

Review of provider organization reforms in China

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1. Introduction

Health care provider organization reforms have been experimented in China since early 1980s after the changes in economic system and reforms of public sector units. Provider organization reforms cover a wide range of areas including ownership transformation, integration and combination of health institutions, personnel or employment arrangements, and salary and bonus systems. As part of the work on AAA of the World Bank, the purpose of this literature review is to summarize the relevant initiatives, present the arrangements of the reforms, and examine effects of the reforms. It is hoped that findings from this brief review could be helpful for considering and designing further actions that can improve performance of health care system.

References used for this review was mainly derived from published studies, using the database of CNKI (Qinghua University Database). The references reviewed cover the last 5-10 years according to the nature of the topics reviewed. Key words include ownership reform, integration of township and village health units, combination of health facilities, personnel policy reform, salary policy, and bonus system.

2. Ownership reform

Since early 1980s, the Chinese government has opened the channels for private investments in health sector for addressing the problem of shortage of health resources. In 1997, the central government clearly stated that private finances can be used for running health facilities, given that public health providers being the main body of providers [1]. In 2002, in a central government document for rural health policy, multi-ownership system with public-private mix was reconfirmed, while public health providers were still stated as the major health care bodies [2].

Facing the experiments of ownership reforms in rural areas, especially in township hospitals, in the policy documents by the central government in 2002, what type of ownership forms for township hospitals was regulated [2]. It was stated that after adjustment of numbers of townships (numbers of townships are reduced according to government policy), one hospital should be available for the reformed township and this hospital should be run by the government. The rest of the existing township hospitals could be transformed to other types of ownership. For township hospitals that are to be reformed in ownership, existing health staff should be properly allocated and financial returns from the transformation should be used for rural health development, according to this policy.

Most of the studies available for this review on ownership reform were conducted before the issue of the key rural health policy in 2002. The root cause for transforming ownership of township hospitals was serious and long-term financial deficits for those hospitals. In 2001, about 1/3 township hospitals were operated with financial deficits

[3]. Lots of studies show that township hospitals cannot deliver health care services as expected due to problems of finance, health manpower, and medical equipment [4-6], which is the fundamental determinant for transformation of ownership of those hospitals.

There are two types of initiators for ownership reform for township hospitals. One is initiated by the township hospitals. The other is initiated by local governments. A representative example of former case is in Wenzhou of Zhejiang where private sector has been developed rapidly [5]. Most of the initiatives of ownership reform were launched by the local governments. In Liuyang county of Hunan Province, township hospitals were sold to private enterprises. Even if this was against by many health managers and health staff in township hospitals, strong political commitment has pushed the privatization forward [7]. For solving the financial difficulties of township hospitals, the Ganji government of Xinjiang reformed the ownership in 8 township hospitals in 2000, resulting in a 2.4 million saving of government expenditure [8]. However, in some places, for instances, Ganjiang of Jiangsu Province and Haicheng of Liaoning Province, ownership reform of township hospitals was not financially motivated, but a political will of the county government that health facilities should be privatized as did for enterprises [9].

Ownership transformation of township hospitals took various forms, including joint stock cooperative system, complete transfer of the assets, rent-out, and contract-out system. Majority of the ownership reform for township hospitals was joint stock cooperative system. In this form, share holders can be the state (public), private individuals (e.g., health staff), and private investors (companies or enterprises). Returns are divided by the share holders according to their proportions of the shares. In Hainan of Wenzhou, for inflation proof of the state assets, 10% of values of the assets were drawn every year, one third of which was for primary health care fund and the rest was for reinvested into the stock [10]. In Shacheng of Wenzhou, the state assets were invested into the stock with returns according to the bank interest rate [11]. Hospital staff can be share-holders with this form. For example, in Nanzha of Jiangyin county, 50% of the township hospital assets were sold to hospital staff. Money from the selling was managed by the county Department of State Assets Administration and used mainly for township hospital development [12]. In some counties, for example in Wuyang and Yancheng, for encouraging ownership transformation, county governments invested some types of fixed assets such as land without request of share bonus [13, 14].

Complete transfer of the hospital assets has two types [13]. One is that the assets were totally sold out to hospital staff or others outside hospitals. The other is that a single buyer was recommended by the hospitals and county government. The rent-out system has various forms [16-18]. Usually, the variable assets including drugs were totally sold to renter and the fixed assets were rented to the renters. In Chunan of Zhejiang, fixed assets were rented out to renters with a fixed return from the renting.

In Suichang of Zhejiang, fixed assets including building and equipment were rented out, requesting a range of 4-8% of returns for those rents. In Wangli of Changnan, after clearing the hospital assets, the township and county government publicized the conditions for renting. In contract-out system, conditions including revenues and operations in the contracts were usually made by the township government or county health authorities. Xixi of Yongjia and Ningjin of Shandong used this method [19, 20].

For township hospitals that taking the ownership form of joint stock cooperative system, three aspects of the arrangements for hospitals remained the same as before. Those aspects included government budget allocation, the nature of the entities, and status of the health staff as public servants and incomes [21, 22]. Under those arrangements, even though a board of the shareholders was established within each township hospital reformed, the county or township governments were still taking the lead in management and supervision. Rent-out and contract systems took the similar arrangements as joint stock cooperative system. For example, Gangxia Township Hospital in Wuxi maintained the non-for-profit nature and provision of public health services after it was rented out [23].

Most of the township hospitals that were totally sold out were transformed to for-profit private hospitals and government stopped the investments and budget allocation to those reformed hospitals. However, some hospitals, Wenjiashi in Hunan as an example, remained the non-for-profit entity [24]. In Tongjiang of Sichuan, government still allocated regular budget for the hospitals transformed for provision of public health care [25]. In general, monitoring and supervision were strengthened for the hospitals sold out. In Shuyang of Jiangsu, the county government implemented 'Regulation for for-profit hospitals' for regulating behavior of health providers and assuring delivery of public health programs by those reformed hospitals [26]. In Haicheng of Liaoning, contractual relationship was made between the government and the hospitals, specifying the responsibilities of the transformed hospitals in operation of public health services [9].

After transformation of the ownership in township hospitals, some changes had taken place in terms of personnel and salary policies. In hospitals taking the forms of joint stock cooperative system, rent-out, and contract system, hospital managers had more autonomy in firing and hiring new health staff [21,22]. Health staff recruited after the reform was managed with contract relationship. For existing staff, the personnel policy was almost the same as before. In sold-out hospitals, hospital managers had autonomy in firing and hiring both old and new health staff with some constraints from county government. In Wenjiashi township hospital of Hunan, the new owner of the hospital could hire the health staff as their will. However, 50% of the positions in the hospital should be available for the existing staff when the ownership was transformed, according to the agreement between the new owner and county government [24]. In Shuyang of Jiangsu, the county government made an agreement

with the new owner that none of the existing staff could be fired in the first year of the reform and no more than 10% of the existing staff could be fired in the second year of the reform [22].

For shared hospitals, the salary of the staff had two parts of basic salary and returns from the shares. Basic salary was allocated based on performance of the staff in terms of quantity and quality of health care provided [21]. Salary policy for sold-out, rent-out and contract system hospitals were similar with shared hospitals taking the performance as the base for determining level of the salary. However, in some places, the county health bureau regulated minimum salary for assuring income level for the staff [16, 27].

Recognized advantages of implementing ownership transformation include three aspects from the studies available. First, resources for sustaining operation of township hospitals were extended. In Feixian of Shandong, the fund collected from joint stock system was equal to public subsidies from the government over past 10 years [28]. Second, the managerial mechanism was changed to a more clear responsibility system. It was found that after ownership reform, hospital staff had more incentive to increase their productivities. Third, ownership transformation may have positive impact on cost containment. If ownership reform had positive impact on cost control was debated. Some cases in Haicheng of Liaoning and Jurong of Jiangsu showed that medical costs decreased after the reform, which was attributed to increased competition perception and improved administration [5, 29]. In Haicheng of Liaoning, average expenditure for appendicitis cases per inpatient reduced from 1500 yuan before the reform to 700-900 yuan after the reform; expenditure for per childbirth with surgical operation reduced from 1500-2000 yuan to 1000 yuan before and after the reform. In Jurong of Jiangsu, expenditures on surgical operations were 20-30% lower in hospitals with ownership reform than that in hospitals without reform. However, it was argued that ownership transformation of hospitals from non-for-profit to for-profit would certainly result in increase in medical costs because of for-profit nature of the entities [29].

One of the most serious concerns is whether or not provision of preventive care provided by the transformed township hospitals has been negatively affected. Even if there is no general conclusion, some cases indicated negative signals that should be noticed. In Wenjiashi township hospital of Hunan, the preventive care station was separated from the hospital after it was transformed. Because income of the staff working in the station became less than before, they were reluctant to provide required preventive care services [24]. This also happened in Sihong and Suqian of Jiangsu [30,31]. After ownership transformation in Sihong, 6,000 yuan from the government was provided to each staff for providing preventive care every year. This amount of money was not enough for covering the basic salary of the staff. There lacked fund to be used for delivering essential preventive care. Separation of hospitals and preventive care station after the ownership transformation also cut off the

professional links between those two institutions. For example, in Haicheng of Liaoning, maternal health care was affected because the preventive care station alone can not provide quality care [32]. In some counties of Wenzhou where township hospitals' privatization was initiated very early in China, the governments have bought the reformed hospitals back to public ones in recent years¹. However, it was not clear if this kind of actions was to follow the 'one township, one public hospital' policy' that was issued in 2002.

