

# Discussion on Hierarchical Diagnosis and Treatment System in China

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## Abstract

It is necessary to establish a hierarchical diagnosis and treatment mechanism to guide residents' first diagnosis needs to community health management institutions in a scientific and reasonable way, so as to realize the orderly diagnosis and treatment of "minor diseases in the community, serious diseases in the hospital, and rehabilitation back to the community", which is a necessary choice to alleviate the social problems of "difficult and expensive medical treatment" in China's medical and health reform. It is also the inevitable requirement of implementing the "healthy China" put forward by the 19th National Congress of the Communist Party of China. This paper introduces the practical background and system development of hierarchical diagnosis and treatment in China, compares the experience of foreign hierarchical diagnosis and treatment, and combines with the local experience and problems faced by China's hierarchical diagnosis and treatment, and puts forward feasible suggestions for promoting the construction of hierarchical diagnosis and treatment system in China.

## Keywords

**Hierarchical Diagnosis and Treatment; Local Experience; Policy Recommendations.**

## 1. Background and Development of Hierarchical Diagnosis and Treatment

Since the reform and opening up, with the economic development and the progress of medical level, China's medical level and health system have made great progress compared with the last century, and the software and hardware equipment and service capacity of medical institutions at all levels have been significantly improved. However, combined with multi regional and multi group observation, there is still room for improvement in China's medical and health system. At present, the contradiction in China's medical and health system is mainly the structural contradiction between the people's demand for high-quality medical resources and the unbalanced and inadequate distribution of medical resources. This is reflected in the fact that although the medical resources of medical institutions at all levels have been greatly improved compared with those before, there is still a big gap in the allocation of medical resources among different levels of medical institutions. Compared with primary medical institutions, tertiary hospitals concentrate more high-quality resources and are very strong in medical facilities, services and human resources. This also leads to patients distrust the level of basic medical institutions, regardless of serious illness or minor illness, they go to large tertiary hospitals for medical treatment. Taking the comparison of urban and rural medical treatment as an example, the number of patients in the provincial capital city's top three hospitals is large, the outpatient department is like a city, and the inpatient ward beds are in short supply. In contrast, the flow of patients in County township hospitals, community hospitals, health centers and other basic medical institutions has decreased significantly compared with a decade ago. At the same time, the number of medical personnel, technical personnel and other major groups of medical activities has decreased.

This phenomenon is related to the rapid development of economy, the aging of population, the improvement of education level, the uneven distribution of educational resources, the high-density aggregation of talent flow in big cities, and the great change of disease spectrum of population in recent 30 years[1].(1) since the reform and opening up, the urban economy in southeast coastal areas has developed rapidly. Large tertiary hospitals and medical institutions have risen one after another. Advanced medical equipment has been introduced, medical buildings have been expanded, and beds have been added, laying a solid foundation for hardware;At the same time, these medical institutions have sufficient funds for scientific research and experiment, combined with their geographical advantages, to carry out academic conferences and clinical forums with frequent exchanges, creating the foundation of academic soft power.Compared with local township hospitals, the lack of competitiveness in economic development, medical research results are relatively lagging behind, and the overall lack of medical resources.(2) With the development of education level, a large proportion of urban high-quality talents choose to study in big cities through the selection mode of college entrance examination, and the high-quality medical talents trained often choose to work in big cities.The lack of medical personnel in township hospitals makes people feel less at the local level of medical treatment.(3) With the advent of the era of big data network and the development of network we media, residents generally pay more attention to their own health problems and pursue higher quality medical and health services. The demand for high-quality medical and health services has increased significantly.(4) With the economic development, China's basic transportation construction is also developing, which provides convenience for patients to seek medical treatment nationwide.(5) According to the results of the seventh national census of China, there are 264 million people aged 60 and above, accounting for 18.70% of the total population, and 190 million people aged 65 and above, accounting for 13.50% of the total population. The aging status of China's population has prompted the focus of disease spectrum to shift from acute to chronic diseases, and the main body of medical resources needed by the population has changed.However, the transformation of medical resource structure lags behind the transformation of population and disease spectrum, resulting in a situation of mismatch and inequality between doctors and patients.

