical assistance system.
2. The second part is the medical service providing system. It includes prevention and cure of disease, health education service institutions, such as hospital or clinic systems.

3. The third part is the health care monitoring system.

In this part, the authors will mainly introduce about the first and second aspects.

4.1.2.1 Chinese Current Health Insurance System

Since the “reform and opening up”, Chinese health care system has undergone enormous changes following the market-oriented economy and social environment. The health insurance is an important component of social insurance, generally undertaken by the government, the government would resort to economical, administrative measures and legal means to enforce as well as organize and manage.

In the aspect of health insurance system, the Urban Unit Health Insurance System (the public expense medical care and labor insurance health care) and Rural Cooperating Health Care System that covered most of the citizens has gradually quit the stage of history. In the urban area, the Unit Health Insurance System has been replaced by the National Medical Insurance System. In the rural area, all levels of rural government are making extensive effort to build up a new health insurance system. At present, Chinese health security system has the basic medical care insurance and the Urban-rural Medical Assistance as the main part, also includes other forms of supplementary medical insurance and commercial health insurance.

The basic medical care insurance consists of Basic Urban Worker Medical Insurance, Basic Urban Residents Medical Assistance and New Rural Cooperating Medical Health Care systems. They respectively cover urban employed population, urban unemployed population and rural population.
The Urban-rural Medical Assistance is the basis of Chinese multi-level health insurance system. It is mainly funded by the government to help poor people who couldn’t enter the basic medical insurance system or can’t afford the shared premium burden after entering the system to gain the benefit of the social insurance as well.

Supplementary medical insurance includes commercial health insurance and other forms of supplementary medical insurance. Its main purpose is to meet higher level medical demands other than basic medical needs.

The following use the Basic Workers Medical Insurance as an example to illustrate the implementation process of Chinese current health care insurance system. The Basic Workers Medical Insurance system is mandatory through legislation. The employers and employees share the burden according to certain percentages to pay the insurance premium, establish social health insurance fund and cover the medical expenses of employees. When the employee is sick, national health insurance institution provides appropriate subsidy and reimbursement, helping to restore the health of labourer and the ability to work as quickly as possible into the process of social reproduction.

Chinese medical service providing system is also divided into two parts. In the urban area, community health service institution linked with city hospitals (including provincial and municipal polyclinics and specialized hospitals, etc.) medical service system has been primarily formulized. In the rural area, there formulated a county, township and village three layer health care network. Among them, the public hospital is the mainstay of Chinese health service system. It is the significant basis of the medical service system, and has played an important role in improving people’s health, safety and social stability tasks.

China’s achievements in health care career are universally recognized. World Health Organization once praised China’s protection of largest population with the lowest cost (with only 3% of the GDP). Under nearly three decades of exploration and
practice recently, China has not only improved the health level of the people significantly, and also made great achievements in the establishment of comprehensive medical system and improving health care service quality.

But in recent years, there emerged a variety of extreme phenomenon, such as the extortionate price hospital in Harbin (“Harbin sky-high price hospital”) or the reporting of doctor’s backhander case. At the same time, the mass complaint of low accessibility (“hard to see a doctor—kan bing nan) and high costs (“expensive to see a doctor—kan bing gui”) of health care are accumulating. There exposed the numerous remaining problems in Chinese health care system.

4.1.2.2 Chinese Current Medical Service Providing System

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4.2 The Problems of Chinese Current Health Care System

In the World Health Report 2000, it is stated that the goals for health systems are to obtain “good health, responsiveness to the expectations of the population and fair financial contribution”. (WHO, 2000)
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In both urban and rural areas, the development of the new health insurance system has been faltered on the generalizing road. In consequence, the cover rate of health insurance rate is extremely low; most of the citizens have absolutely no health insurance. Once get sick, they have to afford the full amount of the medical care expense. On the aspect of medical services, all kinds of medical care providers, especially hospitals, have already comprehensively maketalized. The financial grant from the government only accounts for a too tiny part of their total revenue to by count on. Contrarily, their “sales profit”, which is the medical care service and medicine selling profit, is the main source of their earning. Therefore, all the medical service providers have become organizations trade services for revenue. However, most of the medical service providers are still state owned, and they registered as “non-profit organizations” after the government promoted the categorized medical care institution reform. (Gu, 2007)

According to Chinese State Council’s summarize, there are mainly 6 uncoordinated issues g within the health care system (State Council, 2009).
1. Discordance between the heath care industry development between economy developments. The health industry has been lagging behind economy and other social industry development for a long time.

2. The medical care service doesn’t coordinate with health insurance. Health insurance is developed much slower; people have heavy burdens of medical expenses.

3. Between the urban and rural areas, and among regions, the levels of health care industry differ quite a lot. The rural area and the middle & west part of China has much lower medical service quality, level and accessibility.

4. The managing and operating systems don’t coordinate with the medical service demand. The performance assessment system needs to be improved.

5. The Chinese and western medical care don’t go along with each other. The Chinese traditional medical care and medicine has not been paid enough attention to. Its service occupation has been shrinking gradually. The features and advantages are vanishing.

6. Discordance between equality and efficiency. The focus has been put more into arousing the enthusiasms of medical care personnel and improving the service efficiency, whereas lose much sight of the health care equality.

Consequently, Chinese health care system is still defective. There requires for innovative and effective solutions for the existing problems.

4.3 The New Health Care Reform Policy

The OECD Health Working Paper (2003) points out that health reforms are assessed according to their impact on four policy goals. The first one is ensuring access to
needed health-care services; the second one is improving the quality of health care and its outcomes; the third one is allocating an “appropriate” level of public sector and economy-wide resources to health care (macroeconomic efficiency); and the fourth one ensuring that services are provided in a cost-efficient and cost-effective manner (microeconomic efficiency).

In July 2005, State development research centre concluded in the *Chinese Health Care Reform Research Report* that “basic unsuccessful health care reform in China”. It was indicated in the report that current decline of equality of health care service and low efficiency of macro health investment show that the reform was unsuccessful. The commercialization and marketization tendency of health care industry is totally incorrect. It has violated the primary law of health industry. (Ge, 2005)

It was precisely because of the over usage of market scheme in the health industry, that leads to the severe unequal resource distribution in the health care field. The high level hospitals in cities have been developing accelerant. While the primary medical care institutions (low end) especially rural hospitals and community hospitals has been gradually shrunk.

Facing the dilemma of health care reform, through 4 years of dedicated research and design by the Council and all related organizations, the new health care reform policy finally get passed and published in 2009.

At the beginning of April 2009, Chinese State council released two official documents: *The Suggestions on Deepening the Health System Reform and Deepening the Health Care System Reform Implementation Plan 2009-2011*. The new health care system reform plan promoted 5 emphasises revolution aspects, focusing on solving the problems of low accessibility and high costs which are mostly reflected by the mass. (Fei, 2009)
According to The Suggestions on Deepening the Health System Reform (Chinese State Development Council, 2009), the reform would concentrate on seizing the following five essential tasks during 2009-2011: (Sees Appendix 2)

a. Accelerate basic health insurance system construction;
b. The preliminary establishment of national basic medicine system
c. Improve primary health care service system
d. Promote the equalization of basic public service gradually
e. Pilot projects of reforming public hospitals

In order to achieve the goal of reform, through preliminary calculation, the total investment for levels of government would be 850 billion RMB. Among it, the central government would invest 331.8 billion RMB. This budget would mainly be invested in the following 3 fields: accelerating basic health insurance system construction; improving primary health care service system and promoting the gradual equalization of basic public service.

The most outstanding issue of the new health care reform policy is large extent of increasing in governmental public health care investment, and focus on the primary level.

4.4 The New Health Care Reform’s Impact on the Chinese Medical Device Industry

At the Information Office news conference, the relevant ministries of 4 department of state council consisted of NDRC (National Development & Reform Committee), MOH (Ministry of Health), MOF (Ministry of Finance) and MOHRSS (Ministry of Human Resources & Social Security) indicate the distribution of the 850 billion RMB funds: the proportion of the central and local is 4:6 based on the different responsibility share; there is 2/3 funds used for the purchaser and other else for the
supplier; about the area distribution of the funds, most of the input would tilt to the mid and west area to move the equalization of the basic public health services firmly and gradually ahead.

Measured the distribution of the 850 billion RMB funds from the information released now, there is probably 131.3 billion RMB on reforming the public hospital and 152 billion RMB on reinforcing the construct of the grass roots medical institution.

**Figure 6: 850 Billion RMB Health Care Reform Budget Spending Percentage Distribution**

(Forward Medical Device Research Group, 2009)

4.4.1 New Health Reform Boost Medical Device Industry Growth

4.4.1.1 Government Increase the Investment of Rural Medical Device Industry

Most of the constant input increase will go to boosting the development of the medical care device industry by the Chinese government. “Rural Health Service System construction and development plan” (Ministry of Public Health, 2006) pointed out the 6.8 billion RMB would be pumped into the rural medical care device projects; On Nov 23rd 2008, the government announced to put additional 4.8 billion
RMB into the construction of the rural health service system and inclusive of 1.5 billion RMB for medical care device projects. As a result, there would be approximate total 8.3 billion RMB applied to the rural medical care device projects during these years from 2008 to 2010, and the great mass of the funds would be place in the purchase of the medical care equipment and facilities.

In recent years, the Chinese medical care device industry has developed rapidly with the growing support of the government and the promotion of the speeding up globalization. Till 2008, the output value of the domestic medical care device industry reached 200 billion RMB, an increase of 15%. It is worth mentioning that this amount has been up to 1/3 of the drug production output value, but the ratio was just 1/5 in 2001.

<table>
<thead>
<tr>
<th>Institution Category</th>
<th>Total Investment Amount (Billion RMB)</th>
<th>Device Investment Amount (Billion RMB)</th>
<th>Device Investment (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township (Town) Health Station</td>
<td>14.13</td>
<td>4.27</td>
<td>30%</td>
</tr>
<tr>
<td>County Medical Institutions</td>
<td>4.92</td>
<td>1.43</td>
<td>29%</td>
</tr>
<tr>
<td>County Maternal and Child Health Institutions</td>
<td>0.83</td>
<td>0.27</td>
<td>33%</td>
</tr>
<tr>
<td>County Chinese Medicine Hospital</td>
<td>1.81</td>
<td>0.8</td>
<td>44%</td>
</tr>
<tr>
<td>Increase in 2008</td>
<td>4.8</td>
<td>1.49</td>
<td>31%</td>
</tr>
<tr>
<td>Total</td>
<td>26.52</td>
<td>8.26</td>
<td>31%</td>
</tr>
</tbody>
</table>

*Figure 7: New Health Care System Reform Rural Medical Institution Investment Plan* (Ministry of Public Health, 2006)
4.4.1.2 New Health Care Reform Policy Will Increase Fiscal Investment in Medical Device Industry by around 5 Billion RMB

According to “The Recent Health System Reform Key Projects Implementing Plan” (State Council, 2009), in the following 3 years, the central government will focus on: assisting construction of 2000 county hospitals (including traditional Chinese medicine hospitals); completing the 29,000 supported town (township) hospitals constructions planed by the central government; and rebuilding or extension constructing 5000 central Town (township) health stations. There will be certainly part of the 850 billion RMB being site directed invested in primary medical care institutions as their subsidy for purchase and installation.

In the medical device centralize purchase information release conference held in July 2009, the president of Ministry of health programming finance department Zhao Zhiling unveil to the public that Chinese perfecting primary health system constructing programme has been started up. There will be total investment of 100 billion RMB till 2011. It will be mainly put into basic establishment constructions and medical equipment purchases and installations of the primary medical institutions. The medical device manufacture companies will become the direct beneficiaries of purchasing orders. The whole industry will be greatly boosted.
<table>
<thead>
<tr>
<th>Institution Category</th>
<th>Configuration standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Hospital (Regular)</td>
<td>1.5 million RMB</td>
</tr>
<tr>
<td>County TCM Hospital</td>
<td>1 million RMB</td>
</tr>
<tr>
<td>Township (Town) Health Station</td>
<td>Consider the configuration with average budget for regular health station of 80 K RMB and central health station of 0.2 million RMB</td>
</tr>
<tr>
<td>Maternal and child Health Hospital (Station)</td>
<td>Configuration with average minimum budget for MCH stations of 0.25 million, and MCH hospitals of 0.38 million RMB</td>
</tr>
</tbody>
</table>

*Figure 8: Medical Equipments Purchased by Different Kinds of Medical Care* 

*Institution* (Ministry of Public Health, 2006)

4.4.1.3 Primary Medical System Reform Will Increase the Demand for Low-Normal Medical Devices

One of the focus target in the new health care reform is to, Improve primary health care service system; speed up constructions of rural township hospitals, village clinics and community health service institutions; assume urban community health service institutions to undertake more medical treatments, to solve the low accessibility of the health care system problem (Hard to see a doctor, “Kan Bing Nan” from the mass).

The analysis indicates that, driven by the health care reform, the medical device increase will gradually shift to community health service centres (stations) and township hospitals. This will pull on the low-end medical device needs. Many companies has already been aware of this, and actively deployed the low end development plans. For example, GE Healthcare Conglomerate has launched a series of medical equipment called “Ling Long” (the Chinese word means delicate and exquisite) with better prices selling to rural health care institutions. (GE Healthcare, 2009)
Johnson & Johnson Medical has launched a direct health project. Its “Landing point” is also communities, rural areas, factories, mines, etc. GE Healthcare Conglomerate has established a joint venture company in Shandong Xinhua Medical Instrument Co., Ltd. Its focus is the development of universal type medical technology products. GE has also announces that they will increase investment in Chinese rural health care market. They will promote 5 new rural primary medical products in 2010. (Johnson & Johnson Medical, 2009)

Chinese domestic manufacturers have an advantage in the low end medical device segment. The purchases of low end medical devices are mostly centralized conducted by the government. Therefore the performance-price ratio is special important. The domestic manufacturers’ quality in low end products has already parallel with the international ones. Furthermore they are agile to handle. And they have obvious advantages on cost price.

4.4.1.3 There will be Huge Demand of Primary Medical Devices from Middle and West Part of China

In order to promote the gradual equalization of basic public health services, the new medical system reform of primary health care leans to the central and western regions. It also gives grants to the eastern region. According to the statistics from Chinese Ministry of Health, China have established 39 000 township hospitals. The current configurations of equipment on these hospitals and clinics are unbalanced. The township hospitals equipment level in the southeast coastal areas is even higher than the Ministry of Health standards and the national average. On the contrary, the north, central and west township hospitals have serious equipment deficiency or repeat standard configuration situation. The new health care reform goal of equalization of services will promote the development of medical industry in central and western regions. In April 2009, the Ministry of Finance allocated 1.726 billion RMB fund as subsidies for Midwest urban community health organizations, township hospitals,
village clinics and other primary care health facilities equipment purchase. In the short term, there will be huge demand of primary medical devices.

4.4.2 New Health Care Reform will Influence the Purchase Pattern and Channel

4.4.2.1 Transformation of Medical Device Purchase Channel

Under the guide of new health care reform, grade iii hospitals will enhance their critical disease handling capabilities. At the same time community health station will take the medical position in charge of preventing, diagnose, first time treatment and transfer. As the transformation of social medical care functions, grade iii hospitals will tend to diagnose and treatment. Consequently they will mostly need high end technological sophisticated equipments. And they will probably invite public bidding and purchase independently. For hospitals having lower grades the ii, they will mostly need low-medium level primary medical devices which the government will concentrate purchase.

4.4.2.2 Private Hospitals Will Obtain Relative Large Space for Development

There is one specific clause in the new health care system reform policies—“Private hospitals enjoy equal treatment in health insurance site direction, scientific research items, professional title assessment, continuing education, and other areas.” This means that private hospitals will have equal admittance qualifications and competing relations with state owned hospitals on the level of offering and developing primary health care service level. Since the beginning till now, private hospitals have been mostly small sized, low ended clinics and preparatory hospitals. There are few having the scale and capability of polyclinic. According to the statistics from Ministry of health, the private hospitals’ percentage of treating person times in 2008 is only 9.5% of the total number.

Unequal policies that restrained private hospital developments were mainly shown in:
1. About the national site oriented medical care qualifications, except few large scale private hospitals, it was quite difficult for small-medium size private hospitals to get considered.

2. The personnel in private hospitals cannot be appraised to get professional titles. This resulted in large numbers of outstanding talents being absorbed by grade iii first class state owned hospitals.

3. Although private hospitals have preferential taxation policy for the first 3 years after entering the market, the capital, scale, tech and other conditions disadvantages and restrains made private hospitals dare not to invest in new projects.

When having the equal competing opportunities with the state owned hospitals, private hospitals can increase investment in R&D and equipment, also widen the service offering, to get faster development.

This is one more measure enlarged private hospital’s developing space in the top medical service market. That is noted as “State owned hospital special-demand medical service (referring to the high level medical services provided by medical institutions under the high level medical service demands from some of the high income group of people, such as VIP ward, specialist doctor diagnose rapid track and etc.) should be fewer than 10%”.

State owned hospitals used to be monopoly in top medical services. But they have limited serving capacity. As Chinese abroad educated and high income group of people increasing continuously, high class group of people have increasing higher requirements for medical service. And they can afford it. Private hospitals have advantages on this issue. This policy will increase Chinese private hospital’s competence in the top medical service market.
Private hospitals have independent purchasing rights for medical devices. They order it from commercial companies directly, and operating totally market oriented. As the result, they generally have higher requirements on prices, and prefer products with a high performance price ratio.

4.4.2.3 Government Will Be in Charge of State Owned Hospital Medical Device Purchase

State owned hospitals are the main provider of medical care services. The guidance principals in the new health care system reform that “preserves the commonweal of the public health system”; “separate administration and enterprising, supervision and operation, medical care and medicine business, profit taking and non-profit organizations”, enhanced the responsibility of state owned hospitals. The government will be in charge of their (state owned hospitals) basic constructions, large scale medical equipment purchases, key subject development, resident doctor coaching, retired personnel expenditure and policy-directed subsidies. The government will try to solve problems through setting medicinal service fee, higher the price for technical labour services and other measures.
5 MEDICAL DEVICE INDUSTRY AND MARKET IN OTHER COUNTRIES

5.1 Developing Status of American Medical Device Market

American medical device market is the largest global scale of this industry and United State has numerous medical device manufacturers which strength lie in making the most advanced products with strong economic superiority and the advanced science and technology.

The territory area of United State is more than 9.62 million square kilometres, behind Russia and Canada; the population of this country is more than 0.3 billion and only ranked 3rd to China and India in the world. In 2006, GNI (Gross national income) per capita is 44,070 dollars at PPP (purchasing power parity) and the total cost of national health is 15.3% of GDP (Gross domestic products). (Forward Medical Device Research Group, 2009)

In 2009, the expenditure of American medical device market is expected to 91.3 billion dollars, 41% of the world, the top of the earth. Although the growth trend of this index slows down in recent years, the medical device market is still the most active all of the world and it is predicted to exceed 1,000 dollars until 2012. (Forward Medical Device Research Group, 2009)

The market is mainly comprised of private medical units in United State. The medical insurance system called ‘Medicaid’ is established for the low income people and operated by each state. In 1960, the government set up the elders’ medical insurance plan named ‘Medicare’ for the old people’s hospital and medical service, especially for who elder than 65 years old. This plan also promotes the service of prescription for the old after 2006. Data displays some states are implementing their own national health program without any federal proposal. When President Obama taking office,
health system reform is almost the certain things, but the new president and his supporters in congress will decide how to do that is remained to be seen.

United State is the aggregation of many world class medical device manufactures as Johnson & Johnson, GE, Baxter, Tyco and Medtronic. Among the top 10 medical equipment manufacturers, there are seven U.S.-funded.

Imports are become increasingly important part for the total, reached 34%. The increase is partly because American exploits the cheap foreign production bases as Ireland or Mexico, and these products in these areas are imported into United State then.

American medical device market is in the strict regulation and the cost of market operation is expensive. However, it is running in a transparent manner and according to the rules. This country is the main place for medical research, development and clinical trials around the world.

