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Policy Options of Controlling Irrational Medical Expenditures in China

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Abstract. The medical expenditures of public hospitals in China have been growing rapidly, and the growth rate of medical expenditures is much higher than that of GDP per capita. China and local governments have released numerous documents to control medical expenditures, but the effect is not satisfactory. In order to make medical expenditures control on a positive direction, this essay discusses the current implementation status and the irrational design of the core policy of medical expenditures, aiming to clarify the logic of irrational medical expenditures, smooth out the framework of the policy, and provide ideas to deepen the irrational medical expenditures.

Introduction

With the development of the economy, the acceleration of population aging, the change of disease spectrum, the renewal of medicines and consumables, the improvement of people's health consciousness and ability to pay, and the improvement of social security system, Chinese people's medical needs have increased greatly. The growth of Chinese medical expenses stems partly from rational health needs. However, according to the data of China Health Statistical Yearbook, from 2008 to 2016, the total health expenditures in China increased from 1453.5 billion yuan to 4634.5 billion yuan, with an average annual growth rate of 16%. In contrast with the average annual growth rate of GDP of 9.76%, the growth rate of health expenditures was much higher than that of GDP. From 1995 to 2014, medical and health expenditures per person in China increased by 10 times. The irrational and excessive growth of medical expenditures is highlighted.

Therefore, this essay theoretically analyzes the behavior of the subjects involved in the process of medical expenses and the factors that may induce the irrational growth of medical expenditures. Based on the identities of medical expenditures equal medical services (drugs, medical items, etc.) and price times quantity, synthesizing the existing research results, this essay reviews the implementation effect of the core policy of controlling medical expenditures, and combs out the logic of irrational medical expenditure growth which is controlled by Chinese government, and systematically filters out the classifications and focus of Chinese medical expenditures control policy in order to smooth out the framework of medical expenditures control policy.

The Environment of Irrational Medical Expenditures Control Policy

National Health Commission of PRC and other departments jointly issued the Notice on the Issue of Several Opinions on Controlling the Irrational Increase of Medical Expenses in Public Hospitals in 2015, which states that it is an important goal and mission to deepen the medical reform of controlling the irrational increase of medical expenses in public hospitals. In December 2016, the State Council promulgated the Deepening Reform of Medical and Health System in "Thirteenth Five-Year Plan", which puts forward the phased goal of expenditures control, that is, to strive to reduce the growth rate of medical expenditures in public hospitals to 10% by 2017. In addition to the explicit index of controlling medical expenses, Chinese government has frequently promulgated policies in the following three areas, which are medicine, medical care and medical insurance (see Table 1). China sets regulations from the perspective of several aspects such as the pattern of medical services (hierarchical diagnosis and treatment), price control (abolishing drug price additions, deepening the price reform of drugs and medical services),

supply control (regulation of proportion of drug revenue, rational use of drugs, reform of medical insurance payment methods, management of clinical pathways, DRGs), and introduction of market-oriented measures (encouraging the public to run medical institutions). Among them, the processes of carrying out drug policy involve many departments, which have been the focus of reforming. It can be seen that Chinese irrational medical expenses control should be guided by rules of design instead of the method of one-size-fits-all, controlling the total quantity and the growth rate. The vitality of medical service supply system should be ensured and controlled systematically, scientifically and rationally.

