Health Service Delivery Profile

China

2012

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China health service delivery profile

Demographics and health situation

The People's Republic of China (PRC) is the third-largest country in the world, with a coastline of 18,000 km.[1] China is divided into 23 provinces, 5 autonomous regions, 4 municipalities directly under the central government and 2 special administrative regions (SAR). These 32 regions in mainland China (excluding Hong Kong SAR, Macao SAR, Taiwan Province, and expatriate Chinese) can be divided into three economic zones: Eastern China, Central China and Western China. There is huge disparity in economy among these three economic zones and even regions within the same zone. For example, provinces in Eastern China like Shanghai, Beijing, Zhejiang, Guangdong etc. are more developed than provinces in Western China such as Xinjiang, Guizhou and Gansu.

By the end of 2011, mainland China had a population of 1 347.35 million. Spread across age groups was: 16.5% aged 0-14, 74.4% aged 15-64 and 9.1% aged 65 and over, with a sex ratio of 105.18. Almost half of the population lives in rural areas (48.73%). There are 56 ethnicities, with Han as the majority, accounting for 91.60% of total population. The floating population reached 230 million persons in 2011.[2]

Since the establishment of People's Republic of China in 1949, especially after the economic reform and opening up in 1978, China has seen remarkable achievements in health care development, such as basic health services covering urban and rural residents, reinforced disease prevention and control, expansion of health insurance coverage and rapid development of health technology. The health status of Chinese people has improved steadily. Key health and human development indicators are presented in Table 1.

Table 1. Key development indicators in China

Key development indicators	Measure	Year
Human development index[a]	0.687	2011
Illiteracy rate(15^+)[b]	4.88 (male 2.52, female 7.29) (urban 2.66, rural 7.26)	2010 2010
Gini coefficient[c]	0.474	2012
Total health expenditure[d]	5.15 % GDP	2011
Multidimensional poverty index[a]	0.056	2003
Life expectancy at birth[e]	74.83 years (72.38 males, 77.37 females)	2011
Infant mortality rate[e]	12.1 per 1000 live births	2011
Under 5 mortality rate[e]	15.6 per 1000 live births	2011
Maternal mortality rate[e]	26.1 per 100000	2011

Sources: a: *Human Development Report 2011: Sustainability and Equity: A Better Future for All*
b:*Population Census Office under the State Council Department of Population and Employment Statistics National Bureau of Statistics. Tabulation on the 2010 Population Census of the People's Republic of China. Beijing: China Statistics Press.*
c: *National Bureau of Statiscs.*
http://www.stats.gov.cn/was40/gjtjj_detail.jsp?searchword=%BB%F9%C4%E1%CF%B5%CA%FD&channelid=6697&record=1
d: *China National Health Development Research Center. Abstract of China National Health Expenditure 2012.*
e: *Ministry of Health, P.R. China. China Health Statistics Yearbook 2012. Beijing: China Union Medical College Publishing,2012.*

In 2011, the main causes of death for urban residents were malignant neoplasm, heart disease, cerebrovascular disease, respiratory system disease, and external causes (injury and poison), accounting for 85.34% of total deaths. The pattern is very similar for rural residents with these same diseases causing 86.87% of total deaths[3] but cerebrovascular disease is ahead of heart disease. In 2009, noncommunicable diseases (NCDs) contributed 82 % of the total disease burden.[4]

Health legislation, objectives and strategies

The Constitution of the People's Republic of China, Chapter II Article 45 (1982) states: "Citizens of the People's Republic of China have the right to material assistance from the state and society when they are old, ill or disabled." Furthermore, Chinese government enacts specific laws to ensure sound delivery of health services and safe operation of health organizations. In preventive care, the Laws of PRC on Prevention and Treatment of Infectious Diseases, on Maternal and Infant Healthcare and on Prevention and Control of Occupational Diseases, clarify national targets and professional regulations. In human resources for health, the Law of PRC on Medical Practitioners regulates the qualification requirements of medical practitioners and market access for permission to practice. The Drug Control Law of PRC outlines requirements for drug regulation and drug quality for consumer safety.

Chinese government upholds the following principles in health: "highlight rural areas; preventive care first; aligning positions of Traditional Chinese Medicine and Western Medicine; relying on science, technology and education; encouraging the participation of whole society; serving for people's health; and serving for China's socialistic modernization"[5].

In 2003, the 17th national congress of the communist party outlined the program "Scientific Outlook on Development". The core principle is "people-oriented, comprehensive, coordinated, sustainable development".[6] In line with this principle, a new round of health reform proposed "achieving universal healthcare in 2020"[7] (see Annex 1). The reform emphasizes the responsibility of government to finance and supply basic healthcare. In order to ensure a system where each citizen of PRC has equitable access to needed health services. In 2009, five key areas were initiated to achieve the targets of the health reform including "1. accelerate the development of basic health security system; 2. establish essential medicines system; 3. perfect grassroots healthcare system; 4. promote equitable basic health services; 5. advance pilot projects in public hospital reform"[8]. According to the 12th Five Year Plan on Health Care development, in 2015, Essential Health Care System will be established preliminarily to provide basic health security and basic health services to all residents. The life expectancy will increase by one year on the base of 2010, infant mortality and maternal mortality will less than or equal to 12% and 22/100,000 respectively, the burden of patient will be alleviated, out-of-pocket payment as share of total health expenditure will be less than or equal to 30% in 2015.

