Development of mental health alliances in China (2017 Edition)

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Chapter one: policies and practices of medical alliances in the health sector in China

Section 1: policy interpretation

Development of policies, rules, and regulations on medical alliances

Since the 18th National Congress of the Communist Party of China (CPC) in 2012, with the implementation of the "Healthy China" strategy and the deepened reform of the medical and health systems in China, the Chinese people's health and medical services have been improved substantially. The new round of medical reform has steadily advanced, which shifts the priorities of health care and the allocation of medical resources (including technology and talents in large hospitals) to the grass-root medical institutions. On October 18, 2017, the 19th National Congress of CPC was successfully held in Beijing, during which General Secretary Xi Jinping pointed out in his report that the "the main contradiction in Chinese society has become the contradiction between unbalanced and inadequate development and the people's ever-growing needs for a better life". In the health sector, it is reflected in the unbalanced and insufficient development of medical resources in various regions while the patients' demand for disease treatment is rising.

On March 5, 2017, Premier Li Keqiang pointed out in his *Government Work Report* that "the pilot projects for the construction of various forms of medical alliances will be launched at full scale, and all the public tertiary hospitals will participate in a consortium and play a leading role." More than a month later, Premier Li further called for the construction of medical alliance at an executive meeting of the State Council. He pointed out that the construction of the medical alliance should be adapted to local conditions, focusing on removing barriers associated with administrative divisions, financial investment, medical insurance payment, and personnel management. He also proposed four medical alliance models: urban medical alliance, medical community, specialized medical association, and remote medical collaboration.

Since 2000, relevant policies and regulations regarding the cooperation among medical institutions have been released (*Table 1*).

Interpretation on the Guiding Opinions of the National Health and Family Planning Commission on Piloting the Construction of Medical Alliances

The Central Committee of the CPC and the State Council have been paying high attention to the development of hierarchical medical system and making aggressive push to build the system as an integral part of the basic healthcare system. Local governments have also made extensive explorations in medical alliance and produced substantial outcomes. Based on a summary of successful experiences in building and operating medical alliances, the General Office of the State Council issued on April 23, 2017 the *Guidelines on the Construction and Development of Medical Alliance* (GBF [2017] No. 32) to strengthen the construction

Table 1 Policies and regulations regarding the cooperation among medical institutions

Document	No.	Stipulations
Guiding Opinions on the Reform of Urban Health Care System	GB [2000] No. 16	All kinds of medical cooperative institutions are encouraged to cooperate and merge. Medical cooperative groups can be established jointly
Opinions of the CPC Central Committee and State Council on Deepening the Reform of the Medical and Health System	ZF [2009] No. 6	Specialized public health service networks such as disease prevention and control, health education, maternal and child health care, and mental health shall be established and improved; the public health service functions of the medical service systems that are based on the primary health care service network shall be optimized; and public health service systems with clear responsibilities, active information exchange, shared resources, and coordinated interaction shall be established. Thus, the effective ways for integrating public health service resources shall be explored
People's Republic of China Mental Health Law	Order of the President of the People's Republic of China [2012] No. 62	This law is formulated for the purpose of developing mental health undertakings, regulating mental health services, and safeguarding the legitimate rights and interests of persons with mental disorders
Several Opinions of the State Council on Promoting the Development of Health Service Industry	GF [2013] No. 40	Cities with abundant resources in public hospitals should speed up the pilot reform of the medical institutions run by state-owned enterprises. The State has determined that some regions will carry out pilot reforms of public hospitals. Non-public medical institutions shall be guided to develop at a high level and large scale and shall be encouraged to develop into professional hospital management groups
Framework of National Health Service System Planning (2015–2020)	GBF [2015] No. 14	The medical and health service systems shall be developed in a moderate and orderly manner, with priorities on structural adjustment, system integration, and promotion of equilibrium. An integrated medical and health service system that adapts to the national economy and social development and matches the residents' health needs shall be established. It should be with complete systems, clear responsibilities and duties, complementary functions, and close cooperation. The linkage and division of labour between upper and lower institutions shall be enhanced, and the service functions of various types of medical and health institutions at all levels shall be integrated. Qualified regions shall be encouraged to promote the rational allocation of medical resources through various means such as cooperation, trusteeship, and reorganization
National Mental Health Work Plan (2015–2020)	GBF [2015] No. 44	Through overall planning and resource integration, the government shall take specific actions to strengthen the regional mental health service system to basically meet the people's access to mental health services and promote the comprehensive development of mental health
The General Office of the State Council Issued A Work Summary of 2015 To Deepen the Reform of Medical and Health Care System and the Work Priorities for 2016	GBF [2016] No. 26	A variety of division of labor and collaboration models including medical alliances and counterpart support shall be explored, with an attempt to improve policies and measures for promoting and standardizing the construction of medical alliances in cities and counties.... The functions of secondary and tertiary general hospitals should be clarified, so as to define the capability standards of medical services and promote the triage and management of acute and chronic diseases
Guiding Opinions of the National Health and Family Planning Commission on Piloting the Construction of Medical Alliances	GWYF [2016] No. 75	Construction of medical alliances is an important measure to integrate medical resources in a specific region, promote the sinking of high-quality medical resources, enhance the capacity-building in primary medical institutions, and thus improve the medical service system. It is key step to promote the establishment of a rational and orderly hierarchical health care system. In order to fully implement the "Sanitation and Health Plan during the 13th Five-Year Plan", "Plan for Deepening the Reform of the Medical and Health Care System during the 13th Five-Year Plan", "2030 Framework Document of the 'Healthy China' Plan," and "Guiding Opinions of the General Office of the State Council on Promoting the Classification and Treatment System", "Guiding Opinions for Construction", related to document requirements, guides local governments in strengthening the construction and development of medical associations
Guiding Opinions on Promoting the Construction and Development of Medical Alliances	GBF [2017] No. 32	In 2017, a medical alliance framework is basically established, along with the full launch of all kinds of piloted medical alliances, during which all the public tertiary hospitals shall participate and play a leading role. By 2020, the construction of medical alliances shall be fully implemented, and a relatively sound policy system will be formed

All the tables and figures of the Blue Book are numbered according to the chapter in which they are located.

of medical alliances. The National Health and Family Planning Commission also issued the *Guiding Opinions of the National Health and Family Planning Commission on Piloting the Construction of Medical Alliances* (GWYF [2016] No. 75) (hereafter referred as the "Guiding Opinions") on January 23, 2017 to set specific rules on the cooperation among medical alliances.

Background

In recent years' local governments have implemented the decisions made by the CPC Central Committee and the State Council to develop hierarchical medical system and medical alliance at pilot regions. As of the end of 2016, 205 prefecture-level cities, or more than 60% of all prefecture-level cities, had built medical alliance in various forms, such as urban medical alliance, medical community, specialized medical association, and remote medical collaboration that covers outlying poverty-stricken regions. Based on a comprehensive summary of the successful practices in the pilot region, the Guiding Opinions set the goals and missions for the next stage and craft policy framework and institutional mechanism for the construction of hierarchical medical system.

Definition of medical alliance

Medical alliance is an alliance of different grades and types of medical institutions associated through vertical or horizontal integration of their medical resources. At present, there are four well-established models of medical alliance.

(I)   Urban medical alliance in cities—a typical medical group is led by a tertiary or well-reputed public hospital and joined by community clinics, nursing homes, and rehabilitation centers. These institutions share medical resources and work together under the same roof.

(II) Medical community in counties—a typical medical alliance of this kind is spearheaded by an excellent county-level hospital and joined by township health centers and village clinics. Under the alliance, the county-level hospital plays a pivotal role in leading local health institutions to build a coordinated and collaborative healthcare system.

(III) Cross-regional specialized medical association—this kind of alliance is generally backed by special departments at hospitals from different regions, as well as national medical centers, national clinical research centers, and their supporting networks. With cooperation among professional departments as its ties, its primary objective is to provide better

therapies for major diseases.

(IV) Web-based remote medical collaboration for patients in poverty-stricken areas—this kind of medical network is mainly developed for remote and underdeveloped regions. Well-established public hospitals are encouraged to provide web-based remote services including diagnosis & treatment, teaching, and training, so as to promote the vertical flow of resources, increase the accessibility of premium medical resources, and increase the overall efficiency of medical services.

Aside from these four models, urban and rural hospitals can also form a medical alliance on the basis of their longstanding relationship as givers and receivers of medical assistance. Under this kind of alliance, a tertiary public hospital can take over management of county-level hospitals by sending management teams and medical specialists to help these hospitals improve management and health services. National and provincial public hospitals can also cooperate with regional medical alliance entities to exercise their respective advantages and conduct coordinated research, technology popularization, and talent training, so as to enhance health care services in a broader region.

Objectives on the push for medical alliance

Construction of medical alliances is an important measure to promote the sinking of high-quality medical resources, enhance the capacity-building in primary medical institutions, and thus improve the medical service system. It is key step to promote the establishment of a hierarchical health care system. The Guiding Opinions outlined two-pronged objectives.

(I)   In the first stage through 2017, the primary objective is to build an institutional framework. Specifically, China will launch pilot programs to build various forms of medical alliance. Tertiary public hospitals should be fully involved in the process and play leading roles. All prefecture-level cities at provinces covered by the comprehensive health care reform should each have at least one well-functioning medical alliance.

(II) In the second stage through 2020, the core objective is to develop a well-established policy system for medical alliance. Specifically, on the basis of experiences gathered from the pilot programs, China will make full efforts to advance medical alliance and construct a well-established policy system.

Basic principles for building medical alliances

The core objectives of building medical alliances are to bring premium medical resources to grass-root hospitals and enhance their healthcare services. Four principles should be adopted during this process.

(I) Government should play a dominant role in coordination and planning. The government shall exert its functions in planning, instruction, coordination, supervision, and publicity and select several medical institutions to form an alliance based on the local distribution of medical resources and public demands, with cities and counties as the priorities. Factors including business relations, complementary advantages, two-way choice, sustainable development, and history of medical cooperation should also be taken into consideration.

(II) Sticking to the nature of public welfare and creating innovative mechanisms. The government is obligated to provide public health services and shall safeguard its nature of public well-being.

(III) Bringing medical resources to grass-root hospitals and enhancing their abilities in providing better medical services. Tertiary public hospitals have a large amount of premium medical resources, and they can provide technical assistance or talent training programs to help grass-root hospitals.

(IV) The general public should be able to get greater convenience and more benefits from the alliance. With the people's health as a central task, it is important to achieve the accessibility of uniform health care and increase the capacities of grass-root medical institutions by enhancing the quality management of medical services and integrating the prevention, treatment, and management of chronic diseases. The construction of medical alliances shall be linked with preventive and medical efforts, so as to facilitate the accessibility of medical services, reduce disease loads, and prevent poverty caused by disease or return to poverty due to disease. The alliance is also helpful to expedite the development and upgrade of the health industry and increase the general public's sense of attainment.

How to build a medical alliance in a scientific way

Building a medical alliance in a scientific way is a fundamental precondition to produce tangible results.

(I) Adjust policies to suit local conditions. Various factors should be taken into account, such as the geographic locations of medical institutions, their functions and positions, their service capacities and business relations, and their willingness to be partners. Thus, medical alliances should be established at different levels and according to local conditions.

(II) Build different types of medical alliances. In cities and counties, the medical alliance and medical community should be established mainly by the reform of payment options; hospitals across different provinces can develop a specialized medical association for the treatment of specific diseases; finally, in remote and poor regions, more efforts should go to developing a remote medical collaboration network.