Since the collective economy collapsed in early 1980s, village clinics have been individualized or privatized. Currently, about 50% of the village clinics are run by private individuals. Evidence on performance of private village clinics in quality and cost of health care is limited. In a study in 56 private village clinics, it was found that those clinics was not active in delivering tuberculosis services because there lacked financial incentive [33]. In another study, it was revealed that there were no differences between public and private village clinics in quality of care, willingness to provide preventive care, and behavior of prescribing unnecessary drugs [34].

Joint stock system was the main forms for transforming completely public ownership system in some public hospitals in urban cities. The example is Yiwu People Hospital of Zhejiang Province [35]. The state assets, funds from five enterprises, and funds from hospital staff formed the shares for the joint stock hospital. Profits from the hospitals in the first five years are used for development of the hospital and. After five years, the profits are used by the health bureau for health care for the whole city. Problems frequently mentioned include that there lack taxation and investment regulations and monitoring mechanism for those ownership-transformed hospitals [36].

3. Vertical integration of rural health providers

The Link between county, township, and village health providers was weakened from later 1970s mainly due to privatization of village clinics and decentralization of township hospitals. Since mid 1990s, reforms have been experimented for integrating health providers, especially for township and village health units. In some areas, county hospitals set up branches at townships or integrated township hospitals as one of their branches. However, there lacked studies to examine this issue. Most of the studies regarding vertical integration of rural health providers was focusing on township hospitals and village clinics.

Integration of township hospitals and village clinics was initiated from mid 1990s by county governments and/or township hospitals. In 2002, the central government for the first time affirmed the reform in a high-level policy document, stating that in order to strengthen integrated capacity of rural health network, integration of township and

¹ Information was from Prof Mao Zhengzhong during a World Bank AAA workshop in early July, 2005, in Beijing.

village health care should be further improved, and vertical cooperation between county, township, and village health providers are encouraged. The stated purpose of the integration by the county government and/or township hospitals was to improve provision of health care by controlling quality of drugs, quality of health staff, and reallocation of health resources. However, one of the actual purpose of the local reform initiators was to increase health care utilization and revenues for township hospitals [37].

There are different arrangements of the “integration” ranging from one to ten integrated dimensions, including leadership, financial management, drug purchasing, salary policy, and administration [38]. In Suizhou of Hubei Province, majority of the townships and village clinics took the form of five and three integrations including drug purchasing, salary, and financial management [39]. In three counties of Shandong Province, only drug purchasing in village clinics was administrated by the township hospitals. Township hospital managers in those counties thought that because drugs were the most often used procedures of services in village clinics, if channels for distributing drugs were well controlled, quality of drugs could be assured with reasonable costs.

In most of the places where integration was implemented, village clinics were readjusted in terms of their location and equipment of staff. In Qianyang County of Shaanxi Province, village clinics were removed or combined from 136 to 102 after the reform [39]. With financial supports from county and township governments in this county, village clinics were rebuilt and working conditions were improved. Yicheng county of Shanxi regulated numbers of village clinics, village health workers, building, and equipment, during implementation of the integration [40]. One clinic was planned for each village in which the population size exceeded 1,000. In each village, 3-5 health workers were planned with at least one doctor, one preventive care worker, and one pharmacist. Separated rooms for medical consults, maternal and child health, and pharmacy were requested. In Duohu of Jinhua, 35 villages were divided into 7 locations and one community health station was established in each location [41]. For the community health stations, the upper level health institution was township central hospital and lower level health units were village health station. Each station with 2-3 health workers served 2000-3000 villagers. In some counties, health workers from township hospitals went to villages for delivering health care [42, 43].

Qualifications of village health workers were re-examined in most of the integration schemes. In Jintan of Jiangsu Province, county health authority and township hospitals organized examinations for village health workers [44]. Those passed the examinations could continue their operation. Otherwise, certificate of the practice would be terminated. After implementation of integration, Fuyuan county health bureau fired 80 village health workers who failed to pass the qualification evaluation [43]. In the meantime, 100 health workers from township hospitals were assigned to

work in village clinics. In Haitong Township of Sheyang County, heads of village clinics and health workers were competitively selected [45]. However, in implementation of integration reform in Suizhou of Hubei, all village health workers were kept as before [39]. It was reported that the integration reform encouraged township hospitals to organize trainings for village health workers [46]. No studies were found to show what happened for township hospital staff during the integration. It seems that target in the integration was only for village clinics.

It was recognized that integration of township hospitals and village clinics was positive for improving provision of preventive care by increasing technical guidance from township hospitals to village clinics and strengthening capacity of village health workers in delivering health care [40, 47, 48]. Xingan County of Guangxi defined a service package of public health programs including infectious disease control and maternal and child health for village clinics, on which the assessment of village clinics was based [47]. In She County of Hebei, programme for infectious disease control was developed and implemented through the joint efforts by both township hospitals and village clinics [48].

Alleviation of survival problem of township hospitals is one of the benefits in practice from the integration reform. For example, salary of the staff in township hospitals increased by 2.5 fold after integrating the village clinics in Suizhou of Hebei [39]. This is a common phenomenon benefitable to township hospitals in most areas where the integration was really implemented. Increase of income for township hospital staff was mainly attributed to reallocation of drug markups from village clinics to township hospitals, because township hospitals were responsible for purchasing and controlling sales of the drugs. There was no evidence showing that health care utilization had increased and contributed to increase of income of the staff in township hospitals after the integration.

After integration, in some areas where leadership and financial management were well integrated, the governance and financing mechanisms were changed, especially for village clinics. Township hospitals authorized by county health bureaus had taken the role in managing village clinics that were integrated. Township hospitals had the authority to hire and allocate village doctors, to define the responsibilities of village clinics in delivering health care, and to monitor performance of village doctors [37]. Certificate examination of village doctors by the county health bureaus was usually conducted through township hospitals. The integration did not change the channels of resources for both township hospitals and village clinics, drugs still being the major source for their operations. In general, village clinics had autonomy in their financial arrangements. However, village clinics were asked to report their financial sheets regularly to township hospitals or county health bureaus. In some cases, assets of the village clinics were bought by county government or township hospitals and salaries of village doctors were allocated by township hospitals every month [39].

Safety of drugs used in village clinics was reported being improved after the integration. In Shunchang of Fujian, 95% of the drugs used in village clinics came from formal pharmaceutical distributors after village clinics were integrated into township hospitals [49]. In addition, in this county, a panel of inspectors was formed at township and village levels for monitoring drug quality. Besides quality of drugs, prices of drugs that largely determine the total medical expenditures in rural areas are another important dimension in relation to integration reform. However, no reasonable studies were found in examining the actual changes in drug prices after the reform.

One of the most concerns is the motivation of the local governments and/or township hospitals in integrating the village clinics². Some local reforms were to keep township hospitals financially survival, not the improvement of health care in rural areas. In some counties, income of village clinics decreased mainly because drug markups were shared by the township hospitals, which led to decrease in productivity of village health workers[37]. Geographical access to health care for the villagers was affected where village clinics were removed or combined [43]. In addition, studies available were facility-based, lacking comprehensive assessment of effects of the integration from the demand side³. More rigorous studies are required to examine the social benefits gained from the township/village integration reform.

4. Horizontal integration of health providers

Since 1996, the problem of duplication and fragmentation of health facilities and functions has been addressed by the central government [1], even though the progress is not as well as expected. This problem was more serious in urban cities where hospitals were intensively established, MCH institutions and CDCs extended their services to curative care. Integration of urban hospitals was experimented through regional health planning in some cities with very few successful cases, because it was extremely hard to integrate hospitals that were managed by different sectors (health, enterprise, and military). A good example of horizontal integration of health facilities is Qingdao where several health facilities were integrated under the strong leadership from the municipal government. In general, horizontal integration of duplicate facilities and functions was not well implemented in urban cities.

In rural areas, duplicate functions mainly took place between family planning institutions and township hospitals at township level, and between family planning and MCH institutions, between MCH institutions and hospitals at county level. Given availability of the studies, experiments in combining family planning and township hospitals/MCH institutions are summarized.

The government established family planning care institutions from the end of 1970s.

² This point was raised by Prof Hu Shanlian during a World Bank AAA workshop in early July, 2005, in Beijing.

³ During the World Bank AAA workshop in early July, 2005, in Beijing, Prof Lei Haichao commented that studies on health care users would be extremely important to capture the actual effects of the integration reform .

Those institutions are managed by family planning authorities. Scope of services provided by family planning care institutions has been expanded from family planning to maternal and child health care which is traditionally provided by health institutions. MCH institutions are managed by health authorities.

Along with the changes in health care financing mechanism for family planning and health care institutions that government budgets no longer cover the full operating costs, contradictions in competing resources and users between the two type of institutions appeared [50-55]. In addition, overlap of services provided by both institutions led to waste of health resources. For addressing those problems, local governments in some areas experimented to integrate the two types of institutions.