Table 1 Related irrational medical expenses control policies

Objects of reforming	Documents of policies
Medical Care	Notice on advancing the work of charging according to disease categories (Unified Price(2017)No.68)
	Notice on issuing guidelines for clinical pathway management in medical institutions (NHC(2017)No.49)
	Notice on implementing the clinical pathway for diseases (NHFP(2016)No.1315)
	Notice on issuing opinions on controlling unreasonable growth of medical expenses in public hospitals (NHFP(2015)No.89)
	Guiding opinions on pilot reform of comprehensive public hospitals in cities (GOSC(2015)No.38)
	Circular on policies and measures to speed up the development of social medical services (GOSC(2015)No.45)
	Notice on the opinions on the pilot reform of comprehensive public hospitals at the county level (GOSC(2012)No.33)
Medicine	Opinions on comprehensively deepening the reform of the price mechanism. (Unified Price(2017)No.1941)
	Notice on the issue of opinions on the Implementation of the "Two-vote System" in drug purchase in public medical institutions (SCOHCR(2016)No.4)
	Notice on issuing the opinions on promoting the price reform of medical services (Unified price(2016)No.1431)
	Pilot scheme for establishing drug price negotiation mechanism (Draft for consultation)
	Notice on issuing opinions on promoting drug price reform (Unified price(2015)No.904)
	Guiding opinions of the general office of the State Council on promoting the construction of hierarchical diagnosis and treatment system (GOSC(2015)No.70)
	Guiding opinions on improving the centralized procurement of drugs in public hospitals (GOSC(2015)No.7)
Health Insurance	Guiding opinions on further deepening the reform of payment methods for basic medical insurance (GOSC(2017)No.55)
	Opinions on strengthening budgetary management of basic medical insurance funds and giving full play to the role of medical insurance funds in controlling fees (CFEPH(2016)No.242)
	Opinions on the control of total payment of basic medical insurance (HRSSM(2012)No.70)
	Opinions on further promoting the reform of medical insurance payment methods (HRSSM(2011)No.63)

An Analysis of the Core Policy Effect of Irrational Medical Expenditures Control

Gross Control Policy: Proportion of Drug Revenue

In order to alleviate the problem of expensive medical services, China puts forward a policy strictly controlling the "proportion of drugs revenue" (the proportion of drug cost in total medical expense), as well as explicitly puts forward that we should strive to reduce the proportion of drug cost in total medical expenses (excluding Chinese herbal slices) of public hospitals in pilot cities to roughly 30% in 2017. "Proportion of drugs revenue" was originally a technical outcome index in hospital management, but now it has been adjusted to a rigid index to assess hospitals. In 2016, the proportion of drug revenue of Chinese public hospitals was 38.74% [1], which was much higher than the average level, 16.79%, of OECD countries' hospitals [2]. Seen from the perspective of the "numerator" of the proportion of drug revenue, Chinese drug sales market share in 2017 accounted for 20% of the total global market, while the

European market accounted for 22% [3]. In terms of the "denominator" of the proportion of drug revenue which represents composition of medical expenses, the prices of the same medical services differ in different countries. The price of Australian hospitals is averagely 4.16-4.81 times that of the tertiary and secondary hospitals in Suzhou, a city of China (see Table 2). On the premise that there are no obvious differences in Chinese and European drug expenditures, the proportion of drug revenue of China is naturally higher than that of developed countries in Europe because of the huge difference in medical services prices. After the introduction of the policy of controlling proportion of drug revenue, according to the "Ratchet Effect" in economy (which means that people's consumption habits are irreversible after being formed, and the level of consumption tends to increase, the policy of controlling proportion of drug revenue cannot restrain the prescription of doctors, even causing excessive medical services such as new demands for examination[4-6], and in absolute terms the burden of per capita medical expenses in China has not been alleviated[7].

Table 2 Comparison of medical services price between Australia and Suzhou, China

Medical service items	Price of Australia(¥)	Price of Suzhou(¥)		Price ratio	
		tertiary hospitals	secondary hospitals		
Continuous arteriovenous reversal	831.7329	300	240	2.77	3.47
Intestinal anastomosis	6950.2987	1620	1290	4.29	5.39
Arthroplasty	2387.5909	2160	1730	1.11	1.38
Radical nephrectomy	8849.1994	2630	2100	3.36	4.21
Radical cystectomy	7308.4202	2980	2380	2.45	3.07
Arthroscopy	1870.7993	520	520	3.60	3.60
Radical neck dissection	12081.889	1500	1200	8.05	10.07
Sublingual gland cyst	1403.0138	450	360	3.12	3.90
Laparoscopy	1507.5373	260	260	5.80	5.80
Cataract extraction combined with IOL implantation	5213.4951	900	720	5.79	7.24
TSH	171.6927	39	39	4.40	4.40
TCD	518.8478	100	100	5.19	5.19