(III) Hospitals should be permitted to make two-way choice. Medical institutions should make two-way choice to form an alliance on a voluntary basis, and factors including business relations, complementary advantages, sustainable development, and history of medical cooperation should be taken into consideration.

(IV) Private hospitals are encouraged to join. A medical alliance can enlist private hospitals as members, to promote horizontal mobility of premium medical resources and increase the service capacity and efficiency of the entire alliance.

How to develop division of labor & cooperation mechanism within the alliance

Hospitals of different levels and categories shall develop fair and effective division of labor & cooperation mechanism characterized by clear objectives and well-defined rights and responsibilities, to make the medical alliance a community of shared services, responsibilities, economic interests, and management.

(I) Optimize the management and collaboration mechanism. The constitution of a medical alliance shall be established to define the responsibilities, rights, and duties of the core hospital and other members, perfect the service quality management system, and enhance management efficiency. A council can be established to manage the hospital members.

(II) Implement the medical institutions' functions and positions. The medical alliance should build a mechanism for hospital members to share responsibilities and interests and implement their respective functions and positions.

(III) Make steady progress to encourage residents to sign up for family doctor service. Training of general practitioner shall be enhanced. Hospitals in the medical alliance should step up efforts to push residents to sign up for demand-oriented family doctor service, and the service should firstly be available to patients with chronic diseases such as hypertension and diabetes, with old people, pregnant women, kids, and disabled individuals as the priority populations.

(IV) Provide continued services to patients. Nursing homes and rehabilitation facilities are encouraged to join the medical alliance. A referral mechanism should be worked out so that patients recovering from acute diseases or surgery can be transferred to lower-level hospitals and continue to receive treatment and rehabilitation services. Hospitals can also join hands with nursing homes to provide one-stop convenient services from treatment to rehabilitation to long-term care.

How to improve mobility of premium medical resources within the medical alliance

The Guiding Opinions stated that under the premise of no changes in administrative status and fiscal support, hospitals can make unified allocation of staffing, wage distribution, and resource sharing to improve the mobility of premium medical resources among hospitals at different levels.

(I) Promote orderly flow of human resources. Efforts should be made to make unified allocation of medical resources to maximize the efficiency. Wage distribution within the medical alliance should be coordinated to motivate the medical staff.

(II) Lift grass-root hospitals' service capacity. Tertiary public hospitals should serve as a leader in the medical alliance, and send experienced doctors to help grass-root hospitals enhance their service capacity by co-building special departments, clinical teaching, providing professional instructions as well as conducting joint project research and development.

(III) Build a unified information platform. Build a comprehensive public health information platform and develop separate platforms on hospital management and medical service management at province, city, and country levels, so that patients' health records and electronic medical records can be archived, interconnected, and shared within the medical alliance.

(IV) Make regional medical resources sharable among hospitals. The medical alliance may consist of a medical imaging center, a health examination & testing center, a sterilization & supplies center, and a logistics service center, so as to provide integrated services to all hospital members.

What policies should be introduced to build medical alliance

Building medical alliance is an extensive, longstanding, and complicated process that requires joint and persistent efforts by local governments and relevant departments.

(I) Further fulfill the government's responsibility in providing healthcare services. The central government's funding support for hospitals shall be increased to improve county-level hospitals' ability to treat serious and complicated diseases and enhance the level of remote medical collaboration, so that medical alliance can play a more helpful role to grass-root hospitals.

(II) Further play the role of medical insurance as an economic leverage. The reimbursement ratio for insured patients getting treated at grass-root hospitals shall be increased, and the ratio for those seeking help at county-level and larger hospitals shall be reduced. This policy should encourage insured patients to visit grass-root hospitals more often.

(III) Optimize the staffing and incentive mechanisms. Medical institutions should be permitted to remove wage controls policies and use surplus revenue to reward staffers, and develop a wage distribution mechanism that ties staff wages to their positions and duties, job performance, as well as their actual contributions.

(IV) Build a performance evaluation mechanism suitable for the medical alliance. The evaluation and institutional constraints shall be strengthened, and a sound indicator system to evaluate the effect of the medical alliance be established.

How to proceed with the construction of medical alliance in different areas

Building medical alliance is a systematic process that requires persistent efforts from four perspectives. The first is to strengthen organization and leadership—the local government should set up an interdepartmental task force to craft the top-level framework and draft supportive policies and a feasible implementation plan. The second is to clarify relevant departments' duties and responsibilities—optimize

Table 2 Mainstream models of medical alliances in foreign countries

Structures/means of associations	Virtual combination	Physical combination
Vertical integration	Service level network—e.g., in UK commissioned management—e.g., in Singapore, US, and Japan	Regional medical centers—e.g., in Australia
Horizontal-vertical integration	Group-like alliance—e.g., in Singapore	Integrated hospital group—e.g., in UK and Germany

drug pricing policies, overhaul the means of medical bills payment, implement fiscal subsidy policies, and support the construction of national clinical research centers and other medical infrastructures. The third is to step up supervision and evaluation—create a mechanism to assess the effect of the medical alliance, work out performance evaluation approaches and introduce accountability system. The fourth is to step up publicity and training efforts—Carry out policy training sessions for managerial and medical staff, and call for public media to beef up publicity of the hierarchical medical system and the medical alliance and improve public awareness and support.

Section 2: cases and experiences of medical alliance

History and experiences of medical alliances in foreign countries/regions
Status quo of medical alliances in foreign countries
Reasons behind the drive to develop medical alliance
After the end of World War II, hospitals in the developed world were struggling to deal with these challenges:

(I) rising medical expense. With the upgrade of medical instruments and development of advanced screening technologies, the demand for medical services was going up and sending medical expenses higher year by year (1). Besides, deteriorating air quality, changing disease spectrum, and population aging were also lifting the demand for healthcare services;

(II) inadequate government funding caused short supply of and unequal access to medical resources;

(III) internal problems such as absence of effective incentive mechanism, lacking of distinctions between different hospitals, and declined efficiency of medical services and public satisfaction were obvious (2);

(IV) extremely low percentage of personal payment has caused excessive use of medical services and waste of private medical resources;

(V) the trend of privatization around the world, led by

the US, has led to the boom of privately-run for-profit hospitals;

In order to promote flow of resources among hospitals and increase management level and service efficiency, hospitals have developed different forms of associations or alliances. Due to different policy environments and backgrounds at different countries and regions, they adopt different methods to integrate healthcare services.

Mainstream models of medical alliances in foreign countries (*Table 2*)
Virtual combination is a means of alliance that enables resource sharing through technology and management, whereas physical combination is a means of alliance under which assets are integrated to set up an independent legal entity and realize unified management. Horizontal integration indicates cooperation or alliance among the same type or level of medical institutions within a limited market of medical services. Vertical integration is an association of different types and levels of medical institutions within the same region or different regions, so that they can exchange information, complement resources, and share interests.

(i) Service level network:
Based on the level of medical demand in a region, a medical alliance can be classified into three-level or two-level medical network. The leveled network allows hospitals to focus on their specialties and functions and maximize the effects of their medical resources. In a three-level network, the primary community healthcare centers offer routine health services, the second-level hospitals provide treatment to patients injured by serious accidents or emergency patients, and the tertiary hospitals treat patients with emergency conditions or complicated diseases. Patients must first get treated at the primary (first-level) community healthcare center before they can be transferred to larger hospitals (3). For instance, Dawson is a standard and stringent three-level structure in the UK Under the structure, general practitioners provide basic healthcare to patients, specialists in the second-level hospital offer further consultations and treat

transferred patients, while those in the tertiary (third-level) hospitals provide advanced therapies for rare or complicated diseases (4). Besides, UK has also adopted a series of policies and mechanisms to make sure the hierarchical medical system will be implemented, including standard management on general practitioners, extensive coverage of first treatment at community clinics, effective patient referral mechanism, stringent referral supervision mechanism as well as favorable medical insurance policies that encourages patient referrals. Japan has established a three-level circle—the first is outpatient clinics, the second is general hospitalization, and the third is less frequent but highly professionalized treatment (5). Sweden has built a three-layered medical network from community healthcare center to county hospital to regional hospital (6). Finland operates a similar network with vertical integration of medical resources from college-backed hospitals to community hospitals (7). Singapore is running a two-level medical network. The first level is community hospitals and general clinics offering basic healthcare services, and the second level are general or special hospitals offering comprehensive medical services and most hospitalization services (8).

The US also has a well-established three-level medical system. The extensive network of primary care is composed of private clinics, nursing homes, health education centers, and volunteer groups. The healthcare management system includes health insurance providers (insurers) and medical service providers (hospitals), and they use economic stimulus and organizational measures to balance the supply and demand of medical services. The economic stimulus measures make the two-way referral mechanism efficient and effective (9). There is another form of medical alliance in the US—Accountable Care Organization (ACO)—different service providers work together to provide all-around services to targeted populations (10).

(ii) Regional medical centers

Different from the service-level network, regional medical centers are independent legal entities. Australian government authorizes large public hospitals to manage community healthcare centers, rehabilitation facilities, home care centers, elderly nursing homes, and advanced medical examination & test centers, and these centers have separate functions and positions (7).

(iii) Commissioned management

Commissioned management is a means of trusteeship under which a medical institution is managed by its internal management team or a core hospital. The ownership of a trusted institution is separated from the right to operate. During the trusteeship, the nature and ownership of the medical institution remain unchanged. There are three types of commissioned management–trusteeship by private institution, by internal management team, and by a company.

For a trusteeship by private institution, a private institution will invest in and manage a public hospital by introducing corporate management philosophies and getting paid. For a trusteeship by internal management team, the hospital is operated like a company by independent administrators (2). Most hospitals in Japan are managed by private institutions or internal management teams.

Under corporate trusteeship, a hospital is operated and managed by a company to boost operating efficiency and cost-efficiency. Singapore and the US are typical markets of corporate trusteeship. HCA Healthcare Inc. introduces advanced management approaches, operating strategies, and medical technologies to hospitals it manages, and it has quickly become the largest hospital chain operator in the US (2).

(iv) Group-like association

Group-like association sets up a board of directors to manage and distribute medical resources (11). The group is governed by the board while day-to-day operations are headed by the president. The board is responsible for outlining the hospital's development strategies, approving executive appointments and financial plans, and overseeing the quality of medical services. The group carries out unified management on finance, quality, medical materials, logistics, information system and education. Based on a horizontal-vertical mode, the group is composed of both hospitals at the same levels and those at different levels, forming two-way transferring mechanism inside it. Singapore has set up two large medical groups.

The Singaporean Ministry of Health has established the National Health Group and the Singapore Health Services to be separately responsible for providing medical services in the eastern and western parts of the country. These two groups are owned by the government but managed like a company (2). Both groups are independent legal entities and governed by their board of directors. CEO and board members are appointed by the government and report to the board. Day-to-day operations are headed by the group's president, who is jointly appointed by the Ministry of Health and the group's board (12). Public hospitals under the two groups are separate companies and they can make business decisions on their own. The government oversees

medical practices and controls service prices, bed supply, and the purchase of expensive medical instruments. Large equipment will be purchased by a company controlled by the Ministry of Health, medicines will be bought by a professional pharmaceutical firm, and drugs used by hospitals will be supplied by professional medicine institutions (13).