The recognition and support from government were the determinative factors influencing operation of combining family planning and maternal health institutions. Aihui District Government of Heihe Municipal City in Heilongjiang Province combined maternal and child station and family planning station in 1997 [51]. The district government played lead role in the process of combining those two institutions. The staff, service departments, and administration from the two institutions were reorganized and managed by the same leadership team. Qingdao started to combine family planning and maternal and child health institutions from 1996 [52, 53]. By the end of 1998, 5 of its 8 districts and counties had completed the combination. Government coordination and intervention at municipal and district level were the key element for success of the combination. Before the decision of combination made by the government, lots of studies were conducted to generate evidences on advantages and disadvantages of combination, what were the barriers for combination, and how combined institutions could deliver health and family planning care more efficiently and effectively.

In Huoshan county of Anhui Province, combination of the two type health institutions was initiated by a joint program, 'strengthening the work of maternal and child health and family planning' that was supported by UNICEF and UNDP. When preparing the program, the county government recognized the difficulties in use of resources in those two separated institutions [54]. Facing the pressure to implement the program, the county government combined the two institutions to deliver both family planning and maternal and child health care. In the meantime, family planning station was integrated into township hospital. For assuring effective operation of the newly combined institution, the county government issued local regulatory documents specifying the administrative and service systems for the newly-combined institution.

Wudi county in Shandong Province combined family planning and maternal health care in two phases [55]. At the first phase in 1995, the county government combined township family planning station and maternal health station within township hospital. After assessment of the effectiveness, in 2000, county family planning station and

maternal and child health station were combined. Responsibilities of the county Bureau of Family Planning and Health Bureau were clearly defined. The combined institutions were administrated by the Bureau of Family Planning and technically supervised by the Health Bureau. In Maopingzhang township of Yuanan County in Hubei Province, the township government integrated family planning station into township hospital for improving delivery of both family planning and maternal health care [56].

There were no clear policy directions about the combination of the two type institutions from the central government. In 2002, the central government asked coordination in use of resources and provision of health care between those institutions [2]. In provinces where the two types of institutions were not combined, the government had tried to coordinate the provision of service delivery, avoiding overlap and contradiction. For example, Yunnan Provincial Government issued specific policy document requesting more effective cooperation of the two types of institutions in delivering family planning and maternal health care [57]. Hubei Provincial Government asked to combine all township family planning institutions with township hospitals after the townships are adjusted⁴.

All studies reviewed had concluded positive effects of combination or integration of the two types of institutions on allocation of resources and delivery of services. Combination avoided overlaps of functions and wastes of health resources of the two institutions. Because capacity of family planning in delivering technical care was relatively weak, the combination improved technical services of both family planning and maternal health. Combination also created conditions for government authorities to standardize provision and fee rates of the services. However, those studies were mainly conducted by the combined institutions themselves, advantages rather than disadvantages may be over stated. In addition, those studies were carried out shortly after the combination, evidence on long-term effectiveness was not observed.

5. Contract out supportive service

Contracting out of hospital supportive services has been called by the central government by the end of 1990s. The stated purposes for this reform are to increase efficiency of use of hospital resources by focusing on provision of health care services, to improve quality of supportive services through introduction of competition mechanism, and to reduce burden of hospitals in delivering non-medical services. There were five forms for arranging the contracts [58-60]: 1) the departments of supportive services within the hospitals were financially and administratively separated from the hospitals to form centers or companies for providing supportive services. Contracts were arranged between the hospitals and the newly established centers or companies; 2) hospitals contract out supportive services to companies in the market; 3) the departments of supportive services were reorganized through

⁴The information was from MS Wang Zaoli, the Chief of Division of Primary Health Care and MCH of Hubei Department of Health, during a World Bank AAA workshop in early July, 2005, in Beijing.

cooperation with specific companies outside the hospitals; 4) health facilities within a region establish a joint company which provides supportive services to those health facilities; and 5) health facilities across the regions establish a group providing supportive services to both those health facilities and other health facilities.

Transformation of hospital supportive departments from dependent to independent on the hospitals was very common, especially for the long-established hospitals, because complete contract-out of the supportive services to market companies would make the hospitals hard to find suitable positions for laid-off supportive staff. Guangyuan Chinese Traditional Hospital in Sichuan reformed the supportive department through establishing a business company using the existing facilities and staff [59]. According to the contract, the company provided services including utilities, restaurant, purchasing of medical materials, security, and supplies. Shanghai Number Six Hospital and Ruijin Hospital adopted the same method [58]. Jingzhou Central Hospital in Hubei established a company based on its department of supportive services. This company provided supportive services not only to the hospital but also to other health facilities [60].

It seems easier for newly-established hospitals to completely contract out their supportive services to the companies in market. Shenzhen Hospital of Beijing University located in Shenzhen contracted out almost all the supportive services to a well-known company [61]. A wide range of services including patient registration, medical guidance, meeting rooms, and public security was provided by this company. This company was selected from five candidate companies through a restrict bidding procedure. The Guilin hospital in Guangxi contracted out its all supportive services to a company with good reputation [62]. This company was encouraged to invest resources for improvement of the facilities that made the company plan long-term development in delivering the contracts.

In some hospitals, supportive services were selectively contracted out to market companies [63-65]. Hongze county hospital in Jiangsu Province contracted out its clean services to a company while the food supply services were rented out to a hospital staff [64]. Other supportive services in this hospital were still provided by its department of general service with a contract arrangement. Xiangfan hospital in Hubei contracted out services of clean and maintenance of building to a company, because the hospital administrators recognized that those services were relatively simply to be provided by other organizations [65].

In Hongze county, the health bureau established a company invested by public health facilities to provide supportive services to all health providers within the county [66]. This form was also seen in Chuansha of Shanghai where an alliance for providing supportive services was organized [58]. Benefits from reforming organizations for providing supportive services have been widely recognized. First, efficiency of use of hospital resources was improved by

cutting down size of casual workers. In Xiangfan hospital, the number of casual workers was reduced from 281 to 26 after supportive services were contracted out [65]. Second, quality of supportive services was improved. Because competition mechanism was introduced in selecting contractors, quality of the services was assured [63, 61]. Third, because organization and administration of supportive services usually consume lot of time of the administrators when those services are organized by hospitals selves, contracting out those services makes the hospital administrators well focus their attentions on improvement of delivering medical services [60].

Studies available were mainly case reports from the hospitals that implemented organizational reform for supportive services. There lacked studies at system level carried out by academic researchers. Data used in those studies were not well designed, but some information from existing hospital records. In addition, some conclusions, for example, quality improvement in relation to the reform, were made without supports of hard evidence including quantified changes.

6. Bonus and salary systems reform

Bonus system for health providers was introduced in later 1970s following the payment reform in production sector. Bonus has become a crucial component in total incomes of health providers, especially at and above county health facilities. Bonus system has experienced three stages in terms of its base for calculating the bonus [67, 68]. From later 1970s to mid 1980s, flat bonus system was widely used. Between mid 1980s and later 1990s, both volume-based and revenue-based bonus systems were used. Performance or responsibility-based bonus system was introduced in recent years. Under flat bonus system, every one got the same amount of bonus regardless of performance of the staff. In volume-based bonus system, amount of bonus allocated to individual health workers was determined by volume of health services such as number of outpatient visits and inpatient days. Revenue-based bonus system considered revenues or net incomes each staff earned. In performance-based bonus system, more indicators including quality, cost control and patient satisfaction were included in determining the amount of bonus.

It was reported that both volume-based and revenue-based bonus system had strong incentive for health providers to provide more health care services and generate more incomes. In a study in 21 hospitals in Shandong, it was found that when flat bonus was transformed to volume and revenue-based bonus systems, hospital incomes increased rapidly [67]. When those hospitals adopted flat bonus system, average growth rate of hospital revenues was about 20% annually. After introduction of volume-based bonus system, annual growth rate of hospital revenues increased to 29%. The annual increase rate increased to 31% after the bonus system was transformed from flat to revenue-based system [67]. The most serious problem using volume or revenue as the bases for bonus indicators is that health providers were

stimulated to provide unnecessary health care. Even though there lacked evidence on unnecessary care for each time period of different bonus system, it was found that 18.5% of total expenditures on treatment of acute appendicitis was not necessary during the period of using revenue-based bonus system [68].

In performance-based bonus system, indicators for calculating the bonus can be grouped into four groups [68-70]: financial indicators including revenues and net incomes, quality of care, patient satisfaction and outputs delivered to the patients, and professional level through continued education. Different weights were given to the indicators according to the nature of the hospital departments (clinical or supportive). This bonus system emphasized the importance of quality in determining the amount of bonus. Indicators for measuring quality varied in different hospitals. The most commonly-used indicators included consistency of diagnosis before and after admission of the patients, rate of good medical files prepared, hospital infection rate, rate of complicated cases, recovery rate of the inpatients, and mortality rate of the inpatients. Most of those indicators were regularly recorded by each clinical department. Usually, there was a department within hospital responsible for collecting the data using a panel of examiners every month. Indicators for measuring patients' satisfactions included patients' opinions about the professional services, attitudes towards patients, and general environment. Those indicators were usually investigated for inpatients by a panel of hospital administrators. There lacked indicators of quality and patients' satisfaction used for outpatient services.