Based on the above-mentioned practical background of the implementation of hierarchical diagnosis and treatment in China, the national level has constantly introduced measures to strengthen the top-level design, and actively promote and guide the implementation of hierarchical diagnosis and treatment system.In 2014, the government work report of the 12th National People's Congress proposed to strengthen the training of general practitioners, promote multi-point practice of doctors, and improve the hierarchical diagnosis and treatment system, so that the masses can enjoy high-quality medical services nearby.Since 2015, the hierarchical diagnosis and treatment system, as an important part of deepening the reform of the medical system, has received attention again. The general office of the State Council issued the guiding opinions on promoting the construction of hierarchical diagnosis and treatment system , pointing out that by 2017, we should strengthen the construction of grass-roots medical teams, effectively sink high-quality medical resources, and improve the overall quality and efficiency of grass-roots medical teams,Gradually improve the hierarchical diagnosis and treatment policy system;By 2020, the responsibilities of medical institutions at all levels will be clearly defined and their service capacity will be comprehensively improved. The hierarchical diagnosis and treatment mode of "primary diagnosis, two-way referral, emergency and slow treatment, and up-down linkage" will be gradually formed. A hierarchical diagnosis and treatment system in line with China's national conditions will be basically established. A top-level timetable has been formulated for the policy layout of hierarchical diagnosis and treatment in China. That is, the hierarchical diagnosis and treatment system will be gradually

improved in 2017, and We should basically establish a grading diagnosis and treatment system in line with the national conditions in 2020.

## 2. Significance and Connotation of Hierarchical Diagnosis and Treatment System

Hierarchical diagnosis and treatment refers to the classification of medical institutions according to the severity of the disease and the difficulty of disease treatment, so as to clarify the division of labor of medical institutions at all levels, so that medical institutions at all levels undertake the corresponding treatment work, and transfer the general outpatient, rehabilitation and nursing work undertaken by the original large and medium-sized medical institutions to primary medical institutions. Finally, the reasonable medical pattern of primary diagnosis and two-way referral of upper and lower hospitals will be realized. On the basis of not delaying the patient's condition, wasting social resources and medical insurance fund as a whole, diverting patients to medical institutions that match the urgency and severity of their diseases can maximize the interests of both doctors and patients, and patients can cure their own diseases with appropriate medical expenses. Hospitals can also allocate their own medical resources to patients who need more. Both doctors and patients can enjoy the ideal medical service and medical environment, which is the core significance of hierarchical diagnosis and treatment. The first is to make full use of medical resources, so that patients can make judgments according to their own situation, orderly flow, standardize the order of medical treatment, put an end to waste of public resources, and reflect the effectiveness of hierarchical medical treatment. The second is to save the medical expenses of patients, and make diagnosis and treatment suggestions according to the actual needs of patients, so as not to let patients spend unjust money (such as issuing large prescriptions, inducing patients to buy imported drugs, treating minor diseases and other expenses). Thirdly, we should pay attention to the richness and balance of medical resources, classify the medical system according to the standards, and increase the investment in the construction of primary medical institutions. On the one hand, we should increase the number of primary medical institutions, on the other hand, we need to improve the quality of primary medical institutions, improve their hardware and software strength, and realize the balanced allocation of medical resources.