(v) Integrated hospital group

Different from group-like medical alliance, an integrated hospital group is the product of hospital ownership integration, and the product is an independent medical group (13). The combined medical group remains a part of the government or a public-sector department, although it is managed like a company. The hospital group is governed by the board of directors, which formulate the overall development strategies and oversee policy implementations. Government representatives will join the board to reflect the hospital's nature as a public-welfare entity (14). The group separates service buyers and providers and increases the hospital's autonomy in the range of services, staff recruitment, equipment investment, financial arrangement, and day-to-day management, and reserves its right to seek profit and surplus. By introducing market mechanism, setting up medical groups can increase competition, reduce transaction cost, and strengthen hospital managers' and staff's sense of responsibility and enthusiasm, while the government can shift its focus to policy-making and regulation to improve the availability and equal access to medical services.

Let's take a look at the combination of 10 public hospitals in Berlin and the UK's Hospital Trust. The ten hospitals are independent legal entities and structured like companies. Every hospital has a board of directors, with half of the board members nominated by the government and the other half nominated by staff. The board appoints Chief Executive Officer to take charge of day-to-day operations (2). For the UK's Hospital Trust, hospitals are independent legal entities and managed by an independent board, which can launch public recruitment process to select a president to manage the hospital. Hospitals are owned by the government but managed by professional executives under the leadership of the board of directors/supervisors (15).

Due to continued expansion of for-profit hospitals, market forces are pushing more hospitals to be privatized. For instance, Rhön-Klinikum Aktiengesellschaft (RHK AG) has become a large medical group with 53 hospitals across nine German states, thanks to its sustainable horizontal acquisitions, vertical resource integration, excellent

management team as well as the most optimal medical service procedures (16). Backed by aggressive expansions in the international market and coordinated development of chain pharmacies and clinics, Apollo Hospitals has become the first incorporated private hospital operator in India (17).

Development trend of medical alliances in foreign countries/regions

For the development of medical alliances in developed countries, various models can convert into each other. As hospitals gain a greater autonomy, loosely-organized medical alliances become closely-organized ones via asset integration, and online ones extend to offline; horizontally-integrated medical groups tend to enhance vertical cooperation to transform to a mixed model. The development trends of foreign medical alliances include:

(I) Clarification of property rights. The property right system of hospitals should be reformed to clarify property ownership. Specifying the rights to usage, usufruct, and transfer of hospitals can regulate the practices of hospitals and improve the allocation of resources. Therefore, the clarification of property ownership and trimming transaction cost are vital to the reform of hospital property rights.

(II) Risk diversification and business expansion. Hospitals adopt unified and effective allocation of medical resources including talents, funds, and materials and diversify risks via expansion in forms such as internationalization. The expansion of hospitals creates economies of scale, circumventing adverse effects of the market mechanism. In Canada, hospitals and other medical institutions are increasingly integrated with each other, expanding the coverage of family practice and medicine (18). Britain's hospital trusts consider further expanding to include purchasers of their affiliated medical institutions and family doctors in a bid to increase gains. Meanwhile, it is helpful to change the status quo where the establishment of medical groups is exclusive to private medical institutions and individual practitioners (19).

(III) Diversified fundraising channels. Diversified fundraising channels support private hospitals' heavy investment in infrastructure development, medical equipment, and information networks. The involvement of private investment can tie up investors with hospitals, introduce competition and advanced management models, improve the efficiency of public hospitals by changing operating

model and enhancing management, and create a healthy business environment to achieve win-win outcomes for governments, hospitals, and investors. In Hong Kong SAR, alliances between public and private medical institutions have been established in compliance with government policies.

(IV)   Optimizing incentive mechanisms. Reasonable remuneration systems and effective internal incentive mechanisms, such as annual salaries and promotions, should be devised for doctors in addition to their base pays, so as to ensure that doctors are paid remunerations commensurate with their devotion and performance, and thus lead a decent life and work efficiently.

(V)   Patient-oriented services. Hospitals offer people-oriented, one-stop services to facilitate patients and their family members; train employees, and set up incentive mechanisms and continued study systems to improve employees' medical skills and comprehensive capabilities; and supervise the quality of medical services and establish complaint offices to settle disputes between doctors and patients. In Canada, medical services are patient-centered. Special medical staff are arranged to meet the demands of patients; diagnosis, medical services, lab services are tailored for different patients; and administrative staff provide support (18).

The establishment of medical alliance is a complicated process, and many areas in China have made various efforts in this aspect. However, domestic medical alliances lack diversified models and face institutional restrictions. The development of foreign medical alliances is a good reference for domestic ones, but it will be unwise to borrow foreign experience without adjustment in view of different health systems. China should establish medical alliances with local characteristics.

History and cases of medical alliances in China
History of medical alliance in China

In the four decades since China's reform and opening-up, big cities are offering far better medical services than elsewhere, causing over concentration of medical resources in these cities, and the number of urban population has risen at a faster pace. Since 2003, the central government has increased investment in new countryside, urban construction and medical care, to balance economic development and narrow the development gap via financial support. Around 2007, Shanghai planned to establish medical alliance, with

emphasis on vertical integration of medical resources. The goal was to realize hierarchical diagnosis by linking third-grade, second-grade and community hospitals to provide integrated disease management from hospitalization to outpatient service to recovery, improve equal access to medical services and promote gradual downward mobility of quality services. However, the plan was put on hold due to problems such as medical insurance payment, fiscal support and property rights ownership. Yet, the establishment of medical alliance is inevitable. State policies were rolled out in 2010 to encourage large hospitals in big cities to transfer medical resources, talent and technologies to small cities in order to address the inequality and enable local residents to enjoy quality medical services.

In 2009, the Shanghai municipal government proposed to set up two regional medical alliances in Ruijin Hospital Luwan Branch and Xinhua Hospital Chongming Branch. The Ruijin-Luwan Medical alliance, established on March 21, 2011, adopts the "3+2+1" closely-organized model and has a board of directors. As the top decision-making body, the board is mainly responsible for mapping out overall development strategies, resources allocation and medical insurance quota distribution of member hospitals as well as implementing the accountability system of directors. Seven hospitals, including Ruijin Hospital, two second-grade hospitals and four community health service centers, operate in the form of medical alliance to jointly optimize medical services in the region and improve hierarchical diagnosis services. The medical union encourages soft mobility of medical staff among its members. Department leaders at Ruijin Hospital are department directors at second-grade hospitals so as to improve the region's medical service quality. Meanwhile, residents can make appointments with experts from Ruijin Hospital at community health service centers in Luwan. In order to solve the difficulty in hospitalization, the beds in the union will be reconfigured. To lower the expenditure of medical treatment, a regional examination/testing center and imaging diagnostic center will be established inside the medical union. The residents can make an appointment for health check-up in the community hospital, and the results are valid in the whole union.

The concept of medical alliance proposed by the National Health and Family Planning Commission is more inclusive, including such forms as vertical medical alliance of city hospitals, regional medical communities at county level, medical alliance of special hospitals, regional medical unions of special hospitals and general hospitals' relevant

departments, and cross-region remote network of medical cooperation.

Example of urban medical alliance—Shenzhen Luohu medical group (closely-organized medical alliance)

(I)   Background: It has been a thorny issue to mobilize medical resources downward to community health centers (CHCs) to improve their medical services and attractiveness to patients. In Shenzhen, most CHCs are still established and managed by hospitals and difficult for intensive management, which creates a big barrier for implementing two-way referral, hierarchical diagnosis, and downward mobility of medical resources in Luohu District. In 2014, the district government invested RMB 650 million yuan in medical infrastructure, manpower and equipment, and digitalization. Despite the heavy investment, the district still faces medical resource shortage, unbalanced structure of medical resources, inadequate use of advanced medical technologies and poor services.

(II)   Establishment time: August 2015.

(III)   Initiator: The Third Hospital Affiliated to Shenzhen University (Luohu District People's Hospital).

(IV)   Members: Five public hospitals and 35 CHCs in Luohu district.

(V)   Cooperation model: Corporate governance structure (one legal entity—Luohu Hospital Group).

(VI)   Goals :To strengthen CHCs, improve residents' health, and reduce patient populations.

(VII) Operating model: Six resource-sharing centers and six administrative centers were established to integrate medical resources in the region and reduce operating costs. It is worth mentioning that the medical group promotes talent sharing, technical support, mutual recognition of health check results, prescription sharing, and service connection. Work experience at CHCs is taken into account in medical staff's qualification assessment and promotion. Subsidies are provided to encourage lectures at CHCs, free clinical services, outpatient services by non-CHC experts, and outpatient services by CHC experts on rest days, in order to make expert visits to CHCs a routine. These experts should go to CHCs to offer community residents with services including medical treatment, prevention, healthcare, mental disease prevention and control, and chronic disease prevention and treatment.

(VIII) Achievements: In 2016, the number of patients receiving diagnosis and treatment at CHCs managed by Luohu hospital group jumped 94.6% from the previous year, with the proportion of insured patients up from 51.47% to 60.3%.

Example of county-level medical communities—"Anhui Tianchang" medical community

(I)   Background: Before the introduction of "medical communities" in Tianchang City, county-level and township hospitals were polarized. County-level hospitals were overcrowded with patients, while township ones only saw few visitors. To solve the problem and establish a smooth hierarchical diagnosis system, the city attempted to set up "medical communities".

(II)   Establishment time: 2014.

(III)   Initiators: Three second-grade hospitals in Tianchang City.

(IV)   Members: Sixteen township health centers and 163 village health clinics.

(V)   Cooperation model: "Four in One" regional medical community. Specifically, the "medical community" is of shared services, interests, responsibilities and development. The four aspects are interrelated and influence each other.

(VI)   Goals: Encourage vertical integration of medical resources, improve the urban-rural medical service system, and improve medical services at county and township levels; mobilize stakeholders to engage in medical reform, and the shared interests of a "medical community" means equal interests of community members gained through the allocation of medical insurance funds.

(VII) Operating model: The "community of shared services" capitalizes on respective advantages of medical services at county, township and village levels to produce synergy between prevention, treatment, and rehabilitation. The "community of shared responsibilities" delineates the service scope of county-level public hospitals and township health centers, such as disease catalogues for admissions in the two kinds of medical institutions as well as 41 diseases referred to lower-level medical institutions by county-level hospitals and 15 diseases for downward referral during the rehabilitation period. The "community of shared development" refers to the coordinated development of community members. Higher-level hospitals should enhance instructions to lower-level

hospitals to improve their medical services. Besides, "medical communities" also encourage "1+1+1" master and apprentice relationships between village doctors and doctors at township- and county-level hospitals. In the construction of the "community of shared interests", medical insurance funds adopt a system of prepayment per head based on "medical community", under which the overruns are covered by county-level hospitals while the balance is distributed to county-level hospitals, township health centers and village clinics at 6:3:1. In order to avoid possible shortage of services under the system, the city also introduces payment by clinical pathway and payment by disease, and implements floating quota-based payment of medical insurance according to the proportion of diseases and the implementation of clinical pathways, so as to standardize services at the "medical community", control medical costs, and refer patients to lower- or higher-level hospitals.

(VIII) Achievements: As the end of October 2016, the outpatient rate in Tianchang reached 92.24%, up more than 1 percentage point from the previous year; the self-paid medical fees by patients declined RMB 331; a satisfaction survey by a third party found that the patient satisfaction of two public hospitals remained above 92%.