Health administration

The Ministry of Health (MoH) is responsible for designing national health law, planning and budgeting resource allocation, supervising healthcare services and health professionals. In May 1988, the state council decided to establish the State Administration of Traditional Chinese Medicine (TCM) of PRC subordinated to Ministry of Health, undertaking the responsibility of health service management of

Traditional Chinese Medicine.[9] The State Food and Drug Administration PRC, part of the Ministry of Health from 2008, undertakes the responsibility of supervising the industries of food and drugs.[10,11] Other ministries also play vital roles in the development of healthcare services, such as Ministry of Civil Affairs of PRC and National Population and Family Planning Commission of PRC.

Service delivery model

Health services in China are mainly provided by the public system, which covers 90% of emergency and inpatient services.[3] For outpatient care, the private sector has increased its market share in recent years, with concomitant increases in out-of pocket payments. China's health system is organised along four administrative levels: national, provincial, city and county. Government-owned county hospitals and rural community based clinics are usually directly managed by county's Health Bureau. Each administrative level has health supply system including Traditional Chinese Medicine and public health. The public health network has been established along the same four administrative levels, and includes institutions of diseases control and prevention, health education, infant and maternal care, health supervision and mental health, etc. The health institutions at different levels undertake different responsibilities. The community health facilities mainly provide services on prevention, medical care, health care, recurring services, health education and family planning. Township health centres and village clinics mainly focus on rural residents, and supply the medical care for common, prevalent diseases and primary public health services.[12] County-level hospitals are responsible for acute care and basic health service and technical support for township- and country-level clinics. Township-level clinics are responsible for diagnosis and treatment of common diseases and technical and managerial support for country-level clinics.

The urban health system has community-level health service facilities as the basis, and is responsible for curative and rehabilitative services, exercising the duty of gatekeeper for residents' health. City hospitals support sustainable development of community-level health facilities by providing technical support and staff training. Large general hospitals at city, provincial and national level have responsibility for treatment emergent, serious and complicated diseases, along with medical education and scientific research.

Traditional Chinese Medicine (TCM) is an integrated part of health service in China. Public TCM hospitals are arranged in three levels, national, provincial/city and county level. Most public hospitals have departments of TCM. Some private health institutions also provide TCM services.

The provider network

China's health system has non-profit health organizations as its mainstay, public hospitals as the driving force, with for-profit health organizations and non-public hospitals as partners and backup. In 2011, China had 954,389 health institutions of all kinds, including 134,841 in urban areas and 819,548 in rural areas. By ownership, 497,395 institutions were public and 456,994 were non-public. By institutional type, 21,979 were hospitals including 11,642 urban hospitals (2,220,287 beds) and 10,337 rural hospitals (1,484,831 beds); including 13,539 public hospitals (3,243,658 beds) and 8,440 non-public hospitals (461,460 beds); 918,003 grassroots health facilities including 469,624 public institutions and 448,379 non-public institutions; 11,926 professional public health institutions, most being public.[3] Some public health institutions, for example the Centre of Diseases Control (CDC), provide specialist services, such as treating skin and sexually transmitted diseases; and maternal and children health facilities for paediatrics and gynaecology diseases, etc.

Table 2. Level and type of services provided by China, 2011

Institution Type	Number		Description
	Public	Non-Public	
Hospitals			
General Hospital	9166 (64.0%)	5162 (36.0%)	Mainly provide general services including outpatient, inpatient, all sorts of physical examination and diagnosis, etc. In all jurisdictions at and above county level have established general Traditional Chinese Medicine hospitals.
Traditional Chinese Medicine Hospitals	2611 (78.9%)	697 (21.1%)	Mainly provide general services including outpatient, inpatient, all sorts of physical examination and diagnosis, etc. In all jurisdictions at and above county level have established general Traditional Chinese Medicine hospitals.
Specialist Hospital	1740 (40.6%)	2543 (59.4%)	Mainly provides outpatient, inpatient and examination services specialized in oral, eye, tumour, cardiovascular, paediatrics, mental health, skin, infectious diseases
Grassroots Healthcare Institution			
Community health service institution	25615 (78.0%)	7245 (22.0%)	general services of diagnosis, acute care, rehabilitation, homecare, consultation, referrals, preventive care, hygiene immunization, , health education, family planning, diagnosis and treating common diseases and prevalent diseases etc.
Township health center	37652 (99.2%)	310 (0.8%)	Community based health system in urban area which is responsible for Providing health services at township level, such as general services of diagnosis, acute care, rehabilitation, homecare, consultation, referrals, preventive care, hygiene immunization, , health education, family planning, diagnosis and treating common diseases and prevalent diseases etc.
Village clinics	371024 (56.0%)	291870 (44.0%)	Provide public health services include preventive care, maternal and child hygiene and primary diagnosis and treating prevalent diseases and common diseases.
Outpatient Clinics	2766 (30.0%)	6452 (70.0%)	Outpatient clinics affiliated to hospitals but not located in hospitals, which responsible for providing convenient general outpatient services for ordinary patient.
Clinic and infirmary	32567 (18.6%)	142502 (81.4%)	Simple health faclilities affiliated to facotry or agency, which provde diagnosis and treating common diseases under the supervision of hospitals and community health service center.
Specialized Public Health Institutions			
Diseases Prevention and Control institution	3483 (100%)	1 (0%)	Diseases prevention and control, public health emergency preparedness and response; behaviour risk factor surveillance and intervention; clinical laboratory inspection and evaluation; health education and promotion; health service management; scientific research. Institutions Such as CDC at country and county level.
Specialist preventive care institution	1268 (98.0%)	26 (2.0%)	Preventive health in oral diseases, mental health, skin diseases, sex transmitted diseases, tuberculosis, occupational diseases, endemic diseases, schistosomiasis, drug rehabilitation, etc.
Health education institution	145 (98.6%)	2 (1.4%)	Health promotion and health education and related policy advocacy; technical consultation and promotion; staff training; information management and disclosure; surveillance and evaluation.
Maternal and Child Healthcare institutions	3029 (99.8%)	7 (0.2%)	Launch basic healthcare services, health promotion, health eucation and preventive care for women and children.
Emergency Center (Ambulance)	265 (98.1%)	5 (1.9%)	Responsible for the emergency issues, and provide rescue and treatment on site and transportation.
Blood Center	488 (93.0%)	37 (7.0%)	Responsible for collecting, testing and supplying of the clinical use of the blood to medical facilities.
Health Inspection and Supervision	3021 (100.0%)	1 (0.0%)	Responsible for enforcement of health law, inspect and supervise food safety, public area sanitation, occupational health and medical appliances, etc.
Other Institutions	2533 (96.3%)	96 (3.7%)	Sanatoria, clinical testing centres, medical scientific institutions, medical on-the-job training institutions, medical examinations councils, rural water hygiene centres, human talent exchange centres, bureau of statistics, etc.