The connotation of hierarchical diagnosis and treatment system is mainly reflected in four aspects: primary diagnosis, two-way referral, emergency treatment and slow treatment, linkage between upper and lower levels[2]. (1) "Primary diagnosis" refers to encouraging patients with common diseases and frequently occurring diseases to go to primary medical and health institutions, such as community hospitals. If urban and rural residents who participate in basic medical insurance need to be hospitalized, the first level designated medical institution is the first treatment point. If the disease is not treated effectively, it should be referred to a secondary medical institution. If the condition is still in remission, the patient should continue to be transferred to a tertiary designated medical institution for treatment. (2) "Two way Referral" refers to the realization of patients in different levels, different types of medical institutions for referral. "Two way" means not only to realize the bottom-up referral because the patient's condition has not been effectively treated, but also to realize the top-down referral of patients after the disease treatment in the superior medical institutions has been relieved. The key point is to open the downward referral channel for patients in the chronic stage and recovery stage. (3) "emergency treatment and slow treatment" refers to the transfer of patients who have passed the acute stage from tertiary hospitals to various lower level hospitals, so as to realize the diagnosis and treatment of acute and chronic diseases, and carry out hierarchical medical treatment according to the severity of the disease and the difficulty of treatment. Most of the first-class hospitals are responsible for the diagnosis and treatment of general diseases

and basic diseases, with low technical requirements, low risk and simple operation. Secondary hospitals generally undertake specialized disease diagnosis and treatment, with medium and medium technical requirements and complicated operation. Tertiary hospitals are engaged in the treatment of professional diseases, difficult and miscellaneous diseases, with medium technical requirements and complicated operation. (4) "linkage between upper and lower levels" refers to the establishment of a clear division of labor and mutual cooperation mechanism between medical institutions, so that high-quality medical resources can be effectively vertical flow. According to this requirement, hospitals at all levels should break the original administrative subordination relationship and make layout according to the needs of residents.

### **3. International Experience of Hierarchical Diagnosis and Treatment System**

The United Kingdom is one of the countries that have implemented the hierarchical diagnosis and treatment system early in the world, and it is also one of the countries with the most strict implementation at present. In the UK, the medical service level is divided into primary, secondary and tertiary. Primary medical out-patient service is the most common. It provides general outpatient service for some mild diseases. The provider is general practitioner, which is equivalent to our community hospital or health service center at this stage; The secondary service providers are hospitals, which mainly treat emergency patients, critical patients and patients who need special treatment; The highest level of medical services only provide more professional diagnosis and treatment and advanced nursing services for some critically ill patients [3]. In addition, the United Kingdom attaches great importance to the training and education of general practitioners. After years of practice, it has established a mature training plan for general practitioners, and has obtained abundant remuneration after work.

The reimbursement scope of German statutory medical insurance includes preventive health care, medical services, nursing and rehabilitation services. In other words, the coverage of compulsory social medical insurance covers not only the cost of disease treatment, but also the prevention and early diagnosis of diseases, and rehabilitation projects after illness, so as to ensure that citizens enjoy the basic health rights. One of the characteristics of German medical service is the strict two-way referral system. The patient first goes to the general practitioner's clinic for medical treatment. After diagnosis, the doctor determines whether it is necessary to be hospitalized. After treatment, the general practitioner is also responsible for the postoperative rehabilitation services. The general practitioner is equivalent to the "gatekeeper" in the whole medical process.

### **4. Investigation on Local Experience of Hierarchical Diagnosis and Treatment System**

#### **4.1. The Local Practice of Hierarchical Diagnosis and Treatment System**

##### **4.1.1. Establish Health Service Circle Covering Urban and Rural Areas**

In order to strengthen the construction of rural and urban community medical and health institutions, effectively improve the ability and level of grass-roots services, promote the effective implementation of the hierarchical diagnosis and treatment system, and facilitate the masses to seek medical treatment and referral nearby, Jiangsu Province has established a 15 minute health service circle covering urban and rural areas to help the construction of hierarchical diagnosis and treatment system. Through a series of measures, such as integrated management of rural health institutions, improving the coverage of rural clinics and the construction quality of rural health institutions, and establishing community health service