Example of special medical association—Beijing Children's Hospital group

(I)   Background: "The long queue before the Beijing Children's Hospital can reach the West Second Ring Road. Many patients sleep in tents so that they can get a better chance to make an appointment the next day". About 60% of ill children were non-natives. As long as children don't feel well, be it ailment or severe disease, families will crowd the hospital, increasing the burden on doctors.

(II)   Establishment time: May 31, 2013.

(III)   Initiator: Beijing Children's Hospital.

(IV)   Members: The number of the group's members has risen from nine to 722, mainly in the northern, southern, southwestern and central provinces. The group has become the largest cross-province medical alliance in China.

(V)   Cooperation model: Beijing Children's Hospital is at the center of the cooperation, which consolidates advantageous medical resources of provincial children's hospitals, upholds the philosophy of "shared experts, clinical services, researches and teaching", adopts the model of "doctors go to see patients", and establishes a third-grade hospital network featuring horizontal coordination and vertical extension of quality medical resources, with an effort to ensure equal access to excellent medical teams for patients from the rest of the country.

(VI)   Goals: Improve medical services at grass-root hospitals via paired support; refer more patients with complicated diseases to big hospitals so as to connect departments of alliance members.

(VII)   Operating model: Choose a hospital with strong expertise as the initiator to help grass-root hospital improve specialized medical services and build "resident medical teams" to turn traditional aid into long-term cooperation; improve the comprehensive capability of member hospitals and the quality of national pediatrics via academic exchanges, scientific platforms, joint construction of departments, remote consultation, and tours of experts, enabling patients to enjoy first-rate medical services without the need to leave their province. Group members share experts, clinical services, scientific researches, teaching and prevention measures as well as establish remote consultation centers to reach the goal of "doctors go to see patients".

(VIII) Achievements: Since its establishment in 2013, the Beijing Children's Hospital group has basically formed a joint service model of "preliminary diagnosis at grass-root hospitals, remote consultation on complicated diseases, and seamless referral of severe patients", laying the foundation for the hierarchical diagnosis of pediatrics. A group of 155 experts, including 12 (or 13) from the Beijing Children's Hospital, tours the country to give lectures. Now, the medical alliance covers 722 grass-root hospitals. To improve the pediatric medical system, members of Beijing Children's Hospital group have established local pediatrics alliances since 2015, extending the network to cities and counties via provincial children's hospitals. Following the establishment of the group, the number of outpatients at children's hospitals in Henan, Hebei, Shandong and Anhui has risen substantially. A pediatric medical network covering national, provincial, municipal and county hospitals has been set up, laying a solid foundation for the hierarchical

diagnosis system of pediatrics (20).

Example of regional medical unions—Shanghai pediatrics medical alliance

(I) Background: During the 2011–2015 period, Shanghai made efforts to enhance children health services as the medical reform advanced, such as establishing Shanghai Center for Women and Children's Health and the Putuo branch of Shanghai Children's Hospital, expanding pediatrics departments of municipal general hospitals, raising the proportion of beds at obstetrics and pediatrics departments of new hospitals built under the suburban "5+3" program to 10% of the total, adding 345 beds at pediatrics departments of Xin Hua Hospital and Tongji Hospital, and mobilizing the private sector to construct 15 pediatric hospitals. In order to support pediatric medical services in the suburbs, Shanghai Children's Hospital established the city's first pediatrics union "Shanghai Children's Hospital Putuo Pediatrics Union" in November 2012, and formed the Jiading Pediatrics Union and Jing'an Pediatrics Union in June and September 2014 respectively. In 2016, the Shanghai Municipal Commission of Health and Family Planning issued the "Special Plan for Enhancing Services for Children's Health", requiring that general hospitals of second grade or above should set up pediatrics departments and CHCs should also provide pediatric services; three famous children's hospitals, including Children's Hospital of Fudan University, should add beds. In late January 2016, the Shanghai municipal government convened a press conference, proposing to establish five regional pediatrics alliances or unions before 2020.

(II) Establishment time: April 2014–September 2016.

(III) Initiators and members: Fourteen community hospitals led by Shanghai Children's Hospital Center in the east; 13 community health service centers, the Shanghai Fifth People's Hospital and Central Hospital of Minhang District led by Children's Hospital of Fudan University in the south; 16 second-grade and third-grade district hospitals led by the alliance between Shanghai Children's Hospital and health and family planning commissions of Jing'an, Putuo, Jiading and Changning in the west; 13 second-grade and third-grade hospitals and 23 community health service centers led by Xin Hua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine in the north; Ruijin Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, the health and family planning commission of Huangpu district and Shanghai Children's Hospital in the middle.

(IV) Cooperation model: To integrate resources of pediatric diagnosis & treatment and disease prevention of relevant medical institutions to realize "diagnosis and treatment of common diseases at grass-roots medical institutions, solutions to complicated and critical diseases within the medical alliance", establish cooperation between medical institutions at all levels, and maximize the efficiency of using pediatric medical resources; enable children patients to receive quality, convenient and continuous diagnosis and treatment in their communities via medical alliances of hospitals affiliated to universities; attempt to establish expert offices specializing in treating childhood asthma, congenital heart disease, and orthodontics; provide training based on technologies of leading hospitals; and combine pediatric medical resources of second-grade hospitals and community health service centers.

(V) Goals: Capitalize on initiators' brand effects and advantages in treatment, teaching, scientific research and disease prevention to integrate resources of pediatrics and healthcare for women and children from relevant medical institutions in the region so as to improve pediatric services; promote homogeneous development of members via such forms as standard equipment, unified training and formulation of rules; send academic directors to set up joint pediatric wards for resources sharing; maximize the utilization and expansion of pediatric medical resources to improve regional medical services for children and provide safe, effective, affordable, all-round and continuous medical services; take measures to divert children patients to local medical institutions in a bid to realize the development goal of "diagnosis and treatment of common diseases at grass-root medical institutions, solutions to complicated and critical diseases within the medical alliance" and eventually mitigate the supply-demand unbalance of pediatric services; and conduct vertical integration of pediatric medical resources to offer local children with quality and convenient medical services, support pediatrics departments of second-grade and third-grade general

hospitals in the region, and train pediatric talent.

(VI)   Operating model: Carry out "seven measures", namely building regional pediatrician teams, establishing diagnosis and treatment centers for common pediatric diseases, constructing regional platforms for shared information on pediatric diagnosis and treatment, improving the capability of treating children with severe diseases and newborns with critical diseases, promoting multi-center children's health-related treatment and prevention programs, enhancing sharing mechanisms for pediatric check resources, and promoting the joint development of pediatrics and maternal and child health; promote unified diagnosis and treatment routines, professional training, and medical information disclosure; and achieve the coordination of referral and consultation, special checks, clinical quality control and children's health management. Shift from traditional development model, cooperation model and treatment model toward all-round cooperation between member hospitals' pediatric departments in clinical practices, teaching and scientific research through three steps - homogeneous management, strength development and brand building. Unify recruitment standards and training programs for directors, doctors, nurses and technical staff of pediatric departments as well as roll out "Diagnosis and Treatment Standards of Pediatrics Medical alliance" and "Nursing Standards of Pediatrics Medical alliance" with an aim to implement homogeneous management and improve the overall strength of pediatrics. Set aside funds for the training of front-line pediatric staff to improve grass-root pediatric services and ensure equal access to medical services; promote demonstrative pediatric outpatient services and two-way mobility of staff, unify signs and operating procedures, encourage outstanding doctors to visit local communities and promote the homogeneous diagnosis and treatment of common pediatric diseases; create emergency fast tracks with emphasis on the transfer of critically ill newborns and first aid to children with severe diseases; promote regional public health services for children, including newborn disease screening, intervention in the development of high-risk infants via follow-up visits, prevention of children's accidental injuries, attention deficit hyperactivity disorder and scoliosis screening; advance online children's health services by setting up platforms for sharing medical information and resources, enhancing the digitalization of the referral of patients with complicated diseases, remote video consultation, research cooperation and big data analysis as well as software and hardware support and formulation of pricing standards; promote the reform of medical insurance payment system to adopt capitation. Further promote hierarchical diagnosis and two-way referral to improve the region's clinical pediatric skills and services, enabling children patients to enjoy first-rate services.

(VII)   Achievements: The East Pediatrics Medical Union, which was initiated by Shanghai Children's Hospital Center in collaboration with Pudong and Fengxian districts, has 41 members. In 2016, the number of outpatients at union members' pediatrics departments increased 4%, while the growth of the Shanghai Children's Hospital Center slowed by 10–15% from 2015, which means that other hospitals in the medical union took more share of pediatric services in the region. In the southern area, the medical union led by Children's Hospital of Fudan University gained new development opportunities. Union members have 1,500 beds in total, with the annual number of outpatients exceeding 3 million and the number of discharged patients reaching 50,000. The union's network covers the downtown area as well as nine suburban districts, including Minhang, Xuhui, Huangpu, Yangpu, Jing'an, Pudong, Qingpu, Baoshan and Jinshan.

Example of remote medical cooperation—China-Japan Friendship Hospital health alliance

(I)   Background: China-Japan Friendship Hospital took the lead to explore remote medical services. In 2012, the hospital was approved to set up the "Ministry of Health Center for Remote Medical Service Management and Training", mainly responsible for offering remote medical services and formulating relevant policies, systems and standards. The China-Japan Friendship Hospital Health Alliance was established under the aegis of the Chaoyang health bureau as required by the "Guidelines on the Establishment of Pilot Regional Medical Alliances in Beijing" (No. 182 of 2013) jointly issued by the Beijing health bureau and other departments as well

as the "Guidelines on the Coordination Mechanism for Regional Medical Services by Medical Institutions in Chaoyang District" (No.256 of 2012) and the "Circular on the Implementation Measures for Regional Medical Alliances in Chaoyang District (Trial)" (No. 134 of 2013) issued by the Chaoyang Health Bureau.

(II) Establishment time: December 26, 2013.

(III) Initiator: China-Japan Friendship Hospital.

(IV) Members: Core hospital and cooperative hospitals (including tertiary/second-grade hospitals and community health service centers). The core hospital is China-Japan Friendship Hospital, and the cooperative hospitals include Wang Jing Hospital of the China Academy of Traditional Chinese Medicine (CACMS), Beijing University of Chinese Medicine Third Affiliated Hospital, China Medical University Affiliated Aviation General Hospital, Beijing Capital International Airport Hospital, Beijing Geriatric Hospital, as well as community health service centers in Olympic Village, Asian Games Village, Laiguangying, Sunhe, Wangjing, Donghu, Taiyanggong, Xiangheyuan, Anzhen, Dongba, and Heping Street. All alliance members will put up a sign of "China-Japan Friendship Hospital Alliance Member" after the alliance is formally established.

(V) Cooperation model: Cooperation across administrative areas, affiliations, and ownerships. China-Japan Friendship Hospital is directly managed by National Health and Family Planning Commission, Wang Jing Hospital is affiliated to the State Administration of Traditional Chinese Medicine, Beijing University of Chinese Medicine Third Affiliated Hospital to the Ministry of Education, China Medical University Affiliated Aviation General Hospital to Aviation Industry Corporation of China, Beijing Capital International Airport Hospital to Beijing Capital International Airport Co., Ltd., and Beijing Geriatric Hospital to Beijing Civil Affairs Bureau. The medical alliance covers more than 1.5 million people in the east of Chaoyang district and has 4,460 beds in total.