Source: *China Health Statistics Yearbook, 2012.*

Health Financing

Public financing dominated health financing after the establishment of New China and before economic reform, during which a centrally planned economic system was implemented. After the reform and opening up policy initiated in 1978, as the government's health input declined and the social health security scheme weakened, health financing became increasingly dependent on out-of-pocket (OOP) payments. In 2001, the OOP share of Total Health Expenditure (THE) reached 59.97%.[13]

Health financing now includes tax-based government health budget, social health insurance, OOP, private medical insurance and other health expenditure. The Ministry of Health (MOH) and Ministry of Finance (MOF) developed the health budget together. In 2011 China's THE was 243.46 billion RMB, of which general government health expenditure was 55.89%, and private health expenditure 44.11%. OOP as the share of THE had been reduced by 5.65% during 2009-2011.[14] Now in China, Fee-for-Service is the prevailing medical payment method, while other payment mechanisms, e.g. Diagnosis-Related Groups (DRGs) based payment, are in the phase of pilot and exploration.

The Chinese government officially initiated the Urban Employees' Basic Medical Insurance (UEBMI) in 1998, and further improved medical security systems after 2003, aiming for public-dominated health financing system. Currently, UEBMI covers all urban employers. The Urban Residents' Basic Medical Insurance (URBMI) covers other urban residents who are not formally employed. The New Rural Cooperative Medical Scheme (NRCMS) mainly covers rural residents, and the Urban and Rural Medical Assistance System covers the population who are economically strained. By the end of 2011, the total urban and rural population insured by these three schemes was 1.295 billion, being over 95%.[15]

The schemes are managed by different government ministries. The New Rural Cooperative Medical Scheme is managed by MOH. The urban insurance schemes, UEBMI and URBMI, are managed by the Ministry of Human Resource and Social Security. The Ministry of Civil Affairs is in charge of the Medical Assistance fund.

Non-communicable diseases (NCDs) bring severe challenges for China's health system. In 2010, health expenditure on NCDs was about 70% of China's THE, and predicting that without effective controls NCDs inpatient and outpatient expenditure could cost over 9% of GDP in the future.[16] Tobacco control is an important priority (see Table 6).

Health Human Resources

Over the past decade, there has been significant development in health human resources in China. The number of professional health workers per 1000 population has increased to 4.58 in 2011, from 3.63 in 2000. Just over half (50.56%) of all health workers work in urban areas, with 49.44% in rural areas which have 48.7% of the total population.[3]

Of the total health workers,74.2% have education levels below bachelor degree, (and of these only 37% have junior college qualification), 22.3% have bachelor degree and only 3.4% have Master's or

higher degree.[3] Medical education in China involves school education, postgraduate education and in-service training. In 2010, there are 101 medical, Chinese medicine and pharmacy universities and colleges, and 66 medical technical schools.[17] To achieve a major in clinical medicine or medical technology at a university or college, usually takes five years for bachelor degree, and seven years for master's degree. To get a bachelor degree in pharmaceuticals or nursing usually takes four years, and also seven years for master's degree. Postgraduate and continuing education include a standardized program for resident physicians; special continuing education for licensed and employed pharmacists; and in-service training for nurses and health workers in township hospitals, etc. Legislation such as the Law of the People's Republic of China on Medical Practitioners (1998), Nurse Management Act (1993), and Licensed Pharmacists Qualification System Interim Provisions (1999), have clear and strict regulations on licensing of practicing physicians, nurses and pharmacists. The same registration and licensing system is used for both modern and traditional medicine practitioners.