centers, Jiangsu Province has achieved the goal of ensuring that each county has a county-level hospital, reaching the level of grade II A. The number of community health service centers meets the basic medical needs of residents. It only takes 15 minutes to realize the referral from village clinics and rural health institutions to the County-level hospitals at the second level in the same county. At the same time, various measures should be taken simultaneously, such as free order training, public education, on-the-job training and talent introduction, so as to strengthen the grassroots health personnel team, enhance the strength and service ability of primary medical institutions, and then use the internal strength of primary medical institutions to enhance patients' confidence in primary medical institutions, so as to solve the problem that patients rush to class III A hospitals regardless of major diseases and minor diseases. The problem that hierarchical diagnosis and treatment system can not be effectively implemented. At present, more than 88% of primary medical institutions have more than two general practitioners in Jiangsu Province, and 33.5% of rural doctors have obtained the qualification of township practicing assistant doctors or above. Through "pairing" between large-scale tertiary hospitals and urban medical and health institutions, they were given counterpart assistance; The provincial famous medical team carried out mobile medical treatment at the grass-roots level, bringing advanced medical experience to the primary medical institutions. In order to solve the problem of excessive concentration of medical resources, we should carry out health management team service in primary health centers and open up channels for vertical flow of high-quality medical resources.

#### **4.1.2. Promote Hierarchical Diagnosis and Treatment System around "Construction of Medical Alliance" and "Contracted Service of Family Doctors"**

Medical Alliance refers to the establishment of a medical alliance led by the city's three-level hospitals to realize the integration of medical resources between the three-level hospitals at the provincial level and the comprehensive hospitals at the county level. In terms of the construction of Medical Association, Jiangsu Medical Association has gradually formed four operation modes covering various specialties, including regional type, counterpart support type, co-construction specialty type and close type. It is clear that all municipal public hospitals should work together to establish close type medical association and jointly build specialized medical association, and implement unified management of human, financial and material resources. To comprehensively promote the county-level public hospitals as the leading county-level rural integration construction. In the aspect of family doctor contract service, we should focus on important groups and diseases to achieve real high-quality family doctor service. Changzhou City of Jiangsu Province formulates the service price of contract service package, including basic public health, basic medical treatment and health management. The basic medical service package and health management service package are undertaken by the basic public health service fund, medical insurance fund and individual. At the same time, the incentive mechanism for signing contract service for family doctors should be established. Large hospitals can arrange specialist outpatient number sources according to the plan, extend the prescription time limit of patients with chronic diseases, sign family doctors first, and then apply for the drug subsidy policy for chronic diseases in the staff medical insurance outpatient department, and implement policies such as two-way referral and cumulative calculation of hospitalization starting line in the Medical Association. The attraction of signing a contract with family doctors will be enhanced. At the same time, through strengthening the upgrading of primary medical institutions, reforming the operation mechanism of primary medical institutions, improving the grassroots capacity, laying a solid foundation for the construction of hierarchical diagnosis and treatment system and injecting lasting power.

### **4.1.3. Strengthen the Health Service System of Primary Medical Institutions and Promote the Construction of Grassroots Talent Team**