5.2 Developing Status of European Medical Device Market

In 2007, the EU population has reached 490 million. EU medical device sales in 2006 reached 77.2 billion U.S. dollars. Germany, France, Italy, Britain and Spain occupied 78% of the European medical device market share. Germany and France, two countries has already accounted for 51% market share in Europe. These countries achieved an annual growth rate of 9% of the market. (Forward Medical Device Research Group, 2009)

As the most mature medical devices markets, Europe market has been annoyed by a variety of problems in recent years. The medical device revenue growth was quite slow. EU medical care device industry is rich and sophisticated, including Germany, France, Britain, Italy, Ireland, Austria, Belgium, the Netherlands, Portugal, Spain, Sweden and other countries.
As European largest medical device market, Germany industry was mainly driven by export growth. However, Germany is facing difficulties in health care reform and the financial. France also subjects to weak economic growth and health insurance deficit problem. Italy and Spain, in order to control medical expenses, are ready to be transferred management and financial responsibilities to local government.

EU market leading medical device product categories: cardiovascular products, conventional surgical instruments, imaging products, in vitro diagnostic products, ophthalmic products, nerve products, orthopaedic products, urology products, respiratory products.

The main factors that promote the growth of European medical device industry are: powerful economic strength, high medical expenses ratio of GDP, a relatively high proportion of elderly population, and rising demand for new technology products.

5.2.1 Developing Status of Swedish Medical Device Industry

Swedish medical device industry has been through a successful developing history. The success was mainly benefited from the leading technique innovation. There are 310 small and mid-sized medical device and diagnose companies in Sweden (Swedish Companies Registration Office, VINNOVA). The Swedish medical device industry accounts for less than 1% for the global market. However the revenue accounts for approximately 4% of the global medical device industry revenue. From the world medical device company’s list of top 50, two Swedish companies Gambro and Getinge were listed. (Health Research International, 2006)

Swedish medical device company occupied a considerable amount of patents. Swedish researchers have maintained a high level of publications and patents for over 15 years. 90% of Swedish medical device revenue comes from exporting. The companies mainly benefit from authorizing productions.
However, currently the Swedish medical device industry starts to lose their ground. The essence part of the industry is the innovations from 30 to 50 years ago. The patents are approaching their deadlines. There are signs showing that Sweden is less capable of turning good ideas into products, in other words, to commercialize. Referring to the amounts of articles published and patents acquired in the medical device industry, Sweden is only among the “average” lever relative to European peer countries. (European Innovation Scoreboard, 2006)

Therefore, their competitive advantage in global medical device industry is not outstanding anymore. It is hard to keep the strong performance in the future years.

In order to the development of the Swedish medical device industry, the Royal Institute of Technology, Karolinska Institutet and Karolinska University Hospital together produced a report with a conclusion of the collaborative plan for the industry. The plan involves universities, university hospitals, companies, government, network organization and investors. The main aim is to promote the innovations and the commercialization. It suggests that there are four critical elements: “strong and well aligned incentives, world class capabilities, active and well connected networks, as well as adequate funding for research and early commercialization.” (Action MedTech, 2007)

In the case study part, the Swedish company Gambro will be studied as an typical company case. As well as the suggestions given by the Action MedTech will be considered as a reference for the conclusions for this essay.

5.3 Developing Status of British Medical Device Market

The United Kingdom locates in Western Europe, constituted by Great Britain (including England, Scotland, and Wales), Ireland and some islands in the northeast area. It has 244 100 Km (including inland water), population of 60,209,000. The total health care costs account for 8.4% of the GDP in 2006 (WHO).
Britain is one of the largest medical device markets internationally. In 2009, the total value of English medical device industry was 78 billion dollars. The English domestic market value ranked 3 in EU, behind Germany and France. Its per capita consumption was 125 U.S. dollars, which is not much lower than France and Germany.

During the Labour government, the health care costs have been through a huge growth period. The national health insurance budget was increased by almost 3 times. In 2009, national health insurance budget was 98.2 billion pounds. It will rise to 102.3 billion pounds in 2010. But because of economic decline, starting from 2011 or 2012, the annual national health insurance budget may be decreased by 2.5 to 3.0 percent. This is equivalent to reduce the eight billion -100 billion pounds in the three years, or to reduce 15 billion pounds in 5 years. Facing a shortage of funds, the United Kingdom National Health Insurance system has been fully prepared and improved in many ways.

The British government is tightening operation of private medical institutions and the independent treatment centres. British national health insurance system now requires only minor surgery can be done in private hospitals.

UK medical device market growth was mainly from the import. Since many domestic manufacturers cannot quickly adjust on-demand product, they have to import from other countries. It is expected to have trade deficit in the future 6 years. (Forward Medical Device Research Group, 2009)

Britain is currently implementing Payment by Results paying system. This is a huge change on the financial burden for the British national health insurance system. This is also a government key measure in modern health care plan. Payment by Results, together with the patient can choose on their own, which in fact means that hospitals have to compete for patients. This is an opportunity to improve medical standards. But it will also bring unprecedented levels of financial risk to the primary care sector and the national health insurance system.
6 THE DEVELOPMENT ANALYSIS OF MEDICAL DEVICE INDUSTRY IN CHINA

6.1 General Development Status of Chinese Medical Device Industry

The medical device industry is a high-tech industry which is related to the multidisciplinary cross of human life and health, and as well as requires intensive knowledge and capital. Its development level represents a country’s overall strength and the development of science and technology. There are mass varieties of the products, and the manufacturing technology refers to the crossing areas in medicine, machinery, electronics, and plastics so on. Nevertheless, the production scales in various enterprises are quite different. According to large-scale and high-end medical products, they have high requirements for technology content, and the price of single product is quite high. Medium and small scale products require high quality but the single product price is relatively low, which are suitable for mass production, such as interventional catheterization, interventional guide wire and other interventional medical accessories.

In recent years, with the economic development and the improvement of medical technology, a large number of advanced medical devices have been widely used in clinical practice, so that the medical device market is expanded rapidly. In 2008, the domestic medical device market ranked the fourth in the world. In accordance with the domestic medical devices market, high-end products accounting for 25% market share, of which 70% were occupied by foreign-owned enterprises, and most of them were ahead of technology and quality with a comparison of the domestic enterprises. On the basis of left 75% medical device market, the domestic enterprises had certain advantages on some extent due to the required skill level is not high. Therefore, in the next few years, the demand of Chinese medical device market will mainly base on middle and low-end products. (Forward Medical Device Research Group, 2009)
6.2 Key Features of Medical Device Industry Development in China

6.2.1 Enormous Room for Growth

In 2008, the total sales revenue of 915 Chinese medical device manufacturing companies was 63.6 billion RMB, accounted for 9.69% of 656.1 billion RMB made by 5,949 Pharmaceutical manufacturing companies during the same period, was far lower than the international ratio of 40%. Due to the rapid development of Chinese pharmaceutical market, there is still a quite great room for the development of medical device industry. During 2004-2008, the average growth ratio of sales revenue and gross profit in the medical device industry was more than 30%.

In addition, the Chinese new healthcare system reform will also definitely bring great growth opportunities to the medical device industry. (Forward Medical Device Research Group, 2009)

![Figure 9: 2003-2008 Trend Ratio of Chinese Medical Device Industry accompanying with Medicine Manufacturing Market (Unit: %)](Source: National Bureau of Statistics)
6.2.2 Dominated by Foreign-funded Enterprises

During the year of 2008, according to 915 large-scale industrial enterprises, there were 290 foreign-funded enterprises that accounted for more than 50% market share of fitness equipment manufacturing industry in China. In addition, nearly one third of China's medical device products were exported to overseas. Furthermore, the foreign-funded enterprises with mature international sales channels have already established powerful brand awareness and dominate the export share. The delivery value made by the invested enterprises of overseas, Hong Kong Macao and Taiwan as well was 76%. (Forward Medical Device Research Group, 2009)

6.2.3 Three Major Gathering Areas

China has formed three major gathering medical device areas of Yangtze River Delta, Pearl River Delta and Beijing-Tianjin-Bohai Bay, the total sales revenue of which accounted for above 80% of the total industry. As the center of the Pearl River Delta, Shenzhen takes usefully the advantages of the electronics industry to mainly produce integrated high-tech medical devices based on the research, such as monitoring equipment, ultrasound diagnose, gamma knife, X knife and other equipment. Shanghai, regarded as the centre of the Yangtze River Delta area, mainly produces export-oriented and medium and small sized medical device with the manufacturing advantage of the mechanical and electrical integration. In addition, as the centre of Bohai Bay region, Beijing is rely on its research strength, mainly make the research and produce high-tech digital medical devices.
7 ANALYSIS OF CHINESE MEDICAL DEVICE MARKET

7.1 Threat of New Competitors’ Entry

In the market that firms have higher than normal profitability; more investors will be attracted to the industry. In other words, if there are not enough barriers to stop the emergence of the new entrants, then the enormous number of competitors would eliminate the profitability.

According to the National Bureau of Statistics, during 2002-2008 Chinese medical device industry assets annual growth rate averaged 19.88%, and industry annual sales volume growth averaged 24.06%. The data shows that Chinese medical device industry to maintain rapid growth momentum in recent years.

There are mainly three issues indicates the strength of the threats of the entry of new competitors in the Chinese medical device market:

7.1.1 Industry Profitability.

Generally, the more profitable the industry the more attractive it will be to new competitors. The opportunities which were discussed previously would probably drag much attention from the society. Other investors especially more international investors would see the potential profitability in Chinese medical device market.

Current Financial Status and Profitability of Firms in the Industry

Although Chinese medical device exportation was affected by the financial crisis, the sticky demand of medical care was not heavily influenced. In 2008, the industry has total assets of 60.638 billion RMB, up by 22.5%. During the period 2005-2008, the increase percentage of Chinese medical device industry sales were all more than 20%, the growth rate over the same period of the previous year increased by 5.97
percentage points. Chinese medical device industry achieved sales revenue 63.649 billion RMB, up by 29.06%, the growth rate over the same period of the previous year increased by 6.89 percentage points. Industry sales revenue in 2009 reached 81.471 billion RMB, total industry assets reached 77.616 billion RMB. The Chinese medical device industry has great potential.

The following table shows the main financial indicators of Chinese medical device industry.

<table>
<thead>
<tr>
<th>Main Economic Indicators</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products Sales Revenue (million)</td>
<td>493180.24</td>
<td>636490.14</td>
</tr>
<tr>
<td>Products Sales Revenue Increase Percentage (%)</td>
<td>22.17</td>
<td>29.06</td>
</tr>
<tr>
<td>Total Asset (million)</td>
<td>494985.99</td>
<td>606375.65</td>
</tr>
<tr>
<td>Total Asset Increase Percentage (%)</td>
<td>16.53</td>
<td>22.50</td>
</tr>
<tr>
<td>Total Liability (million)</td>
<td>226983.38</td>
<td>273103.03</td>
</tr>
<tr>
<td>Total Liability Increase Percentage (%)</td>
<td>11.78</td>
<td>20.32</td>
</tr>
<tr>
<td>Sales Profit (million)</td>
<td>97071.81</td>
<td>114894.73</td>
</tr>
<tr>
<td>Sales Profit Increase Percentage (%)</td>
<td>30.83</td>
<td>18.36</td>
</tr>
<tr>
<td>Total Profit (million)</td>
<td>52636.44</td>
<td>63563.83</td>
</tr>
<tr>
<td>Total Profit Increase Percentage (%)</td>
<td>42.51</td>
<td>20.76</td>
</tr>
<tr>
<td>Total Manufacturing Value (million)</td>
<td>514465.57</td>
<td>677347.65</td>
</tr>
<tr>
<td>Total Manufacturing Value Percentage (%)</td>
<td>21.42</td>
<td>31.66</td>
</tr>
<tr>
<td>Total Personnel Number</td>
<td>160642</td>
<td>187172</td>
</tr>
<tr>
<td>Total Personnel Number Increase Percentage (%)</td>
<td>6.41</td>
<td>16.51</td>
</tr>
<tr>
<td>Enterprise Number</td>
<td>806</td>
<td>915</td>
</tr>
<tr>
<td>Deficit Enterprise Number</td>
<td>141</td>
<td>200</td>
</tr>
<tr>
<td>Total Deficit Enterprise Loss (million)</td>
<td>2790.31</td>
<td>4796.60</td>
</tr>
<tr>
<td>Total Deficit Enterprise Loss Increase Percentage (%)</td>
<td>2.76</td>
<td>71.90</td>
</tr>
</tbody>
</table>

*Figure 10: 2007-2008 Chinese Medical Device Industry Major Economic Indicators (Unit: million, %) (Source: National Bureau of Statistics)*
<table>
<thead>
<tr>
<th>Period</th>
<th>Total Profit</th>
<th>Increase percentage</th>
<th>Total Deficit of Unprofitable firms</th>
<th>Scale of Losses</th>
<th>Degree of Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2008 Month1-8</td>
<td>4.41</td>
<td>30.23</td>
<td>0.356</td>
<td>22.35</td>
<td>8.07</td>
</tr>
<tr>
<td>Year 2009 Month1-5</td>
<td>3.518</td>
<td>28.90</td>
<td>0.243</td>
<td>21.26</td>
<td>6.92</td>
</tr>
<tr>
<td>Year 2009 Month1-8</td>
<td>6.011</td>
<td>36.30</td>
<td>0.372</td>
<td>19.98</td>
<td>6.19</td>
</tr>
</tbody>
</table>

**Figure 11: Chinese Medical Device Industry Profit and Loss Condition in 2009 January to August (Unit: billion RMB, %)** (Source: National Bureau of Statistics)

**Figure 12: 2004-2008 Chinese Medical Device Industry Assets and Sales Volume Analysis (unit: billion,%)**

(Source: National Bureau of Statistics)

From January to August 2009, the Chinese medical equipment industry totalled 6.011 billion RMB in profits, upped by 36.30 percent; loss-making enterprises amounted to 372 million RMB losses a year earlier, increased by 16 million RMB. At the end of
August, the Chinese medicine industry loss proportion is 19.98%, It decreased over the same period of the previous year of 2.37 percentage points. Loss depth of was 6.19%, over the same period the previous year decreased by 1.88 percentage points.

With the improvement of living standards, people’s demands for health care growing are growing. And with the start of a new round of health care reform, the Government has increased investment in this area. Chinese annual growth in medical devices is over double-digit rate every year for the past few years. The future development of Chinese medical equipment industry is with a very strong momentum.

The current Chinese Medical devices industry involves in a relatively higher gross margin level and a huge space for growth in the market. This will attract more domestic and foreign manufacturers to enter the industry. The existing monopoly competition would probably be broken. And the future market competition would be even more intense. The product prices may trend to decline and the market share may be further divided. Thus the existing production companies in the industry are facing a tremendous threat. The existing Chinese medical device firms will have to maintain their current industry leading power, intensify R & D investment, and enhance the ability of independent innovation, continue to introduce new products, improve product lines in order to ensure its dominant position in market competition.

### 7.1.2 The Existence of Barriers to Entry

- **Supervision**

  The main related standards in Medical device industry are: ISO13485 standard; UL (UnderwritesLaboratoriesInc, referred to as UL), TUVPS (TUVPorService) and other international certification standards related to testing and certification; Medical Devices Directive-MDD (including CE Mark).
• **Medical device industry supervision system**

Medical device industry is one of national key manage industry. Drug Regulatory Agency of the State Council is responsible for the supervision and management of medical devices. Drug regulatory agencies of Local governments above the county level are responsible for the medical device supervision and management of the administrative area.

Chinese SFDA (State Food and Drug Administration) is responsible for medical devices research, production, distribution; administrative supervision and technical supervision. The medical device department is subordinate to the State Food and Drug Administration medical device responsible of supervision and management departments. (SFDA, 2008)

As the use of medical equipment directly affects the user's health and safety, and thus the medical device industries are strictly managed in every countries. China uses the reference of internationally accepted ideas and models of medical device management methods. China applies the production license and product registration system to the medical device manufacture.

Chinese SFDA referring to *"Medical Device Manufacturing Regulatory Measures"* as the core, formulated and promulgated a series of medical equipment production supervision laws and regulations to strictly supervise medical device manufacturing. Chinese major issued medical device industry laws, regulations and standards. (See Appendix 3)

**7.1.3 Capital Requirements**

In the Chinese medical device industry, there are 915 enterprises, including 816 small businesses, accounting for 89.18% of the total enterprises amount; 98 medium-sized enterprises, accounting for 10.71% of total enterprises. Industry average assets of each company was 0.66 billion. The average total asset for small enterprises was 0.41
billion, the average total asset of large enterprises was 3.028 billion RMB; and the average total asset of medium-sized enterprises was 246 million.

Chinese medical device industry current situation is: large amount of enterprises, high variety, low price high mobility, which is dominant. However, most of them are small and medium enterprises, technology is relatively weak. This is obvious disadvantage.

In 2008, the scale of Chinese medical device industry has more than a total of 915 industrial enterprises, of which there are 290 foreign-funded enterprises and accounts for more than 50% of the market share. In addition nearly one third of Chinese medical device industry products are sold overseas. International-funded enterprises with a mature international sales channels and established brand awareness have more shares of export trade. Foreign, Hong Kong and Macao Taiwan-invested enterprises in the export market share according to deliver value was as high as 76% in 2008.

In Chinese medical device market, the high-end medical equipment accounted for 25% of the overall market, basic medical equipment accounted for 75% of the overall market. Attracted by the great Chinese medical device market, foreign medical device companies are using well-known multinational investment in China, the world's top ten medical devices have eight former has set up production bases in China. 70 percent of domestic high-end medical equipment market had been occupied by multinational companies. China focuses on ultrasound and a few other areas. Most of advanced key technologies are monopolized by international companies from developed countries. The domestic high-technology medical device product performance standards lag behind the international advanced level for about 10 years.

Medical device industry is a multidisciplinary, knowledge-intensive, capital-intensive high-tech industry. It has relatively high barriers to entry, while at the same time that the industry added value of products is also very high. Medical device companies are mostly SMEs (Small-Medium Enterprises). Currently, the global high-tech medical equipment market is primarily dominated by several multinational companies in the
United States, Japan, Europe and other countries and regions, including the United States GE company, Peak, Hewlett-Packard, Siemens; Japan's Toshiba, Shimadzu, Hitachi and Philips Corporation.

Overall, there are high barriers relating to the capital, scale, technologies.

7.1.4 Access to Distribution Channels

For the Chinese medical device manufacturers, the distribution channels are different for disposable medical tools and medical equipments.

- Distribution Channels for Disposable Medical Tools Manufacturers:

Most Chinese medical device manufacturers rely on agents for sales. Since the medical institutions didn’t have a centralized purchase scheme (new purchase scheme might be established in the future as the new health care reform carrying out), most of the institutions implement the purchase individually. Therefore, it is impossible for medical device manufacturers to promote and sale their products directly to their customers all over the country. The agents are spread across regions, doing business mainly on their own behalf—as traders. In other words, they don’t have strong connections with the manufacturers. The main constraints are the contracts signed. Of course, the agents have more intentions to remain authorized with market leaders who bring more profit. But there are no absolute interests sharing identities. Consequently, it is relatively easy for new entrants to access to distribution channels.

- Distribution Channels for Medical Equipment Manufacturers

For medium to large scale medical equipments, the manufacturers normally use localized direct marketing. Strong companies has established comprehensive direct market corporation net. Refer to this situation; the loyalty becomes the barrier for new entrants to access to the distribution channels.
Overall, the distribution channels are not closely constructed. Therefore, the access to distribution channels is weak in barrier for new entrants.

7.2 The Intensity of Competitive Rivalry

Overall competition pattern of the medical device industry

7.2.1 International

Currently, the global medical device market size is about 230 billion U.S. dollars; the world's largest medical device market is the United States, the European Union and Japan, China. The United States is the world's largest medical device producing and consuming country, which supplies 40% of the world medical device market and consumes 37% of the world medical devices.