Even though China increased training of medical professionals, grassroots level health facilities such as community or township health centers still experience shortages of health staff. One reason is the movement of health professionals from grassroots and rural health facilities to larger and urban facilities. China's government has undertaken measures to address this problem, such as increasing the income of health professionals in health centers, subsidizing medical students committed to work in health centers, regular staff exchange between health centers and hospitals, etc.

Table 3 illustrates that there are insufficient nurses and other health professionals compared to the number of doctors. Included in the numbers in Table 3, there are 420,329 Traditional Chinese Medicine health workers, in all kinds of health facilities. Of this total, 37.81% work at traditional medical facilities.[3] Training is mainly in educational institutions, though traditional apprentice learning is becoming more and more popular again.

Table. 3 Numbers of health workers in China (2011)

Profession	Number	Number per 10 000 population	TCM practitioners included
Medical practitioner	2020154	1.49	267,225
Assistant medical practitioner	445940	0.33	42,047
Registered nurse	2244020	1.66	
Pharmacist and assistant pharmacist	363993	0.27	100,116
Technician and assistant technician	347607	0.26	
Others	781144	0.58	10,941
Total Health workers	**6202858**	4.60	420,329

Source: China Health Statistics Yearbook 2012.

Medicines and therapeutic goods

In 2011, the gross industrial output value of medicine manufactures was 1,494.20 billion Yuan (231.34billion USD), which accounted for 1.78% of the national total gross industrial output value. The total sales value of medicine and medical appliance of wholesale trade was 1,046.51 billion Yuan (162.03 billion USD).[a] [18]

Since 2000, under the health reform, China began to strengthen the essential drug system. The number of national essential drugs for primary level issued in 2009 was 307, of which 102 were Traditional Chinese Medicines[19]. Provincial health administrations prepare province-specific essential drug lists relevant to the regional context, provided that all the drugs are on the national essential drug list. All government sponsored primary facilities were using essential drugs lists by the end of 2011. To keep prices low, procurement is through centralized bidding, provinces purchase through the central level, and pharmaceutical companies deliver directly to the medical facilities. Sales of essential drugs must be at zero mark-up. Insurance compensation for essential drugs is 10-15% higher than for non-essential drugs; and for Traditional Chinese Medicine the compensation ratio would be raised again by 5-10%.[20] The *China Pharmacopeia (2010)* included 4,600 types of medicine, of which 1069 were traditional Chinese medicine. This *Pharmacopeia* covers essential drugs and drugs in the health insurance reimbursement packages.

Medicines listed in the health insurance benefit packages are reimbursed by the social insurance fund and dispensed by hospitals. At present, the number of drugs in the reimbursement scope is 800 to 1200 at the county level, and 300 to 500 at the town level, including Traditional Chinese Medicine and ethnic medicines.[21] People covered by the Urban Employees' Basic Medical Insurance and Urban Residents' Basic Medical Insurance can buy medicines in hospitals or drug stores with an insurance card. But for patients without health insurance or self-medicating, out-of-pocket payments for medicines are high, which badly impedes access, financial protection and equity. With implementation of the essential drug system and medicine price control, medicines expenditure as a share of THE fell from 41.56% in 2008 to 37.55% in 2011. The share of outpatient drug expenditure in total medicine expenditure dropped from 40.86% to 37.03%, but in-patient drug expenditure increased slightly to 36.68% from 34.74%. At the same time, the percentage of retail sale and other medical goods expenditure rose to 26.29%.[13]

In 2011, the number of medical equipment costing above 500,000 Yuan (77,414 USD) owned by health institutions were 144,971, being 0.11 per 1000 population. The number of equipment costing 1000 thousand Yuan (154,828 USD) were 61,249, being 0.05 per 1000 people. The number of PET-CT owned by hospitals was about 109, CT was 6,456, and MRI was 2,322. The number of CT owned by primary facilities operated by government was 1,184, and MRI was 76.[22]

[a] The output value and total sales value come from China Statistical Yeabook 2012, which are data of manufactures and wholesale above designated size.

Referrals through the provider network

Public health institutions, financed by government, with advanced technology and excellent health human resources are trusted by people and attract more patients than non-public health institutions. In 2011, the number of outpatient visits in government hospitals was 9.95 times than in private hospitals; the number of physical examinations was 8.62 times more than in private hospitals; and inpatient admissions was 9.31 times more and operations 7.97 times more.[3]

Ambulance services for emergencies are provided by first-aid centres or first aid stations in provincial, city and county level. Government allocates subsidy to ambulance services and health insurance schemes will reimburse part of the ambulance service fee.

Primary health care facilities and hospitals are meant to establish a dual referral system namely, "Minor illness treated in the grassroots institution, serious disease in hospital". With such system, the network of primary medical facilities can be used efficiently, and release the heavy burden of major hospital, and reduce the costs to individuals. The dual referral system was proposed in 1997, and began to pilot in 2006. Different regions have adopted different models to explore efficient referral network. To date, however, the dual referral system has not been well established throughout China, and there is no formal nationwide referral protocol to standardize procedures for referral.