It is particularly important to improve the ability of primary medical and health services for the implementation of the important goal of hierarchical diagnosis and treatment - "first diagnosis in the community, serious illness to the hospital, rehabilitation back to the community". In order to strengthen the health service system of primary medical institutions, Chengdu City of Sichuan Province started from strengthening the top-level design and worked together to lay out the service system of primary medical and health institutions. The municipal government issued the opinions on the construction of grassroots public welfare medical and health service system, which established the basic public welfare medical and health service system of Chengdu City according to its functional orientation for village health stations, township health centers, community health service centers, and community health service stations, so as to provide basic medical services for the people in the jurisdiction area. In terms of enriching the human resources of grass-roots medical staff, Chengdu has signed general practitioners, improved the resident training system, developed the application of traditional Chinese medicine in primary diagnosis and treatment, and promoted the inheritance of traditional Chinese medicine. At the same time, it established a national standardized training institution for doctors to train TCM pharmacists, residents and general practitioners, so as to continuously inject fresh blood into primary medical and health institutions. At the same time, doctors should be encouraged to practice in more than two medical institutions after being registered by the health administrative department. On the one hand, it can give full play to the maximum value of high-quality talent resources, on the other hand, it can also increase the income of high-quality talents to a certain extent, so as to realize the Pareto optimization of society. In deepening the pilot work of multi-point practice of medical practitioners, we should encourage human resources from urban to rural areas, from higher authorities to lower levels, and from centralization to equilibrium through policy support. And upgrade the basic equipment of primary medical and health institutions, so that patients can enjoy better medical services. First of all, provide the diagnosis and treatment equipment urgently needed by primary medical and health institutions. Secondly, gradually make up the gap between primary medical and health institutions and higher-level medical institutions. Finally, upgrade the equipment of primary medical and health institutions, and implement it in stages. For example, Chengdu provides township health centers and community health service centers, village health stations and community health service stations with free digital imaging equipment, color Doppler ultrasound, ambulance, ECG monitor and traditional Chinese medicine equipment, general practitioners team service package, etc., so as to attract the masses to "home" medical institutions, and implement the grass-roots first diagnosis and hierarchical diagnosis and treatment system.

## **4.2. Local Problems and Difficulties in Hierarchical Diagnosis and Treatment**

### **4.2.1. The Scale of Primary Medical Care is Small, High-quality Resources are Lacking, and the Contradiction of Regional Layout Structure is Prominent**

The rural medical and health service network is led by county-level base hospitals. As the hub connecting urban and rural medical services, county-level base hospitals not only undertake the treatment of serious diseases in rural patients, but also provide guidance for the medical services of township and village clinics, provide training for rural health personnel, and play a radiation and driving role in the business development of township hospitals and village clinics. It is a key link in hierarchical diagnosis and treatment [4]. For example, it is difficult to meet the growing demand for medical equipment in the hospitals at the county level because of the weak capacity of the hospitals in charge of intensive medical equipment. Results in the loss of patients in the primary diagnosis.

#### **4.2.2. The Basic Medical Institutions have Poor Service Ability, Low Level and Insufficient Supporting Facilities**

Although local governments are constantly strengthening the construction of primary medical institutions and strengthening public health services in a certain period of time, at present, the primary medical institutions lack the internal driving force for development, so it is difficult to undertake the responsibility of primary diagnosis. First of all, there is a lack of medical personnel at the grass-roots level. The general practitioner system needs to be improved urgently. The policy of personnel treatment and personnel establishment can not attract qualified general practitioners and high-level health technical personnel to stay at the grass-roots level. High quality human resources are scarce, and the overall quality of grass-roots medical staff is not high, which is difficult to meet the needs of the masses of farmers for medical treatment. Secondly, primary medical services are limited. At present, the use of drugs in tertiary hospitals is based on the "medical insurance catalogue" and the medication in community hospitals is based on the "essential drugs", which results in the uneven allocation of drugs in primary medical institutions, the limited medication list and medical insurance reimbursement items, the failure of basic drugs to meet the needs, the limited development of diagnosis and treatment of common diseases, and the lack of drugs for common use, common drugs, chronic diseases and high cost-effective drugs. At the same time, the government failed to effectively establish a third-party service mechanism, and there was no third-party support mechanism in drug distribution, sample submission, etc., which not only affected the treatment of patients, but also led to patients' distrust of the service ability of primary medical and health institutions.

#### **4.2.3. Patients Lack the Willingness and Confidence of Primary Treatment**

The masses have a high demand for the safety and quality of medical services. Patients not only hope to "not queue up" and "good service", but also hope to have reliable doctors who can diagnose the disease without delay. However, compared with large hospitals, grassroots medical and health institutions have no advantages in drug price, medical services, drug richness, medical technology level, convenience of medical information, etc., so patients naturally tend to receive medical services in large hospitals.