(VI) Goals: Uphold the basic principle of "government leadership and autonomous choice, three-level network and tiered positioning, coordination between hierarchical diagnosis and convenience, and shared interests and responsibilities" to establish a united and practical medical alliance with

members bonded together by business, information, management and interest.

(VII) Operating model: Through the remote medical service networks consisted of initiators and medical institutions in grass-root and underdeveloped areas, public hospitals provide remote medical services, remote teaching and remote training to these areas, promote the vertical mobility of resources via digital channels, and improve the accessibility of quality medical resources and efficiency of medical services. Alliance members with specific responsibilities should work closely together with each other. The core hospital is responsible for the diagnosis and treatment of complicated and critical diseases, the application of high medical technologies and instruction on cooperative hospitals. Tertiary hospitals are responsible for the diagnosis and treatment of some critical diseases and complicated diseases and the application of common diagnosis and treatment technologies. Priorities are given to the following five tasks. The first one is paired support. Some departments are selected to form alliances to help each other according to the characteristics and demands of alliance members to improve the capabilities of the members via outpatient services by experts, ward rounds, case discussions, tutoring, and training. The second is to implement two-way referral. Fast tracks for referred patients are established within the alliance based on the principle of respecting patients' willingness, complying with medical insurance policies, allocating medical resources properly, and providing continuous services and health management. Two-way referral procedures and systems should be established to ensure proper mobility of patients within the alliance in view of patients' conditions and members' functions and advantages. The third is to conduct remote consultation. The medical alliance should set up imaging diagnosis centers and conduct remote consultation on radioscopy via remote medical education platforms. The fourth is to enhance talent training. Talent training programs should be devised to include courses of general practitioners, special skills and nursing. Expert groups should be formed to tour grass-root hospitals to guide their service quality management, hospital administration, and hospital-acquired infection prevention and control as well as to tutor grass-root

doctors. The fifth is to increase information support. Online information sharing mechanisms should be established via remote medical education platforms to realize information sharing on appointments, referral, consultation statistics, mutual recognition of check results and remote consultation.

(VIII) Achievements: With the development of "Internet+", remote medical services are expanding as well. Statistics show that China-Japan Friendship Hospital conducted remote consultation on more than 5,000 patients in 2015 and 2016 respectively, and the number will be much bigger this year. Now the hospital has forged alliance with over 2,000 medical institutions across the country. The scope of remote medical treatment has expanded after years of development, including remote training and education in addition to remote consultation.

Forms of participation in medical alliance by private hospitals

In 2010, the Guidelines on Further Encouraging and Guiding the Private Sector to Run Medical Institutions enhanced support for private investment in medical institutions. By 2015, the number of beds and services provided by non-public medical institutions accounted for 20% of the total (21). In recent years, private hospitals have made positive attempts to establish medical alliance. There are two models suitable for private hospitals: one is to form closely-organized medical groups via such forms as acquisition, contract or custody to run a chain of private hospitals, which share medical resources and patient archives, allow referrals and improve professionalism on condition of guaranteed interests; the other one is to jointly establish medical institutions under corporate governance structure by the private sector and experienced public hospitals (22). Although the government has rolled out multiple policies to encourage private investment in hospitals, supportive systems in such aspects as access, approval, talent, taxation and funds, still lag behind, leading to weak development of private hospitals. Particularly, the talent system, which is decisive to hospital development, is flawed. The lack of effective ways to attract talent, shortage in talent reserves, unreasonable talent structure and high talent turnover are weaknesses of many private hospitals and also hinder the participation of such hospitals in establishing medical alliance. The following is an example of cooperation between public and private hospitals.

(I) Background: The First Affiliated Hospital of Wenzhou Medical University and Pingyangxian Chang Geng Hospital forged an instruction-oriented cooperation between public and private hospitals. With its brand effect, talent and technological advantages, the former provides resources of brand, technology and management experience, and cooperates with the latter to cultivate the medical services market.

(II) Establishment time: September 2006.

(III) Partners: The First Affiliated Hospital of Wenzhou Medical University (core hospital) and the Pingyangxian Chang Geng Hospital (partner hospital).

(IV) Cooperation model: The First Affiliated Hospital of Wenzhou Medical University provides technology and management experience, while Chang Geng Hospital offers its building complex as the medical treatment base. The jointly-run hospital retains its joint stock ownership system, but adopts the mission, philosophy and standards of the public hospital. The direct management organization is the comprehensive management office, responsible for the coordination and communication between leaders of the two hospitals. The core hospital dispatches a certain number of outstanding employees (about 100 at the early stage) to the jointly-run hospital as well as sends a certain number of experts to offer outpatient services regularly. The two parties distribute interests according to an agreed proportion. The first stage of cooperation lasts for five years as stated in the cooperation agreement.

(V) Achievements: (i) Optimize the allocation of public hospitals' special assets. Public hospitals usually have a strong influence for their management model, technological brand and medical resources to create their own special assets. The First Affiliated Hospital of Wenzhou Medical University enjoys a high reputation incomparable by ordinary medical institutions in the south of Zhejiang and the northeast of Fujian. In contrast, the reputation of the private hospital is deteriorating due to loose internal management, and it is difficult for the hospital to form its special assets. The public hospital sends medical talent to its private partner and adopts a vertical management model, which can help enhance patients' confidence in the jointly-run hospital. Statistics of performance in the first two months showed that the jointly-run

hospital saw rising outpatients and hospitalized patients, including medical staff and their family members at other medical institutions in the region; (ii) Improve economic benefits substantially. The cooperation model increases economic benefits significantly. The first is the benefits of economies of scale. The public hospital and the private hospital are tied up together in both technology and management. The private hospital can thus receive free technical support and training, medical equipment and management experience, while the public hospital gains greater influence and more medical staff and devices. The cooperation reduces medical service costs of both parties, achieving economies of scale. The second is the benefits of economies of speed. The new cooperation model changes labor distribution and introduces strict competition mechanism, which surely improve the work efficiency of employees. Meanwhile, a new referral system under the model speeds up the response to different sources of patients, producing benefits as well. The third is the benefits of information economy. A study shows that "the relations of private hospitals with local communities and other medical institutions are far better than that of public hospitals, which however get along better with health regulators". The public-private cooperation facilitates the two sides to exchange information on medical policies, industrial development, medicine and technological development; (iii) Cooperation brings about social benefits. With rising living standards in recent years, some affluent people in non-urban areas also have demands for high medical consumption, shifting focus from medical treatment to medical care and prevention. A jointly-run hospital with comprehensive functions can meet the public's demand for medical treatment as well as the affluent people's diversified demands for medical care and prevention, offering them with easy access to quality health services. Time is decisive to some critically ill patients, especially old-age patients with chronic diseases, and treatment at nearby hospitals is the best choice. The patients can receive quick and safe treatment at the jointly-run hospital. Chang Geng Hospital is located near the National Highway 104, and often receives patients

injured in car accidents. In the past, the hospital was unable to deal with such patients due to various limitations. Following the cooperation with the public hospital, the hospital can treat such patients and sees a high proportion of discharged patients. According to statistics in the first two months since cooperation, the number of patients rescued from critical conditions exceeded 50 (23).

Chapter two: cooperation among hospitals in the field of mental health and development of mental health alliances

Section 1: resource allocation for mental health in china: status quo and issues

With its rapid socio-economic development, China is facing accelerated industrialization, urbanization, marketization, and population aging, which have led to increasingly severe mental problems. Mental health has become a major public health issue and social problem affecting socioeconomic development (24). In 2004, there were 16 million people with mental disease in China, and the prevalence of various mental disorders reached 13.47 per thousand. It has the highest total disease burden in China, accounting for about 20%. It is estimated that by 2020 the proportion of neuropsychiatric diseases will rise to 25% the total disease burden in China (25). On the other hand, the currently available resources and capabilities in China are far from adequate. The distribution of mental health service resources in China is uneven. Most of the major mental health facilities and professional physicians are located in provincial capitals and other large cities. A large number of patients with mental diseases have no access to timely and effective treatment and rehabilitation, which not only seriously affects the quality of life of patients and their families but also places a heavy burden on society. New ways and more effective methods are urgently needed to address these issues.

On May 1, 2013, the Mental Health Law of the People's Republic of China was formally enacted. The mental health law stimulates that mental health shall be led by the people's government at or above the county level and should be incorporated into the national economic and social development plans. Efforts should be made to establish and optimize the prevention, treatment, and rehabilitation service systems for mental disorders, establish and improve the coordination mechanism and accountability

Table 3 Specialist psychiatric hospitals in China (2005–2015)

Year	Number of specialist psychiatric hospitals	Growth rate (%)
2005	557	–
2006	570	2.33
2007	577	1.23
2008	598	3.64
2009	637	6.52
2010	874	37.21
2015	1,235	41.30

Table 4 Distribution of mental health facilities in China [2010 and 2015 (according to the sponsors)]

Sponsor	Year of 2010 (n)	Year of 2015 (n)	Growth rate (%)
Government	1,146	2,138	86.56
Private	243	655	169.55
Enterprises	195	136	–30.26
Others	66	7	–89.39

systems for mental health, and assess and supervise mental health work undertaken by relevant authorities. Meanwhile, it is important to encourage and support talent training, maintain their legal interests and rights, and enhance capacity-building (26). The promulgation and implementation of the Mental Health Law has greatly promoted the development of mental health prevention and control in China.

Distribution of mental health facilities in China

The number of mental health facilities in China has increased annually since 2005. In 2008, China formulated the "*National Guiding Outline for the Development of the Mental Health Service System (2008–2015)*", followed by laws and regulations including "*Regulations on the Management of Severe Mental Diseases (2012 Edition)*" and "*Mental Health Law*", proposing specific goals, norms, and requirements for mental health services. Since 2009, the State has increased investment in mental health, and the infrastructure and talents of psychiatric hospitals have been strengthened, and the mental health industry has entered a stage of rapid development.

In 2010, there were a total of 1,650 mental health facilities in China, of which 874 were psychiatric hospitals (*Table 3*), 604 were departments of psychology/psychiatry in general hospitals, 77 were rehabilitation centers, and 95 were clinics. Of these 1,650 institutions, 1,146 (69.45%) were sponsored by the government (including 892 by health authorities, 183 by civil affairs departments, 2l by public security systems, and 50 by other authorities including judicial departments and family planning commissions), 243 (14.73%) by private sector, 195 (11.82%) by enterprises, and 66 (4.0%) by other institutions such as public institutions and social organizations (*Table 4*).

The majority of the government-sponsored institutions are psychiatric hospitals (n=677, 59.08%), which are mainly sponsored by municipal administrative authorities (n=496, 43.28%), and only 26 institutions (2.27%) were at or below the county level.

According to China's administrative divisions, 28 of 333 prefectures/cities still had no psychiatric beds by the end of 2010; among the 2,856 districts/counties across China, only 970 districts/counties had psychiatric beds, and two thirds of districts/counties still had no psychiatric beds (27).

According to the National Health and Family Planning Commission, there were 2,936 mental health facilities in China in 2015, an increase of 77.94% over 2010. These facilities included departments of psychiatry in general hospitals (n=1,268, 43.19%) in general hospital psychiatry, psychiatric hospitals (n=1,235, 42.06%), grass-root health care institutions (n=293, 9.98%), general clinics (n=53, 1.81%), mental health clinics (n=44, 1.50%), and rehabilitation centers (n=43, 1.46%). The sponsors of these facilities included government authorities 2,138 (72.82%) are headed by government departments, and are in charge of government departments, including 1,855 health care plans, 208 civil affairs officials, 19 public security officers, and other government departments (education, disabled persons' associations). There were 56 companies in the armed forces, armed police, and the judiciary; followed by 655 private enterprises (22.31%); 136 enterprises (4.63%); and other organizations (trade unions, social organizations, collective ownership) were the least, only 7 (0.24%).