In Bangpu Medical College Hospital, quality indicator was weighted 50%, volume of health care provided 30%, and net income 20% [70]. Yongjia County Hospital of Zhejiang Province set similar weights for the three components (40% for quality and patient satisfaction, 30% for volume of health care, 30% for financial indicators) [58]. A study conducted in Bangpu Medical College Hospital reported the major effects of performance-based bonus system on behavior of health providers [70]. After implementation of this system from the beginning of 2001, behavior of physicians for charging patients changed. The extent of unnecessary health care reduced. Expenditure per inpatient day decreased from 345 yuan in 2000 before the reform to 298 yuan in 2001 after the reform. Official fee schedule could be strictly followed by the hospitals and volume of health care services increased. However, decrease of hospital revenues was noticed by the hospital managers, while volume of health care increased. From a survey on 134 patient cases, it was found that charges were less than normal fee rates for one-third of the cases. This is because some physicians and nurses offered free health care to their relatives and friends. Managers of the hospital thought that quality and volume-based bonus system influenced financial balance of the hospital. Findings from this hospital suggests that if direct relationship between incomes of the individual health staff and amount of revenues they generate is cut off, less financial incentive would be for health staff in charging the patients. It also implies that removal of current financial incentives for health staff would result in problem in generating revenues for hospitals, if financing mechanism at system level

remains the same.

From mid 1990s, the salary system has been reformed in some hospitals. The most commonly used approach is to separate salary into two or three components of fixed salary and performance salary [71-74]. Reforms of salary policies were mainly conducted at county and above hospitals. In Xiangfan of Hubei, most of the health facilities set the total income of health workers with above components [71]. Fixed salary was used for basic living of the staff without change every month. Performance salary including bonus was determined mainly by net incomes each clinical department generated. For non-clinical departments, professional and administrative positions were the factors determining the level of performance salary. Huaihe hospital in Henan also divided the salary into two parts of fixed and performance, but linked working days with the fixed salary [72]. For determining the performance salary, a center for cost accounting responsible for collecting analyzing data was established. No ceiling was set for the performance salary. Indicators of finance (revenues and net income), quality (correction rate of diagnosis and recovery rate of the inpatients), and productivity (numbers of outpatient visits and inpatient days), were the major determinants for the level of the performance salary. The hospital listed conditions for canceling the performance salary, including serious misconduct of practice, under-table charges from the patients, violence of laws and regulations.

In Shekou Union Hospital in Shenzhen, performance salary was divided into two parts: nominal and actual performance salary [73]. Nominal performance salary was mainly determined by volume of health care and net income from provision of health services. Financial contribution centered this part. Actual performance salary was determined by adding quality factor based on the nominal performance salary. Quality indicators focused on performance in preparation medical files and patients' satisfaction. If patients' satisfaction cannot reach 95% for a clinical group, the performance salary would be reduced accordingly for this group.

Shaoyifu Hospital in Zhejiang Province broke the regular salary system because it has more autonomy in making its personnel and salary policies [75]. It adopted ranking salary system from 1994. According to the contents of professional, supportive, and administrative work in the hospital, 226 categories of working positions were specified for 800 hospital staff. A minimum salary was set for each position. For each position, 17 ranks of salary were set. Every one at a position can have chance to be promoted to higher rank of the salary every year if he or she meets the working requirements for this position.

Even if a number of health facilities tried to reform salary systems, it is not easy to have substantial changes. This is mainly because the influence of government personnel and salary policy is very strong on public health facilities and any changes in salary policy are very sensitive to every one working in the hospitals. For stability of the hospitals, managers have no incentives to adopt radical salary reforms.

7. Personnel policy reform

Health facilities have had more autonomy in allocating resources they generated since early 1980s. In the contrast, the autonomy in hiring and firing staff of the health facilities is relatively limited. However, in recent years, for recruiting new health staff, hospitals have more autonomy and most of the newly-recruited staff was managed with contract arrangements. This means hospitals have more autonomy in firing the new health staff. Usually, selection of general managers of health facilities is decided by either government or the party committee. Even if the national personnel policy has changed a lot including that the individual institutions can fire their employees, for public health facilities, it is not easy because they must rearrange positions for the laid-off workers within the health facilities. The commonly implemented personnel reform in health facilities was to select department heads and health workers using competition mechanism.

Selection of department heads and health workers usually follow following procedures [76-82]: 1) post specification. Health facilities specified responsibilities of each position and the number of staff for the positions according to workload and technical requirements; 2) selection of department heads. Health facilities formed a selection committee to evaluate the candidates to decide the department heads. Evaluation process including writing examination, scoring by all staff to the candidates, interview, and final evaluation; 3) selection of associate heads of the departments. Usually, the associate heads were recommended by the managers of health facilities and decided by the department heads; 4) mutual selection of health workers. Each health worker chose the departments and would be selected if the department heads agree; 5) the health workers who were not selected by any departments would be laid-off. The laid-off workers would be trained for a time period and be rearranged in other positions. If those workers did not accept the assigned positions, they could apply for retirement with a fixed payment for living.

Yangmazhen township hospital in Shenyang county reduced the departments from 22 to 19 and reduced the number of staff for those departments [80]. From 2000, 6 health workers were reorganized to other departments after assessment of their qualifications and 3 health workers were sent to village clinics. Longyou county Chinese hospital advertised positions of deputy managers of the hospital [81]. The managers were contracted with a three-year term. Responsibilities of the managers were clearly specified in the contract.

Even though health facilities could not do much on personnel reform under current personnel policy, it was recognized that reorganization of working positions and competition mechanism for selecting department heads and health workers had helped in improving performance of the staff. The fundamental problem in reforming personnel policy recognized by the health facilities is that more autonomy is required for further reforms. For accelerating process of the personnel reform in rural health

facilities, the central government asked for public competitive selection of township hospital managers and encourage contract management method for managing health staff [2].

8. Capacity building in management

Capacity building of health administrators has been paid more attentions in recent years. Training programs for health administrators have been widely operated over the past 10 years. The Ministry of Health through the Center of Health Resources and Services is organizing training programs for four categories of health administrators: hospital managers, township hospital managers, urban community health station heads, and health officials [83]. All health administrators were asked to have certificates of trainings in management for their positions. Besides training programs organized by the government sector, academic institutions also organized various forms of trainings including EMBA, MPH, and MPA, for health managers and administrators. However, participants in those training programs mainly came from county and above health facilities. Managers from township hospitals have not been intensively trained. This is partially because most of the courses were designed for high-level health facilities and because fees of the training programs were much high.

For improving management of the township hospitals, in some areas, management was contracted out to other organizations. In Zhangguo of Xinghua, Zhejiang Province, the township hospital management was contracted out to a enterprise that was thought of being more advantaged in managing the hospital [84]. In Changshu of Jiangsu, the township hospitals were contracted out to county hospitals [85]. However, it was not clear about its effects on performance of management with the available reports.

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Annex 1: Integrated Management of Rural Health institutions in Qianyang County

1. Major problems existing for township health centers of Qianyang County.

1.1 Rigidity of management system and little scope for survival.

For many years, township health centers are situated in dilemma between big hospitals and small clinics because of planned-economy management system and lack of consciousness of competition and services. Township health centers are on the edge of bankruptcy for less patients and more losses. In 2002, operational revenue in thirteen township health centers was only 1.17 million Yuan and the wage per capita per month wasn't up to 300 Yuan.

1.2 Simple and crude facilities for diagnosis and treatment and lower instruments for prevention and remedy

Required medical apparatuses and facilities have not been equipped because of difficult finance and critical scarcity of financial input for township health centers. The quality of medical services was greatly affected by lack of modern, scientific, accurate apparatuses, and even now stethoscope, sphygmomanometer and thermometer are predominant in township health centers.

1.3 Uneven quality of health personnel and inferior medical care

Quality personnel often seek to transfer and self-employed for less patients and lower income. It's usual that most township health centers don't have specialized departments, even a graduate or high-level professional. There are only 6 professionals above college level accounting for 5.11% of all professionals. At the same time, there are only 19 medium-level professionals accounting for 16.25% of all professionals. Many existing professionals seldom study intensively for living.

1.4 Chaos of medical market and increasing unordered competition

The problems are prevalent including weak supervision of medical market including practicing medicine without license, many clinics in a village and illegal private clinics. Only in districts of Qianyang County were there 68 illegal private medical institutions in 2000. Thirty five illegal clinics without *executive certificate for medical institution, executive certificate for physician and business license* were established by doctors from township health centers. And about forty five clinics alike were centralized at dense population streets. One hundred and thirty six rural clinics of Qianyang County were all private. Medical accidents happened from time to time because of nonstandard technical norm by mountebanks and some of rural doctors.

1.5 Absence of effective management and weakness of epidemic prevention.

Much attention has been paid to medical treatment which can bring about high economic benefits, but social effect and epidemic prevention were neglected in rural areas. Little importance has been attached to health education including disease control, maternal and child care etc. The masses of rural people were lack of

confidence in township health centers and village clinics.

2. Countermeasures

2.1 Regrouping health resources to realize rational distribution of rural health institutions

The rural health resources were re-allocated according to the principle of rational distribution, appropriate scale, facilitating masses, apt management, and at the same time geography, population distribution, traffic and patients' selection of health institutions were also considered. After the merge, the amount of township health centers became from thirteen to eleven, and its departments were also subdivided. The amount of village clinics decreased from one hundred and thirty six to one hundred and two. The criterion that service radius was about 2 kilometers and average served population is about 2000 was implemented in the process. The financial inputs at county and township levels were transferred to township health centers. In recent year, thirty nine hundred thousand Yuan was transferred to purchase B-ultrasonic, X-ray, electrocardiograph, stomach pump and so forth in seven township health centers. At the same time, infrastructures including heating and fencing furnished was improved in 11 township health centers. Uniform tablets were done in one hundred and two village clinics above forty square meters, and at least the house was divided into diagnosis and treat room, pharmacy, observational room and injection room.