Patient demand for health service depends on their insurance policy, co-payments, perceived quality of care and convenience. The reimbursements rates for medical services delivered by hospitals at different levels vary. However, with increased financial coverage of health insurance and more convenient public transport, patients tend to choose high level hospitals for care. This causes hospital over-crowding, and leaving grassroots health facilities almost empty. Some government control of the insurance scheme is necessary to limit reimbursement of hospital treatment that could be dealt with adequately at lower level facilities. Table 4 shows the reimbursement policy of NRCMS in Henan province, which is also typical of other provinces.

Table 4. The reimbursement policy for NRCMS in Henan province, 2012

Level	Hospital Level	Deductible （Yuan/USD）	Reimbursement Share %
Township level	Township hospital	100/15.48	90
County level	Second grade and below	400/61.93	80
City level	Second grade and below	700/108.38	70
City level	The three grade hospital	1000/154.83	70
Province level	The second grade or below	1000/154.83	65
Provincial level	The third grade	2000/309.66	65

Note: exchange rate of USD to China Yuan used here is 6.4588 in 2011 - refer to China Statistical Yearbook 2012.

Medical and public health institutions cooperate closely. For example, hospitals provide disease information cards for collecting information from patients so that public health institutions can build the disease data base and health records. Public health institutions help hospitals do clinical experiments with disease samples to examine disease risk factors.

Quality

The Chinese Government has set improving quality of health services as a key target in China's new health system reform because of the importance of quality for improving people's health. In 2011, diagnosis concordance between admission and discharge was 98.8%, and 99.4% before and after inpatient surgery. [3] Efforts to improve health services quality include the following:

Special agency: The Department of Supervision of Medical Services was set up at national level in MoH, and Bureau of Supervision of Medical Services have been set up in several provinces.

Quality management institutions: A national guideline: *Hospital Management Evaluation Manual* was issued in 2005, to require establishment of quality management departments in each health facility, to comprehensively supervise the medical and nursing services.

Clinical treatment guidelines: Ministry of Health spent two years to complete clinical pathways pilot of 112 diseases in 50 hospitals. By the end of 2011, clinical pathways issued by MoH covered 331 diseases， which were piloted in 110 hospitals in 23 provinces.[23]

Qualified nursing services: MoH issued the Standards of Qualified Nursing Service in Hospitals in 2010, Clinical Nursing Practice Guidelines in 2011, and Plan to Enhance Qualified Nursing in 2012 to guarantee a provider-safe, qualified nursing service system.

Fight against counterfeit drugs: In 1984, the NPC Standing Committee adopted the China Drug Administration Law, regulated pharmaceutical research and development, production, sale and user provisions, which clarified the legal liability of producing and selling counterfeit or inferior drugs. At present, the State Council has issued 17 drugs-related administrative regulations.

Capacity building: First, implementing the standardized training system for residential physicians; second, implementing the plan of free directed training of general practitioners along with recruiting physicians to practice in rural areas; third implementing annual training: 360,000 personnel, 160,000 personnel and 1370,000 personnel were trained respectively for township health centres, community health centres and village clinics during 2009-2011.[24]

Standardize and increase construction of health institutions: MoH issued standards for the construction and equipment of health institutions. Central government has comprehensively supported construction of a further 2000 county-level hospitals to add to the existing 2233 (including TCM hospitals) within three years (2009-2011), and at least one hospital in each county should reach the level of the required standardization; At the same time, to ensure each administrative village equipped with one clinic in nationwide and support village clinic construction in remote areas and border areas, 3700 urban community health centres and 11000 community health stations were newly built and renovated during 2009-2011.[25] During the same period, according to the requirement of the government, mental health care institutions, public health emergency system as well as public health institutions were also constructed.

Equity

During the planned economy period, China recognized equity and equality as core values for society. After the period of opening up, the health system put more emphasis on efficiency in service delivery, which lead to increased health inequity among people of different social economic status and different regions. First, inequity is evident in unbalanced allocation of health workers. In 2011, professional health workers/1000 population in the developed eastern region was 5.49 but only 4.00 in the under-developed western region. The number of beds per 1000 people was 7.55 in Shanghai, however, in Guizhou-an under-developed province in western region, the number was 2.77.[3] With devolution of health financing responsibility to local governments, the gap of government health subsidy between developed and under-developed areas is expanding due to financial constraints of different regions. Second, inequity is also apparent in differences of health service utilisation. Again in 2011, in Heilongjiang province, the 20% poorest residents utilized 10.9% of inpatient services while the 20% richest residents utilized 35.83% of inpatient services.[26] Third, inequity in health outcomes is noticeable in different regions. In 2011, Maternal mortality was 180.7/100,000 live births in Tibet and 1.2/100,000 in Jiangsu province [3].

The new round of health system reform, launched in 2009, strengthened the government's obligation to provide basic health services, including duties in planning, financing, service delivery and regulation to ensure public welfare, public health, and to promote a fair and equitable health system. With the improvement of the social security system, equity in health financing is also improving. The occurrence of catastrophic health care payment decreased from 13.72% in 2003 to 11.75% in 2008 in Heilongjiang province, and from 6.61% to 4.71% in Tianjin municipality[26]. The government’s 2009 project for universal coverage of essential public health care provides for some free services including immunization, maternal and child healthcare and NCDs prevention and treatment services for all citizens. The scope of the services package and the level of government subsidy will progressively increase, promoting better utilization of health services and improved equity in health.

