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## Impact analysis of chinese township health centers financing on two-way referral

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### ABSTRACT

This paper analyses the present situation of the Chinese township centers from two aspects: health resource and health service. To analyses the Chinese township centers financing and its changes under the New Health

Care System Reform. Using the investigate data and literature to analyze the situation and problem of Chinese two-way referral, then analyze the impact of financing of Chinese township health centers to the two-way referral under the New Health Care System Reform. The results show that under the New Health Care System Reform, the financing method of township health centers aggravate the "easy to up, hard to down" phenomenon of two-way referral, and the township health centers who get to be whole-budget management by the government will shuffle patients, and will reduce the basic health service.

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### KEYWORDS

Township health centers;  
Financing;  
New health care system reform;  
Two-way referral.

### THE SITUATION OF TOWNSHIP HEALTH CENTERS IN CHINA

Township health center is the hub in the rural three level medical health service system, and it is the public welfare and all-around basic medical treatment and public health institutions, in order to maintain the health of the local residents as the center, providing public health and basic medical services, and assume the function of health management commissioned by the health administrative department of the people's government at the county level, to assume the national basic public health services the project, providing referral service. 2

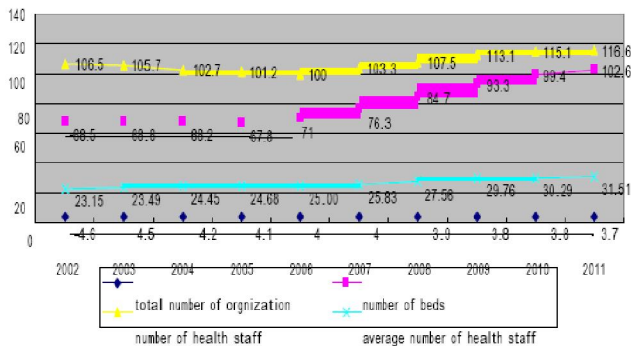
In recent years, township health centers had cer-

tain development in the influence of new national health care policies such as the new rural cooperative medical, New Health Care System Reform and so on<sup>[1-3]</sup>. From the health resource of township health centers, the number of township health centers is in decline, from 46,000 in 2002 to 37,000 in 2011 ut the number of hospital beds and health staff continues to increase, the average number of health staff increased from 23 in 2002 to 31.5 in 2011, as in Figure 1.

From the health service of township health centers, the last 10 years can be divided into two sections, the first stage:2002-2009, the total number of diagnosis and treatment, the total number of admission, utilization rate of hospital beds and the days of hospitalization of pa-

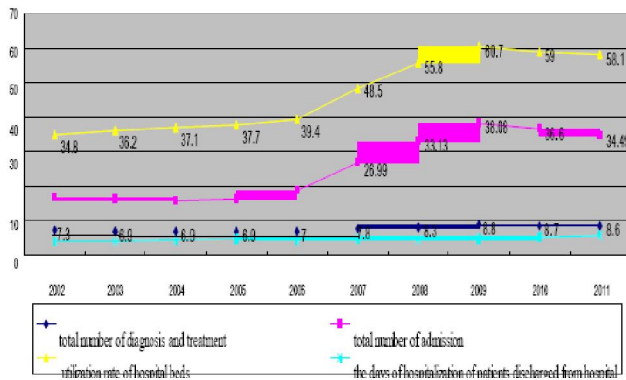
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tients discharged from hospital show rising trend. The second stage:2009-2011, the total number of diagnosis and treatment, the total number of admission, utilization rate of hospital beds decreases, and the days of hospitalization of patients discharged from hospital still show rising trend, as in figure 2. In theory, implementation and promotion of the new rural cooperative medical system urge patients from big hospital to primary hospital in a certain extent<sup>[1]</sup>. At the same time, because of the improvement of the population security level, the NCMS reimbursement grassroots tilt policy, the increase in the total population and the aging, the improvement of economic conditions of rural residents, the total amount of township hospital medical services and other factors should be continued to increase<sup>[2,4]</sup>.