2.2 Adopting centralized management to promote the integration of rural health institutions

Integrated and normal management for institutions at township and village levels was carried out in the center of township health centers. The specific contents follow: one certificate, two systems, three insurances, four standards and five unifications. One certificate means that *Executive Certificate for Medical Institution* must be acquired for village clinics. Two systems concern that village doctors should be nominated and their wages and welfare should be provided by township health centers. Three insurances refer to collective ownership, serving people and prevention-centralized. Four standards encompass normalized setup, institutionalized management, standardized apparatus and normalized operation for village clinics. Five unifications include adjusting personnel, administrative and operational management, approval for remuneration, drugs purchase and financial accounting. Five specific measures were taken. Firstly, administrative and operational management was strengthened. Integrated goal-management meant that assessment outcomes were connected with remuneration and appraisal for village doctors. Secondly, health personnel were adjusted. All village doctors were appointed according to their virtues, capabilities, diligence and performance. And their posts, registries, ranks, responsibilities were fixed. Village doctors can freely float in their towns and every clinic was equipped with 2-3 doctors. Thirdly, approval of remuneration was strict. Performance assessment system was used for formal personnel, and deducting a percentage from revenues is used for appointed personnel and fixed wages are for temporary personnel. Fourthly, financial accounting was centralized. Financial management was normalized

and centralized in the county accounting center. Fifthly, drugs purchase was implemented uniformly. Pharmacy center located in township health centers was set up, and its functions was to be in charge of purchase and transfer of drugs, medical materials and medical apparatus and facilities for village clinics. So the quality of drugs can be guaranteed.

2.3 Integrating human resources to enhance the expertise of rural health personnel

Firstly, the leaders were selected and nominated strictly through open examination. Fourteen elites who were good at profession and management were nominated directors and vice-directors of township health centers. Secondly, rural doctors were nominated openly. Seventy-four graduates at least from technical secondary school and retired professionals were nominated in Qianyang County. The objective was realized that one doctor introduced can drives up a project and even activate an institution. Thirdly, famed doctors were admitted widely. Twenty three notable and qualified doctors were admitted into regular medical institutions. At the same time, twenty seven young doctors who graduated from medical colleges were arranged into village clinics.

2.4 Carrying out overall cleanup and rectification to maintain the normal order of the medical market

Illegal medical institutions, mountebanks and druggists were cleaned and repealed by the law under the cooperation of the Bureau of Public Security and Bureau of Industrial and Commercial Management etc. Firstly, the business scope of medical institutions was rectified and normalized. Two departments of STD (sexually transmitted disease) contracted by non-medical staff were repealed legally. Thirty five clinics derived from township health centers and five clinics employed at home by doctors were quashed. In all, thirty four village clinics were repealed and merged rationally. Secondly, thirteen doctors in retailed drugstores derived from Pharmaceutical Company of Qianyang County were repealed. Thirdly, illegal clinics which don't accord with regional health planning of Qianyang County and don't have *Executive Certificate for Medical Institution* were banned strictly. Six private clinics were banned also in the process of exchange of *Executive Certificate for Medical Institution*. Two hundred and seventy four medical institutions and two hundred and eighty person-times were examined of which illegal 148 institutions and 156 persons were included. So the order of medical and pharmacy markets were normalized.

3. Results

3.1 The three-level network of rural healthcare was perfected and new development was actualized.

The network of rural healthcare at county, township and village level was established and perfected, and management mechanism was harmonized after the integrated management of rural medical institutions. Social medical treatment, prevention and care, health education, immunization planning and public health etc were carried out smoothly. The infrastructures and management of rural medical institutions were

perfected and improved remarkably to promote the development of rural healthcare.

3.2 The operating efficiency of township health centers was improved.

The existing regionalism and ownership of rural medical institutions were broken completely. The advantages of health resources were displayed adequately. In 2003 when the integrated management has been implemented, the operational revenue was up to 3.57 million Yuan which is 3.05 times as that in 2002 when the reform hadn't took place. Wage per capita per month is up to 800 Yuan which was increased 250% than that in 2002. Medical apparatuses and facilities were improved strongly and the external image was upgraded.

3.3 The quality of rural health personnel was raised and medical level was enhanced

The remuneration of medical personnel was ensured and stimulating mechanism was perfected after the integrated management. So the medical personnel are absorbed in improving their medical levels. Meanwhile, the quality of health personnel was enhanced by routine operational assessments and designedly trainings for village doctors.

3.4 The transparence of medical services was enhanced and the demands of the broad masses of rural people for medical services were satisfied.

The charge criteria and pricing of drugs were supervised through being illustrated on the wall by township health centers and village clinics. The medical and drugs markets were neatened and safe drugs was guaranteed through purchasing drugs uniformly. Meanwhile, timely, good quality and efficient medical services for the masses of rural people was enhanced by improving service attitude and adjusting service time.

Annex 2: Combination of MCH Health institutions and Family Planning in Qingdao

Along with further health sector reforms, it is of critical importance to optimize health resources allocation and maximize their functions. Under the leadership of Qingdao civic government, Ministry of Health and Health Department of Shandong province, a new method of integrated management of maternal and child services institutions and family planning services institutions has been explored. The merger of the two types of institutions promotes rapid progress of maternal and child services and provides technical guarantee for basic national policy of family planning and population controlling in Qingdao city.

1. Overall situation and guideline for institutions merger.

1.1 Situation of maternal and child services institutions

There are 13 maternal and child services institutions at city and county levels which have 482 technical professionals in Qingdao city. The management and services for maternal and child are their main functions including operation guidance, technical training, scientific research, ante-marital medical checkup, perinatal care, eugenics, technical services for family planning and children care etc. For many years, under the concerns and support of all levels government, an integrated health services system for maternal and child has been formed. The scale, facilities, customized technical services and management of maternal and child services institutions has been promoted remarkably.

1.2 Situation of family planning services institutions

For recent years, with further development of family planning, 9 academies and services stations at city and county levels for family planning, and 145 township services stations have been established in Qingdao city. The amount of all types of technical professionals is up to 892 which are charged with 4 major functions including dissemination and education, operational training, contraceptive management and technical services for family planning. 4.85 million Yuan has been invested into services stations to purchase apparatuses for family planning surgeries such as B-ultrasonic, X-ray, operating bed and inhaler for abortion etc since 1995.

1.3 Guideline for institutions merger

Family planning and strengthening maternal and child services are two important items of implementing population policy in China which is to control quantity and improve quality of population. And there is a necessary relationship between them. But their served objects and service purpose, functions for management and technical services, apparatuses and norm of infrastructures are same or alike. So a new model has been implemented to make the two types of institutions play a more important role and maximize their advantages. The model has five characteristics: making overall plans and taking all factors into consideration, institutions merger, optimizing allocation, resources sharing and harmonious development. The merger was implemented between family planning and maternal and child service institutions in five districts (Huangdao, Laoshan, Chengyang, Jiaozhou, Pingdu) from existing eight extramural districts and Sifang District, one of the four in-city districts of Qingdao. The percentage of institutions which have been implemented integrated management of maternal and child services institutions and family planning services institutions was up to 50%. The method of “One institution, two brands” was put in

practice for the merged institutions. The two brands are Maternal & Child Health Centre and Family Planning Technical Centre respectively which have the same administrative department. Jiaozhou, Pingdu and Chengyang are affiliated family planning administration, otherwise Sifang, Huangdao, Laoshan are affiliated health administration. The functions of the two types of institutions were assumed effectively by the new merged institution.

2. Methods

2.1 promoting development of health services through widening thought, further reform and scientific decision-making.

The following methods have been applied: the first is to widen thought; the second is to make decisions scientifically on evidences; and the third is to increase governmental financial input. Some institutions were merged on basis of evidence from surveys. Qingdao Civic Maternal & Child Health Hospital was newly established from the merge of maternal & child health station and gynecologic and obstetric hospital. Family Planning and Maternal & Child Health Centers were incorporated from through cross-sectoral merge of family planning station and maternal & child health centre. Joint-stock system was piloted in some township health centers. Furthermore, the strategy of technology and construction of key departments were strengthened. Much attention has been paid to rural health care investing two million Yuan for “Rural Three institutions Development” including township health centers, county maternal & child health hospitals (or stations) and county center for diseases control and prevention (CDC). At the same time, the amount of investment for TCM was five hundred thousand Yuan was invested and the amount for maternal & child services was 1.5 million. A national first-rate Family Planning and Maternal & Child Health Centre was established in Pingdu. A national standard county TCM hospital was established also. Infrastructures of Jimo and Pingdu People’s Hospital became more advanced among counterparts in China. Rural cooperative medical system (CMS) and primary health care (PHC) were further improved. The medical, preventive and care network at county, township and village levels was further consolidated.

2.2 Optimizing resource allocation and supplementing predominance mutually to promote harmonious development of family planning and maternal and child care.