Demands and constraints on the service delivery model

With China facing challenges brought on by rapid industrialization and urbanization, changes in life style, a large and aging population, increasing prevalence of NCDs, as well as constraints of resources; in order to meet people’s increasing demand and expectation for health and medical services, several factors need to be dealt with without delay:

Legal support for the health system: Although China has issued many laws and regulations related to health resources and problems, there is comprehensive overall legislative or regulatory framework to guide and control efficient and safe health system to achieve national health goals.

Coordinated management of health providers: Currently, management of health providers is segmented across several sectors, limiting both coordination and efficient use of resources. For example, the education sector is in charge of medical university hospitals; the railway sector have their own hospitals and disease prevention and control institutions. There is scope for more integration and efficiency.

Referral system: Due to the low professional capability of health workers in primary health facilities, ineffective implementation and unsound incentive and monitoring mechanisms, the referral system is not functioning effectively. In order to increase both quiality and efficiency in healthcare, China needs to establish sound coordination and referral mechanisms between grassroots health facilities hospitals and between hospitals at the same and different levels.

Balance between primary, secondary and tertiary services. Overexpansion of hospitals increases the cost of operation and poses potential threat to the quality and safety of health services, while at the same time wakening the grassroots level services and inhibiting efficiency and equity. Health resources are concentrated in big hospitals at city level, which lead to increasing health expenditure, and aggravate the "difficult and costly access to health care services". Greater balance between primary, secondary and tertiary services will promote better access, efficiency and equity.

Health professionals training and distribution: The changing circumstances have implications for production and management of health workforce. Currently, 37.2% of the total health workers have vocational school degree or below, 22.3% have bachelor degree, and only 3.4% have Master's degree or higher.[3] Uneven distribution of health workers persists between urban and rural areas; qualified health workers concentrate in eastern China and in high level hospitals, with insufficient staff in disease prevention and control or primary health facilities, and in less well-off provinces.

Integrated health information system: The health information system is segmented and not standardized, failing to serve the health service system effectively. Efforts should be made to build up an efficient, compatible, inter-connected, open platform, unified national health information system, fulfilling the mission of disease prevention and treatment, disease management and health management for both urban and rural residents.

Even competitive environment: Medical services provision is dominated by public hospitals in China. Efficiency can be encouraged through a competitive but controlled healthcare market. China government had adopted measures with pushing forward public hospital reform. For example, non-public investors are encouraged to sponsor non-profit hospitals. An equal playing field is intended for both public and non-public hospitals in terms of designation of medical insurance eligible institutions, approval of research projects, professional titles assessment and continuing education. Both types of hospitals shall be treated equally in terms of service access and supervision.

Indicators of progress

The health system made great achievements during the 11th Health Five Year Plan. Main tasks were carried out, and targets reached (see Table 5). The people's health had improved substantially. The disease prevention and control work made great achievements: the Class A and B infectious disease incidence rate is overall stable and smooth; there were no significant pandemic disease outbreaks; the carrying rate of HBsAg was always under 7%; 97.94% of counties realized the goal of eliminating iodine deficiency disorders; the health problems of infant and maternal care had been reduced; 97.8% of rural women gave birth in hospitals; the rate of children less than five years suffering from middle to severe malnutrition fell by 49.8% and the rate of examination for new-born infant diseases reached 57%.[27]

Table 5. Achievement of national health targets in 11th Health Five Year Plan, China

Indicator	2010 goal	2010
Average life expectancy (years)	72.5	74.83
Maternal mortality ratio (per 100 000 live births)	40	30.0
Infant mortality rate (‰)	<14.9	13.1
Under 5 mortality rate (‰)	<17.7	16.4
Under 5 moderate to severe malnutrition rate drop compared to 2000 (%)	25	49.8
Hospitalized delivery rate in rural areas (%)	>90	97.8
New-born disease examination rate (%)	50	57
% Counties eliminating iodine deficiency disorders	>95	97.94
HBsAg carrier rate (%)	< 7	< 7

Source: Notice of the State Council on the issuance of the health development of the 12th Five-Year Plan.[O] http://www.gov.cn/zwgk/2012-10/19/content_2246908.htm.

With China's progressive emergence as the second largest economy in the world, it is reasonable to compare key health indicators to the OECD average, as in Table 6. There remains scope for increases in overall health expenditure and for government's proportion of total health expenditure to increase significantly. The density of beds to population is very similar to the OECD average, but the density of health workers to service those beds is very much lower, leading to a highly inefficient system. Further, there is a great need to increase the number of non-medical health professionals such as nurses, physiotherapists, laboratory technicians, etc. Prevalence of obesity is significantly lower than the OECD average, but the proportion of adults smoking every day is higher.