Note: Data source: Australian Government Department of Health Medicare Benefits Schedule http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Downloads-201809

Price Control Policy - Zero-markup Drug Policy

For a long time, doctors in public hospitals tend to prescribe more expensive drugs to compensate for their low income, which causes some social problems, such as the virtual-high medicine price, irrational drug use, commercial bribery. The abolition of drug price addition and the adjustment of medical service prices are important structural adjustments to drug and medical service prices system in public hospitals. Since 2012, pilots of some county-level hospitals have been set up. At present, the urban public hospitals develop comprehensively. The existing literature focuses on burden of patients, hospital income, economic compensation, drug use structure and other aspects after the drug price addition policy was canceled. However, the conclusions differ greatly because of the differences in geographical distribution, the level of government financial compensation, the adjustment of medical service price, the type or level of hospital, the type of department and so on. Total hospital revenue declines. Drug costs decrease. Medical services (inspections, consumables) costs increase, and total costs remain the same [8], even increase [9]. Cancelling drug price addition is certainly conducive to strengthening cost control consciousness of public hospital managers, and prompting them to pay attention to the control of drug abuse and medical service quality. However, the drug price addition is only one of the reasons for the high medical costs, and after adjusting the structure of medical costs, total medical costs may not be changed but even increase. The increasing of the hospital loss, which is produced by policy, encourages the demand for greater financial support, while the financial burden of patients has not changed significantly.

Price Control Policy - Drug Procurement with Target Quantity

Documents No.7 and No.70 issued by the State Council and National Health and Family Planning Commission have laid the foundation for a new round of centralized drug procurement. Under the classified purchase pattern, drug bidding and purchasing gradually tend to be diversified. In addition to the original double envelope bidding, negotiation purchase, drug procurement with target quantity, publishing the price on the Internet, GPO and other new models have been piloted and gradually adopted by provinces. "Drug Procurement with Target Quantity", that is, the purchase quantity is been cleared when tendering and bidding or bargaining are launched. The enterprises give quoted prices on the basis of the specific drug quantity, aiming at giving play to the "group purchase" advantage. They can get low drug prices through the determination of market share. Shanghai was the earliest city to carry out "Drug Procurement with Target Quantity", and the winning bid of the first batch dropped by 65.57% at most, which is compared with last year (see Table 3). It is true that the centralized bidding and purchasing system for medicines has indirect effects on drug costs by directly affecting drug prices. However, the control of drug prices is not equal to the control of drug costs. There are also drug consumption, quantity structure (the self-replacement of available drug combinations on the market) and other factors. The effect of controlling drug costs of the bidding and purchasing system for medicines is unsatisfactory [10].

Table 3 Price drop of the first batch of purchased varieties in Shanghai

Varieties	Specifications	Manufacturing enterprise	Winning Bid Price(¥)			Planned purchase quantity
			2014	2015	2016	
Amoxicillin oral release form	0.25g*24	Rui Yang Pharmaceutical Co., Ltd.	7.78	5.49	1.89	450 Ten thousand tablets / grain
Cefuroxime axetil oral release form	0.25g*12	Guangzhou Baiyun Mountain Tianxin pharmaceutical Limited by Share Ltd	17.96	7.18	7.18	3000 Ten thousand tablets / grain
Enalapril oral release form	5mg*16	Ouyi Pharmaceutical Co., Ltd.	6.21	5.27	2.5	850 Ten thousand tablets / grain