From 2005 to 2015, the total number of psychiatric beds in China has dramatically increased (*Table 5*). The number of available beds in psychiatric departments nationwide was 109,000 in 2005, 218,100 in 2010, and 433,100 in 2015. There were 337,900 beds in psychiatric hospitals, 72,900 in general hospitals, 16,300 in psychiatric departments of general hospitals, 717 in general clinics, 125 in mental

Table 5 Available beds in China's psychiatric departments in 2005, 2010, and 2015

Year	Number of available beds (10,000 beds)	Growth rate (%)
2005	10.90	–
2010	22.81	109.34
2015	43.31	89.87

health outpatient departments/clinics, and 6,129 in rehabilitation hospitals. Of these 433,100 beds, 371,100 (76.60%) were sponsored by the government (including 249,807 under health and family planning departments, 73,300 under the civil affairs departments, 4,436 under the public security systems, and 4,219 under the government administrative departments), followed by privately-owned facilities (n=86,200, 19.92%), enterprises-sponsored facilities (n=13,200, 3.04%), and others (n=1,937, 0.44%).

The number of psychiatric beds per 10,000 populations nationwide was 1.71 in 2010 and 3.15 in 2015, an increase of 84.21% over 2010. Beijing and Shanghai had the highest are the highest number of psychiatric beds per 10,000 population. There was only one psychiatric hospital in the Tibet autonomous region. Thus, the number of psychiatric beds per 10,000 populations in China is still lower than the world average of 4.36 and far below the average of 7.7 in middle- and high-income countries.

The distribution of human resources for mental health

According to the national survey on mental health resources by the National Health and Family Planning Commission, there were a total of 122,300 psychiatric professionals in 2015, including 75,800 nurses (4.16 persons per 100,000 population) and 30,100 physicians (including assistant physicians), 3,153 psychological counselors, 1,615 psychotherapists, 1,500 social workers, 1,060 rehabilitators, 852 public health doctors, and 8,244 unlicensed interns/ nurses, nursing care workers, correctional police officers (28). There is still a certain gap when compared with the average numbers of psychiatrists (2.7 per 100,000 population) and nurses (5.35 per 100,000 population) in middle- and high-income countries.

Notably, 14% of Chinese registered psychiatrists had not received any training, and 29% had only a junior college diploma. Mental health staff members have low social status, poor welfare, and low overall quality.

Status quo and analysis of challenges on mental health services

Status quo of mental health services

(I)   Mental health facilities involve too many authorities and organizations: Mental health facilities involve too many entities, including government authorities, enterprises, individuals, public institutions as well as social organizations. Government authorities related to mental health management include those separately responsible for healthcare & family planning, civil affairs, public security, justice, and education. Scattered resources make it a difficult job for the provincial mental healthcare centers to coordinate and communicate with other authorities to provide integrated and sufficient mental health services.

(II)   Short supply and uneven distribution of mental health and talent resources, especially premium medical resources: (i) The challenges include inadequate mental health resources, unreasonable structure and uneven distribution of resources, unsatisfactory quality of medical staff, and high staff turnover. Based on 2015 statistics, China has 315 psychiatric beds per 100,000 populations, versus the global average of 436 beds and 770 beds in middle- and high-income countries. China has 75,800 psychiatric nurses (4.16 nurses per 100,000 population) and 30,100 psychiatrists and assistant psychiatrists (1.8 psychiatrists per 100,000 population) (*Figure 1*), compared to 2.7 psychiatrists and 5.35 psychiatric nurses per 100,000 people at medium- and high-income countries. China's mental health resources are largely concentrated in the 11 eastern provinces and municipalities, which account for 47.21% of the country's mental health hospitals, 42.06% of beds, 48.65% of psychiatrists, and 45.25% of psychiatric nurses. These factors are affecting the equality, accessibility and availability of mental health services. Shanghai has already established a three-tiered approach to prevention and intervention of mental diseases. According to a survey conducted at the end of 2013 by the Professional Committee of mental health management of Shanghai Hospital Association on 24 public mental health facilities, the city has a total of 13,200 beds for mental patients from one municipal-level hospital and 23 district-
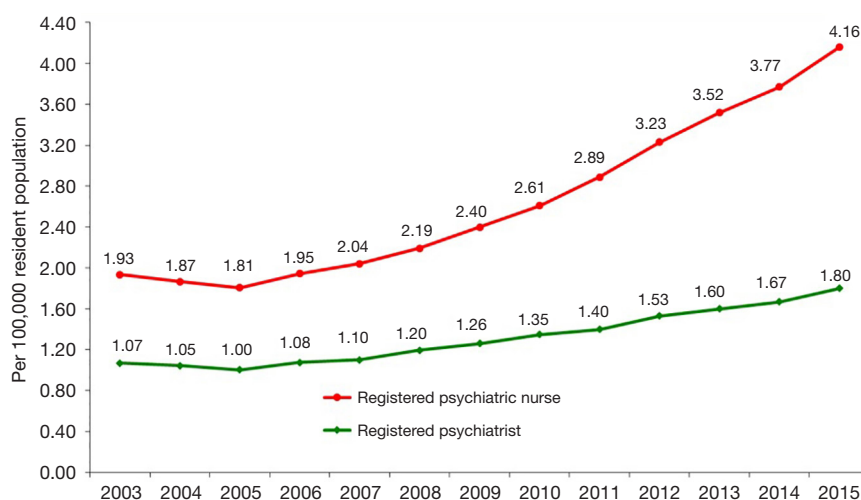
Figure 1 Number of licensed physicians and registered nurses per 100,000 populations, 2003–2015 (psychiatric hospitals nationwide).

level psychiatric hospitals. The 23 district hospitals had 83.77% of total beds for mental patients in the city; however, the proportion of senior doctors was only 27.45%, along with 57.6% for associate senior doctors and 69.22% for general doctors (29). Because of the specific distribution features of mental diseases, most of the hospitalized patients are suffering from serious mental diseases such as schizophrenia and senile mental disorders, while people with more commonly seen mental disorders (e.g., depression and anxiety) prefer to receive outpatient services. According to the latest figures provided by Shanghai Mental Health Clinical Quality Control Center, 21 grass-root mental health facilities with outpatient services received a total of 827,400 patients in 2016, and the number is comparable to outpatient volume at the Shanghai Mental Health Center (SMHC), suggesting imbalanced distribution of medical resources had apparently stalled the progress to advance hierarchical diagnosis and treatment for mental health diseases in Shanghai; (ii) Private hospitals are increasing rapidly, but talent shortage has also exacerbated. Shanghai had 243 private mental health facilities in 2010, accounting for 14.3% of the total, and the figures rose to 655 and 22.31% in 2015 (increased by 169.55% than in 2010). A psychiatrist manages an average of 22.92 beds in Shanghai, 59.41% higher than the national average of 14.38 beds; a nurse takes care of 9.59 beds on average, 67.66% higher than the national average

of 5.72 beds; (iii) Inadequate supply of county-level mental health facilities: There are still 1,180 counties and districts, or 41.35% of all counties and districts in China, that do not have any mental health institution; (iv) High intensity and low efficiency about bed use at specialist psychiatric hospitals: The bed occupancy rate reached 96.9% and the average hospital stay was 60.6 days.

(III) Growing imbalance between the demand and supply of psychiatrists: Since standard training programs for residents were launched in 2010, the 24 public specialist psychiatric hospitals in Shanghai has added 29 doctors (including 19 psychiatrists) from 2011 to 2013; in other words, every hospital added less than one psychiatrist during these three years. Between 2014 and 2016, Shanghai's public specialist psychiatric hospitals planned to recruit 331 psychiatrists, but only 123 doctors had received standard training during the previous three years (2011–2013) (29).

(IV) Insufficient academic exchange between large hospitals and grass-root clinics: As more and more people are troubled by mental disorders, China has invested more on mental health. Research on the pathogenesis of mental disease and clinical diagnosis and treatment technology grow rapidly, which requires higher professional exchanges in this field, especially at grass-root hospitals. However, the main approach to academic exchanges among psychiatrists is no longer what it was in the past.

Psychiatrists at large hospitals are now overwhelmed by routine medical practicing, teaching, research, and administrative affairs, and they have little time to practice at grass-root clinics, give lectures to young doctors, or discuss complicated cases. The so-called academic exchanges are largely conducted in the form of academic conferences organized or sponsored by some pharmaceutical companies, and that would more or less undermine the outcomes of academic exchange. Moreover, psychiatrists at grass-root hospitals are less likely to be invited to attend national academic conferences (30).

(V) Hospitals and patients are lukewarm to hierarchical medical system: Municipal hospitals get a majority of revenue from medical services to fund their operation and development, and government subsidies are tied to the number of patients received by a hospital and the quality of its medical services. A doctor's wage income is primarily associated with workload; therefore he/she is reluctant to encourage patients to get treated in a grass-root hospital. Most grass-root hospitals have yet to establish satisfactory performance assessment and incentive mechanisms, and their inflexible wage distribution system and rigid financial management have curbed doctors' enthusiasm. As the standard of living is enhanced, mental patients are holding higher expectations on the quality of mental health services. As a result, most patients tend to seek help from a municipal-level mental hospital or the psychiatric department at a tertiary general hospital, because they believe they will be able to meet the most professional doctors and they can be treated with the latest and best drugs, especially imported medicines. Once a psychiatrist prescribes a new drug or imported drug, these drugs can only be bought at large hospitals. That further pushes up patient figures at the municipal hospitals, although a significant proportion of patients come for the sake of getting drugs. Grass-root hospitals, however, are rarely visited because few patients are aware that they can actually get what they need from these small hospitals. Due to small patient numbers, doctors do not have much clinical experience about how and when to use the drugs, and that might affect the curative effect and erode patients' confidence. Patients are reluctant to see the same doctors when they have mental problems next time (30).

(VI) Insufficient policy support to grass-root medical institutions from the medical insurance system: According to the current medical insurance policies, there is no significant difference on reimbursement ratios at different levels of specialist psychiatric hospitals, and most psychotropic drugs, including imported drugs, are reimbursable at both large and small hospitals. In addition, the commonly seen mental diseases are covered by medical insurance and by relatively cheap psychotropic drugs. These factors are making patients even more reluctant to go to grass-root hospitals (30).

(VII) Other issues: (i) Financial subsidies to specialist psychiatric hospitals in China are determined by the government's fiscal resources instead of patient needs; (ii) hospitalization cost at county-level specialist psychiatric hospitals and above is an enormous economic burden for most residents; (iii) most mental diseases end up untreated in China. Shanghai has abundant mental health resources and offers strong protections to patients. However, a survey showed that 47.3–76.3% of mental patients in Shanghai had not been treated when they were supposed to in the beginning of the 21st century (31); (iv) the general public and medical staff have little mental health knowledge, and there is strong public prejudice against mentally ill patients; (v) the model of mental health services: our problem is excessive emphasis on treatment and inadequate attention to prevention and rehabilitation, and excessive emphasis on hospital care and inadequate attention to community nursing. We should make further explorations on community mental healthcare and innovative service model.