Optimizing resource allocation is the primary consideration for merge in Qingdao city. Over the past decades, maternal and child service institutions of Qingdao have made great progress in improving its infrastructures and technical services. More importance has been attached by civic government to increase financial input and perfect infrastructures including staff, apparatuses and facilities and to improve their management function. So in general, an integrated maternal and child service system was established in the city. Family planning service station has been recently established whose functions are dissemination, training, contraceptive management and birth control. Family planning technical services is only one item of maternal and child services and so health resources waste is caused by re-building infrastructure and financial re-input only for family planning. In view of that, integrated management of the two merged institutions was implemented for resources sharing, predominance supplementing and harmonious development.

2.3 Harmonizing relationship and strengthening guide and management to establish new administrative mechanism

The primary principle for merger is to harmonize working relationship and establish new working mechanism and perfect assessment management system for the different affiliated relationship of the two institutions. The idea that the institution established newly has one leadership, two brands and two functions has been identified by city and district governmental standing conferences. A new leadership group was nominated and appointed, and other things including scale, staff, affiliation and higher-level operational guide units were also specified. Maternal and child service was put into the important agenda of health administration. Firstly, the guideline, responsibility, tasks and requirements have been introduced when the new leadership group is taking posts. Secondly, setups of departments for maternal and child care, family planning, eugenics, contraceptive control and reproductive care etc were featured in the new institution. Thirdly, the purpose of care-centralized and combination between clinics and care was emphasized. Fourthly, supervision and assessment were strengthened to ensure the completion of its aims. In a word, during the process of merger, maternal and child services were enhanced for unambiguous guideline and powerful measures. At the same time, a new administrative mechanism was established for harmonious relationship between the two sectors.

2.4. Fulfilling responsibility, strengthening internal work and broaden services to promote the two civilization constructions.

Maternal and child services institution is to provide care services for women and child legally. Family planning services station is to control quantity of population and implement family planning surgeries. The new institution worked well for fulfilling responsibilities and mutual cooperation. At the same time, in terms of maternal and child services, operational and scientific management levels were generally improved because of strengthening internal work and carrying out operational trainings. In terms of family planning technical services, consultant services was provided mainly including eugenics, contraceptive control and reproductive health etc for newlywed and women of reproductive age . The competence of integrated services was reinforced for pooling of professionals and apparatuses. At present, newly-married care, pregnancy care, child care and family planning were provided by all institutions. Some new service items have been carried out such as disease screening for the neonatal, mouth, eyes and psychological care for child, nutritional guideline for child and menopause care etc for recent new demands. So service scope was broadened, service competence was enhanced, social effectiveness was improved and revenues was increased. In Qingdao, thirteen maternal and child services institutions have been entitled “Spiritual Civilized Units” above city level and some became “Advanced Units” at provincial or national levels for the personnel’s ardors and passions.

Annex 3: Bonus system reform in Yongjia County Hospital

Allocation system is one of the most concerned focuses for personnel in units. How to establish allocation system on the basis of facts and improve the development of hospital is one of focus topics for hospital directors. To establish a sound and scientific allocation system for bonus is an effective method to stimulate medical personnel. The following are the analysis of evolvement for allocation system for bonus during the last more than 10 years in Yongjia county hospital.

First phase (1984—1986): bonus is associated with net operational revenue.

Allocation system for bonus was attempted to reform from 1984 in Yongjia county hospital. Initially, the wage was fixed and bonus was floating. Compared with bonus per capita per month in 1983, it was increased more than 8 times (from 5 Yuan to more than 40 Yuan) to stimulate personnel greatly. The merits of this system: the method was simple and obvious and every member could know the amount of bonus. The demerits: firstly, drawing medical materials was increasing and out of control. Secondly, drug revenue increased obviously and over-prescription was emerging.

Second phase (1987—1991): bonus is associated with revenue minus materials expenses.

Allocation system for bonus in the first phase was improved from 1987. The method was to regard department costs of expendable as minus of departments' revenue (not including wages of personnel) and enhance deducting proportion for departments' revenue. Bonus deducted by departments = (revenue – costs of expendable) × deducting proportion. The merits of this system: operational revenue, balance of income and expenses and bonus per capita were enhanced. The demerits: firstly, only considering economy, the more operational revenue, the more bonuses of departments. Disparity of bonus among departments became larger and resulted in conflicts among them. Secondly, drug revenue increased obviously.

Third phase (1992—1998): bonus is associated with net benefits.

On the basis of improving allocation system of bonus in the second phase, the concept of total cost accounting connecting bonus with net benefits was introduced. Namely, Bonus deducted by departments = (revenue – costs of departments) × deducting proportion. Costs of departments include wages of personnel, costs of expendables, depreciation of facilities and houses, costs by indirect departments. The merits of this system: controlling costs was attained for association between bonus and departments' costs. The demerits: it was very difficult to identify deducting proportion for human feelings. The principle of more work, more incomes were not really embodied. Secondly, deduction has become a prior consideration before working.

Fourth phase (1999 up to now): total cost accounting at hospital and department level with responsibility of integrated goal-management.

This system was established on the basis of synthetically considering merits and demerits above. Recently Practices proved that this system was suitable for Yongjia county hospital and true of relevant national policies.

The before-mentioned are four phases of allocation system for bonus among and the fourth was the best. The achievements were following: outpatient visits in Yongjia county hospital were increasing stably and that of other health facilities in Yongjia

county were decreasing generally. The proportion of drug revenue for total revenue decreased and inpatients increased year after year. Inpatient days per capita decreased yearly. The increase of inpatients expenses was controlled. Working discipline was strengthened and medical quality was further improved. Hospital's credibility in patients was also improved.

Responsibility of integrated goal-management is to partition accounting units, identify its personnel number and establish conduct norms, standards of quality and tasks according to development planning, yearly financial budget or department's setup. The specific practice is to disintegrate task indicators into related departments or departments and identify coefficient and basic baseline of bonus respectively. Basic baseline of bonus will be given if completing the tasks. Excess bonus will be given for over-fulfillment.

1. Partition of accounting units and identification of personnel number

Firstly, all accounting units were partitioned and fixed the number of personnel or actual number of personnel. The coefficient of bonus is associated with the number of personnel and tasks. Coefficient of bonus allocation was identified by administrative post and rank and professional technical titles.

2. Establishment of conduct norm and standard of quality

Integrated conduct norms are established by Yongjia county hospital, including working disciplines, courteously practicing medicine and standards of quality, etc.

3. Identification of task indicators

3.1. Quantitative tasks of clinical departments including outpatient visits, inpatients numbers, inpatient days etc were disintegrated by statistic department according to development planning of Yongjia county hospital and then approved by medical and nursing departments. Generally, the tasks are distributed by professional technical coefficient of personnel.

3.2. Economic tasks for clinical technical departments and pharmaceutical departments were identified as general task according to the reality of the previous year and considering augments of current year. Then the general task was distributed according to allocation coefficient of every clinical department.

3.3. Generally, no tasks are identified for administration and logistics departments. Their assessment was based on conduct norms and performance of their tasks and the bonus was allocated according to outcomes of assessments.

4. Calculation and allocation of bonus

4.1 calculation methods for medical personnel

Proportion of objectives of assessments: conduct norms 10%, standards of quality 30%, task indicators 30%, economic indicators 30%.

Monthly baseline of bonus is identified by yearly total budget of hospital. Adjusted proportional coefficient is identified by work intensity of departments. The Adjusted proportional coefficient of clinical departments, technical departments (including pharmacy department), and administration and logistics (including supplier, washhouse, etc) is 1.10:1.05:1.00.

Deserved bonus of departments in current month = (current monthly scores of conduct norms + scores of standards of quality + scores of quantitative tasks + scores of economic tasks) ÷ 100 × bonus baseline × bonus coefficient of departments × adjusted proportional coefficient. Percentage was used. If the outcomes of assessment were different between departments and hospital, outcomes from departments were used to adjust amount of bonus.

4.2. calculation methods for personnel of administration and logistics

Generally, no tasks are identified for departments of administration and logistics.

Their assessments were based on conduct norms and performance of their tasks.

Bonus is allocated according to outcomes of assessment and administrative rank, and technical posts were also considered. Deserved bonus in current month = (rank or post coefficient + additive coefficient) × (current monthly scores of conduct norms × 40% + scores of standards of quality × 60%) ÷ 100 × bonus baseline × adjusted proportional coefficient.

5. What to be improved for actual allocation system

- a) The personnel system of hospital should be reformed as soon as possible to give hospital personnel autonomy. Well competitive order should be established to make elitists outstanding and wash out mediocre personnel.
- b) Scientific methods should be used to identify the tasks of departments to lessen the influence of human feelings in the process. These methods include qualitative and quantitative analysis methods, etc.

Annex 4: Contract-out hospital supportive services in Hongze County Hospital

With the development in depth of medical reform, logistics reform is extremely urgent. Since 2000, from the height of hospital system innovation and personnel-allocation system reform, Hongze County Hospital in Jiangsu Province studied carefully, explored actively, and boldly practiced. This hospital carried out a socialization reform involving 12 logistics items, including labor service company, cleanness and sanitation, mess hall and purchasing of goods and materials. The reform completely settled such logistics problems as much recruitment, large consumption, high costs, low benefits, being difficult to manage, etc, and gained preliminary effects.