Note: Data source: Shanghai Sunshine Procurement Network, drug data expy

Quantity Control Policy - Medical Insurance Payment Method

Medical insurance payment is an important part of basic medical insurance management and the process of deepening medical reform. It is also an important lever to regulate medical service behavior and guide the allocation of medical resources. At present, the reform of medical insurance payment method explored in China focuses on DRGs, which is a mixed approach including multiple payment methods. The purpose of the reform is to promote the healthy competition among medical institutions, mobilize the enthusiasm of hospitals and medical staff and improve the quality of medical services, reduce medical costs and make the price control policy work by guiding the behavior of suppliers [11]. But it is impossible for medical institutions to reduce costs unrestrictedly. In order to control medical insurance costs and limit the costs of certain types of diseases within the limits of total expenditures, medical institutions may reduce services, treat patients selectively, shuffle severe patients, arrange the number of hospitalizations irrationally [12, 13]. These not only increase irrational medical insurance fund expenditure, but also increase financial burden of patients. Studies have shown that payment methods do have an impact on the quality of medical services. Whether the impact of payment methods on medical services is positive or negative still needs to combine disease types with implementation conditions to make a judgment [14].

Behavior Analysis of Related Subjects in the Generation and Control of Medical Expenses

Through the analysis of the implementation effect of the core policy of irrational medical expenses control in China, it is found that most of the existing studies focus on a single policy. Therefore, the results of the studies are contrary to each other, and the impact of other policies in the same period cannot be eliminated. Thus, the study should be regarded with a dialectical view. When the government formulates

policies, due to the different management needs of different departments, the medical health system is often not considered comprehensively, and the cohesion and integration between policies are poor. Therefore, the obstruction of realizing policy objectives is great. There are three main factors in the current medical service systems, patients, medical service providers (hospitals, doctors) and fee payers (medical insurance departments). They are lack of subjective motives to control medical expenses, but there often exists a motive to do backscratching and maximize the use of expenses [15]. Due to the defects of the social medical insurance system, the behavior of each subject has been alienated, resulting in a crisis in the contractual relationship among the insured, medical institutions and medical insurance institutions. The insured tend to choose high price medical service. Medical institutions tend to induce consumption, and the payment methods of medical expenses are not binding, resulting in frequent moral hazards and irrational growth of medical expenses. Therefore, it is necessary to fully understand the process of medical expenses and the behavior characteristics of the relevant subjects before formulating an irrational medical expenses control policy framework.

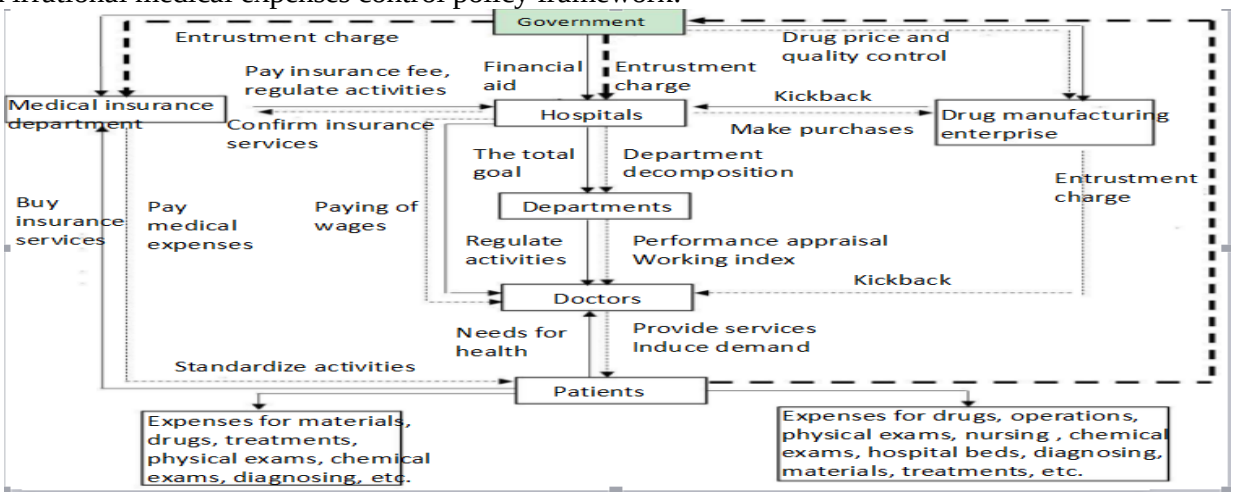

Fig. 1 Model of related subjects behaviors in the generation and control process of medical expenses