As the international division of medical device industry, the production of labour-intensive or low-tech "traditional" medical devices (such as disposable medical latex gloves, disposable syringes, infusion / blood transfusion bags, conventional surgical instruments, etc.), has been transferring to Asian countries since 90’s last century (particularly China, India, Bangladesh, Thailand and other countries with low labor costs).

The United States, Japan and European countries are becoming the high-end medical equipment (such as MRI, CT, PET, X-ray machine with high-definition and other medical diagnostic equipment as well as represented stent implanted medical devices and advanced products, etc.) significant researching, developing and producing base. It is foreseeable that in future there won’t be significant change in this situation.

According to statistics from national Bureau, in 2008, the global medical device market total sales were about 336 billion U.S. dollars. It was 12% increase on 300 billion U.S. dollars in 2007. The top 25 medical device companies’ together accounts
for sales 60% of total medical devices sales worldwide. Tens of thousands of medical device company's spread around the world sales account for only 40% of the total share. It can be seen that the medical device industry concentration is increasing.

In Asia (excluding Japan), China and India has undoubtedly been the two major medical device manufacturer and exporters in Asia. The production of medical devices in India had a big gap towards China. In recent years, the Central Government of India support strongly the national pharmaceutical and medical device industries, and also applies preferential export tax rebate policy, so that the Indian medical equipment became exporters from importing countries 10 years ago. Some of India's exporting medical devices are competing against similar products in China. This has constituted a big threat for the Chinese medical device industry.

7.2.2 Chinese Domestic

Competition from products in China, Europe, America and Japan and other countries medical device companies are gradually no cost advantage in local production of basic medical equipment and other products through OEM or ODM way to China manufacturing. China's medical equipment industry was the rapid growth in exports, customs data show that, in 2008 China Medical Apparatus industry import and export of goods amounted to 8.223 billion U.S. dollars, up 8.47 percent. One of imports amounted to 3.869 billion U.S. dollars, up 6.91%; exports 4.354 billion U.S. dollars, up 9.89%.

United States, GE, Philips, Siemens and the Netherlands and other foreign companies in high-end medical device market significantly in the competitive advantage to radiation treatment equipment, for example, the United States, GE, Siemens, Philips Netherlands at CT, MRI imaging equipment, angiography equipment market had a high market share. Sui Zhao Chinese enterprise software development capability and precision electronic equipment manufacturing capability, and is gradually breaking
the monopoly of foreign companies, there has been a number such as Shenzhen Mindray, Shenyang Neusoft, Wandong Medical Equipment and other outstanding high end medical device enterprise.

Basic medical equipment mainly small and medium-scale mechanical and electrical integration products are the main, has some scientific and technological content and manufacturing process requirements. Medical device manufacturers in China after years of development, the automation and precision manufacturing advances in the medical device market is currently competitive advantage based on clear, there a number of health care such as Xinhua, diving and medical basis of international competitive medical devices enterprise

7.2.3 Domestic Medical Equipment Industry Competition Pattern

China's medical device industry from the competitive landscape of view, private enterprises and foreign-funded enterprises are the main competition in the industry, and the number of private enterprises and foreign-funded enterprises a large proportion, respectively 38.80% and 31.69%. Distribution of income from the sale, in 2008 the market share of foreign-funded enterprises account for 52.35 percent of the industry as a whole more than the 2007 increase of 0.85 percentage points. Private enterprises have 46.39% of the market share, compared with 2007, down 0.76 percentage points. Other properties which enterprises, collective enterprises and joint-stock enterprise's market share has declined, private, joint-stock cooperative enterprises increased significantly, indicating the medical device market to heat up as the new foreign-invested enterprises into the enterprise and more. (See in Appendix 4)

According to the report of the company sales statistics, sales in mid-2008 the top 10 companies of its sales revenue in excess of 7.9 billion, of which the top five companies followed by Shenzhen Mindray Bio-Medical Electronics Co., Ltd., Zibo mountains Medical Equipment Co., Ltd., Air Guardian General Electric Medical
Systems, Siemens Shanghai Medical Equipment Co., Ltd. and Omron (Dalian) Co., Ltd. Which, Siemens Mindit resonance (Shenzhen) Co., Ltd., Shenzhen Mindray Bio-Medical Electronics Co., Ltd. and General Electric Medical Systems (China) Co., Ltd. are there better sales growth, an increase of 225.71 percent year on year respectively, 74.08% and 28.16%. (See in Appendix 5)

Therefore, there is already fierce competition among Chinese small-medium medical device companies with low technology. However, the large populations’ enormous demand provides spaces for primary medical device manufacturers. On the other hand, the multinational enterprises have dominated the high end market with high profitability. The international leading companies are competing with each other universally, but with different focus areas. So the competing status is not intense extremely.

### 7.3 Threat of Substitute Products of Services

Since this essay is talking about the whole Chinese medical device industry, there are no real substitute products for the medical devices. Therefore the authors will skip this aspect of the market analysis.

### 7.4 Bargaining Power of Buyers

The downstream industry determines the market capacity, consumer demand and spending power. All these influence and decide medical device product quality, technical and economic benefits. The main needing industry of the medical device industry medical and health care industry, medicine circulation, and etc. Medical Device’s effect on health care, medicine circulation and other industries is self-evident. It affects their service quality, efficiency and many other aspects.

In the figure below shows the number of Chinese health care institutions. There are large numbers of medical institutions with a large demand in China. Referring to the
buyers’ bargaining power, discussions should be based on three groups categorized according to the buying pattern.

<table>
<thead>
<tr>
<th>Health Care Institution Category</th>
<th>Institution Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>278337</td>
</tr>
<tr>
<td>Hospitals</td>
<td>19712</td>
</tr>
<tr>
<td>Health care centres</td>
<td>39860</td>
</tr>
<tr>
<td>Town (township) hospitals</td>
<td>173777</td>
</tr>
<tr>
<td>Maternal and Child Health Hospitals</td>
<td>3011</td>
</tr>
<tr>
<td>Community health stations</td>
<td>24260</td>
</tr>
<tr>
<td>Disease Prevention Centres</td>
<td>3534</td>
</tr>
<tr>
<td>Clinics</td>
<td>6975</td>
</tr>
<tr>
<td>Special disease control hospitals</td>
<td>1310</td>
</tr>
<tr>
<td>Sanatoriums</td>
<td>210</td>
</tr>
<tr>
<td>Other health care institutions</td>
<td>5688</td>
</tr>
</tbody>
</table>

**Figure 13: the amount of Chinese Health Institutions Amount**

(Chinese Health Statistics Yearbook, 2009)

As it has been discussed previously, there will be two different purchasing patterns for hospitals and other health care institutions.

- For state owned primary health care institutions, they will basically in need of primary medical devices. And the government will be in charge of centralized purchase. Therefore, it will be an important buyer purchasing large amount with strong bargaining power. However, the level of bargaining power strength depends on the responsibility distributions among different levels of governments. Widely spread distributions—the primary government departments will in charge of the medical devices purchase in their domination individually, will mean weaker bargaining power.
For III state owned hospitals and private hospitals will conduct the purchase individually. The bargaining power will depends on the advance level of the products they acquire. The more advanced devices they are buying, the stronger of their bargaining power. This is because fewer institutions will be able to afford the cost as the product advance level being increasing. Summarily, the bargaining power is relatively weaker comparing to governments.

In addition, as people are paying more attention to health care, especially in the daily health-cultivation area, there will be more individual customers for special health care devices. They purchase for themselves or family members and friends. This group of people has the weakest bargaining power. However, they are all end users, companies need to follow the trend of health-cultivation and grasp customer’s attention, in order to build brand awareness and gain market share.

**7.5 Bargaining Power of Suppliers**

The medical device is a complicated terminal product. It involves various kinds of materials, including rubber, plastic, PP, LLDPE, electronic components, iron, fastening devices, nonferrous metals, and etc.

The medical device industry is highly affected by the upstream industries. The upstream industries technical development will directly influence medical device techniques developing direction. The primary industries, such as rubber, plastic, electronic, iron, fastening devices, nonferrous metal and other upstream industries’ manufacturing abilities will decide the quality, technique level, and cost of the primary materials or semi finished goods. In particular, medical equipment industry demand for raw materials or components varieties are numerous and complex. It is difficult to form a fixed system of coordination. In developed countries, medical equipment is able to create high profitability and efficiency, the key lies in relying on the development of new technologies. However, most of the industries are highly connected with mine exploitation and mineral or other raw material prices. Therefore,
the bargaining space with the supplying industries is limited as well.

All the upstream industries manufacturers are large scale and powerful. The material products can various buyers. The material products are widely used in a large amount of areas. Also the products are international traded. The global manufacturing has shown strong upward trend since the metaphase in 2009. According to JP Morgan Global Manufacturing purchasing managers’ index (PMI); it exceeded 50 critical boundaries in August 2009. (See in Appendix 6) That indicated the manufacturing is out of recession in the mid 2009.

The medical device industry doesn’t purchase quite a large amount of their products. So, medical device industry firms are not important buyers for those industries.

Moreover, most of the upstream industries belong to the primary national industry. In other words, they are protected by the government in consideration of national economic security. In all, the suppliers have a strong bargaining power against the medical device industry.

8 CASE STUDY

In this part, three companies’ operating status will be analyzed. One is Swedish company - Gambro AB, two come from China - Shenzhen Mindray Bio-Medical Electronics Co., Ltd and Jiangxi Hongda Medical Equipment Group Co., Ltd with the products of high-tech equipments and disposable medical devices separately.

8.1 Operating Status Analysis of a Swedish Company - Gambro AB

8.1.1 Brief Introduction of Enterprise Development
Gambro was originally founded in 1964 in Lund Sweden by Holger Crafoord. Holger decided to start a business after listened to Professor Nils Alwall who invented world’s first artificial kidneys in 1961. (Gambro, 2010)

In 1967, Gambro started its mass production of single-use artificial kidneys and dialysis machines. Thus Gambro started its life saving device development journey. Gambro started to build plants in other countries in 1970s, first in Germany. Then Gambro built itself into an international group with wide products and services by acquisition.

Gambro became listed in the Stockholm Stock Exchange in 1983. However, in 2006, Indap AB (a Swedish investment company) acquired Gambro by announcing a public cash offer for all Gambro’s outstanding shares. The new structure of the group contains three split companies: Gambro, CaridianBCT and Diaverum. Since then, “the new Gambro is a focused Med-tech company with a clear aim to become the number one in its extracorporeal field”. (Gambro, 2010)

Currently it has approximately 8000 employees, and production facilities in 9 countries. Its sales region covers more than 100 countries.

Gambro has been in one of the leading global medical technology company. It focuses in “manufacturing and supplying products and therapies for Kidney and Liver dialysis, Myeloma Kidney Therapy, and other extracorporeal therapies for Chronic and Acute patients” (Gambro, 2010)

In the following parts, the annual financial data of Gambro’s headquarter will be analyzed. Base on the fact that Gambro retrieved their stock in 2006, and was relisted in Stockholm Stock Exchange in 2008, the data of year 2006 and 2007 is missing. Then the data from 2005 is not comparable with year 2008. Therefore, this essay will basically take the data from 2008 for analysis and comparison with Chinese company cases.
In year 2008, Gambro has done some big investments. Gambro opened two new plants—a dialyzer plant in Opelika, AL, USA, and a bloodline plant in Prerov, Czech Republic. Gambro Artis, the next generation dialysis system, is launched, and innovative products such as the heparin-grafted Evodial dialyzer and Polyflux Revaclear / Revaclear MAX dialyzers were introduced. (Gambro, 2010)

The information from the company report will be analyzed in the following part.

8.1.2 Analysis of Major Economic Indicators

Figure 14: Illustration of Gambro’s Major Economic Indicators

(Source: Gambro Company Report)
The diagrams above show some of the key item of Gambro’s financial status in year 2004, 2005 and 2008. The Operating income from 2008 is 88 million USD, which is much lower than the year 2005. And the net income is far below the breakeven, which is almost the same as in the year 2004.

However, seen from the Figure below showing Gambro’s income statement of year 2005 and 2008, differently from 2004, the lost part for year 2008 is on the item “Financial P/L”. This means that Gambro has done efficient management in normal operation, but not for the financial section. The global financial crisis is also considered.

<table>
<thead>
<tr>
<th>INCOME STATEMENT(mil USD)</th>
<th>31/12/2008</th>
<th>31/12/2005</th>
<th>31/12/2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 months</td>
<td>Cons.</td>
<td>Cons.</td>
<td>Cons.</td>
</tr>
<tr>
<td>Operating Revenue / Turnover</td>
<td>1,915</td>
<td>1,879</td>
<td>4,046</td>
</tr>
<tr>
<td>Cost of Goods Sold</td>
<td>-1,223</td>
<td>-1,154</td>
<td>-2,919</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>-604</td>
<td>-554</td>
<td>-1,192</td>
</tr>
<tr>
<td>Operating Income</td>
<td>88</td>
<td>171</td>
<td>-65</td>
</tr>
<tr>
<td>Financial P/L</td>
<td>-357</td>
<td>67</td>
<td>-16</td>
</tr>
<tr>
<td>Tax</td>
<td>87</td>
<td>-71</td>
<td>-89</td>
</tr>
<tr>
<td>Extraordinary &amp; Other Items</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Net Income</td>
<td>-182</td>
<td>167</td>
<td>-181</td>
</tr>
<tr>
<td>EMPLOYEES</td>
<td>10,599</td>
<td>19,143</td>
<td>21,391</td>
</tr>
</tbody>
</table>

Figure 15: Gambro AB Income Statement
(Source: Gambro Company Report)

8.1.3 Profitability Analysis

In general, the profitability indicators of Gambro AB show negative results. In year 2005, Gambro AB had an outstanding return on total assets ratio of 6.35% From the
charts below we can see that in the past few years, Gambro AB’s return of share
holder’s fund has never reached the median of peer group level, even with a
considerate amount of net income in 2005. Since the net income is a big loss resulted
by the loss of Financial P&L, the ratios computed on the net income base can’t fully
explain the company’s normal production ability. The gross profit margin, however,
shows a quite convincing number with 36.1% in 2008 and 38.6% in 2005. This means
the company has its strength in maintaining low of variable cost.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Return on Shareholders’ Funds (%)</td>
<td>-32.31</td>
<td>10.23</td>
<td>-2.92</td>
<td>7.69</td>
<td>5.31</td>
</tr>
<tr>
<td>Return on total assets (%)</td>
<td>-4.92</td>
<td>6.35</td>
<td>-1.68</td>
<td>4.49</td>
<td>2.95</td>
</tr>
<tr>
<td>Return on Capital Employed (%)</td>
<td>0.78</td>
<td>9.80</td>
<td>-0.55</td>
<td>7.71</td>
<td>5.74</td>
</tr>
<tr>
<td>Gross Profit margin (%)</td>
<td>36.1</td>
<td>38.6</td>
<td>27.9</td>
<td>26.4</td>
<td>25.4</td>
</tr>
<tr>
<td>Profit margin (%)</td>
<td>-14.06</td>
<td>12.65</td>
<td>-1.98</td>
<td>5.84</td>
<td>3.84</td>
</tr>
</tbody>
</table>

Figure 16: 2002-2008 Profitability Analysis of Gambro AB (Unit: %)

(Source: Gambro Company Report)
### MEDIAN VALUES OF THE PEER GROUP 2002-2008

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenue / Turnover (th USD)</td>
<td>1,257,811</td>
<td>851,997</td>
<td>872,567</td>
<td>797,080</td>
<td>670,385</td>
</tr>
<tr>
<td>Operating Income (th USD)</td>
<td>38,945</td>
<td>40,174</td>
<td>40,585</td>
<td>32,107</td>
<td>26,010</td>
</tr>
<tr>
<td>Net Income (th USD)</td>
<td>40,497</td>
<td>35,614</td>
<td>37,093</td>
<td>24,501</td>
<td>21,026</td>
</tr>
<tr>
<td>Return on shareholders’ funds (%)</td>
<td>11.07</td>
<td>14.60</td>
<td>14.06</td>
<td>11.48</td>
<td>12.20</td>
</tr>
<tr>
<td>Return on capital employed (%)</td>
<td>9.14</td>
<td>10.14</td>
<td>9.97</td>
<td>8.77</td>
<td>9.11</td>
</tr>
</tbody>
</table>

**Figure 17: Median Financial Values on Profitability of the Peer Group 2002-2008**

*(Unit: the USD & %)*

(Source: Gambro Company Report)

#### 8.1.4 Ability of Business Operations

In 2006 the company was split into three free standing parts. So the number of employees has been largely decreased, from 19,143 to 10,599. However, from the table below we can see that the assets/employee increase more than doubled. And the net assets turnover ratio has been always low. Gambro has the lowest net assets turnover in year 2008 with only 0.41 times. This shows the company’s weakness in managing their assets.

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets / Employee (th USD)</td>
<td>516</td>
<td>195</td>
<td>223</td>
<td>220</td>
<td>196</td>
</tr>
<tr>
<td>Net Assets Turnover (x)</td>
<td>0.41</td>
<td>0.64</td>
<td>1.11</td>
<td>1.00</td>
<td>0.91</td>
</tr>
</tbody>
</table>

**Figure 18: Operating Capability Analysis Gambro AB (Unit: the USD & Times)**

(Source: Gambro Company Report)
8.1.5 Solvency Capacity Analysis

From the data showed we can see that, in 2008 all the company’s solvency capability indexes have declined quite much. The solvency ratio has lowered to 15.23% from the company’s normal level around 50%. Moreover, the shareholders liquidity ratio has declined to a dangerous amount, with only 0.22% in 2008. On the whole, the company doesn’t have enough financial security.

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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio (x)</td>
<td>1.64</td>
<td>3.12</td>
<td>1.62</td>
<td>1.46</td>
<td>1.87</td>
</tr>
<tr>
<td>Solvency ratio (%)</td>
<td>15.23</td>
<td>62.07</td>
<td>57.58</td>
<td>58.33</td>
<td>55.54</td>
</tr>
<tr>
<td>Shareholders liquidity ratio (%)</td>
<td>0.22</td>
<td>3.81</td>
<td>3.02</td>
<td>3.11</td>
<td>1.93</td>
</tr>
</tbody>
</table>

*Figure 19: Solvency Capability Analysis of Gambro AB (Unit: % & Times)*

(Source: Gambro Company Report)

8.1.6 Enterprise Development and Product Trends

After the restructure of Gambro group in 2006, Gambro starts to focus on its extracorporeal therapies. The latest news on Gambro’s webpage is that the company
makes the strategic decision to focus on its core businesses and sell its global PD business to Fresenius Medical Care. All the recent movements show that Gambro has chosen the segmenting strategy.

The kidney dialysis is still the main extracorporeal therapy for kidney failure. The product has only one substitution, which is the kidney transplantation. This substitution is highly restrained by the donations available and body matching. For decades, Gambro has been leading this product segment as being the first publisher of grounding innovations. Therefore, with the concentrating and resource reallocating strategy, backing up with its strong R&D ability, Gambro has its promising future in the medical device industry for kidney and liver extracorporeal therapies.

8.1.7 SWOT Analysis of Enterprise Performance

Figure 20: SWOT Analysis of Gambro AB
Strengths (S)

As it is mentioned in the beginning of this case study, Gambro has build up a network worldwide. The international network enables Gambro AB to acquire and distribute the resources effectively, giving more growing opportunities. As well as the risk diversification can give Gambro a safer position against negative regional effects.

In 2009, Gambro celebrated their 45 years of innovation. Since Gambro started their mass production of dialyzer, it has been well known as a word leading researcher and instruments provider for kidney and liver disease patients. The strong brand image enhances the company’s marketing strength.

Gambro penetrated into many stages of providing medical service. Starting from researching for innovative therapies till the service providing to patients, Gambro involves in the whole process of curing patients. With the ability to manufacture their own products, Gambro has its competitive advantage in cost saving over competitors, such as Davita (a dialysis service provider).