Table 6. Comparison of health indicators in China with OECD Average

Indicator	China	Year	OECD average	Year
Total health spending as percentage of GDP	5.1%	2010	9.5%	2010
Total health spending per capita	379 USD	2010	3268 USD	2010
Total health spending funded by public sources	53.6%	2010	72.2%	2010
Practising physician per 1 000 population	1.4	2010	3.1	2010
Nurses per 1000 population	1.4	2010	8.7	2010
Acute care hospital beds per 1 000 population	4.2	2010	4.8	2010
MRI units per 1 000 000 population	0.18	2011	12.5	2010
CT scanners per 1 000 000 population	0.57	2011	22.6	2009
Life expectancy	73.1 years	2010	79.8 years	2010
Prevalence of obesity among adults *	5.7%	2008	22.2%	2008
Proportion of adults smoking everyday	24.1%	2010	21.1%	2010

Source: OECD Health Data 2012 – Country Notes: How does China Compare

**World Health Organization*

References

1. Chinese government's official web portal. The central people's government of the People's Republic of China [O]. http://english.gov.cn/2006-02/08/content_182551.htm
2. National Bureau of Statistics of China. China's Total Population and Structural Changes in 2011. www.stats.gov.cn/was40/reldetail.jsp?docid=402780233.
3. Ministry of Health, P.R. China. China Health Statistics Yearbook 2012. Beijing: China Union Medical College Publishing,2012.
4. WHO. 2009. Global Health Risks. Comparative Risk Assessment Project. Geneva: WHO.
5. The CPC Central Committee, the State Council, PRC. The decision of the CPC Central Committee and the State Council on Health Reform and Development,15/1/1997.[O] http://www.people.com.cn/item/flfgk/gwyfg/1997/112708199730.html.
6. Hu Jintao's report to the 17th CPC National Congress, 2007. [O] http://news.xinhuanet.com/english/2007-10/24/content_6938749.htm.
7. Opinions of the CPC Central Committee and the State Council on Deepening the Health Care System Reform,2009.[O] http://www.gov.cn/jrzg/2009-04/06/content_1278721.htm.
8. Recent Priority Implementation Programs of the Health Care System Reform.[O] http://www.gov.cn/zwgk/2009-04/07/content_1279256.htm.
9. Notice of the State Council of PRC on Setting up National Administration of Traditional Chinese Medicine, 1986. http://www.chinabaike.com/law/zy/xz/gwy/1332398.html.
10. Notice of the State Council on Setting up Government Organizations, 1998. http://www.people.com.cn/item/flfgk/gwyfg/1998/112602199801.html.
11. Reform Program of the State Council Government Organizations,2008.[O] http://www.gov.cn/2008lh/content_921411.htm.
12. Ministry of Health, P.R. China. The Guideline for the Medical Institution Establishing,2009.
13. China National Health Development Research Center. China National Health Accounts Report 2002.
14. China National Health Development Research Center. Abstract of China National Health Expenditure 2012.
15. The introduction of Summary Report after Three years' Deepening Health Care Reform. [O] http://news.xinhuanet.com/politics/2012-06/25/c_112286717.htm.
16. China National Health Development Research Center. Study on the Expenditure Accounting and Financing Mechanism& Appropriate Technology and Its Community Application for Prevention and Control of Non-communicable Diseases.
17. Ministry of Education, PR, China. Educational Statistics Yearbook of China 2010.
18. National Bureau of Statistics of China. China Statistical Yearbook, 2012. Beijing: China. Statistics Press, 2012.
19. Ministry of Health Decree No.69. List of National Essential Drugs for Grassroot facilities 2009.
20. The reimbursement rate of national essential drugs will raise 10%. http://news.sina.com.cn/o/2010-02-01/063717025384s.shtml
21. The catalogue of drugs would be classified and the compensation ratio would be raised in primary facilities. [O]http://news.sohu.com/20091013/n267318194.html.
22. Ministry of Health, P.R. China.National Annual Health Finance Report,2011.
23. Ministry of Health, P.R. China.Clinical Path Management Pilot Scheme,2009.
24. The State Council. The recent implementation plan on deeping the medical and health system reform,2009-2011 .March,2009.
25. Ministry of Health, P.R. China.Minister Chen Zhu's speech in National Health Conference,2009.
26. World Bank Institute Flagship Course on Equity and Health System. Past and current equity challenges in China.2012

27. Notice of the State Council on the issuance of the health development of the 12th Five-Year Plan.[O] http://www.gov.cn/zwgk/2012-10/19/content_2246908.htm.

Annex1:

Brief Summary of New Health care Reform in China

For the purpose of establishing a health care system with Chinese characteristics, of progressively realizing the goal that everyone is entitled to basic health care services and of raising the health level of the Chinese people, ***The Opinions of the CPC Central Committee and the State Council on Deepening the Health Care System Reform*** was issued on April **2009.** The overall goal is to establish and improve the basic health care system covering urban and rural residents and provide the people with secure, efficient, convenient and affordable health care services.

1. Improving four major health care systems and establishing the basic health care system covering urban and rural residents

1.1 Strengthening the construction of the public health service system in an all-round way

Efforts should be made to establish and improve professional public health service networks and improve the public health service functions of the basic health care service system, which is based on grassroots health care service network; establish a public health service system featuring a clear-cut division of work, information-exchange, resource-sharing, coordination and interaction; improve the capacity to deal with public health service and public health emergencies, and make equalized basic public health services gradually available to urban and rural residents.

1.2 Further improving the health care service system

A rationally structured health care service system covering urban and rural residents should be established by adhering to the operational principle of taking the non-profit health care institutions as the main body, for-profit health care institutions as the supplement, with the state-owned institutions playing a leading role, while non-state-owned health care institutions making synergies in the development.