Challenges and problems on mental healthcare (SWOT analysis)

(I) Strengths on the development of specialist psychiatric hospitals: (i) China offers a string of favorable policies to specialist psychiatric hospitals, such as tax benefits and financial subsidies, as well as funding hospital constructions and medical equipment purchase; (ii) specialist psychiatric hospitals generally have good public reputation and image, and are covered by medical insurance.

(II) Weaknesses on the development of specialist psychiatric hospitals: (i) Most specialist psychiatric hospitals harbor outdated development ideas and are

heavily dependent on government support. They do not have clear publicity strategies or strong desire to expand the market, and their income distribution and incentive mechanisms are also flawed, making it harder to motivate medical staff; (ii) Hospitals are plagued by talent shortage and unreasonable department and personnel arrangements. The lack of leading talents and insufficient research and teaching capacities make specialist psychiatric hospitals unable to build valuable brands and offer diversified medical services; (iii) China adopts a fiscal management system that government departments draft separate budget plans. Health, civil affairs, public security authorities, and the federation of disabled people make their own budget plans on mental health, which causes uneven and unfair distribution of mental health resources.

(III) Opportunities for the development of specialist psychiatric hospitals: (i) Favorable national policies and robust economic development are bringing hope to specialist psychiatric hospitals. Due to strong economic growth, the rising standard of living as well as the implementation of the Law on Mental Health, Chinese people are paying greater attention to their mental health, and mental services are affordable to more people. In the meantime, increased government attention and investments create good development opportunities for specialist psychiatric hospitals. In particular, those providing comprehensive mental healthcare services will receive more favorable policies and financial support from the government; (ii) As China's public hospitals intensify exchange with foreign counterparts and more and more China-foreign medical institutions have established, we can expect that advanced hospital management theories and practices will be introduced into China. The adoption of total quality control (TCO), ISO quality management system as well as the establishment of modern hospital management system will play positive roles in improving service and management at China's public hospitals and building professional management teams; (iii) As the government requires comprehensive hospitals to provide psychiatric and psychological therapies, demand for mental and psychological services has been on the rise.

The relentless push to build medical alliances has accelerated horizontal and vertical integration of medical resources between specialist psychiatric hospitals and comprehensive hospitals.

(IV) Threats to the development of specialist psychiatric hospitals: (i) Rising price levels: as China has witnessed robust economic growth in recent years, consumer prices and wage levels have increased as well. Rising consumer price index (CPI) is affecting the standard of living for ordinary citizens, while higher prices of medical instruments and growing staff wages are adding economic pressure to many hospitals; (ii) Policy changes: as the healthcare reform deepens, governments are rolling out more policies, rules and regulations on medical institutions to tighten scrutiny on medical practices. Efforts to curb hospital expansions and scrap drug price markups are compelling hospitals to adjust structure and strengthen internal controls and management; (iii) Competition between hospitals: more and more foreign-funded hospitals have opened in China, and private hospitals and Internet-based hospitals are mushrooming as well. That would intensify their direct competition with existing hospitals and specialist psychiatric hospitals. In addition, competition will also be fueled by the rapid development of international and domestic commercial healthcare insurance markets. Hospitals with poor management, service and efficiency risk to be kicked out of the market. Chinese hospitals are in a disadvantaged position in the competition against foreign rivals, due to unfavorable external environment and inflexible internal operations. That means we should make further reforms to overhaul hospital management; (iv) Hospital's organizational and management structure: China has expanded the autonomy of hospitals, but the government continues to play excessive roles in some areas and inadequate roles in other areas. At developed countries, most hospitals are governed by the board of directors or a council, with day-to-day operations headed by the chief executive officer. This kind of management structure enables a hospital to develop in the established direction without sacrificing flexibility and independence. Therefore, a reform is also needed to overhaul the management structure

of specialist psychiatric hospitals.

Section 2: significance of establishing mental health medical alliance

Overview

Medical alliance is an extensive and close cooperation between hospitals under a non-administrative framework, and it's a community of shared future for medical institutions. Medical alliance is a new product of reform and undertakes special functions, and it is of great significance to build sound healthcare service systems in the urban and rural regions and bring safe and effective therapies to patients.

Significance of mental health medical alliance
Policy directions

The General Office of the State Council issued the Guideline on Advancing the Construction and Development of Medical alliance on April 26, 2017. The document stated that all tertiary public hospitals must launch medical alliances by the end of October 2017. That means it's now imperative for specialist psychiatric hospitals, especially the tertiary ones, to begin preparatory work to develop medical alliances.

Significance

The World Health Organization estimated that mental diseases would account for roughly a quarter of medical cost in China by 2020, and mental diseases would cause total economic losses of more than US$9 trillion to China between 2012 and 2030. According to statistics released by the WHO in February 2017, some 322 million people worldwide are struggling with depression, and the total population of depressed people increased 18.4% between 2005 and 2015. More than 40 million Chinese people are troubled by depression, and its disease burden will become the top one among other diseases in China by 2030. With growing public awareness on mental health, it has become practical to establish medical alliances on mental health.

From the hospital's perspective, the advantages of a medical alliance include:

(I) it can balance the hospital's short-term interest and long-term development, maximize its brand value and the scale effect, enhance the social status of specialist psychiatric hospitals and their staffers, and make it easier to get more policy support;

(II) it's helpful to share medical resources, complement each other's advantages, reduce medical and management cost and improve efficiency, satisfy people's different levels of medical needs, and expand the healthcare market to bolster comprehensive competitiveness and the capacity to withstand risk;

(III) through human resource integration and integrated development of medical disciplines, it can enhance the expertise in treatment, teaching, research and prevention at district and county-level hospitals, and expand their public influence; medical alliance can also play positive roles in building innovative hospital management regimes;

(IV) tertiary hospitals enjoy clear advantages in medical facilities, talent resources as well as public reputations, and they can play core and leading roles in the medical alliance.

From the government and public perspective, the advantages of a medical alliance include:

(I) it's conducive to consolidate premium resources and services at various specialist psychiatric hospitals and guide the reasonable distribution of medical resources, so as to improve the quality of services and enhance the availability and equal access to the services;

(II) it can further optimize the three-dimensional prevention & treatment network, clarify the functions and positions of the medical institutions, improve the structure of medical resources, reduce repetitive investments in medical resources, cut medical cost, and make the medical management system more standardized and medical practices more orderly organized;

(III) it's helpful to spread high-quality resources from tertiary hospitals to second-grade hospitals and community clinics and strengthen grass-root institutions' ability to prevent mental disease and provide rehabilitation services;

(IV) it's helpful to resolve problems like inadequate supply and waste of medical resources caused by hospital fragmentation, optimize the governance structure, promote the implementation of regional mental health programs, and enhance the efficient use of fiscal appropriations.

From the patients and their family's perspective, the advantages of a medical alliance include:

(I) it offers convenience for patients to get treatment and drugs at nearby hospitals, and the patients can enjoy high-quality medical services;

(II) patients can reduce their medical expenses thanks

to the two-way referral mechanism, and health examination results issued by one hospital can be recognized by another hospital within the same medical alliance.

Section 3: cases and experience of mental health alliances

Status quo and cases of mental health alliances in foreign countries/regions
Recommendations of World Psychiatric Association (WPA) (32)

In most countries, clinical psychiatry mainly focuses on individuals and their diseases and health problems rather than the mass population's needs for mental healthcare. The lack of public health prospects is among the reasons behind the huge treatment gap in most countries; according to the estimates of the World Health Organization (WHO), the treatment gap of depression and common mental disorders in low-income countries exceeds 75%. A solution to the treatment gap is to enhance public health training for psychiatrists. Funds from health service systems have an important influence on practices of psychiatry, especially mental health services including prevention and care. The healthcare systems of many countries are either underdeveloped or malfunctioning. According to the United Nations' Sustainable Development Goals, effective supply/demand mechanisms are necessary to reach health goals and emphasis may be shifted back to the improvement of healthcare systems, which creates a great opportunity for psychiatry. Psychiatrists should effectively advocate for the inclusion of mental health services in healthcare systems and prevent the marginalization of mental health problems in the systems. The WHO has worked out the Service Organization Pyramid for an Optimal Mix of Services for Mental Health. A prerequisite for the pyramid model is that no single service can meet the demands of a whole population. The model specifies the relations between different service levels (primary, second, and tertiary) and it should be used by all countries when planning services regardless of their resource levels. However, no existing services in any country are likely to fit into this service model. No matter what the actual situation is in a country, any effort to improve service supply model should be based on deep understanding of the country's existing mental health system and how to establish, reform and divert the existing system to meet local demands.

Aside from optimal service portfolios, the following issues should be taken into account when planning mental health services for the populations:

(I) Situational/continuous care: healthcare, especially that at the primary and second levels, usually centers on patients with acute infectious diseases who need treatment but have no demand for care. However, the situational care model fails to satisfy the needs of many patients with serious mental diseases, leading to possible persistence and intermittent deterioration. Such patients need better and continuous care that takes into account the chronicity of mental diseases.

(II) Demand-driven/service-driven healthcare models: in many countries, services are offered in light of providers' management rather than patients' demands and affordability. Demand-driven service models will pay attention to users' demands and provide seamless connection between health services and social services.

It was not until a few decades ago that psychiatrists in most countries concentrated at old-fashioned mental asylums. Increasing evidence shows that the relocation of long-term hospitalized patients to community-based care reduces negative impacts and symptoms of social relations. High-income countries (and some low-income ones) have included mental healthcare into community and normal health systems. Patients with mental health problems can receive treatment from psychiatrists at ordinary hospitals, community clinics, and home aside from specialist hospitals.

However, due to political, cultural and structural reasons, independent mental asylums remain the sole provider of mental health services in some countries. Although some hospitals have made much progress in terms of environment and governance structure, many others face problems including flawed institutions, suicides of patients, and human rights infringements. It is noteworthy that in many countries, the continuous dominance of large mental asylums does not promote intervening measures of evidence-based medicine, such as community-based integration of scattered services and appropriate support for the referral to second-grade and tertiary healthcare systems.

In some countries, the change of care models necessitates the change in relations between psychiatrists and other mental health experts from the parent model to the teamwork model. In the past, psychiatrists were regarded as the core of professional medical services and other mental health professionals as executors of the former's prescriptions. In contrast, in the new model of mental health intervention, more ordinary mental disorders are handled

by other professionals through primary health departments, while psychiatrists now act as tutors of these health professionals, with duties of planning the implementation of evidence-based psycho-social intervening measures and deciding between second-level or tertiary mental healthcare. In low-income countries, the scarcity of mental health resources has led to the rising participation of informal human resources including companions, volunteers, family members, and carers. Therefore, psychiatrists should not only diagnose and manage various mental health problems but also supervise, train, and educate other health staff and non-professional individuals.

Psychiatrists of second-grade hospitals should work in ordinary hospitals or community clinics or together with different professionals such as community nurses, consultants, and social workers. There is mounting evidence that the incidence of untreated hypertension and obesity among mentally ill patients is increasing, and some diseases are related to adverse reactions to new mental drugs. Another fact is that patients with chronic diseases are more vulnerable to mental diseases. Therefore, psychiatrists should work closely with physical health experts. They should also receive training on the diagnosis and management of ordinary infectious diseases and non-infectious diseases so as to be able to deal with common medical issues of their mentally ill patients. The implementation of tiered service model requires adequate well-trained mental health experts, including psychiatrists, changes in training courses for primary healthcare and mental healthcare staff in communities and changes in healthcare delivery model.