Gambro has always put large effort into the R&D since their funding. The research departments spreading globally take well advantages of cooperating with leading research centres and universities. Gambro has 350 R&D employees worldwide. The main research centres are located in Sweden (Lund), France (Meyzieu), Germany (Hechingen) and Italy (Medolla). At present, Gambro has obtained more than 1,800 patents. (Gambro, Research Development) As the accumulated patents enable Gambro to produce differentiated products, it also gives out large number of production licences, which has brought huge amount of profit to the company.

Weaknesses (W)

There has been reported several big scale of product failure for last two decades. Deaths and injuries were reported to be caused by Gambro’s flawed products. For instance, 9 deaths and 11 serious injuries were reported in the US in 2005, when Gambro issued a “Worldwide
Safety Alert” to all users of its Prism System dialysis machine. (Data monitor Company profile, 2006) Gambro got the suspension of shipments from the US Food and Drug Administration consequently in 2006. After baring the heavy penalty payments, all of these instances reported has highly affect Gambro’s global image and credibility negatively.

After the 2006’s destruction of Gambro group, the new Gambro gave away the blood component technologies and dialysis clinic operations to two other free standing companies: CaridianBCT and Diaverum. However, with decades of huge fix investment and large amount of branches and sales office worldwide, Gambro has its high fix cost. This put the company into a high risk with heavy burden.

Gambro had a huge loss on Financial P&L in 2008. And the assets/employee is quite high with only 0.4 times of net asset turnover. Together with the low numbers in the company’s solvency analysis, Gambro has showed poor management in the financial part. The company hasn’t made comprehensive use of its shareholder’s funds and assets.

**Opportunities (O)**

As the global population is aging, there becomes increasing number of people in demand of renal care product. Also with the unhealthy “modern” way of life, especially in some of the developing countries with large populations, such as China and India, the kidney failure patients are growing in a steady percentage of 8-10 percent. (Data monitor Company profile, 2006) Therefore, Gambro has its opportunities win over this increasing demand.

**Threats (T)**

The global financial crisis brought larger impact to America, Europe and other major developed economies, international medical device industry have also been affected.
The medical device industry is always of highly concern of regulatory authorities. The authorities conduct strict control of the material and technique used. Thus, for an international operating company as Gambro, the time frame from the innovation till shipping and selling of the products in different regions would be longer than other industries. Therefore, it would be harder to keep the leading position or in other words first mover in the global market.

For years, the companies in medical device industry have been consolidating themselves to build up strong compatibility. The resulting fierce competition with powerful competitors worldwide will adverse the company’s profitability.

The customers which are the hospitals and health care centre have also conducted many consolidations in order to obtain a cost efficient operation scale. The larger scale and smaller number of customer enhances their bargaining power against companies in medical device industries.

8.2 Operating Status Analysis of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.

8.2.1 Brief Introduction of Enterprise Development

Shenzhen Mindray Bio-Medical Electronics Co., Ltd. (the "Mindray") is a leading manufacturer of high-tech medical equipment research and development. It is also one of the leaders of innovation in the global medical diagnostic equipment area. Since the inception in 1991, Mindray Company is committed to medical devices for clinical research and development and manufacturing, product range covers the four main areas: life information and support, clinical examination, digital ultrasound, and radiology images. It sells good balanced performance and price medical electronics products all over the world. Today, Mindray company's worldwide sales have been extended to more than 140 countries and regions.
Mindray Company is headquartered in Shenzhen, China. It has also set up research centre in Shenzhen, Beijing, Seattle USA. Mindray established sub-companies in 30 Chinese major cities, and in the USA, Canada, United Kingdom, the Netherlands, Russia, Turkey, India, Mexico, Brazil and other countries. There established a strong worldwide distribution and service network. Ended in July 2008, the employees in Mindray have exceeded 5300 people worldwide.

In September 2006, Mindray Medical Equipment Company was successfully listed in the United States as the first Chinese company on the NYSE. The same year in October, approved by Ministry of Science, Mindray formally established "state of medical diagnostic instrumentation engineering technology research centre", featuring leading national medical equipment development responsibilities, Mindray company is leading the industry towards the world-class quality objectives. (Forward Medical Device Research Group, 2009)

### 8.2.2 Analysis of Major Economic Indicators

Despite of the great impact of global economic fluctuations and the recent global financial tsunami swept across Chinese enterprises, Mindray is still maintaining the momentum of rapid development with technological innovation and strong support from overseas mergers and acquisitions of assets.

In 2008, the company achieved:

- Sales of 3,742,128,000 RMB, up by 74.08 percent over the same period the previous year
- Margin 2,029,561,800 RMB, up by 72.01 percent over the same period the previous year
- Operating profit of 803,195,400 RMB, up by 37.42 percent
- Net profit of 742,832,200 RMB, with up growth of 30.30%
Figure 21: 2006-2008 Shenzhen Mindray Bio-Medical Electronics Co., Ltd. Main Economic Indicators analysis (unit: million RMB)

(Source: Company Report of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.)

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Revenue</td>
<td>1486.5735</td>
<td>2149.7146</td>
<td>3742.128</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>811.9799</td>
<td>1179.8974</td>
<td>2029.5618</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>352.1255</td>
<td>584.4703</td>
<td>803.1954</td>
</tr>
<tr>
<td>Net Profit</td>
<td>355.0069</td>
<td>570.0729</td>
<td>742.8322</td>
</tr>
</tbody>
</table>

*Data computed with exchange rate 1 dollar= 6.8346 RMB

8.2.3 Profitability Analysis

Comparing with 2007, the company’s profitability has declined in 2008. 2006-2008, the company's sales margins were maintained at the high level of 54%. It indicates that the company has a considerable sales margin, and the earnings are stable. During 2006-2007, the cost of company profit margins were maintained at 30%, in 2008,
although declined, but was remained at 27.33 percent. It shows Mindray’s high level of unit expense profitability, the cost was effective controlled. Return on total assets declined, but still maintained a 19.91% level of profitability of company assets. It indicates the good total asset utilization. Capital Maintenance and Appreciation is also stabilized at levels above 133%, indicating corporate capital operation efficiency, security, and preservation of capital value. Overall, the company has a high profitability.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Margin</td>
<td>54.62</td>
<td>54.89</td>
<td>54.24</td>
</tr>
<tr>
<td>Return on Total Asset</td>
<td>27.56</td>
<td>20.67</td>
<td>19.91</td>
</tr>
<tr>
<td>Profit-Cost Ratio</td>
<td>31.04</td>
<td>37.34</td>
<td>27.33</td>
</tr>
<tr>
<td>Capital Maintenance and Appreciation</td>
<td>803.82</td>
<td>133.72</td>
<td>133.17</td>
</tr>
</tbody>
</table>

**Figure 23: 2006-2008 Shenzhen Mindray Bio-Medical Electronics Co., Ltd Profitability Analysis (Unit :%)**

(Source: Company Report of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.)

### 8.2.4 Ability of Business Operations

In the year of 2008, the company's operating ability indicators has all declined except the total assets turnover and current asset turnover, with a comparison of 2007.

Inventory turnover decreased 1.24 times, indicating increase in product inventory. This may increase the company's expenses, thereby reducing the utilization efficiency of corporate assets.

- Accounts receivable turnover decreased by 4.70 times, indicating the company's accounts receivable recovery has slowed, and also space of efficiency of fund
utilization increase.

- Fixed asset turnover ratio fell by 1.90 times, demonstrated the company's inadequate efficiency usage of production equipments and plants. The fix asset being idle needs to be improved.

*On the other hand,*

- An increase of 0.13 times the total asset turnover ratio shows the level of increased use of corporate assets;

- Current asset turnover increased by 0.44 times, the use of company management level of liquid assets has increased, has enhanced the liquidity of assets.

On the whole, Mindray needs to improve its asset utilizing efficiency.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory Turnover</td>
<td>24.34</td>
<td>14.55</td>
<td>13.31</td>
</tr>
<tr>
<td>Receivables Turnover</td>
<td>28.39</td>
<td>13.94</td>
<td>9.24</td>
</tr>
<tr>
<td>Fix Asset Turnover</td>
<td>15.89</td>
<td>8.17</td>
<td>6.28</td>
</tr>
<tr>
<td>Total Asset Turnover</td>
<td>1.16</td>
<td>0.76</td>
<td>0.89</td>
</tr>
<tr>
<td>Current Asset Turnover</td>
<td>1.50</td>
<td>1.05</td>
<td>1.49</td>
</tr>
</tbody>
</table>

*Figure 24: 2006-2008 Shenzhen Mindray Bio-Medical Electronics Co., Ltd.*

*Operation Capability Analysis (Unit: times)*

(Source: Company Report of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.)
8.2.5 Solvency Capacity Analysis

From recent three years’ data, the company's asset-liability ratio remained below 40% despite increasing year by year, while the level of equity ratio remained above 60%. It indicates the company's leverage is low, and the assets and liabilities structure is conservative. The creditors share lower risk. A high degree of creditor rights and interests protection indicates the company’s strong long-term solvency.

During 2006-2008, the company's current ratio and quick ratio are 1.53 and 1.32, respectively, indicating the company's strong short-term liquidity. Analysis believes that the scale of corporate liabilities is completely within controllable range. Mindray can appropriately increase the leverage scale, giving full play to the financial leverage effect of debt for more profits.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset-Liability Ratio</td>
<td>14.63</td>
<td>16.27</td>
<td>36.61</td>
</tr>
<tr>
<td>Equity Ratio</td>
<td>85.37</td>
<td>83.73</td>
<td>63.39</td>
</tr>
<tr>
<td>Current Ratio</td>
<td>5.63</td>
<td>4.42</td>
<td>1.53</td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>5.28</td>
<td>4.06</td>
<td>1.32</td>
</tr>
</tbody>
</table>

Figure 25: 2006-2008 Shenzhen Mindray Bio-Medical Electronics Co., Ltd. Solvency Analysis (unit :%)

(Source: Company Report of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.)

8.2.6 Ability of Enterprise Development Analysis

During 2006-2008, the development capacity of the company was maintained at a high level. Among them, the sales revenue growth rate increased year by year. In 2008, it rose to 86.05%, reflecting the company is accelerating the pace of market
development with better business conditions and strong market share occupying ability.

The rate of capital accumulation remained at more than 33% in 2007-2008. It indicates the company's good capital preservation and growth capabilities. It has relatively stronger ability to withstand risks, and high level of equity security.

Growth rate of total assets has increased, reaching 75.90 percent. Comparing with the last year, there has been a substantial increase in the size of the company's asset. The rate of expansion of the asset management has accelerated.

Overall, the company's growth prospects are good.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Revenue Growth Rate</td>
<td>44.63</td>
<td>54.59</td>
<td>86.05</td>
</tr>
<tr>
<td>Capital Accumulation</td>
<td>703.82</td>
<td>33.72</td>
<td>33.17</td>
</tr>
<tr>
<td>Total Asset Growth Rate</td>
<td>204.12</td>
<td>36.33</td>
<td>75.90</td>
</tr>
</tbody>
</table>

*Figure 26: 2006-2008 Shenzhen Mindray Bio-Medical Electronics Co., Ltd. development capability analysis (unit :%)*

(Source: Company Report of Shenzhen Mindray Bio-Medical Electronics Co., Ltd.)

8.2.7 Product Mix and New Product Trends

Mindray's products include life information and support, clinical examination, digital ultrasound, radiological images, in vitro diagnostic reagents and other. Mariner Health Care products which in the domestic market, total installed capacity over 100 thousand units, being top in the nation for 8 years; test series domestic installed more than ten thousands, blood cell analyzer national market share of the first, one-third of the blood cells of group Instrument got the most sales for 8 years. Five categories of
Shenzhen Mindray launched 10 new products in 2008, allowing the company to market total 60 variety products in the domestic market. Mindray’s goal in 2009 is to launch 7-9 new products.

8.2.8 Enterprise Sales Channels and Networks

In China, Mindray has build up good cooperation with more than 10 thousand hospital customers and hundreds of dealers. Mindray has won numerous III hospitals’ and different levels medical institutions’ favour and medical institutions with products of superior quality and service, such as Beijing 301 Hospital, Beijing University People's Hospital, Beijing Chaoyang Hospital, Fudan University Zhongshan Hospital, Shanghai Ruijin Hospital, Union Hospital, Tongji Medical large, Mukden, China Medical Hospital, First Affiliated Hospital, China Medical University, Jiangsu Provincial People's Hospital, Nanjing Military General Hospital, Affiliated Hospital of Sichuan University Reverse Engineering software, Xijing Hospital, Guangdong Provincial People's Hospital, Peking University Shenzhen Hospital and so on.

In addition, Mindray has been to look at the global market development. In the overseas market, its sales have expanded to more than 140 countries and regions. Mindray’s full range of products won wide acceptance from medical institutions in the United States, Britain, Germany, France, Italy, Spain and other countries.
8.2.9 SWOT Analysis of Enterprise Performance

**Figure 27: Shenzhen Mindray Bio-Medical Electronics Co., Ltd. SWOT Analysis**

**Strength (S)**

- **Industry Status:**
  Currently, Mindray has become one of the global medical device industry's most influential brands. In September 2006, Mindray was successfully listed in the U.S as the first Chinese medical equipment company on the NYSE. In this way it acquired more financing channels.

- **Network:**
  Mindray has established a powerful worldwide distribution and service network. Sale has been extended to more than 140 countries and regions, products are wildly sold.

- **Emphasis on R & D:**
  In 2006, the State Medical Diagnostic Instrument Engineering Technology Research Centre formally opened and Mindray established R & D Base foundation. Mindray will introduce several new products every year in the future.
• **Global strategy:**

In 2008, Mindray acquainted U.S. Datascope Corp. (NASDAQ listed company) life Information custody business, making Mindray become the world's third-largest brand in this field. This leaded to Mindray’s achieving cross-border integration of resources and the global strategic breakthrough.

**Weaknesses (W)**

- A conservative structure of the company's assets. Mindray has not made full use of the financial leverage effect of debt. The company need to raise the utilization efficiency of its equity.
- The company has high-speed business development which means that management is more difficult. Therefore the risk management capabilities and skills need to be improved.

**Opportunities (O)**

- The boost chance for Chinese medical device industry brought by the new health system reform.
- Due to the impact of the global economy crisis, developed countries are bound to cut public health and welfare budget. They will focus on looking for high performance-price ratio alternatives. This also creates more demand and growth opportunities for Chinese medical equipment exports.

**Threat (T)**

The global financial crisis brought larger impact to America, Europe and other major developed economies, international medical device industry have also been affected. Chinese medical device market will become an international medical device manufacturer’s focus. More foreign brands will enter Chinese medical device market with more and more foreign company plants setting up in China. It can be foreseeing, the Chinese medical device market competition will be intensified.
8.3 Operating Status Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd

8.3.1 Brief Introduction of Enterprise Development

Jiangxi Hongda Medical Equipment Group Co., Ltd. has obtained the business registration certificate of disposable sterile medical equipment products which is recognized by SFDA (State Food and Drug Administration). At present, the Group has a registered capital of 118.88 million RMB, and 320 million RMB of liquidity. In addition, its plant covers an area of about 240,000 square meters, owns 42,000 square meters of clean room to meet GMP (Good Manufacturing Practice) requirements of 100,000 level, and as well as over 5,000 employees who are the industry elite in order to interact actively with the global medical device industry.

The Group, founded in 1987, owns 20 years of manufacturing experience, a high-quality management team and advanced production equipment. There are 29 employees who have senior professional titles, 48 intermediate professional employees, 198 professional and technical personnel, and 26 full-time inspectors who are qualified by the national and provincial training.

It now has 168 sets of injection modelling machines, 57 sets of extrusion machine, 33 sets of 20 cubic meters automatic program-controlled sterilizer, 12 sets of automatic needle assembly machine, 36 sets of automatic assembly machine, 5 sets of automatic packaging machine, 16 sets of automatic drip bucket modelling machine, 45 sets of automatic fault management machine, 5 semi-automatic assembly lines of infusion needle, 60 sets of high frequency heat sealing machine, 80 blow modelling equipment of bag making, 3 sets of modular water equipment, and 23 units of central air conditioning and chillier as well. At the same time, the syringes, needles have been basically completed the automation of production lines, also the infusion sets and infusion needle have been completed the assembly water line.
Furthermore, the Group implements a type of humanization management. Through the development of various rules and regulations, it can fully mobilize and bring into play the employees’ initiative and enthusiasm. In order to constantly make employees adapt to new demands and accept the new challenges, it provides opportunities for job training to them. From the aspect of human resources, it has already formed a complete and cohesion management team, in which the performance appraisal system is quite fair, impartial and objective.

In addition, according to the standards of ISO9001 and ISO13485, the group established a perfect quality assurance system which passed the ISO9001 quality certification in accordance with CE certification of EU (European Union). On the basis of product process control, it implements a “three inspection system” with three-level quality management network in order to assure the quality from raw materials to the final product. In all, Hongda is continuously to provide customers with safe and high quality products and pursuit zero-defect products. (Forward Medical Device Research Group, 2009)

8.3.2 Analysis of Major Economic Indicators

In the year of 2008, the company achieved 442.16 million RMB of sales, with the amount decreasing by 0.31%. The industrial output value was 452.166 million RMB, with the amount rising 0.91%. By deducting the cost of sales, selling expenses and additional sales taxes, the profit was 27.547 million RMB, which was 69.36% lower than the year of 2007. In addition, during 2006-2008, the company’s sales rate (sales revenue/gross industrial output value) were basically maintained at about 98%, as represented the company concentrated on the coordination of production and marketing, reduced the cost brought by the shortage or surplus, and as well as improved the allocation efficiency of enterprises resources. Nevertheless, the company had incurred losses within an amount of 14.157 million RMB, which was
mainly due to the substantial increase in sales and financial costs with 21.24% and 517.91% separately.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Revenue</td>
<td>358.92</td>
<td>443.547</td>
<td>442.16</td>
</tr>
<tr>
<td>Total Profit</td>
<td>3.16</td>
<td>9.489</td>
<td>-14.157</td>
</tr>
<tr>
<td>Total Industrial Output</td>
<td>370.024</td>
<td>448.093</td>
<td>452.166</td>
</tr>
<tr>
<td>Profit of Sales</td>
<td>24.49</td>
<td>89.919</td>
<td>27.547</td>
</tr>
</tbody>
</table>

**Figure 28: 2006-2008 Production and Marketing Capability Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd (Unit: Million RMB)**

(Source: Company Report of Jiangxi Hongda Medical Equipment Group Co., Ltd.)

### 8.3.3 Profitability Analysis

In general, compared with 2007, in 2008, all the profitability indicators of the company except the capital management and appreciation had declined. The substantial decrease in profit margins and sales indicated that its sales profit was also declined. Furthermore, the profit-cost ratio, return on total asset and return on net asset were negative, which represented that the company had a great loss, and the unit level of expenditure and the input-output level of assets were not high. Nevertheless, the capital management and appreciation was 207.27% with a significant increase over the previous year, which referred to an improvement of corporate capital operating efficiency and security. On the whole, the company’s profitability still needed to be improved.
Figure 29: 2006-2008 Profitability Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd (Unit: %)
(Source: Company Report of Jiangxi Hongda Medical Equipment Group Co., Ltd.)