Data source: China health statistical yearbook 2002-2012

Figure 1 : The health resource of chinese township health centers



Data source: China health statistical yearbook 2002-2012

Figure 2 : The health service of china township health centers (2002-2011)

Why township health service should continue to increase in theory, but actually reduce, does this means that it opposite with the goal of the “guide the general practice to sink base, gradually realize the community first diagnosis, classification of medical treatment and

two-way referral”<sup>3</sup> ? Many experts analyze the existing problems from the number of township health centers, the quality of health human resources, structure and configuration balance and so on<sup>[5,6]</sup>. This paper will analyze the behavior of the township health centers from the financing, as well as to the classification of medical treatment, the effect of two-way referral, and try to explain this phenomenon.

THE FINANCING OF TOWNSHIP HEALTH CENTERS IN CHINA

The financing of township health centers in china is closely related to the china’s economy transformation. Generally speaking, the financing of township health centers in china is divided into three stages: the first stage, early years of the new china to the 80’s, the government full founding management; the second stage, the ninety’s to the implementation of the new medical reform, township health centers’ financing from “government full funding management to balance allocation, balance allocation to self-financing”; the third stage, since the new medical reform, the government full funding efforts to increase.

In the first stage, the government bears all the expenditure of the township health centers. in the early of 1950s, government set up health centers in the countries, township health center in towns and village clinics in villages. From 1960s to 1970s, government vigorously develop and county hospitals, township health centers and village clinics which formed “three levels of medical system in rural areas”, WHO concluded “three rural medical system”, “cooperative medical care” and “barefoot doctors” for China’s rural medical and health services “three magic weapons”.

Since 90’s of the twentieth Century, along with the transformation of China’s economic system, the collapse of the rural collective economy which pocket-book of the township health centers, the implementation of the market economic system reform and decentralization, especially the system of tax distribution. the government slashed the township fiscal investment, and encourage the township health centers to income-generating self-financing. Township health centers financing from “government full funding management to balance allocation, t balance allocation to self-financing,”

Some areas transfers the right of management by joint-stock, auction, leasing and other ways. thus gradually lost its public welfare, has increased its profit.

**TABLE 1 Financing of township health centers**

Financing form/Time	2007	2011
Whole budget management	17.00%	42.70%
Budget Management By Remainder	73.60%	50.20%
Self-financing	9.40%	7.10%

**Data source: China health statistical yearbook 2002-2012**

Since the new health care system reform, the government improved the investment mechanism of urban and rural medical and health institutions. the government should bear the operate found including the basic construction, purchase of equipment, personnel and funds and its commitment to public health service funds of the township health centers and community health service center which found by the government<sup>4</sup>. Therefore, the full budget and budget allocation proportion rising, township health resources have been greatly improved, housing facilities has been continuously strengthened, equipment and facilities have also increased, staff wages and welfare treatment has been greatly improved.

According to the actual situation and the statistics caliber of China Health Statistical Yearbook, township health centers' financing mainly include: financial subsidy income, grant from the higher authority and the business income. The business income from medical income, drug income and other income, the medical income accounted for about 55%, drug income accounted for about 45%, other income of township health center is relatively small, almost zero. The medical income constitutes by two parts of outpatient income and hospital income, including outpatient income accounted for about 30% of the medical income, hospital income accounted for about 65%. In the outpatient income, income by checking up accounted for 50%, followed by the treatment income accounted for 9%, operation income accounted for only 3%. In hospital income, the treatment income accounted for 30%, followed by the operation income accounted for 15%, inspection income accounted for more than 13%. In drug income, western medicine income accounted for 95%, this show that business income of the township health centers mainly rely on western medicine income, hospitalization and inspect income of outpatient service.

In this paper, the total income of the township health center is  $Y=F$  (financial subsidy income + grant from the higher authority) +  $M$  (medical income) +  $D$  (drug income) +  $O$  (others).