In the medical health service market, because of the highly asymmetric information between doctors and patients, patients (the insured) are put at an informational disadvantage and a passive position in the medical service. Their medical expenses are entirely controlled by doctors. As the representative of the public, the government transfers the responsibility of controlling medical expenses to medical insurance and hospitals through system design (see Fig.1). From the point of the process of medical expenses, its irrationally rapid growth cannot be ascribed to any part, but the result of all parts of the process of medical expenses and the behaviors of subjects: (1) Hospitals and government. As an important participant in the medical service market, hospital needs to keep its own economy running smoothly while providing medical services to meet the needs of patients and undertaking public health mission. (2) Hospitals and doctors. Hospitals pay doctors wages by means of performance appraisal. Doctors' labor intensity is high but their basic wages are low. Doctors' income mostly comes from merit pay. (3) Doctors and patients. Doctors have a very high information advantage, so patients' decision-making depends entirely on doctors, that is, there is a "principal-agent" relationship. (4) Hospitals and medical insurance. In the social medical insurance market, medical insurance departments, as main purchasers of medical services, only pay for the insured. They do not effectively control the medical costs, but lead to a weak awareness of patients to control the drug costs, nonstandard medical behaviors and other issues.

Conclusion: Policy Framework for Irrational Medical Expenses Control

Value Orientation of Policy Framework for Irrational Medical Expenses Control

In the process of controlling irrational medical expenses, the dominant position of the government should be emphasized. From a system perspective to treat the control of medical expenses, medical insurance has to work as a "buyer's side" in controlling medical expenses. Chinese government should insist on the linkage of medical insurance, medicine and medical care, at the same time, introduce the

mechanism of supply-side competition and demand-side selection in the medical service market and social insurance market, and improve the supervision mechanism of management, then dissolve the conflict of interests in policy implementation through multiple-process and multiple-link, and realize the integration of public policy, and rationalize the rational needs of medical services and curb irrational supply of medical services in medical institutions.

The existing research results show that many effective policies are accompanied by various risks. There is no best policy choice in the world. China should consider the integrity and dynamics of the medical health system and use a variety of policies according to the specific national conditions. As shown in Fig. 2, Chinese irrational medical expenses control policy framework focuses on price and quantity, distinguishes three policy areas: medicine, medical care and medical insurance, and establishes an irrational medical expenses control policy choice framework with two factors: the demander and the supplier.