8.3.4 Ability of Business Operations

In the year of 2008, the operating capability index except the finished goods turnover dropped with a comparison of 2007. The accounts receivable turnover decreased by 8.23 times, which indicated that the company had slowed the realization of assets, increased the remained funds on accounts receivable, and also reduced the efficiency of fund utilization. The total asset turnover with an amount decreasing by 0.75 times showed that the company reduced the level of capital utilization. In addition to the finished goods turnover, an increase of 3.87 times was mainly due to the decline of finished goods and its management expenditure to enhance the capital efficiency. Overall, the company’s operating ability was quite powerful.
8.3.5 Solvency Capacity Analysis

During the period of 2006-2008, there was no much change on asset-liability ratio and equity ratio, which indicated that the scale of corporate leverage was stable, and the shared risk and the protection level of rights of the company's creditors was basically the same. Therefore, both the long-term solvency ability and the debt assurance level of the repayment needed to be improved. On the whole, the company fully utilized the financial leverage effect of debt.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset-Liability Ratio</td>
<td>71.04</td>
<td>76.22</td>
<td>73.85</td>
<td>49.51</td>
</tr>
<tr>
<td>Equity Ratio</td>
<td>245.35</td>
<td>320.59</td>
<td>282.37</td>
<td>98.05</td>
</tr>
<tr>
<td>Interest Earned (Times)</td>
<td>2.07</td>
<td>7.69</td>
<td>-0.70</td>
<td>9.69</td>
</tr>
</tbody>
</table>

*Figure 31: 2006-2008 Solvency Capability Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd (Unit: % & Times)*

(Source: Company Report of Jiangxi Hongda Medical Equipment Group Co., Ltd.)

8.3.6 Ability of Enterprise Development Analysis

Compared with the year of 2007, in 2008, in accordance with various development index of the company, the sales revenue growth rate dropped dramatically, as -8.91%, which reflected that the improved scale of operations had been reduced, and the marketing ability needed to be improved. In the long term, during the period of 2007-2008, sales of the company's three-year average growth rate remained above 40%, showing a solid accumulated foundation, strong capability for sustainable development, and as well as powerful potential development of the company.

From the enterprise benefits point of view, the company’s three-year average profit growth rate of 2008 was -209.48%, reflecting its incurred losses and poor overall economic benefits which may affect the development in the future. In addition, the ratio of accumulated capital was 107.27%, higher than the industry average,
indicating the company had quite good capital preservation and growth, and strong capability of sustainable development.

In the long term, the company had a three-year average growth rate of capital up to 30.86% in the year of 2008, which represented that the accumulated resources increased. The growth rate of total assets also increased to 88.43%, which showed Hongda accelerated the expansion rate of the asset operating scale in order to enhance the storage ability in the later development. On the whole, the company had a greater space for future development.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Revenue Growth Rate</td>
<td>159.84</td>
<td>23.58</td>
<td>-0.31</td>
<td>17.66</td>
</tr>
<tr>
<td>Capital Accumulation</td>
<td>16.99</td>
<td>-7.58</td>
<td>107.27</td>
<td>11.23</td>
</tr>
<tr>
<td>Total Asset Growth Rate</td>
<td>23.21</td>
<td>12.56</td>
<td>88.43</td>
<td>8.86</td>
</tr>
<tr>
<td>Average Sales Revenue Growth Rate of Three Years</td>
<td>/</td>
<td>41.43</td>
<td>47.38</td>
<td>21.98</td>
</tr>
<tr>
<td>Average Profit Growth Rate of Three Years</td>
<td>/</td>
<td>-1.73</td>
<td>-209.48</td>
<td>19.45</td>
</tr>
<tr>
<td>Average Capital Growth Rate of Three Years</td>
<td>/</td>
<td>-8.18</td>
<td>30.86</td>
<td>17.95</td>
</tr>
</tbody>
</table>

**Figure 32: 2006-2008 Ability of Enterprise Development Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd (Unit: %)**

(Source: Company Report of Jiangxi Hongda Medical Equipment Group Co., Ltd.)

8.3.7 Product Mix and New product Trends

According to the “Hongda” brand production, the company owns nine categories within dozens of varieties of products which are as followed: class blood transfusion, syringe, puncture device class, bags, check or auxiliary equipment, anaesthesia equipment, catheter, sanitary materials, medical equipment, etc. In 2008, the "Hongda" series of trademarks achieved high reputation of "Chinese Famous Brand."
8.3.8 Enterprise Sales Channels and Networks

At present, the company has already become a major supplier of sterile medical device among the markets of America, Europe, Africa, the Middle East and Southeast Asia as well. It is one of the industrial largest disposable production suppliers and processing manufacturers, and takes up almost 25% market quota in China.

8.3.9 SWOT Analysis of Enterprise Performance

![SWOT Analysis]

*Strengths (S)*

Hongda, regarded as one of the industrial largest disposable production suppliers and processing manufacturers in China, has high quality level of asset management. Furthermore, it owns a powerful brand which is quite well-known among the Chinese people in the disposable medical device industry.

*Figure 33: SWOT Analysis of Jiangxi Hongda Medical Equipment Group Co., Ltd*
Weaknesses (W)

The level of company’s profit is not high and the overall economic benefit is also quite poor. In addition, its indebted operating risk is higher rather than the same level of enterprises in the industry, which may bring financial risk to the company.

Opportunities (O)

In accordance with China’s new healthcare system reform, there is no doubt that it will bring a boost opportunity for the medical device industry. At the same time, due to the impact of the global economy crisis, developed countries are bound to cut public health and welfare budget. They will continuously focus on looking for high performance-price ratio alternatives, which can create more demand and growth opportunities for Chinese medical equipment exports.

Threats (T)

The global financial crisis brought larger impact to America, Europe and other major developed economies, international medical device industry have also been affected. Chinese medical device market will become an international medical device manufacturer’s focus. More foreign brands will enter Chinese medical device market with more and more foreign company plants setting up in China. It can be foreseeing, the Chinese medical device market competition will be intensified.
From the figure above, we can see the focusing area of the companies currently competing in the Chinese medical device market. 75% of the manufacturers are within the low-medium market section. They are basically Chinese small scale companies. The high end market accounts for only 25% of the market. In this section it is mainly dominated by international invested companies.

Although there are large numbers of companies competing in the low-medium section, there is still much unmet demand existing in this region. The reason is that Chinese
large population and the deficient primary health care. Also we need to consider the promoting effect of the new health care system reform policy in this section.

The performance price ratio for the products currently in the market is relatively low. Considering the big space existing in the market, companies should focus on delivering better quality products that are mostly needed and widely used in the health care process, but of course, with a better price.

In the chart we can see that there are market sections that do not require for high techniques and input but with special needs are empty. Therefore, companies can target at a group of customers with special needs, such as special family health care products.

Therefore, the suggested generic strategy for Chinese medical device companies is the segmentation strategy. Either to adopt the narrow or wide scope approach, companies should take their own resources into consideration. Comprehensive market research should be done before any decisions.
10 DEVELOPMENT TRENDS AND FORECASTING OF THE MEDICAL DEVICE INDUSTRY IN CHINA

10.1 Development Trends Analysis of Chinese Medical Device Industry

10.1.1 A “two-pattern” Structure of Global Medical Device Industry

In the year of 2008, the total sales of global medical device products accounted for 50% of the global pharmaceutical market, in which the top 25 enterprises’ sales took up 60% of the total sales in accordance with the global medical device. This indicated that the market concentration had been significantly increased. (Forward Medical Device Research Group, 2009)

Therefore, in the future, the global medical device market will form a two-pattern structure which is as followed:

- A new type of medical device chain emphasizing high-tech mainly exists in European and American developed countries that monopolize the majority of the global market, while the products include CT, physical detection, scanning devices and so on. In China, there are 70% of high-tech devices imported from the abroad.

- The labor-intensive and low-tech traditional medical products are gradually transferred from developed countries to the developing countries of low labor cost, such as disposable surgical gloves, disposable syringes and so on. The major shift is to Asian countries especially in China and India.

Furthermore, with the rapid development of global medical device industry, there is no doubt that the formation of this structure will become more and more evident.
10.1.2 High-tech and Humanity of Chinese Medical Device Industry

The medical device industry in China will deeply involve the elements of high-tech and humanity, as there is a great breakthrough development of biological intelligence and intelligent robots. In the future, China will add more high-tech into the products such as mechanical sensor materials, smart devices clinical trials system and so on. In addition, on the basis of the family as a unit, China will produce self-care and remote medical devices and diagnostic products which are more suitable for family.

Nevertheless, in the past, the accuracy of medical device products were relatively low and then might occur some negative effects during the treatment process. Nowadays, the industry will achieve a new era of minimally invasive medical devices, in which a number of miniaturized, intelligent medical devices will be the future direction of development, and China will vigorously develop organ transplant and Para-medical equipment, such as heart transplantation, skin transplantation, vascular grafts, in order to defence the arising risks of people’s health and safety on the largest extent.

10.1.3 A Boom Peak in the Next Three Years

As mentioned before, there is no doubt that Chinese new healthcare system reform will definitely bring a significant benefit to the medical device industry, particularly in basically rural medical device products.

With the improvement of living standards, due to the arising aging problem and an increasing demand on health care among Chinese people, there will be a rapid development in the medical device industry. In addition, since the new health care reform-related effects will appear in the next few years, the next three years will bring a boom peak to the industry especially have a quite positive impact on some basic, relatively low-end medical devices. In all, this will be a turning point for low-end medical device companies, and bring the most beneficiary to the basic medical equipment, and products of high-tech, humanity and miniaturization.
10.2 Forecasting Development Prospects for Chinese Medical Device Industry

China, regarded as the largest medical device producer in Asia, is one the world’s top ten emerging medical device markets. During the year of 2008, the total output value of the industry in China was 67.735 billion RMB, with the amount rising by 31.66%. The accelerated economic development drives the upgrade of medical services’ demand. At the same time, rapid economic development results in an overall increase in the demand for health care services. In addition, the gradual opening for the medical service market will also accelerate the domestic and foreign capital investment to China's medical service industry, which directly leads to an increase demand for medical device market. (Forward Medical Device Research Group, 2009)

With the continuous improvement of living standards, the selection of medical device will be more advanced and the product structure will continuously be adjusted, so that the function could be diversified and the market capacity could be expanded. According to the developed countries, the output value of medical device industry and pharmaceutical industry are roughly the same. Nevertheless, in China, the former value is only 1/10 of the latter; this serious imbalanced ration indicates that there still have great development spaces for the medical device industry.

In accordance with new health care system reform, by 2010, China will preliminarily establish the basic medical framework, in order to alleviate the growing gaps of basic medical services between urban and rural areas, people of different income levels, and also alleviate the outstanding problems of masses of patients effectively. Chinese government needs to increase about 100 billion RMB investment to establish a basic medical system which can cover all urban and rural residents in 2020.

Therefore, it is foreseeable that the continued expansion of urban and rural medical institutions will open up more and more broad market for medical device companies. Therefore, medical device manufacturers can obtain great benefits, particularly spread the demand for the middle and low-end medical devices, and the related strengthen companies need to be upgraded according to China's health system.
11 CONCLUSIONS

11.1 Recommendations

As it is showed in the chart above, to promote Chinese medical device industry development requires for a collaborative work of different departments in the society. This framework emphasis on two aspects: the R&D and the customer relationship. The medical device companies have two channels to fetch the customer demand information. One side is from the medical care institutions, and the other side is the communication directly with end consumers. The communication with the end consumers is mostly about the health nourishing tools which the end consumers purchase and utilize at home. As more people starts to pay attention to keep in a good

Figure 35: Collaborative Development Framework for Chinese Medical Device Industry

As it is showed in the chart above, to promote Chinese medical device industry development requires for a collaborative work of different departments in the society. This framework emphasis on two aspects: the R&D and the customer relationship. The medical device companies have two channels to fetch the customer demand information. One side is from the medical care institutions, and the other side is the communication directly with end consumers. The communication with the end consumers is mostly about the health nourishing tools which the end consumers purchase and utilize at home. As more people starts to pay attention to keep in a good
health and daily relaxing and health promoting treatment, so health nourishing devices market are growing quite fast in China and all over the world. Therefore companies need to keep up with this global trend and develop products orientated by consumers. The research work has to be done by cooperation among research institution, medical care institutions and medical device companies. Academic researchers need access to the healthcare system (both clinicians and patients). Join collaboration projects must be established among different parties. Over the entire framework, the government needs to provide facilitation and directory sufficient funding.

**Recommendations for the Medical Device Industry**

Chinese medical device companies often undue emphasis on short-term business results. They normally pay too much attention to the company's temporary gains and losses, rather than focus on the business competitiveness construction. The current temporary performance of business enterprises are often at the expense of future development prospects. In recent years, Chinese medical device companies losing ground in the competition is the best example.

In order to gain a competitive position in domestic and international medical device market, Chinese manufacturers must fully mobilize and effectively use various resources. They also need to effectively train and strengthen the core competitiveness of enterprises. It is the only way to get long-term stability of competitive advantage.

There are two basic models for enterprises to build core competitiveness:

- Build core competitiveness of through enterprises self-development.
- Achieve through mergers and acquisitions between companies complementing each other and form core competitiveness of enterprises.

Referring Chinese Medical Device Industry status and specificity, the following aspects should be considered when build up Chinese medical device companies’ core competences:
• **Strengthening R & D**

Technical innovation is the core source of competitiveness. Large scale foreign companies, especially multinational companies have attached great importance to technological innovation. They have not only established research and development institutions with strong innovating capabilities, and also been maintaining big volume investment. Measuring with the proportion of R & D expenses in the total sales revenue, in the 1990s, the United States and Japan corporations averaged around 3%, among which the large enterprises had much higher than average. The U.S. Hewlett-Packard electronics company funds for research and development accounted for about 9% of sales, GM had up to 6%; as long as Hitachi, Fujitsu, Hitachi Electric were all more than 10%.

Especially considering the Swedish medical care device industry case, the profit brought by the patents and licensed production is extraordinary. China has been the production base in many industries. With the fact of high cost of goods sold and low profit margin, this is outstanding case to learn from.

From the retrospection of the development of Chinese medical device industry, it is easy to see that Chinese medical device industry’s rapid development in the 70’s and 80’s, was mainly due to government continuing input in medical devices R & D, technology and equipment introduction. In last ten years, because the state system reform, it greatly reduced the input into the medical device industry. At the same time, domestic medical device manufacturing is having large volume but small scale companies. The companies are weak in independent investment, and lack of R & D and mass production capabilities. This situation is urgent to be changed.

Medical device industry is a multidisciplinary, knowledge-intensive, capital-intensive high-tech industry, involving medicine, machinery, electronics, plastics and other industries. The production process is relatively complex. Consequently, it involves a relatively high entrance threshold. The current Chinese medical device production
level is only about the level of developed countries 15 years ago. Therefore, to accelerate the upgrading of medical devices, and improve the technological degree of products is the imperative task for current Chinese medical device industry.

- **Improve the Marketing Skills**

Competing with foreign giants, the local direct marketing will become domestic company's advantage. On the contrary, loyalty and network vulnerability proxy mode will be the soft underbelly of imported products. Therefore, direct marketing advantage, emphasis on brand-name effects, improve marketing skills, will be the powerful weapons for domestic enterprises to gain competitiveness.

Medical device companies need to build up brands, since brand is the key to corporate survival and development currently. In the globalizing market competition, it is more important for medical device enterprises to build up brand name to support the operation. Generally, to establish a brand requires for several years or more than ten years of market examination. Therefore, enterprises should strengthen the market research; improve the brand marketing strategy awareness.

- **Enhance Cooperation**

Medical device industry is a sector that is multidisciplinary, interdisciplinary and the most concentrated high-tech integration applications. All products are closely associated with the level of related industries, especially in basic industries, such as materials, electronics, machinery, energy and so on. They are also an important factor directly affecting the medical device industry development.

At present, medical device companies’ comparative advantage in Guangdong, Shanghai, Beijing and many other areas is due to raising level of basic industries. However, the level of medical device industry development and regional industrial development has shown a great imbalance in these areas. The root causes of this mainly two issues.
On one hand, medical device production is particularly combing medical and manufacturing skills together. Its R & D personnel are basically internal trained by the industry. Due to the lack of effective personnel flow mechanism, the medical device industry cannot introduce technologically advanced professionals from other industries.

On the other hand, along with the gradual development of domestic medical device companies, the medical device industry gradually formed relatively fixed industrial communication and experience exchange groups. They have reduced the exchanges and cooperation with other sectors. It gradually resulted in numerous medical device companies closing up, impeding the advanced technology application in medical device technology and industry.

The fundamental way of solving the isolation of the medical device industry situation is:

- To establish a reasonable flow of talent mechanisms to promote professionals and technical personnel from other industries to move to the medical device industry, and also to bring fresh ideas and knowledge to the development of the medical device industry.
- The second is to strengthen the cooperation with education and research institutions. One of the successful experiences from foreign scientific and technological development is close collaboration among manufacturers, education and research institutions. Successful cooperation requires for:
  - Universities and research institutions need to conduct market-oriented R&D programs. The study's should focus on the subject of business need, rather than isolationism;
  - Second, universities and research institutions need to fully respect and value the enterprise’s input and recommendations. Business need to provide adequate support for universities and research institutions, and establish communication and tracking mechanisms;
Finally, the manufacture, education and research cooperation should go be throughout the entire process of the product and technology research and development projects’ projecting, R & D and industrialization.

Through the talent exchange and industries cooperation, the advanced management skills and technology from other sectors will be integrated and upgraded in the medical device industry. Then there can form the core competitiveness of the medical device industry.

- **Adjust the Industrial Structure**

Chinese medical device industry must maintain a rapid pace of development. It has to put the common, large widely needed and used medical devices as the development focus. Government can encourage manufacturers to merge, and form economies of scale to enhance the production of concentration and market share as soon as possible. By adjusting the medical device industry, products and organizational structure, the development of the medical device industry will be promoted in the 21st century.

In the adjustment of medical equipment industries, products and business structure, we must give priority to developing good quality middle and low end product for local hospitals. The development of medical devices cannot emphasis partially on high technique and large scale or luxury products. Instead, comprehensive considerations need to be made on good performance, reliable, low cost products. China is having fast economic development currently. However the social development level is still relatively low in general. There are 800 million rural populations in China. Therefore the hospitals of county level or lower are market with large potentials. They were lack of certain funds before. With the deepening of reform, it will become the new tasks for hospitals of all levels to purchase, use and maintenance of medical devices. To select the appropriate medical devices used in various levels of hospitals, and to improve efficiency, has become the generally concern of medical and health units.
Chinese medical device industry companies need to carry out domestic and international market analysis and demand forecasting. So they can produce marketable products, and insure the satisfaction of medical and health needs in order to maximize the economic and social benefits. In the continuation exporting of traditional surgical instruments, sanitary materials, small equipment, the industry needs to increase export categories, and more high value-added products. So that Chinese medical device industry can possess certain amount of share in the international market.

- **Emphasis on Quality Management**

   It is widely existing phenomenon that the Chinese medical service institutions value more on imported products than domestic products. The main reason for this is that there are large gap on the quality and after sale service between domestic and international large scale high end equipments. ISO9000 standard has been introduced into China for a few years, but it hasn’t really become the mainstream in many industries. Enterprises should actively seek ISO9000 quality system certification. Quality system certification should be considered as ticket for medical device companies to enter the market.

   Therefore, pay more attention to quality control, improve after-sales service, is the long-term strategy to win the market competition.
11.2 Limitation

- Most of the information required is the industrial internal data, as long as the company operation statistics. The data collecting period was during the beginning of 2010. At that time, the statistics for year 2009 were not available yet. Moreover, accesses to specific databases are restricted. Therefore, the acquired information is limited to analyze the topic.

- According to the fact that the data we obtained is mostly on the basis of the whole medical device industry and it is quite difficult to be classified into particular parts, we decided to limit our research to the medical device industry that caters to both medical equipments and disposable tools when doing the analysis.

- The design of questionnaires was not proper. Widely use of open questions lead to low reply rate for the survey. The authors treat the first section of survey as interviews to get the rough ideas from people. Then redesigned the questionnaires to get enough responses. However, there are still drawbacks in the design. The answers contain limited information. The authors should have done more interviews to obtain more comprehensive feedbacks.

- Since the questionnaires are designed based on the understanding of previous interviews, and final version of questionnaires still contains some open questions, the research quality is heavily dependent on the individual skills of the researchers.
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Gambro, Company global website: [www.gambro.com](http://www.gambro.com)

Government Offices of Sweden http://www.sweden.gov.se/

Johnson & Johnson Medical, http://www.jjmc.cn/

Ministry of Health and Social Affairs http://www.sweden.gov.se/sb/d/2061

Appendix 1 - Questionnaires

Questionnaire about Health Care System and Medical Device Industry

---For Swedish citizens

1. What kinds of problems do you think exists in the current Swedish health care system? Choose the ones that mostly represent your opinions.