## THE TWO-WAY REFERRAL OF TOWNSHIP HEALTH CENTERS IN CHINA

In order to solve the problem that medical treatment is too difficult and too expensive. rational utilization of regional the health care resources, to promote the formation of the division and cooperation mechanism between the big hospital and the basic medical and health institutions (township health centers and city community health service center), to provide safe, effective, convenient, economical and orderly health services for urban and rural residents. In 2009 April, the State council of the Central Committee of the Communist Party of China issued 00pinions on deepening the reform of the medical and health system<sup>0</sup> he government invested 850 billion RMB to solve the problem of medical and health system, and realize the stage goal that "guide the general practice to sink base, gradually realize the first diagnosis, community classification of medical treatment and two-way referral". In order to achieve this goal, the medical and health related departments developed a series of "two-way referral" policies. Jiangsu and Hubei province health departments had formulated the medical institutions two-way referral management specification. Although the central and local government has formulated many policies and measures, the two-way referral effect is not just as one wishes. According to Huangpi district People's Hospital Medical Association office in Wuhan city: in 2011 they supverage 10,000 patients, but only 190 infraduction; in 2012, they supverage more than 10,000 patients, but only 351 infraduction patients. The six street hospital upverage 39 patients, but only 1 infraduction patients. The Niekou street hospital upverage 31 patients, but only 3 infraduction patients. "Two-way Referral" just supverage 0 infraduction.

Many domestic and foreign exoerts believe the referral depends on patient and disease. Yingqiu Guo, Toshihide Kurokia, Seiji Yamashiro and Shunzo Koizumi<sup>[7]</sup> found there is a certain relationship between the patient referral and the patients' own abnormal ill-

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ness behavior.

Sarah Webb, Margaret Lloyd<sup>[8]</sup> found that the patient's expectation and anxiety affects doctor prescribing and referral behavior. Christopher B. Forrest, Robert J. Reid<sup>[9]</sup> found that Surgical conditions were referred more often than medical conditions, and a greater burden of comorbidities increased the odds of referral. Herndon MB<sup>[10]</sup> found that there was differences between GPS and patients on referral and medical examination, got two conclusions: first, the patient expectations of more examination or referral; second, gender and race differences in referral of patients, therefore, doctors should clearly explain to the patient that medical inspection has both positive and negative effect. Chencai<sup>[11]</sup> had did quantitative analysis on patients' referral willingness determinants, the results show that patients did some influence on referral, if patients have first diagnosis tendency, it will be good on two-way referral.

Lixiang<sup>[12]</sup> did statistical analysis on referral orientation of patients and related factors, results show that the provincial hospital and other provinces (city) hospital is the most patients preferred; the main reason to choose small hospital is a specialist of disease or to seek special treatment for the disease; some patients choose informal channels for medical treatment. But there are also many experts and scholars believe that the interests of doctors have an important influence on the referral. Stephen M. Shortell and Odin W. Anderson<sup>[13]</sup> used the "exchange theory" to analyze the doctors referral behavior which is influenced by six factors: return, attitude, interaction, responsibility, cost, balance and comparison. Peter Franks<sup>[14]</sup> research shows that the main factor affecting the referral is the doctor's operation factor, such as interest, specialty, time pressure and so on, there is little association with

the psychological factors such as risk adverse, uncertainty tolerance, autonomy, psychological orientation, take the patient as the center.

Thus, there are some following reasons for the problem of "Two-way Referral". In the first place, the hardware equipment and technology level of the township health centers is not up to the requirement, can't do clear diagnosis results, can't treat some patients who need operation or with difficult miscellaneous disease. Secondly, the impact of drug reimbursement policy, the

government had extended the drug use in basic hospital from 370 to 474 kinds of basic drugs currently according to the national basic drug bidding, so it can meet the treatment of common disease, but some serious illness need better drugs (primary hospital do not submit an expense account). To reduce the burden of patient, so the patient will be send to the high-level hospital. The third reason is the patient's own request, they lack confidence in Grass-roots hospital and township health centers. The forth reason is the interest of hospitals and the doctors. To a certain extent, the financing of township health center decided the level of income of doctors in the township health centers, at the same time, the financing of township health center also affect the behavior of doctors about the "two-way referral".

### THE FINANCING AND TWO-WAY REFERRAL OF TOWNSHIP HEALTH CENTERS IN CHINA

There are three township health center budget management modes by the government: whole budget management, budget management by remainder and self-financing. With the government's emphasis on primary health care, there are more and more financial investment, so the whole budget management township health center is more and more. What does the better financial situation of township health center effect on the objectives of "two-way referral" policy. This part we will analyze this question.