1 several methods of logistics socialization reform for hospitals

First, separating the labor service company. Recent years, the labor service company was lack of managers who did well in operating and managing, had no dominant domains all the time and its operation performance was very bad. As there were more than 30 employees in logistics department, the hospital had to pay 12,000 yuan for them every month. In March, 2003, the labor service company was separated from the hospital and incorporated into the County Dingye company. Operation affairs and personnel arrangements were all authorized to the Dingye company, and all the logistics personnel withdrew from the hospital. The logistics department implemented independent accounting and took full responsibility for its own profits and losses. At the same time, the hospital offered policy support to the labor service company—exempt from rent in the first two years, and from the third year on, the rents will be transformed into stocks, participating in sharing out the bonus of the labor service company.

Second, inviting public bidding on cleanness and sanitation. There were 32 employees engaged in this work, including 2 formal employees, 4 employees working in the labor service company before, and others were all casual laborers. Annual expenditure was about 80,000 yuan, involving personnel wages, labor instruments, sanitizing apparatus, drugs, and so on. In March, 2003, the hospital invited public bidding on cleanness and sanitation, and drew contracts to define responsibilities of double sides (the hospital and contractor). Based on the public bidding, after serious filtrating, a relation of an employee won the bid for his feasible management planning and an annual contracting cash of 40,000 yuan. The contractor handed in 5000 yuan to the hospital as risk guarantee. The contracting time was 1 year. After the contract expired, according to the circumstances of complying contract, implementing security and changes of markets, etc, both sides could decide whether to continue or pause the contract. The hospital no longer paid for the expenditure involving personnel wages, labor insurance and welfare, cleaning appliances and disinfection articles. The highest-bidder reviewed 26 casual cleaning personnel, and 15 remained in their offices. And he established regulations, implemented strictly. The hospital made inspection standards of environment sanitation, and organized related departments to check the environment sanitation in the areas belong to contracting ranges termly or

aperiodically. The hospital paid the contracting cash referring to the sanitation inspection and satisfaction of medical staff and patients with the environment sanitation every month. If the environment was found dirty or disorderly for the first time, the contractor would be fined 50 yuan, and since then, the fine would be doubled every another time. If the hospital was criticized by the higher level departments, which damaged the hospital's reputation, the contract would be cancelled.

Third, leasing management of the mess hall. There were 2 formal employees, 3 casual employees and 1 employee who worked in the labor service company before in the mess hall. The hospital paid over 20,000 yuan for the personnel wages and handed in the balance of over 10,000 yuan to the hospital. In April, 2000, the hospital reformed contracting of the mess hall, mainly including: the rights of the fixed assets belong to the hospital; regulate the profit rate of the mess; implement independent management and accounting and took full responsibility for its own profits and losses under the premises of not changing the fundamental properties of the mess and assuring the provision. The mess hall was leased to a formal employee of the hospital with an annual rent of 20,000 yuan, who wouldn't pay for the personnel wages and other expenditures any more. The leaseholder should hand in 20,000 yuan as contracting cash to the hospital. The term of the contract was 3 years. The contractor should continue to employ existing employees, pay the pension, housing public accumulation fund and medical cost for them, and establish a concept of serving the staff and patients, ensuring that they could repast in time. The contractor was entitled to the rights of independent management, personnel, using of funds, and managing and using existing fixed assets, could define personnel and posts on his own, and implement a two-way selecting mechanism. The contractor should obey all the regulations made by the hospital strictly, accept the hospital's management in unison, transact such procedures as *Hygiene licence, health card, etc.*, and hand in fees of water, electricity and gas. The hospital would immediately stop the contract if the contractor was found not performing his own obligations.

Fourth, bidding and purchasing of materials and goods. The reporting system of purchase of goods and materials should be implemented, and the logistics department should report the purchasing plan every month. The bulk purchasing and bidding should be examined and approved by the related leaders. The hospital improved the system of purchasing of goods and materials, rotated the purchasing personnel, selected personnel with good thoughts and decent styles to do this work, strengthened law and discipline education, and helped purchasing personnel to establish collectivistic concepts, safeguard the hospital's interests conscientiously, resist all kinds of temptations, and put down the expenditures.

Fifth, medicines centralized purchasing. According to the 'competitive bidding, fairness and justice, centralized managing, regulating actions' principle, the hospital dispatched purchasing personnel to concentrate on negotiating in regular drug places

of the County in the 5th day and the 10th day every month, and signed contracts with many large companies. In view of current drug price policies of purchasing and selling, purchasing personnel carried out bidding and purchasing goods and materials on the month plan. Salesmen were strictly prohibited from sales promotion within the hospital. If backhander behaviors were found, the hospital would immediately stop stocking the related company's goods. This method controlled the drug prices, decreased medical cost, and alleviated the patients' burdens.

Sixth, the washhouse implemented quota system, all-round responsibility system, and piecework wage system. The wash house transformed the past time rate wage system to piecework wage system. Implementing 'three fixings': the first is fixing on tasks, which need to complete washing work ensuring quantity, quality, and clinical departments' needs. The second is fixing on popedom, and the personnel and equipments in the washhouse are subject to and used by the contractor. The third is fixing on cost, which makes a list of unit prices for concrete washings. The computing method is:

Actual wage=Total wage(according to the unit price list and the pieces of washing at the end of a month) – expenditure of water, electricity, gas, and detergents – deduction of points

The wages were distributed according to the internal assessment system by the contractor.

Seventh, the logistics services, involving greening, bathroom, boiler house, security, maintenance of equipments, were all contracted by the general affairs section. While fixing the contracting amount of money, the hospital established the requirements of workload, quality, efficiency, etc. The related sections in the hospital assessed the logistics services aperiodically, and then fulfilled the contracting cash. The hospital implemented 'Zero Complaining' in the logistics section, and the general affairs section would be deducted the contracting cash if complained by patients for service attitude or quality.

2 Effects of the logistics service socialization

After implementing the logistics socialization, benefits perceived directly by the hospital were at least such three facets as followed:

First, creating a new system. The hospital hired a 'majordomo', transformed its own role, and turned the past direct management on the logistics into direction, supervision, coordination and assistance. It broke away from traditional 'Small hospital-Large society' running system, also disadvantages and entanglements concerned about personnel, allocation and management. There were two independent corporation entities in the hospital: the contractor was neither humble nor pushy, getting profits through supplying services; the hospital concentrated on tackling medical quality. 'One hospital with two systems' occurred, made everything in order, and many profound contradictions were easily solved.

Second, improving the efficiency. Separated from the hospital, the labor service company turned the survival pressure into the power of development. It created a new point of economic increase with an annual revenue of 800,000 yuan. After the cleanness and sanitation were contracted through public bidding, the environment sanitation were changed significantly. The company declined 17 casual labor employees, built a keen-witted and capable cleaning team, which was trained well, defined the cleaning standard and range, and allocated the responsibilities to individuals. The past one-time cleaning was changed into an all-day cleaning, which made the road surface without dusts and cigarette ends. The intraday medical and living rubbish was cleared away within the same day. The outdoor lavatories were scoured every day, with no stink or flies. Additionally, they emphasized aces in the cleaning. The first ace was the construction section; the second ace was the holiday; the third was the circumstance of the outpatient building and the ward. The cleaning personnel were all hired and managed by the contractor himself, so the hospital didn't worry about the management of casual labor employees any more. The mess hall based on leasing management, not only introduced social services, but also formed the market competition, which improved meal quality and the employee's satisfaction. The hospital opened cooking stoves convenient for people, so the patients could have a delicious meal at any time, which improved patients' satisfaction and the whole service and image of the hospital significantly.

Third, saving funds. The most obvious effect was to have saved spendings since the logistics socialization began. The hospital separated the labor service company, which saved 142,000 yuan in the expenditure of personnel wage and welfare every year. The bidding and contracting of the cleaning work and the leasing management of the mess hall could save over 70,000 yuan in the expenditure every year. The 500 tons coals purchased through bidding, whose unit price was 24 yuan per ton, saved 12,000 yuan in the same year. The medical equipments, hygiene materials and reagents, which were purchased through bidding, valued respectively 280,000 yuan and 810,000 yuan. The hospital introduced an ultrasonic emulsification appearance and a Cloth mirror, which valued 900,000 yuan. The hospital strengthened the purchasing management of materials related to water or electric apparatus, and perfected all kinds of regulations and restriction mechanism, ensuring 'three-down' (going down to collect, send, and repair), 'four-opening' (opening water, electricity, gas and telephone), and 'three-not-leaking' (not leaking out of water, electricity, and gas). Some long-standing problems were solved respectively.

Annex 5: Reform of personnel System in Yangma Township hospital

The reform of personnel and allocation systems is a keystone among the reforms of management system and operation mechanism within township health centres. During the course of carrying out this work, Yangma township health centre in Sheyang County, Jiangsu Province, explored effective approaches actively, got preliminary effects, and then accelerated the development of the enterprise. Concreted methods are as followed:

1. What have been done

1.1 setting posts according to affairs and allocating personnel according to posts.