A. Low efficiency of the medical care service delivery process
B. High cost of medicines or dental services
C. Low solvency level of doctors (the doctors can’t help too much)
D. Too heavy burden for the government

Respondent 1: AC
Respondent 2: AB
Respondent 3: AB
Respondent 4: Don’t know about any of these.
Respondent 5: B
Respondent 6: A
Respondent 7: AD
Respondent 8: AC
Respondent 9: A
Respondent 10: A
2. Which one of the problems above mostly needs to be solved?

**Respondent 1:** A

**Respondent 2:** A

**Respondent 3:** A

**Respondent 4:** I don’t know

**Respondent 5:** Dental services should cost less it’s too expensive in most cases for an average Swedish family to check their teeth every 3 months.

**Respondent 6:** Low efficiency due to badly organized bureaucratic health care system.

**Respondent 7:** Low efficiency

**Respondent 8:** Med vilket jag menar att de största problemen verkar vara primärvården. Det är mycket svårt att ”komma till”. Väl inne i systemet är problemen inte lika grava. (Translation: By that I mean that the biggest problems seem to be with the primary care. It’s very hard to “get to it”. Once in the system the problems are not as grave. )

**Respondent 9:** A

**Respondent 10:** A

3. Would you be willing to pay more to enjoy faster and better medical services (possibly in privately owned hospitals)? Please briefly explain why.

**Respondent 1:** Yes but there is a danger with this attitude: that money shouldn’t be a factor for the quality of the healthcare you receive. Poor people should receive the same high quality health care as the rich.
Respondent 2: Of course I would not mind paying a bit more, thou I feel that privatizing the Swedish health care would result in a situation where our public welfare comes to risk. This would not be acceptable.

Respondent 3: Yes, I assume you get what you pay for to a certain extent.

Respondent 4: Not really, mostly I don’t even go there even if I probably should.

Respondent 5: No I wouldn’t pay more its already expensive as it is. Maybe if the private owned hospitals would lower their prices I could consider it.

Respondent 6: No, because we already pay the highest taxes in the world. We need to prioritize healthcare and cut down on things that doesn't benefit us but cost tons of money. Like immigration.

Respondent 7: Yes if I got seriously sick.

Respondent 8: Absolut inte. Jag skulle enbart göra det om jag kände mig tvungen eller ville genomföra någon behandling jag inte anser andra skattebetalare ska betala för. Sjukvård är en av de absoluta pelarna i välfärdssammhället. (Translation: Absolutely not. I would only do it if I felt I had to or wanted to go through with a treatment that I don’t think other tax payers should pay for. Healthcare is one of the pillars of welfare society.)

Respondent 9: Yes, I had been on a waiting list for a long time I would consider paying more to get a 'spot' faster at a private facility.

Respondent 10: Yes, the quality of the medical care is important, so I would be willing to pay more, but I don’t like the idea of private hospitals.

4. Do you know anything about the health care system in China? (if so) What do you think of it?

Respondent 1: My impression is that China has western medicine-based emergency healthcare and the primary care seems more based on traditional Chinese medicine.
The danger with this is that proven treatments may be put aside for traditional Chinese medicine treatments which may not be as good.

**Respondent 2:** I like the ideas of the NRCMCS, to pay a small amount yourself and get funded when in need. I fail to see any major differences with Swedish healthcare as it is based on taxes and then a small fee from the patient. It is mostly the same.

**Respondent 3:** No.

**Respondent 4:** Not really.

**Respondent 5:** No I haven’t heard anything about their healthcare system so I couldn’t comment on that.

**Respondent 6:** Don’t know anything about it.

**Respondent 7:** No

**Respondent 8:** No

**Respondent 9:** Don’t know anything about it

**Respondent 10:** No

5. As you may have heard, many countries are conducting health care system reforms. When reforming health care services, what is the most important thing the government need to do in your opinion?

A. Increase the budget

B. Reduce the medical cost

C. Cover as much people as the government can to the social medical insurance scheme. Include as many people as possible in the social medical insurance system.

D. Other-----write down your own opinion

**Respondent 1:** ABC
Respondent 2: C

Respondent 3: C

Respondent 4: ABC

Respondent 5: B

Respondent 6: D I assume you are talking in a broader sense now and not about the government in Sweden since costs already are low for patients, and everyone gets treatment. Eventually....

In the case of Sweden: Educate more doctors instead of this stupid system we have now where people who score the highest degrees still have to go through a lottery process to get in to medical school. This and other measures must be taken to cut down the queues, which are ridiculous.

In case of other countries: (c) cover as many (everyone preferably) as possible in the social medical insurance system.

Respondent 7: B

Respondent 8: C

Respondent 9: B

Respondent 10: C

6. How important are the medical devices (tools and machines) for the health care service in your opinion? Would you please briefly explain why?

Respondent 1: Extremely important for speedy and reliable results.

Respondent 2: Using medical technology to diagnose, conduct therapy or surgery is of course a crucial element if we are to keep our high medical standards. Most ailments are of course easily solved with chemical treatments but you can’t dispense with the needle when stitching a wound or dispense with the knifes and breathing
apparatus when conducting surgery or a stethoscope when listening to ones heart. I would place medical devices on TOP 2, depending on the ailment.

**Respondent 3:** Unnecessary for most medical issues but humans are limited and machines are not. Their importance will increase over time as our understanding of medical science grows.

**Respondent 4:** Very important I’d guess. With the right tools one can perform incredible things while without them you might be able to do almost nothing or even make things worse.

**Respondent 5:** it’s pretty important as the tools and machines/robots can saves lives. Example heavy operations as prostate cancers surgery needs robots to cut inside within the millimeters that a human mind isn’t capable of doing so that could mean life or death.

**Respondent 6:** Good equipment is always important in every field, to provide the best possible care to patients. I can't evaluate HOW important. Very?

**Respondent 7:** Extremely important is my guess. I don’t believe evidence based medical services can be done without modern equipment.

**Respondent 8:** Omöjligt att svara på som patient, egentligen. Men som blivande BMA kan jag ju se att automatiserade analyser är extremt mycket säkrare, dvs ger ofta sann diagnos. *(Translation: Impossible to answer as a patient, really. But as a soon-to-be BMA I can see that automated analysis is much more precise, i.e. often gives the right diagnosis.)*

**Respondent 9:** I would say the tools are very important, ex if I'm going to have laser surgery on my eyes. I don't want the lowest quality laser doing the work.

**Respondent 10:** Very important. It makes the medical service more efficient and of better quality.
7. What do you know about Swedish medical device industry? What do you think about it?

Respondent 1: Not much, just the impression that we do a lot of research within this area, also does some of the manufacturing.

Respondent 2: According to the Swedish health and medical care policy, every county council must provide residents with good-quality health services and medical care and work toward promoting good health in the entire population. This is a very sound system financed primarily through taxes and gives our entire population equal access to health care services.

Respondent 3: Nothing on both.

Respondent 4: Nothing.

Respondent 5: Well Sweden have pretty good healthcare program for everyone who lives here but one thing that bothers me is that pharmacy isn’t controlled by the government no more. Which means it will be much easier to get heavy medicine without permission from a doctor.

Respondent 6: Hope it’s doing well, don’t really know anything about it.

Respondent 7: Nothing

Respondent 8: Vet bara att reagens till analyser upplevs som mycket dyra. Men jag har ingen insyn i huruvida de är så pga utvecklingskostnader eller girighet. (Translation: Only know that reactants for analysis are experienced as very expensive. But I have no insight of whether that is so because of development cost or greed. )

Respondent 9: I don’t know anything about it

Respondent 10: Nothing
Questionnaire about Chinese Health Care System Reform and Medical Device Industry

---For Chinese citizens

1. 您认为中国的医疗服务体系，存在以下哪些问题？（多选）（      ）

   最需要改善的是哪一项？（      ）

   A. 医疗费用太高，看病贵
   B. 医疗保障体系不完善，覆盖面太窄
   C. 医疗体系资源不足，人力物力都低于需求--看病难
   D. 城乡之间，或沿海与中西部之间医疗资源配置不均
   E. 医疗工作者缺乏公益意识，更在意如何赚取利润问题

   What kind of problems do you think that currently exists in Chinese health care system? Choose the ones that mostly represent your opinions. (      )

   Which of the problems mostly needs to be addressed? (      )

   A. High cost of medical care, expensive to see a doctor
   B. Underdevelopment of the Health care insurance, the coverage rate is too low
   C. Lack of capacity of Medical care system, both in human and material resource
   D. Uneven distributions between urban and rural areas, or between east part and middle west part
   E. Lack of commonweal concept of medical care personnel, they pay more attention to earning profit.

   Respondent 1: ABCDE A
   Respondent 2: ADE C
   Respondent 3: ADE A
Respondent 4: ABDE   E
Respondent 5: ABE   B
Respondent 6: AE   A
Respondent 7: ABC   B
Respondent 8: ADE   D
Respondent 9: ADE   A
Respondent 10: ACE   A
Respondent 11: ABCDE   A
Respondent 12: AE   A

2. 2009 年 4 月，国务院发布了《国务院关于印发医药卫生体制改革近期重点实施方案（2009-2011 年）的通知》，新的医疗改革政策重点将加大基层医疗体系的建设与投入，并积极推动全民医保的进展（此次医改总投入为 8500 亿）。对此新医改政策您有什么看法？请从以下列表中选取您认同的选项。 (多选) (    )

A. 说得容易，实行难，可行性不高
B. 对医疗体系的严格监管应该是首项举措
C. 8500 亿财政投入从中央到地方的过程中极有可能严重缩水
D. 医疗体系内存在广泛的问题，医改任重而道远，国家还需投入更多财力
E. 方向错误，医疗体系的主要矛盾没抓住
F. 中国的医疗体系整改需要社会各界的共同支持
G. 比较赞同，有成功的希望
H. 其它，请写下您的观点:

In April 2009, the State Council released Deepening the Health Care System
Reform Implementation Plan 2009-2011, the new health care system reform will focus on the construction of primary medical care system and promote the development of Universal Health Insurance System (with total budget of 850 billion RMB). What do you think of the new health care system reform? Please choice the ones in your mind from the following list. (   )

A. Hard to implement  
B. Build up strict monitor scheme for medical care system should be the first step  
C. The 850 billion RMB budget will probably shrink quite much on the distribution way from the central government to local  
D. There are various problems existing in the current health care system, the government should put more investment into it  
E. It aims in the wrong targets, which are not the primary problems.  
F. The health care system reform needs supports from the all the circles  
G. Basically agree, looking forward for good results  
H. Others, please write down your opinions:

Respondent 1: BCD  
Respondent 2: CD  
Respondent 3: BCDGH  
Respondent 4: BCDFG  
Respondent 5: ABCF  
Respondent 6: ABCF  
Respondent 7: CEF  
Respondent 8: ACD  
Respondent 9: BF  
Respondent 10: ACDEF

(To ensure the basic medical conditions of rural people. However, in my opinion, the rural people seem to be easy to satisfy, but actually they rarely satisfy due to their needs are often ignored.)
Respondent 11: BDFG
Respondent 12: ACDF

3. 您对其它国家的医疗服务体系有了解么？您比较认同的是哪个国家的医疗服务体系（如瑞典，英国，美国）？其特别之处在哪呢？

Do you have any acquaintance of the health care system in other countries? Which do you mostly prefer (E.g., Sweden, England and America)? What is special about that system?

Respondent 1: 稍微有了解；瑞典；公众医疗保障体系完善 (Yes, a little bit. I think Sweden is quite good since it owns an improved public health care system.)

Respondent 2: 不了解 (I don’t know.)

Respondent 3: 完全不知 (I have no conception of it.)

Respondent 4: 了解一些，比较赞同瑞典的国家医疗服务体系。根据瑞典法定医疗保险制度，该国凡年满 16 周岁以上、在本国长期合法居住的公民都必须参加国家医疗保险。投保人只需按规定交纳一定的保险金额，即可享受到必要的基本医疗照顾。参保人员据此即可享受该国医疗保险照顾，如诊断、治疗、手术、康复、住院等，并可享受病假津贴、工伤补助及有关治疗的车费补贴等。对医疗经费不足的部分，则由中央政府予以补贴。

(Yes, I have some acquaintance, and I prefer national health care system in Sweden. According to the statutory health insurance system of Sweden, all the citizens over 16 years old and have long-term legal residence of the country must participate in national medical insurance. Only pay a certain required amount of insurance, the insurance applicants can enjoy necessary basic medical services, such as diagnosis, treatment, surgery, rehabilitation, and hospitalization. In addition, they can also comfort sick leave allowance, injury benefits and as well as fare subsidies related to
the treatment. Furthermore, the central government subsidizes the part of health care which are lack of funds.)

**Respondent 5:** 不了解 (I don’t know.)

**Respondent 6:** 美国 (America)

**Respondent 7:** 美国，体系清晰完善。(America, its health care system is quite clear and perfect to some extent.)

**Respondent 8:** 瑞典的医疗服务体系应该算是不错的。瑞典医疗行政管理机构分为三个层次：国家级管理机构、县级管理机构及区一级管理机构。在瑞典，私人提供的医疗服务与国家提供的医疗保健服务有机地结合在一起。从 1983 年起，瑞典实行了新的保险法，对私人开业医师严格审核和限制。各县议会有权决定哪些私人医师可以为病人提供服务，并可决定他们可以提供多少的工作量及提供卫生服务的形式。新保险法的目的是控制医疗卫生机构过快增长、防止卫生资源的滥用和浪费、控制医生的增长、防止医生过剩、保证医生的质量。

(Sweden has a quite perfect public health care system. Swedish medical administrative agencies can be divided into three levels: national regulatory agencies, country authorities and the distinct level of authorities. In Sweden, the private medical services integrate dynamically with state-provided health care services. Since the year of 1983, the government introduced a new insurance law, which has strict audit and restrictions on private practitioners. The country councils have the right to decide which of the private physicians can provide medical services for patients, and as well as decide how much workload and the provided forms of health services. The purpose of this new insurance law is to control the excessive growth of medical institutions, to prevent the abuse and waste of health resources, and regulate the growth of doctors in order to prevent the over plus and guarantee the quality of doctors.)

**Respondent 9:** 没有 (I don’t know.)

**Respondent 10:** 不是很了解 (No understanding)

**Respondent 11:** 不是很清楚 (Not clearly)
Respondent 12: 英国，实行全民医疗保障制度（England, implementing an universal health care system）

4. 如果您需要就医，您会在意相关医疗机构的器械配备么？如果答案是肯定的，考虑的侧重点是在对医疗器具的使用规范上（如一次性针管或手套）还是在医疗器械的配备水平（设备种类或先进程度）？

If you need medical service, would you care about the medical device of related medical care institution? If yes, which aspect will you consider more about, the standardizing usage of medical devices (E.g. One-off transfusion vessels or medical gloves) or the equipment level (the varieties amount or the technical level)?

Respondent 1: 会；使用规范 (Yes. The standardizing usage of medical devices.)

Respondent 2: 会，都会看重 (Yes. Both of them.)

Respondent 3: 必须的，要先进，也要干净，看着脏兮兮的高科技心里也不踏实。我觉得都需要加强！ (Definitely yes. Both of them.)

Respondent 4: 不会在意 (No)

Respondent 5: 如果我需要就医，会在意器械配备的，我还是在意医疗器械的配备水平。 (If I need medical service, I would care about the medical device of related medical care institution, especially the aspect of equipment level.)

Respondent 6: 是，使用规范 (Yes. The standardizing usage of medical devices.)

Respondent 7: 会，器械的配备水平。 (Yes. The equipment level.)
Respondent 8: Firstly, we should care about the standardizing usage of medical devices, and the following is the equipment level. According to the saying “Nothing can be accomplished without norms or standards”, the regulations are required to follow the industry. We couldn’t blindly pursue the equipment so that give up the fundamental thing. Nevertheless, there is no doubt that advanced technology and equipment are necessary for the medical development. Due to the improved level of health care, the current average life-span is definitely increased. (Yes. Firstly, we should care about the standardizing usage of medical devices, and the following is the equipment level. According to the saying “Nothing can be accomplished without norms or standards”, the regulations are required to follow the industry. We couldn’t blindly pursue the equipment so that give up the fundamental thing. Nevertheless, there is no doubt that advanced technology and equipment are necessary for the medical development. Due to the improved level of health care, the current average life-span is definitely increased.)

Respondent 9: I care a lot. Especially the standardizing usage of medical devices.

Respondent 10: I care more about the equipment level. In my opinion, according to the current domestic, the standardizing usage of disposable medical devices is relatively comprehensive. In comparison, the types and sophistication of the equipment should be more widely available, so that the government should increase the investment and usage in this area. (Yes, I care more about the equipment level. In my opinion, according to the current domestic, the standardizing usage of disposable medical devices is relatively comprehensive. In comparison, the types and sophistication of the equipment should be more widely available, so that the government should increase the investment and usage in this area.)

Respondent 11: Comparing with these two aspects, I think the standardizing usage of medical devices is more important than the equipment level. (Yes. Comparing with these two aspects, I think the standardizing usage of medical devices is more important than the equipment level.)

Respondent 12: The standardizing usage of medical devices.)
Would you consider acquire medical service in TCM (Traditional Chinese Medicine) hospitals? What is the top reason that you don’t or seldom consider of TCM hospitals?

Respondent 1: 会；中医疗效好，但是治疗周期长 (Yes. Although TCM is effective, but it requires a relatively longer treatment period.)

Respondent 2: 会；主要还是医疗水平不高 (Yes. The main reason is the medical standards of TCM are not high.)

Respondent 3: 会；中医院不够普及。 (Yes. TCM hospitals are not widely available.)

Respondent 4: 大部分情况下还是会选择西医。首要原因是现如今人们都注重医治的效率。 (In most cases, I may choose Western Medicine hospitals. The top reason that I seldom consider of TCM hospitals is I focus the treatment efficiency more.)

Respondent 5: 我会考虑去中医院就医的,我很少去时因为中医时间较长, 还有就是中医宣传做的不到位。 (Yes. I seldom consider of TCM hospitals because of TCM needs a longer period of treatment and the propaganda is not enough.)

Respondent 6: 会考虑 (Yes.)

Respondent 7: 会考虑 (Yes)

Respondent 8: 会;中医更侧重全身的调理，是养生之道。但是中医的过程比较慢，不像西医这样，起效快。中医的调养，加西医的快速这样的过程才是最佳。 (Yes. TCM concentrates on the recuperating of body which is quite good for health. Nevertheless, the treatment process of TCM is quite slower than Western Medicine. In all, the best way is to recuperate by TCM and owns quickly treatment process of Western Medicine.)
Respondent 9: 会选择中医，因为比较便宜。（Yes, because it’s relatively cheap.）

Respondent 10: 会考虑，中医讲究治根，往往需要长时间的调理，我觉得更适合人体的生长规律，是值得推荐的。但是由于宣传力度不够，很多人都不了解中医，我觉得应该更加大宣传力度。

(Yes. TCM pays more attention to the root rule which requires a long period of conditioning. And I think it accords with the body’s growth pattern which is worthwhile to be recommended. However, due to insufficient propaganda, lots of Chinese do not understand TCM. Therefore, the propaganda of TCM should be enhanced.)

Respondent 11: 会选择中医院就医，对中医有些认识，但是可能大多数人对中医不抱有就医愿望。（Yes. I have some understanding of TCM, but most people probably do not expect TCM treatment.)