Through the above analysis, the total income of the township health center is  $Y = F$  (financial subsidy income + grant from the higher authority) +  $M$  (medical income) +  $D$  (drug income) +  $O$  (others). Use  $Ru$  to express the reduce income because of the upward patient from the township health center to high-level hospital. Use  $Rd$  to express the reduce income because of the downward patient from the township health center to the village clinic. Use  $Iu$  to express the increase income because of the upward patient from the village clinic to the township health center. Use  $Id$  to express the increase income to express the increase income because of the downward patient from the high-level hospital to the township health center. So  $Ru \gg Rd$ ,  $Iu \gg Id$ , the total income of the township health center from "two-way referral" is  $\pi = (Iu + Id) - (Ru + Rd)$ . In the competitive market, the township health centers will

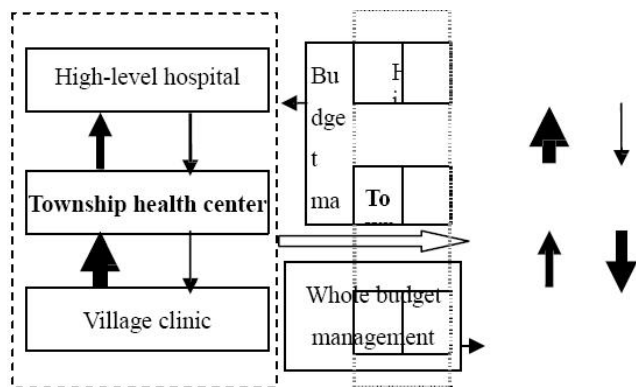
reduce the upward patients from the township health center to high-level hospital and downward patients from the township health center to the village clinic.

They try to receive the upward patients from the village clinic to the township health center and downward patients the high-level hospital to the township health center. The total income of the township health center with “two-way referral” is

$$Y = F + M + D + O + \delta = F + M + D + O + (Iu + Id) - (Ru + Rd)$$

In order to increase their total income from “two-way referral”, the township health centers try to reduce the roll-out patient whether it is to upward or downward, and increase the roll-in patient whether it is from upward or downward.

When the budget management by remainder and self-financing the township health centers transition to whole budget management, because of financial guarantee and two lines of revenue and expenditure, the township health centers will change their behavior when “two-way referral”. Because of limited rationality, individual information asymmetry and profit, In the process from budget management by remainder and self-financing to whole budget management, doctors will transfer the patients who should stay in township health centers to the high-level hospital and don't accept the downward patient from the township health center to the village clinic, as in Figure 3.



Note: the arrow thickness represents the number of referral  
**Figure 3 : Effect diagram of township health centers to “two-way referral”**

This will directly lead to two problems: Turn upward is easy, and turn downward is difficult, the big number of upward patient and a small number of downward patients. The total number of diagnosis and treat-

ment and admission decrease. This is also explain the two problems above “Why township health service should continue to increase in theory, but actually reduce” and “ ‘Two-way Referral’ just suppravege, no infraduction”.

### CONCLUSION AND SUGGESTION

Since the New Health Care System Reform, along with the increase financial investment in construction of gross-roots health system by government, the township health centers’ infrastructure and facilities were improved. Based on the analysis of medical resources and medical services, township hospital financing, two-way referral, and the effects that financing to two-way referral, some conclusions are as following:

Resources of the township health centers increased, basic health service is in decline. The number of the township health center is reduced while the scale expansion. The total number of diagnosis 0 treatment and admission, utilization rate of hospital beds decreases, and the days of hospitalization of patients discharged from hospital still show rising trend, Financing of the township health centers is improved.

The township health centers obtain more government subsidy which accounted for the total proportion increased to 26.9% in 2007 from 11.8% in 1992<sup>[15]</sup>. In the 2007-2010, fiscal subsidy township hospitals accounted for the total proportion increased to 34.9%<sup>[16]</sup>. Local government formulated “two-way referral” policies, but the effect is not well, “Two-way Referral” just suppravege, no infraduction.