First, based on a thinking of simplifying, high-efficient, and flattening the management levels, the centre reduced internal units, simplified management branches, and set 22 executive and medical departments combining the circumstances of the hospital, such as office department, medical department, prevention department, logistics department, internal medicine department, surgery department, paediatric department, Chinese medicine department, etc. Second, the centre set posts according to affairs, i.e. drawing a post-setting scheme according to work demands, the size of workload, the makings of personnel and professional specialty. In 1998, after the employee's secret ballot, the committee of the hospital studied and defined 27 persons as technical backbones or necessary persons with abilities to be managed especially, and made some relevant measures of training, using and protecting for the 27 key professional backbones based on implementing a regulatory, scientific, and humanistic management. In 2000, the centre cancelled and incorporated skin disease department, stomatology department, anus intestines department, and Chinese medicine gynaecology, and added Lithotripsy department, pathology department and acupuncture and tuina-massage room. The number of internal sections decreased from original 22 to present 19, the actual number of people on duty decreased by 4, and at the same time encouraged non-technical-backbones to do part-time jobs with discharging 13 casual laborers.

1.2 Competing for posts and two-way selecting. The centre always insisted on the principles of 'using capable ones, dismissing bourgeois ones', implementing comprehensively a 'three no-attentions and three attentions' principle, i.e. paying no attention to Academic credential, Past, and professional title, but paying attention to Capability, Present, and Performance. The centre mainly tackled four aspects: first, the employees competed for medical group leader, prevention group leader, nursing group leader, executive and logistics group leader. According to the principle of equally competing and selecting the excellent ones, through such procedures as voluntary entering, making a self-speech, employee's evaluating, judging panel's marking, the Party's reviewing, announcing to the public, publicly employing, much attention were paid to the ideas of the employees, and eventually the hospital's committee employed some people. Second, heads of departments were all technical backbones. The centre moderately increased the departments' popedoms and the

departments had suggesting authorities of using personnel. Third, the employing course was based on two-way selecting. Not only the departments were entitled to select employees, but also the employees were entitled to select departments. Fourth, for the redundant personnel, the four channels of transferring posts internally, being trained with temporarily releasing from original work, being dispatched to village clinics, encouraging employees and shifting posts, were opened up at the same time and operated cooperatively. Managed especially technical personnel and promising young doctors were selected and sent to Municipal hospitals or Provincial hospitals to get a two-year training. During the training period, the trainees couldn't get wages from Yangma township health centre, but they could get a loan of 150% file salary from there, which would be looked on as their own loans and could be cancelled after the trainees went back to the centre to work for ten years. For those not managed especially also-ran technical personnel, they could get a one-year municipal hospital training, when would be given basic salary as cost of living, and the rest of file salary would be gradually granted in the balance of performance salary after they went back to the centre. Those dispatched to village clinics, would be granted salary according to the regulation of the township-village integration management, but their insurance premiums would be paid by the centre. To encourage those removed to other units, the centre would give them 10,000 yuan. Since 2000, 6 persons have been transferred posts, 7 persons removed, and 3 dispatched to village clinics early or late. The centre introduced 3 intermediate technical staff of the hygiene early or late, invited visiting experts to come to work in the centre, and showed especially technical advantages.

1.3 Breaking the fixed salary and widening the allocation difference between different grades. After weighing again and again, the centre implemented a 'basic salary(post salary,subsidy)+performance salary' distribution method, and the rest salary would be deposited, which could be used when the staff were removed or after retirement. The centre combined the pay with medical ethics and styles, post responsibilities, technology contents and operation revenue, paid attention to actual performance and contribution, and was inclined to clinical posts, key posts, and excellent technical backbones. In order to emphasis topping pay for topping talents and performance fully, the centre strengthened the comprehensive assessment involving many factors including trade style, quality and benefits. Concreted methods are: (1) set up an assessing committee; (2) carry out a 100-mark assessment, including: 25 points for medical ethics and styles, 25 points for health economics, 20 points for work quality, 20 points for labor discipline, and 10 points for appearance; (3) accounting of one's performance salary: (net income - money of turning in - water and electricity fees - instruments depreciation charge)/100*assessment mark; (4) health economics indicators of the executive and logistics personnel's performance salary refer to the average level of the medical and technical ones, prevention ones and nursing ones.

Three points are emphasized in the assessment: first, consider the health as the core, focus on the patients and exploit potentialities of human resources fully; second, embody the technology contents, risk factors and labor intensity of the medical staff;

Third, put medical ethics and styles, labor discipline, and appearance into assessment contents, which not only considers economic indicators, but also facilitates to improve the whole makings of the staff.

While granting performance salary through assessment, the centre added rewards and punishments measures: first, ones who are late, leave early or make patients unsatisfactory will be deducted 50 Yuan one time, ones who are off duties in the midway will be deducted 150 yuan one time, ones who receive covert payments will be deducted 5000 yuan one time, but the reporter will be rewarded 20000 yuan after finding out the truth, and those who actively escape conflicts will be rewarded 50-100 yuan. Second, 'chain model' binding and fostering team spirits. If the operation revenue per day of the centre is below 6000 yuan, all the staff can't get the intraday performance salaries, while if the operation revenue per day is over 10000 yuan, the staff will be rewarded with average performance salary of one month in the intraday time. Third, set up a dean's encouragement fund. The centre will take out 5% surplus of revenue and expenditure in the year-end to reward the heads whose departments generate a revenue of over 800,000 yuan and the key doctors whose operation revenue is over 300,000. Fourth, those clinical doctors whose annual pay are over 25,000 yuan will be granted a year-end prize of 20% performance salary of a year.

While emphasizing internal personnel and allocation systems reform, the centre took suited and comprehensive measures, making trade style construction, hospital management, medical quality, and prevention tackled and developed together. This further showed especially social effects, long-term effects, and potential effects of personnel and allocation systems reform, formed harmony, resonance, and efficiency superposing, changed the mental outlook of medical staff, and then improved the whole and comprehensive benefits of the centre.

2. Effects

2.1 Exploding traditional allocation pattern. The reform of personnel and allocation systems was strictly based on one's responsibility, risk and labor service value, broke away the complex, where salary distribution was simply focused on longevities and positions, solved the asymmetry problem of the pay effectively, and brought an immense and permanent encouragement effect.

2.2 Transforming the ideas of cadres and masses. In the past some medical staff thought that they should be granted full-amount salary and intact welfare. Through implementing internal reform, taking off secure jobs and calling off equalitarianism policies, they realized the crisis and establish a new concept of 'working on abilities'. After the reform, three great changes have taken place, including: from shuffling patients to trying for heavy burdens, from being afraid of handling affairs to everyone's shooting for work, and from disfavoring patients to supplying zealous services.

2.3 Improving the attitudes of the staff. Good and bad attitudes affected directly the images and comprehensive benefits of Yangma township centre. The clinical doctors regularly visited the patients of leaving hospital on their own. The executive and logistics staff actively asked for medical staff's ideas and held colloquia involving patients' relatives. The nurses trimmed nails and washed clothes for patients, and chitchatted with patients to shorten the distance between them and patients.

2.4 Extending the scope of medical treatment. The reform of personnel and allocation systems effectively exerted subjective initiatives of departments, each of which showed his special prowess like the Eight Immortals crossing the sea. The surgery department associated with tertiary hospitals to do the operations. The medicine department took patients out of the centre to be examined and consulted, and brought them back to be treated. B ultrasonic wave room developed the Lithotripsy Technology with supports of the medicine department. Doctors with specialties established characteristic subjects, for example, anaesthetists cooperated closely with acupuncture and tuina-massage room to set up a waist-leg-ache characteristic subject. The paediatric department looked on asthma treatment as a bibcock, the department of ophthalmology developed Intraocular lens implantation and optometry technologies, the Chinese medicine pharmacy began to decoct medicinal herbs for patients, the Western medicine pharmacy recommended significant-curative-effect and high-profit new drugs to clinical doctors. The interests driving and improvement of makings, exactly, shifting of psychology, made everything not only coincide with admittance rules of health sector, but also vigorous. Within the centre was a vigorous popularity, out of the centre was an improved image. The scope of medical treatment was active, and the revenue was increased.

2.5 Improving the whole and comprehensive benefits. First, social benefits were improved roundly, and patients' satisfaction was increased significantly. Since 1999, Yangma township health centre has been selected as one of the best units by the people's congress of Yangma township every year, and awarded as one of the advanced groups by the health bureau of Sheyang County. In the past four years, the centre has been awarded as one of the civilized units continuously by the Municipal or County government. Second, economic benefits were improved markedly. Medical revenue increased from 723,000 yuan in 1998 to 3880,000 yuan in 2003, with an annual growth rate of 30%. Third, health service developed steadily. The reform of personnel and allocation systems not only made all the staff taste blood, but also laid a foundation for the centre's steady development. Using the accumulated funds, the centre built a new outpatient building of 1768 m² in 2000, a ward building of 1818 m² in 2001, the related houses attached to the ward building in 2002, the related houses attached to the outpatient building, class II fever clinic, and a staff building of 960 m² in 2003. Also in 2003, the township health centre added added Lithotripsy centre and pathology department, and acquired 500 mA X-ray machine with closed-circuit television system, two B-ultrasonic wave machines, semi-automatic biochemistry analyzer, K-Na-Cl-Ca analyzer, automatic haemocytometer, electroencephalograph,

binocular microscope and slit lamp for the ophthalmology department, etc. The centre took four years to turn an awful mess into a new hospital.

2.6 Improving the management level of Yangma township health centre. The reform of personnel and allocation systems combined working duty, objectives and tasks, economics indicators and welfare treatment, implemented systematical and regulatory overall assessment, made post duties more clear, and then improved management level of the centre effectively.