#### **4.2.4. Information Construction has not Yet Met the Needs of Hierarchical Diagnosis and Treatment**

Information technology is the guarantee of rapid, high quality, standard and homogenization of medical services in the Medical Union. Whether the hierarchical diagnosis and treatment can be carried out quickly, normally and effectively depends on the support of information technology. At present, the information systems of hospitals in different regions are basically independent, and the situation of medical information island is serious, which leads to the inspection items and diagnosis made by patients in primary medical institutions will not be recognized by the next level medical institutions to a great extent. There is the phenomenon that the same kind of examination is repeated, which wastes medical resources and increases the medical cost of primary patients. At the same time, in order to save costs, most patients with better economic foundation skip the primary diagnosis and go directly to the county-level and municipal level tertiary hospitals for diagnosis and treatment. Therefore, it is urgent to establish a health information platform with high-level interconnection and information sharing[5]. At the same time, the construction of medical consortium needs to establish a perfect and effective hierarchical diagnosis and treatment information management platform, to further promote the establishment of imaging, pathology, ECG diagnosis center, inspection and detection, disinfection supply center, give play to the allocation efficiency of large equipment and high-quality medical resources, achieve the purpose of unified management and resource sharing, and better serve the masses.

## **5. Suggestions on Promoting Hierarchical Diagnosis and Treatment System**

### **5.1. Promote the Sinking of High-quality Medical Resources and Improve the Ability of Grassroots Service**

Regional health planning should be carried out, and the scale and layout of medical institutions should be planned according to the number of service population and the radius of service area, so as to ensure that the grassroots people can see the disease nearby. At the same time, we should learn and popularize the successful experience of Medical Union Construction at home and abroad, accelerate the construction of medical integration in provinces, cities and counties, optimize the allocation and distribution of existing medical resources, and make full use of the existing medical resources. We should strictly control the extensive development of public hospitals above the county level, improve the overall service capacity of medical resources in the county, and build a positive pyramid structure of medical service structure. We should improve the construction of internal control system in public hospitals as soon as possible, and establish an internal control system which is compatible with the medical reform, highlights the public welfare of hospitals, has strong implementation, scientific management, consistent rights and responsibilities, effective and smooth operation.

### **5.2. Scientifically Set the Functional Orientation of Hospitals at All Levels in Medical Alliance**

In order to improve the overall function of hospitals at all levels, it is necessary to make a better allocation of medical resources and to optimize the overall function of hospitals. As the "leader", the provincial and municipal hospitals should give full play to the role of medical technology leaders, training learning organizers, coordinating planners in the provincial and county medical alliance, city county medical association and County Township Medical Association. At the same time, under the command and coordination of the provincial and municipal leading hospitals, the member hospitals should constantly enhance their own strength, serve the grassroots patients and play a good role in the primary diagnosis.

### **5.3. According to the Characteristics of Regional Diseases, Formulate Operable and Industry Specific Two-way Referral Standards**

Through the establishment of operable referral standards, we should not only keep the referral channels of county and township medical institutions to higher level hospitals unblocked, but also timely transfer patients who have been stable after treatment in provincial and municipal hospitals to basic level hospitals for continuous treatment, so as to build a benign medical order of timely two-way flow of patients and rational use of medical resources.

### **5.4. To Adapt to the Needs of Improving the Ability of Grassroots Service, Strengthen the Training of General Practitioners and Grassroots Medical Talents**

In order to cultivate more general practitioners for the province, we should set up a general practitioner major in medical colleges and formulate a reasonable enrollment plan. We should actively explore practical training methods for general practitioners, expand training times and number of trainees, and train general practitioners in urgent need at the grass-roots level. The implementation of the "localization" training of grass-roots medical talents, that is, to allocate special funds to "order oriented" training of grass-roots medical talents by medical colleges and universities in the province, at the same time, to carry out the education of academic degree promotion and appropriate technical training for the on-the-job health and family planning



personnel in township hospitals and village clinics, and guarantee the treatment during the study.

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