The improvement of township health centers financing aggravate the phenomenon of” ‘Two-way Referral’ just suppravege, no infraduction” to some extent. The township health centers who transferred into whole budget management appear prevarication phenomenon and reduce the basic health service.

According the results, this paper proposes suggests as following:

To establish perfect rules and procedures of the “two-way referral” and strengthen the implementation and supervision. To establish scientific and reasonable process for the “two-way referral”, especially formulate indication standard of the “two-way referral”. To establish the full-time management institutions and im-

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prove the level of information, for example, Zhejiang Lishui Central Hospital established full-time institutions of two-way referral to manage the two-way referral.

To further clarify the functions of township health center in China's medical and health system. To strengthen the collaboration between the inner bodies in the rural three level health service system. To give full play to the pivotal role of the township health centers. To improve the overall efficiency and service level of the rural three level health service system through medical association, medical group, the county-town-village integration management.

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### REFERENCES

- [1] Sun Xiaojun, Adrian. Sleigh, Li Shixue; The Impact of the New Rural Cooperative Medical Scheme on Township Health Centers [J].Chinese Health Economics Magazine, **25(5)**, 23-25.(2006)
- [2] Huang Xiao, Wang Qiong, GU Xue-fei; Research on Influence of New Rural Cooperative Medical Scheme Out-patient Reimbursement Plan on Choosing Medical Institutions[J].Chinese Health Economics, **31(4)**, 48-51 (2012).
- [3] Ma Gui-feng, Sheng Hong-qi, Ma An-ning; Research of Township Hospitals Efficiency Change Before and After the Implementation of the New Rural Cooperative Medical System[J].Chinese Health Economics., **31(3)**, 52-55 (2012).
- [4] Deng Feng, Gao Jiangmin, Lu Juhong; Retrospective analysis of china township hospital resources and resource utilization[J], Chinese primary health care, **27(4)**, 14-16 (2013).
- [5] Wu Bi, Liu Jun-rong; Analyzing medical resources allocation of township hospitals in China[J]. Chinese Health Resources, **15(4)**, 338-340 (2012).
- [6] Hu Xiao, Zhou Dian u Dan; Analyzing HR resources of township hospitals in China[J]. C Health Economics research, **293(11)**, 25-27 (2011).
- [7] Yingqiu Guo, Toshihide Kurokia, Seiji Yamashiro and Shunzo Koizumi, Illness behavior and patient satisfaction as correlates of self-referral in Japan[J], Oxford Journals, **19(4)**, 326-332 (2002).
- [8] Sarah Webb, Margaret Lloyd; Prescribing and referral in general practice: a study of patients' expectations and doctors' actions[J], The British Journal of General Practice, **v44**, 381 (1994).
- [9] Christopher B.Forrest, Robert J.Reid; Prevalence of Health Problems and Primary Care Physicians' Specialty Referral Decisions[J], Journal of Family Practice, **50(5)**, (2001).
- [10] M.B.Herndon; Older patients perceptions of unnecessary tests and referrals: a national survey of Medicare beneficiaries[J]. J Gen Intern Med., **23(10)**, 1547-54 Oct (2008).
- [11] Cheng Cai, Zhang Xin-ping, Zhou Zhi-ming; Analysis of the Dual Referral Will of Patients[J].Chinese Health Economics, **27(8)**, 43- 44 (2008).
- [12] LI Xiang, New-type Rural Cooperative Medical Referral Patient-oriented and Research[J].Chinese Primary Health Care, **23(6)**, 14-15 (2009).
- [13] Stephen M.Shortell, Odin W.Anderson; The physician referral process: a theoretical perspective[J], Health services research, Spring, **6(1)**, 39-48 (1971).
- [14] Peter Franks; Gatekeeping revisited—protecting patients from overtreatment [J], N Engl J Med., **327(6)**, 424-9 Aug 6 (1992).
- [15] Li Zhao-cheng; Analysis on Resource Allocation and Utilization in Township Hospitals Under Health Reform in China[J], Chinese Health Economics, **28(5)**, 31-33 (2009).
- [16] Yuan Jing; Development of Township Health Centers under the new health care system reform[D], Shan Dong University, (2012).