Policy Choice Framework for Irrational Medical Expenses Control

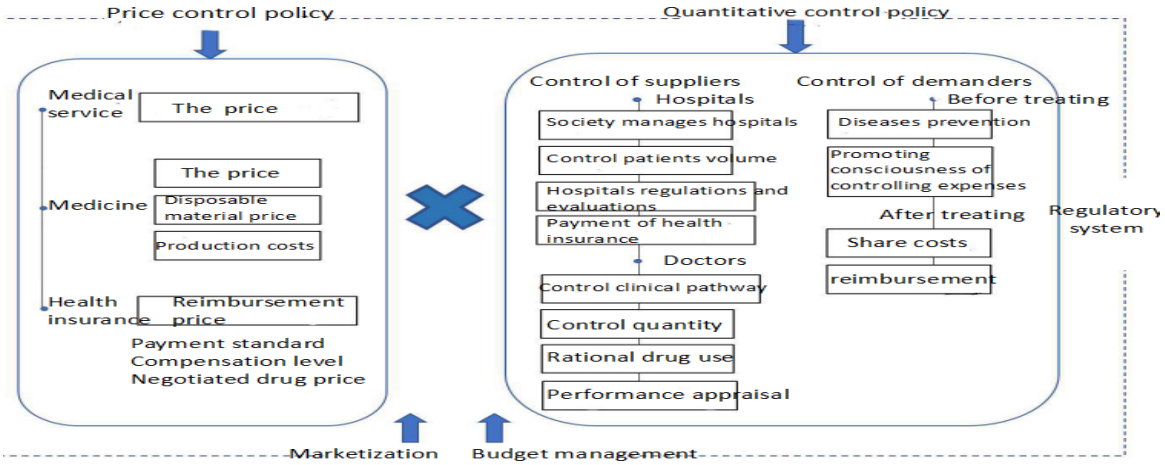

Fig. 2 Medical expense control policy selection mechanism

At present, it is mainly through setting appropriate starting line, self-payment ratio and capping line to control the consumption of the demander, while the control of the supplier is more complex. The irrational medical expenses control policy framework proposed in this paper will be based on hospitals to design the top-level policy of, rooted in the entire medical service system. Policy instruments distinguish between price and quantity of supply. The former can be divided into drug price control policy, medical service price control policy, medical insurance payment price control policy and cost control policy according to the different targets. Quantity control policy can be divided into control policy of the demander and control policy of the supplier. As an important part of the development of medical and health services, the level and direction of government budget health expenditures determine the quantity and quality of basic medical and health services. To sum up, the irrational medical expenses control in China in the China can be carried out in the policy framework which is proposed in this paper. In order to promote the existing policy synergy, four aspects can be perfected, the demander, the supplier, system reform and supervision system, and the source of irrational medical expenses can be controlled comprehensively, systematically and scientifically.

References

[1] National Health and Wellness Committee.2017. China Health Statistics Yearbook

[2] OECD.data-health spending.[EB/OL]. https://data.oecd.org/healthres/health-spending.htm

[3] chinabaogao.com. Analysis of Market Share, Revenue and Proportion of Global Pharmaceutical Market Industry in 2017 [EB/OL]. http://market.chinabaogao.com/yiyao/121330I912017.html

[4] Zhu Hengpeng. Endogenous nature of regulation and its consequences: taking medicine price control as an example [J]. The Journal Of World Economy, 2011(07):64-90.

[5] CHEN Gang. Can Regulation of Drug Proportion Control Medical Expenses? Based on Theoretical and Empirical Analysis on County Hospitals [J]. Collected Essays on Finance and Economics, 2014(08):87-96.

[6] Zheng GuCheng. Medical expense control policy effectiveness analysis: take Huzhou City Zhejiang Province as an example [D]. Central China Normal University, 2015.

[7] Liu Guoyan. Analysis of the Influence of Drugs' Ratio Assessment Indicators on Controlling Medical Expenditure and Suggestions [J]. Review of Economic Research, 2013(23):78-81.

[8] Yang C, Shen Q, Cai W, et al. Impact of the zero-markup drug policy on hospitalisation expenditure in western rural China: an interrupted time series analysis[J]. Trop Med Int Health, 2017,22(2):180-186.

[9] Cao Yonghong. Analysis of Economic Operation under the Comprehensive Reform of Public Hospitals [J]. China Chief Financial Officer, 2017(04):76-78.

[10] DING Jin-xi, GONG Ting, LI Wei. Empirical Analysis on the Controlling Expenditure Effect of China s Drug Bidding and Purchasing System [J]. Chinese Health Economics, 2015(10):68-71.

[11] Li Lele. Study on the Payment Mode Reform of Basic Medical Insurance in China——Exploratory Analysis Based on Two Typical Cases [J]. Contemporary Economic Management, 2018(03):75-82.

[12] GUO Wen-bo, ZHANG Lan, LI Yuan-feng, et al. Analysis of the Effect of Medical Insurance Scale Payment [J]. Chinese Health Economics, 2012(03):25-27.

[13] Liu Shi-zhu, et al. Empirical research on the effect of payment system on medical insurance expense control sampled with Zhenjiang City. [J]. The Chinese Health Service Management, 2012(12):909-912.

[14] LI Cheng-qiang, DAI Tao, ZHU Kun. Analysis of Impact of Payment Methods on Medical Quality [J]. Chinese Health Economics, 2011(06):63-65.

[15] Yao Yu. The Control Mechanism and the Operational Logic of Public Hospitals in China [J]. Social Sciences in China, 2014(12):60-80.