1.3 Accelerate the construction of the medical security system

Efforts should be made to accelerate the construction and improvement of the multi-layer medical security system covering urban and rural residents, with the basic medical security as the main body, and other diversified supplemental medical insurance and commercial health insurance as the supplement.

1.4 Establishing and completing a secured pharmaceutical supply system

Efforts should be made to accelerate the establishment of a secured pharmaceutical supply system on the basis of the national essential medicines system, and ensure medicine safety for the people.

2. Improving institutional mechanism, ensuring effective and well regulated operations of the health care system

2.1 Establishing a coordinated and unified health care administration system

Efforts should be made to implement localization and sector-wide administration, to strengthen regional health planning, to promote the reform on the administration system for public hospitals and to further improve the basic medical insurance management system.

2.2 Establishing an efficient and well regulated operation system for health care institutions

In light of the duties and tasks of the said institutions, the government shall rationally determine their staff size, salary level, and budget scale, clarify the duties of various positions, exercise rigorous staff enrolment criteria, strengthen performance assessment, establish the staff placement system on the basis of competitive selection, and improve work efficiency and service quality.

2.3 Working out a multi-source health investment mechanism with the government playing the dominant role

Establish the dominant position of the government in providing public health and basic health care services. The public health services shall be mainly provided, through government funding, to urban and rural residents in an equalized way. The expenses of the basic health care services shall be rationally proportioned and borne by the government, society and individuals. Special health care shall be directly paid for by individuals or borne by commercial health insurance.

2.4 Establishing a sound health care pricing system

Efforts should be made to regulate the management on health care service pricing, to reform the drug pricing mechanism, to actively explore and build the negotiation mechanism for medical insurance handling institutions, health care institutions and pharmaceutical suppliers, and bring into full play the restraining role of medical security over health care services and pharmaceutical expenditures.

2.5 Establishing a rigorous and effective health care regulatory system

Efforts should be made to reinforce the regulation on the health care system, improve medical security regulation, strengthen pharmaceutical regulation and establish the regulation system featuring open information and multiple-stakeholder participation.

2.6 Establishing a sustainable development mechanism for scientific and technological innovation and a secured mechanism for professional talents in the health sector

2.7 Establishing practical and shared health care information system

Efforts should be made to energetically promote health care information, accelerate the construction of health care information system and establish and improve medical security information system.

2.8 Establishing and improving health care legal system

Efforts should be made to improve health legislation and promote government administration in accordance with the law.

3. Implementation Plan for the Recent Priorities of the Health Care System Reform (2009-2011)

3.1 Accelerating the construction of the basic medical security system

The UEBMI, URBMI and NRCMS will cover all urban and rural residents within three years, each with the coverage rate over 90%. Efforts will be made to improve fund-raising standard and benefit level of URBMI and NRCMS. The proportion of hospitalization and outpatient expenses reimbursed by UEBMI, URBMI and NRCMS will be increased step by step within the scope of policy.

3.2 Preliminarily establishing the national essential medicines system

Establishing the selecting and readjusting management mechanism for the list of national essential medicines, ppreliminarily establishing a secured supply system for essential medicines, establishing priority selection and rational utilization system for essential medicines.

3.3 Perfecting the system of health care services at grassroots levels

Strengthening construction of grassroots health care facilities, strengthening the team of grassroots health care workers, reforming the compensation mechanism for health care facilities at grassroots levels, and transforming the operation mechanism of health care facilities at grassroots levels

3.4 Promoting the gradual equalization of basic public health services

Covering both urban and rural residents with basic public health services, increasing major national programs of public health services, strengthening capacity building of public health services and ensuring funding for public health services

3.5 Push forward pilot projects for public hospital reform

Reforming the management system, operation and supervision mechanisms of public hospitals; promoting the reform on the compensation mechanism of public hospitals and accelerating the formation of a health care structure featuring multiple hospital sponsors.

4. Progress of current health care reform

4.1 The coverage of basic medical insurance has been expanded by a large margin. At present, 1.28 billion rural and urban residents are covered by basic medical insurance, accounting for about 95% of the total population.

4.2 Medical and health care services at the grassroots level have been improved. More than 2,000 county-level hospitals and over 30,000 grassroots medical and health facilities have been constructed or reconstructed. A campaign to train grassroots medical workers, especially general practitioners, has been launched.

4.3 New progress has been made in our effort to provide equitable access to basic public health services for all people. China launched a portfolio of basic public health service programs spanning ten different categories and initiated seven major public health service campaigns across the country.

4.4 Steady progress has been made in the establishment of a national system for essential drugs and in the trial reform of public hospitals. With the implementation of a system for essential drugs in all government-run medical and health facilities at the grassroots level, drug prices have decreased by an average of 30%, while outpatient drug fees and inpatient fees have also decreased. Trial reforms in public hospitals had been implemented in 17 national pilot cities and 37 provincial pilot cities. In addition, China government has decided to put emphasis on comprehensive reform of county-level hospitals and to complete staged reform by 2015.

4.5 Investment in health programs has progressively increased. From 2009 to 2011, an additional 331.8 billion Yuan in central government funds was allocated to health care reform. At the same time, all localities have also increased their expenditure in health care reform. With the significant increase of government expenditure, the proportion of health care fees borne by individuals has dropped on a constant basis.