Respondent 12: 会；中医疗效太慢。（Yes. The curative effect of TCM is too slow.）

6. 在进行医疗改革的过程中，您认为政府最需要采取的措施是：（ ）

A. 增加财政投入
B. 降低医疗费用
C. 尽量扩大医疗保险覆盖面
D. 合理配置资源，完善配置结构
E. 其它（请写下您的观点）:

When reforming health service, what is the most important thing that the government needs to do: (   )

A. To increase the fiscal investment in health care system
B. To reduce the medical cost
C. To cover as much people as the government can in the social medical insurance scheme
D. To balance the recourse distribution among regions
E. other----Please write down your own opinions here:

Respondent 1: B
Respondent 2: B
Respondent 3: BD
Respondent 4: D
Respondent 5: BC
Respondent 6: B
Respondent 7: ABC
Respondent 8: ABD
Respondent 9: B

Respondent 10: BDE 要加强医疗诊所，和小医疗机构的规范性和普及率，能够缓解医疗压力，让老百姓切身感受到医改的好处。

(As strengthen the coverage rate and standards of medical clinics and small medical institutions, the pressure on health care can be alleviated and people could feel the benefits of medical reform.)

Respondent 11: ABCDE 除以上四点外，更重要的是加大医药行业的监管，很多时候，不是药真的有那么贵，而是医药一些违规的不合理的巨额利润导致的，应该抓住根源彻底解决问题。

(In addition to these four points, the most important thing is to strengthen the supervision of the medical industry. In general, the price of medicine itself is not so much expensive, so that the problem of “expensive to see the doctor” is often caused by the huge profits with unreasonable number of irregularities. Therefore, the government should seize the root to solve problem completely.)

Respondent 12: B
Questionnaire about Chinese Health Care System Reform and Medical Device Industry

---For Personnel involved in Chinese Medical Device Industry

1. 中国自改革开放以来，持续进行了近三十年医疗体制改革，在近几年的改革过程中，您有什么样的感受？变化最大的是什么？

Since the Opening and Reform, China has been conducting health care system reform for nearly 30 years. How do you feel for the health care system reform in recent years? Which do you feel changes the most?

**Respondent 1:** 感觉看病越来越贵，缺乏职业操守的医生越来越多，整个行业缺乏管理。（I feel that it is more and more expensive to see the doctor, and there are more doctors who are lack of professional ethics. Furthermore, the whole industry is short of management.)

**Respondent 2:** “看病难”、“看病贵”成为当今中国的一大社会问题。当今社会，拜金主义已经浸染各行各业，政府官员和专家、学者面临着巨大的道德风险，惟有坚持科学发展观，遏制腐败，才能改善民生。

(“Difficult to see a doctor and expensive to see a doctor” has already became a major social problem in China. At present, money worship has been disseminated the various walks of life, government officers, experts and scholars are facing huge moral hazard. Therefore, only adhere to the scientific concept of development, curb corruption, can improve the people’s livelihood.)

**Respondent 3:** 没什么感受，最大的变化是看病越来越贵了。

(I have no much feeling of it. The biggest change is the medical services become really increasingly expensive.)
Respondent 4: In recent years, there are many big changes for the health care system reform. Firstly, we pay a lot when get sick. Secondly, the whole health care system developed quickly.

Respondent 5: 好处没看到，恶心人的倒是多了，看病贵，不方便，医生服务态度恶劣，医院态度恶劣。（I didn’t see the benefits, but expensive and inconvenient to see a doctor. In addition, the attitude of doctors and hospitals are quite bad.）

Respondent 6: 近30年的医改，让人感受不深，老百姓依旧面临“看病难，看病贵”的尴尬境地，最大的变化就是城乡居民基本医疗保障覆盖面有所扩大，还有关于药品的质量监控有所加强。

(Although nearly 30 years of medical reform, people still face up the embarrassing situation of “difficult and expensive medical treatment”. Nevertheless, there is no doubt that the basic medical insurance coverage of urban and rural residents has enlarged, and the quality of control on drugs also strengthened on some extent.)

Respondent 7: 最大的变化就是看病的人很多，看不起病的人也很多。（The biggest change is there are lots of people need medical services, but most of them cannot afford the fare.）

Respondent 8: 我对医疗体制没什么感觉。（I have no idea about this reform.）

Respondent 9: 总体是发展的，但也有需改进的地方。总体趋势水平不断提高，普及范围越来越大。变化最大的，是人们对疾病的认识和预防的重要性认知有了明显的深化。

(Overall, the situation is developing, but there still are some areas for improvement. The general trend is continuously to improve and more and more popular areas. The biggest change is people’s awareness of prevention of diseases has significantly deepened.)

Respondent 10: During these years the government has raised policy, people can apply for reimbursement, but the fee is still too high for lots of ordinary people. Most people can’t afford the payment when they were series ill especially the poor.
Respondent 11:中国的医疗体制改革和教育体制改革一样，越改越糟糕，广大
群众还是很不满意。或许原本的方向就是错的，就像住房改革，造成高房价一
样。从积极方面看，现在的农村医疗改革确实给受苦受难的农民群众得到了一
些实惠。

(Like the education reform, China’s health care system reform is also dissatisfied with
the masses. Perhaps the original direction is wrong, just as housing reform which is
also resulting in quite high price. However, current health care system reform does
really bring some tangible benefits to rural people who are suffering masses of
peasants.)

Respondent 12: Well, the “high drug price and difficult to see doctors” is the main
problem of the health care system in China, I don’t think the reform changes the
situation in China.

2. 您认为中国的医疗服务体系，存在以下哪些问题？（ ）

   最需要改善的是哪一项？（ ）

   A. 医疗费用太高，看病贵
   B. 医疗保障体系不完善，覆盖面太窄
   C. 医疗体系资源不足，人力物力都低于需求--看病难
   D. 城乡之间，或沿海与中西部之间医疗资源配置不均
   E. 医疗工作者缺乏公益意识，更在意如何赚取利润问题
   F. 其它，请写下您的观点:

   What kind problems do you think that current exists in Chinese health care system?
   Choose the ones that mostly represent your opinions. (  )

   Which of the problems mostly needs to be addressed? (  )

   A. High cost of medical care, expensive to see a doctor
B. Underdevelopment of the Health care insurance, the coverage rate is too low
C. Lack of capacity of Medical care system, both in human and material resource
D. Uneven distributions between urban and rural areas, or between east part and middle west part
E. Lack of commonweal concept of medical care personnel, they pay more attention to earning profit.
F. Others, please write down your opinions:

Respondent 1: ACD   A
Respondent 2: ADE   E
Respondent 3: AE    A
Respondent 4: C     B
Respondent 5: A     A
Respondent 6: ACE    A
Respondent 7: ABCDE  A
Respondent 8: ABDE   E
Respondent 9: ABCDF  A

深度上，整体来说我国的医疗水平有待提高，个别来说，我国也需要各科的顶级专家。另外，对教育的鼓励：医务人员的培养，医生和护士皆然。技术、医德，二者都要抓。

(In depth, the overall level of Chinese medical services needs to be improved. Individually, we need lots of top experts. In addition, we should pay essential attention to the encouragement of education and the training of medical personnel including both doctors and nurses.)

Respondent 10: ABCDE  A
Respondent 11: ABCDE  CE
Respondent 12: ABCD   A
3. 您对现在的医疗器械市场有什么样的看法？（如竞争情况，营利状况，发展前景等）

What do you think of the medical device market? (E.g. competition, profit, and developing prospect, and etc)

Respondent 1: 黑幕太多，蒙蔽百姓的双眼。 (There are so many gammons to blind people’s eyes.)

Respondent 2: 中国的医疗器械市场正在呈现外资巨头与本土龙头企业相互向对方势力领域渗透的格局。只靠品牌和产品就能牢牢掌控市场的时代已然远去，要想在中国市场稳住脚跟，需要做得更多，比如，不止推出新产品，更应主动地和经销商合作，推出更多的整套营销解决方案，以及针对中低端市场开发更多“经济适用”的机器和专门针对中国市场的基础医疗解决方案等。

(Chinese medical device market is showing the pattern that foreign giants and local leading enterprises penetrate in each other’s force field. The time that firmly relied on the brand and products to control the market has already gone. In order to stabilize the heel in Chinese market, the industry needs to do more, such as not only continuously introduce new products, but also actively cooperate with distributors, take the initiative to launch more complete marketing solutions, and also develop more affordable devices for low-end market as well as specialized basic medical solutions for Chinese market.)

Respondent 3: 不了解 (I don’t know.)

Respondent 4: Currently the medical device market becomes more and more competitive. As a special industry, maximizing profit is not the only goal. How to balance the relationship between the profit and people’s demand is the key affair.

Respondent 5: 这个完全不懂 (I have no idea about it.)

Respondent 6: 目前中国医疗机构的整体医疗装备水平还很低，在全国基层医疗卫生机构的医疗器械和设备中，有 15% 左右是 20 世纪 70 年代前后的 products，有
60% is 20th century 80s products, their updating will带动中国医疗器械市场的快速发展。

(At present, the overall level of medical equipment in China is still quite low. Among the medical devices in primary health care institutions, 15% of which come from the products around the year of 1970, and 60% are the products before middle 80s in the 20th century. Their replacement may lead to a rapid development of medical device market in China.)

**Respondent 7:** 感觉是一个比较具有垄断性质的行业，可能利润比较大。(I think the medical industry is relatively monopolistic, and its profit may quite great.)

**Respondent 8:** 我对这个行业不熟悉，但是感觉现在的竞争状况有些混乱，竞争有混乱的感觉，都是靠着关系在营销，并没有靠产品来竞争。如果对这种混乱的竞争状况不得到有效治理，今后行业发展前景不容乐观。

(I am not familiar with this industry, but in general, I feel the current competition is confused, and marketing is mainly relying on the relationship, doesn’t rely on the products to compete. If the confused competition situation cannot be treated effectively, the future development of medical industry outlook will not be optimistic.)

**Respondent 9:** 国家宏观调控不够，市场化程度也不高，有垄断感，且一定会有gray market。

(The national macro-control is not enough, and the level of marketization is not high which leads to a monopoly. Therefore, there will definitely come up with gray market.)

**Respondent 10:** I am not familiar with the medical market.

**Respondent 11:** 不是很了解。但是可以确定的是，缺乏有力的监管，市场混乱，医疗器械的质量和价格堪忧。(I don’t understand it a lot. But I am sure the market is lack of effective supervision and it is really disordered. Furthermore, I am also anxious about the quality and the price of medical devices.)

**Respondent 12:** I think the medical device market has a promise future for the Chinese government deserve to promote the health care condition in China.
4. 2009 年 4 月，国务院发布了《国务院关于印发医药卫生体制改革近期重点实施方案（2009-2011年）的通知》，新的医疗改革政策重点将加大基层医疗体系的建设与投入，并积极推动全民医保的进展（此次医改总投入为 8500 亿）。对此新医改政策您有什么看法？请从以下列表中选取您认同的选项（多选）。（ ）

A. 说得容易，实行难，可行性不高
B. 对医疗体系的严格监管应该是首项举措
C. 8500 亿财败投入从中央到地方的过程中极有可能严重缩水
D. 医疗体系内存在广泛的问题，医改任重而道远，国家还需投入更多财力
E. 方向错误，医疗体系的主要矛盾没抓住
F. 中国的医疗体系整改需要社会各界的共同支持
G. 比较赞同，有成功的希望
H. 其它，请写下您的观点：

In April 2009, the State Council released Deepening the Health Care System Reform Implementation Plan 2009-2011, the new health care system reform will focus on the construction of primary medical care system and promote the development of Universal Health Insurance System (with total budget of 850 billion RMB). What do you think of the new health care system reform? Please choice the ones in your mind from the following list. (  )

A. Hard to implement
B. Build up strict monitor scheme for medical care system should be the first step
C. The 850 billion RMB budget will probably shrink quite much on the distribution way from the central government to local
D. There are various problems existing in the current health care system, the government should put more investment into it.

E. It aims in the wrong targets, which are not the primary problems.

F. The health care system reform needs supports from the all the circles.

G. Basically agree, looking forward for good results.

H. Others, please write down your opinions:

Respondent 1: ACD
Respondent 2: BCDFG
Respondent 3: A
Respondent 4: CD
Respondent 5: C
Respondent 6: ACDF
Respondent 7: ABCDG
Respondent 8: ABE
Respondent 9: BCF
Respondent 10: ABCD
Respondent 11: BCF
Respondent 12: BDF

5. 您觉得新医改政策对医疗器械行业会有什么样的影响？

What influence do you think that the new health care reform policy will have on the medical device industry?

Respondent 1: 管理更加规范 (The management will become more standardized.)
Respondent 2: 中国医改向基层倾斜，医院设备的巨大缺口产生的市场空间甚至一时“难以想象”。(The new Chinese health care reform is tapped to the primary level, and the market space which is generated by the huge gap of medical devices is temporarily unimaginable.)

Respondent 3: 不了解 (I don’t know.)

Respondent 4: The new health care reform will have big influences on the whole medical device industry. In China, an industry has to accept the result when new policy is born. That is why the medical device Industry will face up with big challenges since the policy comes out.

Respondent 5: 完全不知道 (I totally know nothing about it.)

Respondent 6: 我国医疗器械市场将迎来一个快速发展的时期，卫生系统建设的重点领域之一将是基本医疗设备。(It is cleared that the medical device market in China will usher in a rapid development, and one of the key areas in health system is the foundational medical device.)

Respondent 7: 可能会有一些影响，主要是销售模式和盈利方向这个层次上的。(There may be some impacts, mainly rely on the levels of sales pattern and profitability direction.)

Respondent 8: 会加剧医疗器械行业的竞争状况，也许会更加混乱。(It will intensify the competition situation of medical device industry, which may be more confused.)

Respondent 9: 需求增大，若政府不下价格管制，可能会引起物价的普遍上涨。价格过低，则易导致质量好的器材被淘汰。国家应综合考虑，合理定价。(The demand will increase. Nevertheless, if the government doesn’t control the price, it may result in prices generally rose. On the other side, if the price is too low, the medical devices with high quality will be easy to get eliminated. Therefore, the government should take all the things into account and set prices reasonably.)

Respondent 10: It will be a good chance, but the competition will be fiercer. And it’ll stimulate the development of the medical device industry. But also there will be some side effect, such as some unscrupulous merchant will take advantage of this policy
sale some fake products or products of poor quality to money and in spite of people’s health.

**Respondent 11:** 不了解 (I don’t know.)

**Respondent 12:** Actually, I know little about medical device industry, but I believe the market will be expanded in the future.

6. 您觉得国家应该怎么以及在哪些领域加大对医疗器械行业的支持？

A. 加大财政投入
B. 对医疗器械行业实行宽松的货币政策
C. 支持科研创新
D. 合理管理调整市场
E. 紧密相关单位与医疗器械企业的联系，广泛开展合作
F. 其它，请写下您的观点:

How and in which area do you think the government should assist the medical device industry development? (  )

A. Increase the fiscal investment
B. Apply loosen monetary policy for medical device industry
C. Assist technical research and innovation
D. Properly manage and adjust the market
E. Close connect related institutions with medical device companies, developing extensive cooperation.
F. Other, please write down your opinions:

**Respondent 1:** ACD
**Respondent 2:** AD
**Respondent 3:** AD
Respondent 4: DE

Respondent 5: F 我觉得应该从大众出发，这些都是虚的，只要让人民看病容易，方便，便宜就 OK 了。(I think the government should base on the general public, all the choices above are nominal. As long as it is easy and cheap for people to see the doctor, the problem can be solved.)

Respondent 6: ACDE

Respondent 7: ACDE

Respondent 8: CD

Respondent 9: ACDE

Respondent 10: ACDE

Respondent 11: D

Respondent 12: ABCDE

7. 您对中国医疗改革或医疗器械行业的发展有什么建议？

Do you have any suggestions for Chinese health care reform or the development of Chinese medical device industry?

Respondent 1: 国家加强有效手段进行有效调控。(The government should strengthen effective means to control the industry actively.)

Respondent 2: 1. 建立一个覆盖城乡的急救保障体系。2. 改进公共卫生体系的资金投入方式和组织方式，创新服务内容。3. 在一般地区建立一个以社会医疗保险为主体的医疗保障体制。4. 在边远贫困地区建设基本卫生保健制度，为农民提供医疗保障。5. 利用管办分开、扩大自主权、分类管理、引入竞争等手段，促进公立医疗机构的改革。6. 加强保险机构的购买者功能，以支付制度的改革为核心，理顺医药价格体系。7. 充分利用市场机制调整医疗服务体系的结构，促进
社区卫生服务网络的发展和合理转诊体系的建立。

8. 重视现代信息技术以及其他适宜技术在医疗卫生领域的应用，促进科技创新。

(1. Establish an emergency security system which covers both urban and rural areas. 2. Improve the public health care system’s patterns of the investment approach and organization. 3. Build a medical security system which mainly relies on the social medical insurance in the general areas. 4. Set up a basic health care security system in remote poor areas in order to provide medical services for farmers. 5. Use separate management from operation, expand autonomy, category management, as well as introduce the competition and other means to promote the reform of public medical institutions. 6. Strengthen the function of insurance sector buyers, and establish a rational pharmaceutical pricing system with the core of the payment system reform. 7. Fully use market mechanisms to adjust the structure of health care system in order to promote the development of community medical network and the establishment of rational referral system. 8. Pay significant attention to the modern information technology and other appropriate technology applications in health care fields with the purpose of technological innovation.)

Respondent 3: 提高医务人员医德，降低药价。 (To improve the ethics of the medical staff and lower the drug prices.)

Respondent 4: As a Chinese citizen, I have lots of suggestions for Chinese health care reform. We need to properly manage and adjust this special market and maximize its influence on people’s interests.

Respondent 5: 没建议，这个发展怎么样不是我们关心的。 (I have no recommendation about it, because we are not concern about this kind of development.)

Respondent 6: 对于医疗器械行业的建议，主要说说对于医疗器械生产厂家的建议：1. 要让产品的生产更加规范化，流程化，高效化，要保证产品质量和提供可靠的售后服务；2. 让产品更加符合国际标准，提高其科技含量，和质量监控。

(For the suggestions of medical device industry, I mainly want to talk about the recommendations for medical device manufacturers which are as followed: 1. To make the production more standardized, process-based, and efficient, and then ensure the products’ quality and provide reliable after-sales services. 2. To make the products be more in line with the international standards, also improve the technology content and as well as the quality control.)
Respondent 7: 希望国家对相关医疗行业做好监督工作，加大对医疗黑幕和事故的惩处力度。(I hope that the government could carry out the supervision of related work, and increase the punishment of medical shady deals and accidents.)

Respondent 8: 1. 我觉得最重要的是整顿医疗机构的管理和监督体制。2. 加强医疗机构的医德建设。

(I think the most important thing is to consolidate the management and supervision of the medical device industry. And then to strengthen the construction of medical institutions and ethics.)

Respondent 9: 平稳发展，市场与计划结合。广泛动员社会的力量，也普及社会对医改的知悉程度。

(The development should be stable, and effectively integrate marketing and scheme. In addition, not only broadly mobilize the social forces, but also spread the universal community aware of the health care system reform.)

Respondent 10: 1. Reduce the price 2. Balance (most good hospitals are in developed city) 3. Strengthen the management of market 4. Easier access to good doctor

Respondent 11: 1. 加强监管，规范市场行为，对违反医疗法律法规的行为严加惩罚；2. 在规范管理的同时，充分放开市场，以充分的市场竞争促进行业发展；3. 加大相关从业人员的培养和教育力度；4. 加大医疗基础建设，增加医疗资源。

(1. Strengthen the supervision and regulate marketing behavior, as well as severely punish the medical behavior which are violated the laws and regulations. 2. At the same time of standardizing the management, the market should be fully opened in order to accelerate the industrial development. 3. To increase the training and education of relevant practitioners. 4. To enhance the construction of medical infrastructure and augment medical resources.)

Respondent 12: 1. The government should expand the public budget in the health care sector. 2. More hospitals should be built in the rural area. 3. Regulations and rules should be made to control the hospitals and doctors.
Questionnaire about Chinese Health Care System Reform and Medical Device Industry

---For Chinese Medical Service Personnel

1. 中国自改革开放以来,持续进行了近三十年医疗体制改革，在近几年的改革过程中，您有什么样的感受?变化最大的是什么?

Since the Opening and Reform, China has been conducting health care system reform for nearly 30 years. How do you feel for the health care system reform in recent years? Which do you feel changes the most?

**Respondent 1:** 感受最深的是就医方便, 医疗水平也有很大的提高, 医务人员的服务态度很好, 变化最大的是农村医改有保障, 农村医改满意。

(I deeply feel that it is much more convenient to fetch medical care. And the health care standard has been greatly improved as well. Medical staffs have good attitude. The biggest change is that the health care insurance starts to cover the rural area. The rural health care reform is quite satisfactory.)

**Respondent 2:** 感受最深的是就医方便, 医疗水平也有很大的提高, 农村医改做的比较满意。 (What I feel most is the convenience of health care service, and also the improvement of health care standard.)

**Respondent 3:** 感受最深的和变化最大的是农改有医保。 (What I feel most and the biggest change is that they invited public health insurance into the rural area.)

**Respondent 4:** 感受最深的是医改见效太慢, 变化最大的是农改有医保。

(What I feel most is the effect pace of the health reform is too slow. The biggest change is the health insurance in the rural area.)

**Respondent 5:** 近几年医改进展加快了, 初见成效, 变化最大的是农改有医保。

(In the recent years, the pace of health reform has been accelerating. The biggest change is the rural area citizens start to have public health insurance.)
Respondent 6: 方便了群众，变化最大的是农民看病有了保障。（More convenience for the mass, the biggest change is that the farmers start to have insurance in medical care.）

Respondent 7: 感感觉到越来越重视百姓的看病难的问题了，变化最大的问题是农民看病有了保障。（I feel that the government cares more and more about the mass’ problems of difficulties to fetch medical care services. The biggest change is that the farmers start to have insurance in medical care.）

Respondent 8: 近 30 年的医改，对老百姓表面有了不错的改变，但很多时候百姓出钱更多，似乎政府投资多了，但医院建设医疗风险全由医护人员自己担当经济责任，医护人员待遇过低，政府对医护人员不重视，社会舆论也是如此。（Through the 30 years of health care reform, it seems that the mass gets many benefits. But I think actually the mass has to spend even more. It seems that the government is investing more into the health care industry. However the marketization of medical care institutions lets the medical care staff to bare the hospital construction and all the risks. The medical care staffs have too low salary. Both the government and the society give little concern about the medical care personnel.）

Respondent 9: 感受是，表面上老百姓有了一定的医疗保障，但实际的保障却微乎其微。医疗行业很混乱，无证行医遍地都是。政府监管不力。（My feeling is that, the mass starts to have some health insurance superficially. But actually the insurance amount is tiny. The medical care industry is out of order. There are a lot of private clinics operates without license. The government hasn’t done their job in monitoring.）

Respondent 10: 全民医疗保障更加健全，但医疗费用仍居高不下。变化最大的是全民医保。（There are improvements in the public medical care insurance system. But the medical care is still expensive. The biggest change is about the universal health insurance.）

2. 您认为中国的医疗服务体系，存在以下哪些问题？（多选）（  ）

最需要改善的是哪一项？（  ）
What kind problems do you think that current exists in Chinese health care system?
Choose the ones that mostly represent your opinions. (  )
Which of the problems mostly needs to be addressed? (  )

A. High cost of medical care, expensive to see a doctor
B. Underdevelopment of the Health care insurance, the coverage rate is too low
C. Lack of capacity of Medical care system, both in human and material resource
D. Uneven distributions between urban and rural areas, or between east part and middle west part
E. Lack of commonweal concept of medical care personnel, they pay more attention to earning profit.

Respondent 1: BCD; B
Respondent 2: DAB; B
Respondent 3: BC; B
Respondent 4: BCD; E
Respondent 5: BCDE; E
Respondent 6: ABE; B
Respondent 7: ABC; A
Respondent 8: ABCD; A
Respondent 9: ABCD; C
Respondent 10: ABCDE; A

3. 对医院的营利程度，您觉得满意么？

Are you satisfied with the medical care service profit level?

Respondent 1: 有些方面不满意 (Not satisfied in some aspects)

Respondent 2: 不满意 (Not satisfied)

Respondent 3: 不满意, 医院不应该是有赢利的机构 (Not satisfied, the hospitals should not be profit earning institutions.)

Respondent 4: 不满意, 医院除了添置必须的设备和建设.不应该考虑赢利的多少。 (Not satisfied, except the acquirement of necessary devices and constructions, the hospitals should not consider about the amount of the profit.)

Respondent 5: 不满意.不应该考虑赢利。(Not satisfied, the profit should not be in consideration.)

Respondent 6: 不是很满意.觉得医院不能专以营利为目的。(Not very satisfied, I think the hospitals should not only aim in profit.)

Respondent 7: 还算满意。(Fairly satisfied)

Respondent 8: 无所谓 (I don’t care)

Respondent 9: 医疗机构不应该是盈利的机构。(Medical care institutions should not be profit earning.)

Respondent 10: 不很满意 (Not very satisfied.)
4. 您觉得国内中医院和其它医院存在的不平等程度深么？您能简单介绍一下大致情况么？

Do you think it is seriously unequal between TCM hospitals and normal hospitals? Could you please make a brief description of this issue?

**Respondent 1:** 我觉得不深，相同等级的医院收费标准是一样的，职工的基本工资是按学历资历而定的，当然职工福利是不一样的。单位效益好职工福利也就好。
(I think there is no big gap. Hospitals of the same level have the same charging standards. The salary of the personnel depends on the education and experience level. Of course the welfare level is different; it increases with the operation effect.)

**Respondent 2:** 我觉得还可以，医院是按等级标准收费的。
(I think it is fine, hospitals charge according to the ranking level.)

**Respondent 3:** 我觉得没太大的差别。
(I don’t feel much difference.)

**Respondent 4:** 差别不是很明显。
(No obvious gap.)

**Respondent 5:** 差别是有的，如今很多领导不太重视中医。学中医的也越来越少，中医很难学，而且起效较慢，所以很多病人都首选西医。
(There are gaps. Nowadays most of the leaders don’t attach importance to the TCM. There are less and less people studying Chinese medicine. Traditional Chinese Medicine is very hard to master, and it effects slowly. So many patients’ prior choice is western medicine.)

**Respondent 6:** 有一定的不平等程度，大多数人还是信服西医，觉得西医效果来得比较快，中医效果不是太明显。
(There is certain amount of unequal. Most of the people trust western medicine more. They think that western medicine effects faster, while Chinese medicine effect is not so obvious.)

**Respondent 7:** 比较深，国内还是比较重视西医，觉得中医太古老了，起效又慢。
(It is quite unequal. In the mainland, people pay more attention to western medicine. They think traditional Chinese medicine is too old, and effects slow.)
Respondent 8: Not much. It is actually putting more emphasis literally on Chinese medicine hospitals, labeling Chinese medicine to be national treasury. In fact, Chinese medicine hospital personnel are struggling their life. Law of market economy leads to the results of weaken Chinese medicine and strengthen western medicine.

Respondent 9: There are not much unequal. But it is hard for Chinese medicine hospitals to compete in the market economy. Therefore, they are getting worse.

Respondent 10: There are relatively big gap, in which the investment levels are different.

5. What do you think of town or township hospitals? ( )
A. Relatively not good
B. Very bad
C. Fine

Respondent 1: A
Respondent 2: A
Respondent 3: A
Respondent 4: C
Respondent 5: C
Respondent 6: A
Respondent 7: C
Respondent 8: A
Respondent 9: A
Respondent 10: A

6. In April 2009, the State Council released *Deepening the Health Care System Reform Implementation Plan 2009-2011*, the new health care system reform will focus on the construction of primary medical care system and promote the development of Universal Health Insurance System (with total budget of 850 billion RMB). What do you think of the new health care system reform? Please choice the ones in your opinion.

A.说得容易，实行难，可行性不高
B.对医疗体系的严格监管应该是首项举措
C. 8500 亿财政投入从中央到地方的过程中极有可能严重缩水
D. 医疗体系内存在广泛的问题，医改任重而道远，国家还需投入更多财力
E. 方向错误，医疗体系的主要矛盾没抓住
F. 中国的医疗体系整改需要社会各界的共同支持
G. 比较赞同，有成功的希望
H. 其它，请写下您的观点:
mind from the following list. (   )

A. Hard to implement
B. Build up strict monitor scheme for medical care system should be the first step
C. The 850 billion RMB budget will probably shrink quite much on the distribution way from the central government to local
D. There are various problems existing in the current health care system, the government should put more investment into it
E. It aims in the wrong targets, which are not the primary problems.
F. The health care system reform needs supports from the all the circles
G. Basically agree, looking forward for good results
H. Others, please write down your opinions:

Respondent 1: BDFG
Respondent 2: BCD
Respondent 3: ABCDG
Respondent 4: ABCDF
Respondent 5: ABCDF
Respondent 6: ABCD
Respondent 7: ABCF
Respondent 8: ABCDF
Respondent 9: ABCDFG
Respondent 10: ABCDEFG

7. 对其它国家的医疗体制您有了解么？印象比较深刻或者觉得比较值得借鉴的是哪个国家的哪种体系呢？（如瑞典，英国或美国）

Do you have any acquaintance of the health care system in other countries? Which one is you impressed most? Or which do you think China can learn from? (E.g., Sweden, England and America)
Respondent 1: 对一些经济比较发达的国家，他们的医疗体制都很好，人民的医疗有保障。印象较深刻有瑞典。(I think most of the developed countries have good medical care system; the citizens have good medical care insurance. The Swedish system is quite impressive.)

Respondent 2: 对一些经济比较发达的国家，他们的医疗体制都很好，人民的医疗有保障。印象较深刻有瑞典。(I think most of the developed countries have good medical care system; the citizens have good medical care insurance. The Swedish system is quite impressive.)

Respondent 3: 对一些经济比较发达的国家，他们的医疗体制都很好，人民的医疗有保障。印象较深刻有瑞典瑞士澳大利亚等。(I think most of the developed countries have good medical care system; the citizens have good medical care insurance. I have profound impression from Sweden, Switzerland, and Australia.)

Respondent 4: 不是很了解，对一些经济比较发达的国家有一些了解，印象较深刻有瑞典，澳大利亚等。(I don’t know much about this, except a little about those developed countries with strong economic strength, such as Sweden and Australia.)

Respondent 5: 了解不多，但对瑞典有些了解。(Not much, some about Swedish health care system.)

Respondent 6: 了解不多，但对英国有些了解。(I am not familiar, but know something about the English system.)

Respondent 7: 了解不多，但对美国有些了解。(I don’t have much knowledge of this, heard about the American system.)

Respondent 8: 了解不多，瑞典澳大利亚。(Not much, some about Sweden and Australia.)

Respondent 9: 有些了解，值得借鉴的有：瑞典，美国，澳大利亚。(I read some articles about this topic. I think China can use as references from Sweden, USA, Australia, etc.)
Respondent 10: 有些了解, 值得借鉴的有: 瑞典, 美国。(Heard something about it, like Sweden and America.)

8. 对国内的医疗器械市场，比如价格质量及科技程度，您有什么样的看法？（ ）

A. 水平严重落后于发达国家
B. 价高质劣
C. 价廉物美
D. 价廉，但质量不高
E. 其它，请写下您的观点:

What do you think of the Chinese medical device (tools and machines) market, such as the price and quality level or the techniques? Choose the ones mostly represent your opinions. （ ）

A. the developing level is far behind developed countries
B. high price with low quality
C. good price with high quality
D. low price but with low quality
E. Others, please write down your opinions:

Respondent 1: AD
Respondent 2: AD
Respondent 3: AD
Respondent 4: A
Respondent 5: AD
Respondent 6: AB
Respondent 7: AD
Respondent 8: AB
9. 身为医务人员，您觉得医疗器械在医院提供医疗服务体系中占有什么样的地位？

As medical care personnel, what do you think of the position of medical devices in health care system?

Respondent 1: 我觉得医疗器械在医疗服务中占有很重要的地位。高科技的产品我还是比较相信的，加上医生的临床经验对疾病的诊断起到至关重要的作用。

(I think the medical device is very important in the medical care service process. I basically trust high technique devices. Plus the doctor’s experience, it is quite essential for diagnose of the disease.)

Respondent 2: 我觉得医疗器械在医疗服务中占有很重要的地位。对疾病的诊断起到重要的作用。（Very important, especially for diagnose.)

Respondent 3: 我觉得医疗器械在医疗服务中占有很重要的地位。对疾病的诊断和医院的知名度都起到重要作用。（It is very important, both for the treating of disease and the hospital reputations.）

Respondent 4: 我觉得医疗器械在医疗服务中占有很重要的地位。很多医院或医生会靠各种检查来提高业务量。（I think the medical devices are very important. Many hospitals and doctors leans on varies of examinations.）

Respondent 5: 医疗器械在医疗服务中占有很重要的地位。各类检查费用在正个医疗费中占很大的比例。（The medical device takes very important position in the medical service system. The expense of various examinations takes a great proportion of the total medical costs.）
medical service. And the examination and lab fee accounts for a high percentage of the total medical care cost. )

**Respondent 6:** 医疗器械是医疗服务中占有很重要的地位。很多检查都需要依靠器械的帮助才能完成工作。（It’s very important. Many examinations need instruments to complete.)

**Respondent 7:** 医疗器械在医疗服务中占有很重要的地位。它在一定程度上对疾病的诊断起到了很重要的作用。（It is very important, helping to diagnose the disease.)

**Respondent 8:** 医疗器械本身无可非议，但在医疗器械提供过程中由于不正之风管理者和经销商暴利，而患者却是最大的受害者。政府监管不力，百姓无能为力。（The importance of the medical devices is out of discussion. But through the medical devices providing processes, there are managers and dealers corrupt to get huge profit. The patients are the biggest victims. The mass cannot do anything while the government doesn’t monitor effectively.)

**Respondent 9:** 医疗器械占有相当大的地位，但在医疗器械提供过程中由于不正之风管理者和经销商暴利，所以各种检查费用就高，而患者却是最大的受害者。政府监管不力，百姓无能为力改变。（It is very important. But if the government doesn’t give enough effort to monitor the device provide process, to minimize the corruptions. The cost varies of examination will be too high for the mass to bear.)

**Respondent 10:** 其具有重要地位，能为临床医生提供服务，有确切诊断依据，指导治疗方案。（It has very important position. It can serve the doctors to diagnose with sound proof, guiding the treat.)
10. 您对中国医疗改革或医疗器械行业的发展有什么建议么？

Do you have any suggestions for Chinese health care reform or the development of Chinese medical device industry?

Respondent 1: 我认为中国的医改应该根据中国的国情，学习和借鉴发达国家的医疗体系，制定适合中国的医疗体系，使人民有更好的医疗保障。

(I think China's medical reform should be based on China's national conditions, learning from the health care system in the developed countries. Develop suitable health care system for Chinese special situation, so people have better health care insurance.)

Respondent 2: 中国的医改应该学习和借鉴发达国家的医疗体系，制定适合中国的医疗体系，使人民有更好的医疗保障。(Use the health care system of developed countries as the references, improving the Chinese health care system.)

Respondent 3: 中国的医改应该学习和借鉴发达国家的医疗体系，制定适合中国的医疗体系，使人民有更好的医疗保障。(Use the health care system of developed countries as the references, improving the Chinese health care system.)

Respondent 4: 中国的医改应该学习和借鉴发达国家的医疗体系，使人民有更好的医疗保障。(Learn from other countries, so the mass can have better health care insurance.)

Respondent 5: 中国的医改应该学习和借鉴发达国家的医疗体系，引进先进的医疗设备。(For the health care system reform, we should learn more from other countries. And we also need to import more high technique medical instruments.)

Respondent 6: 中国的医改应该学习更好的技术，引进先进的医疗设备。(Learn and develop better technique and skills, importing more advanced medical instruments.)

Respondent 7: 中国的医改应该更多考虑百姓的利益，引进先进的医疗设备。
(Chinese health care system reform should consider more about the mass’ real benefit. Import more advanced medical devices.)

**Respondent 8:** 中国的医疗机构和医疗器械行业很混乱，中国的医改应该加大力度整治。（Chinese medical care industry and medical device industry are out of order now. The health care system reform should put much effort into regulating.)

**Respondent 9:** 中国的医疗机构和医疗器械行业很混乱，中国的医改应该加大力度整治。（Chinese medical care industry and medical device industry are out of order now. The health care system reform should put much effort into regulating.)

**Respondent 10:** 1. 全民享有医疗保障；2. 医疗器械共享；3. 患者就医无区域限制。（1. Universal health insurance; 2. Medical instruments sharing; and 3. No regional restrictions for the patients to fetch medical care.)
Appendix 2 - Five Focuses in New Health Care System Policy

新医改五项重点改革

实现全民医保 3 年内使城镇职工和居民基本医疗及新型 农村合作医疗参保率提高到 90%以上。2010 年，对城镇居民医保和新农合的补助标准 提高到每人每年 120 元，并适当提高个人缴费标准， 提高报销比例和支付限额。

初步建立国家基本药物制度 建立科学合理的基本药物目录精选调整 管理机制和供应保障体系。将基本药物全部纳入医保药品报销目录。

健全基层医疗服务体系 从 09 年开始，逐步在全国建立统一居民健康档案，增加公共卫生服务项目，提高经费标准，充分发挥中医药作用。

促进基本公共卫生服务均等化 从今年起，中国逐步向城乡居民统一提供疾病预防控制，妇幼保健、健康教育等本公共卫生服务，人均经费标准今年不低于 15 元， 2011 年不低于 20 元。

推进公立医院改革试点 今年开始试点，2011 年逐步推开。改革公立医院管理体制和运行、监管机制，提高公立医疗机构服务水平。摔倒进公立医院补偿机制改革，加快形成多元化办医格局。
Appendix 3 - Recently Published Medical Device Industry Laws, Regulations and Standards

图表318：近年来中国颁布的有关医疗器械行业的主要法律、法规及标准

<table>
<thead>
<tr>
<th>序号</th>
<th>法律、法规及标准</th>
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<tbody>
<tr>
<td>1</td>
<td>《医疗器械监督管理条例》国务院令第276号（2000年发布）</td>
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<tr>
<td>2</td>
<td>《医疗器械临床试验规定》局令第5号（2004年发布）</td>
</tr>
<tr>
<td>3</td>
<td>《医疗器械生产监督管理办法》局令第12号（2004年发布）</td>
</tr>
<tr>
<td>4</td>
<td>《医疗器械注册管理办法》局令第16号（2004年发布）</td>
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<tr>
<td>5</td>
<td>《一次性使用无菌医疗器械监督管理办法》（暂行）局令第24号</td>
</tr>
<tr>
<td>6</td>
<td>《医药工业洁净厂房设计规范》（简称GMP设计规范）</td>
</tr>
<tr>
<td>7</td>
<td>《医疗器械生产企业质量体系管理规范》</td>
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<td>8</td>
<td>《医疗器械生产企业质量体系管理规范植入性医疗器械实施细则》（试用）</td>
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<td>12</td>
<td>《医疗器械经营企业许可证管理办法》局令第15号（2004年发布）</td>
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<td>13</td>
<td>《医疗器械说明书、标签和包装标识管理规定》局令第10号（2004年发布）</td>
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<td>14</td>
<td>《无菌医疗器械生产管理规范》YY0033-2000（2000年发布）</td>
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资料来源：前瞻研究中心整理
Appendix 4 - The Competing Pattern in Chinese Medical Device Market in 2008

图表334：2008年中国医疗器械行业市场竞争格局（单位：%）

图表335：2008年中国医疗器械行业收入前十家企业的市场占有率（单位：%）

Appendix 5 - The Market Share of Top 10 Chinese Medical Device Enterprises

图表335：2008年中国医疗器械行业收入前十家企业的市场占有率（单位：%）
Appendix 6 - JP Morgan PMI

图表320：JP 摩根全球采购经理人指数 PMI

资料来源：前瞻核电行业研究小组整理