The lack of government commitment and mental health policies and the insufficient legislation on human rights are major barriers for improving mental health services. Psychiatrists working at higher education institutions will lead multi-disciplinary teams due to their skills of managing complicated mental disorders (such as eating disorders and severe personality disorders). Aside from professional knowledge and skills of diagnosing and managing patients with complicated demands, psychiatrists should also have leadership skills to influence and unite various mental health professionals to work as a team, especially when their patients are critically ill. Undergraduates and graduates majored in psychiatry should be taught with knowledge, skills, and attitude to deepen cooperation with stakeholders in communities and general medical settings.

Psychiatry should be integrated into ordinary health systems vertically and horizontally. The hospital-based integration model of hospitalized patients and outpatient care cannot ensure the accessibility and continuity of medical services, while community-based services cannot provide comprehensive treatment. Therefore, a balanced management model is the best choice, which requires mental health professionals to adjust their roles.

Mental health professionals including psychiatrists can work at second-grade and tertiary service institutions so as to offer advice, liaison, training and instruction to primary healthcare staff in complicated cases, identify and treat mental diseases, and assess whether outpatients and hospitalized patients can receive treatment at primary healthcare institutions. The balance is achieved via cooperation between colleagues of different disciplines and close interaction with non-health departments, including social welfare, education, and justice.

Psychiatrists should form alliances and learn to ally with other health professionals to break the isolation of traditional psychiatry. The cooperation with others can help provide segmented services to patients with different demands and reduce mental disease-related isolation and stigma. Psychiatrists should learn to appreciate advantages and values of different interested parties, use plain language to express their views, and persuade, negotiate and compromise with interested parties, so as to devise optimal nursing plans for their patients.

To realize these changes, it is necessary to regulate government authorities of mental health and mental care. In some countries, mental health departments are part of their health systems to promote and ensure the interaction with other organizations and proposals and thus enhance cooperation and integration with other health departments and systems regarding mental health-related issues. In other countries, especially low-income ones, only one person may be responsible for mental health proposals, which highlights the importance and urgency of building alliance. In all cases, psychiatrists should have skills of persuading, negotiating, and promoting the value of population mental health to forge cooperation with relevant government departments and individuals to ensure the access of individuals with mental health problems to comprehensive care. This will put psychiatrists at a better position and thus enhance their professionalism and core skills.

Due to the availability of historical, cultural, financial and human resources, mental healthcare models vary from place to place worldwide. Many models are not necessarily

evidence-based and may not be effective or acceptable to service users. The WHO's pyramid model and relevant concepts, namely tiered care, teamwork and inclusion of mental health in ordinary healthcare, is widely accepted as a good template while considering the reform or development of mental health services in different countries. In such an international framework, individual treatment strategies and usage of human resources (professional's *vs.* industry insiders or health staff) should respect individual values and the accessibility of cultural, financial and human resources. Diversity should be respected and encouraged in a bid to ensure local supply of services in different countries. Meanwhile, it is imperative to improve psychiatrists' skills so as to facilitate and lead changes in the supply of mental health services across the world.

National Health Service (NHS) mental health trust

The NHS, which serves more than 60 million people across Britain, is the world's largest public medical system and hires 1.5 million employees, including 90,000 hospital doctors, 35,000 family doctors, 400,000 nurses and 16,000 emergency staff. There are 1,600 hospitals and special care centers in UK.

The NHS system comprises two levels. The first level is community-based medical services offered by family doctors, dentists, drugstores, and ophthalmologists. Every British resident needs to register with a nearby general practioner (GP) clinic and makes an appointment with GP to get medical services. Any further treatment should be referred by primary medical institutions. The second level services are mainly hospital-based, including outpatient services, special outpatient services and check-ups, surgeries, and hospitalization care. The NHS's Mental Health Services Trust provides health and social care services to people with mental problems. Mental health trusts like this is one of the NHS's many kinds of trusts, which make up of the national medical care system. Now, Britain has 60 mental health trusts. They are commissioned and funded by NHS primary healthcare trusts (some large primary health care trusts may offer them with multiple mental health services). Patients usually obtain services from mental health trusts via their general practitioners (primary health care doctors) or residence doctors. Although there may be special services available across the country or services referred at the state level, most services target local residents. Mental health trusts can decide whether to provide hospitalization services for mentally ill patients (they may set up psychiatric wards at comprehensive hospitals run by NHS hospital trusts). All kinds of trusts work with each other, local governments and volunteer organizations to provide medical services (33).

So how do the Britons view mental health service trusts? Adolescence is a period with the highest risk of mental diseases. Plaistow Jreviewed 31 researches, in which 13,605 young people (525 received mental health services) expressed their opinions on Britain's mental health service system, and explored reasons through thematic analysis. Plaistow found that in some aspects, the trusts are necessary or helpful (34).

(I) Information: Young people want more information about mental health and relevant services (35); the quality of information they obtained before seeing a psychiatrist is very important, and 80% of the respondents said they want to get information ahead of diagnosis; most young people reckon that the information on mental health services for teenagers should be available to all young persons and not just relevant people; young people who have already received mental health services expect the information from mental health services before diagnosis to be useful; young people hope that mental health services could be more visible and put forward suggestions on how to improve the accessibility of information on mental health services, including websites, publicity leaflets before diagnosis as well as information and interventional measures in emergency rooms (36).

(II) Accessibility of services: Young people reckon that mental health services should be provided at nearby places, such as schools and communities, and can be received alone; they hope the scope of services could be expanded and treatment at home is more welcome than at hospitals (37); for young people, it is important to receive services timely and identify problems before diseases deteriorate; some researches emphasize the flexibility of services and the application of communication means (telephone calls, text messages, and e-mails are considered better than letters).

(III) Quality and skills of medical staff: Young people believe that amiable, sincere, kind, positive, good-tempered, knowledgeable, and skillful medical staff are more helpful to them; the awareness and ability of privacy protection are also mentioned. Relations with medical staff and listening to and communication with others in the early stage of mental diseases are very important as well.

(IV) Autonomy: Young people who have not received mental health services think that they don't want or

need such services and they hope to solve problems on their own; those who have received services also hope that mental health services could help improve their autonomy. In other aspects, young people reckon that mental health services are not useful: (i) Stigma: it is viewed as a big barrier for assessing mental health services and a primary reason for young people's reluctance to seek help; young people who have received mental health services have negative views on mental disease and the resulting stigma will prevent them from seeking help, which is one of the reasons for them to deny that they have mental diseases; (ii) Low accessibility of information and services: Biddle pointed out that the underestimation of the lack and difficulty of mental health-related information is a key reason for young people to turn away from mental health services (38); besides, young people lack information on service availability—"I don't know where to and how to ask for help" (39); for people who have received mental health services, the unavailability of information on service and treatment choices is also a decisive factor; some other researches pointed out that young people think that they lack some targeted services, such as services designed for eating disorders; (iii) Trend of medicine-oriented solutions to mental health problems: research has shown that young people feel that they are not listened attentively while seeking professional help but are just offered with drug therapies (40); some young people think that they are not treated seriously by their doctors; (iv) Lack of continuous services: repeated questions due to the lack of continuous services disappoint young people.

Relevant cases in China

Mental health sector in China has also made attempts in cross-hospital cooperation and cooperation on psychiatry: regional exchanges on mental health or cross-region cooperation have been conducted; there are also attempts in establishing mental hospital-centered regional alliances or those centering on psychiatry departments of general hospitals, and different models with different characteristics have been adopted. Here we introduce the experience and operating models of some domestic medical alliances and special medical associations in the mental health sector.

SMHC specialist hospital alliance

(I)   Background: SMHC has long been dedicated to the cooperation among mental health service institutions and improving the quality of mental health services via such methods as technical instruction and talent training. In August 1997, Nantong Zilang Hospital (Nantong Mental Hospital) became the first to establish comprehensive medical cooperation with the SMHC, opening a new chapter in cross-province collaboration between specialist psychiatric hospitals. Since then, many specialist psychiatric hospitals and psychiatry departments of general hospitals in Jiangsu, Zhejiang and other provinces and cities joined the mental hospital alliance. The scope of cooperation has expanded from expert consultation and instruction on ward rounds to two-way referral, joint construction of sub-specialties, multi-center studies, talent training, demonstration and promotion of new technologies and hospital management. In order to shift the focus of mental health services from the treatment of mental disorders to the improvement of public mental health, SMHC signed an agreement with the Shanghai Jiaotong University about the cooperation on college student mental health education in 2004, involving such aspects as education, medicine, and scientific research. Under the agreement, a series of activities were held, including the popularization of mental health knowledge, treatment suggestions on moderate and severe mental disorders of students and fast track referral, and scientific research on college student mental health. The model pioneered the mental health cooperation between mental health facilities and universities, providing a new perspective of professional mental health services. So far, the network has covered more than ten colleges in Shanghai directly or indirectly. The efforts made over the past two decades have played a key role in improving mental health and building professional mental health teams.

(II)   Establishment time: August 1997.

(III)   Initiator: Shanghai Mental Health Center (Shanghai Jiaotong University School of Medicine Affiliated Mental Health Center).

(IV)   Members: Twelve specialist psychiatric hospitals and psychiatry departments of general hospitals and more than 10 university psychological counseling centers in Shanghai; and 34 specialist psychiatric hospitals and psychiatry departments of general hospitals in 11 provinces and autonomous regions.

(V)   Cooperation model: SMHC partners with mental health facilities, including specialist psychiatric hospitals, psychiatry departments of general hospitals and university psychological counseling centers to integrate medical resources horizontally and vertically to develop a management model of shared resources and coordination and build a mental health alliance featuring prevention by hospitals and community clinics and association between teaching and scientific research.

(VI)   Goals: The goal of "significantly improving the prevention and treatment of common mental disorders and the identification and intervention of mental problems by 2030" mentioned in the "Healthy China 2030" will be achieved by interaction between core hospitals and peripheral mental health facilities, integration of medical resources, increased outpatient rate of mental problems, standard regulation on mental disorders, and improved management and scientific research of mental disorders.

(VII)   Work content and directions: According to the status quo of medical resources, the work content and direction of the loosely-organized mental health alliance are deliberated as follows: (i) Establish collaboration mechanism. By signing long-term cooperation agreements with alliance members, the alliance will enhance support for member hospitals, promote vertical technical cooperation, and improve targeted support system; (ii) Establish and improve the two-way referral mechanism. By upholding the principle of "willing patients, disease-based demands, hierarchical diagnosis, matched referral, shared resources, and continuous services", grass-roots medical institutions and SMHC realize seamless referral, under which the former can refer outpatients and hospitalized patients to the latter via a "fast track" by making appointments to enjoy prioritized diagnosis and hospitalization. The number of referred patients has so far reached about 200,000; (iii) Establish professional instruction and talent training mechanisms. In view of work demands and actual situation at member hospitals, experts or outstanding doctors at clinical and medico-technical departments should be sent to member hospitals regularly for outpatient services, ward rounds, and consultation instruction. Graduates recruited by member hospitals should receive uniform training.

Meanwhile, further training opportunities should be provided to employees of alliance members. The training courses for staff from alliance members can be received via remote network in the form of live or recorded broadcasting; (iv) Establish key discipline construction mechanism. The alliance will cultivate a group of excellent talents and discipline pioneers with emphasis on talent training, strengthen the construction of key clinical specialties, and improve medical services. Up to now the alliance has trained 1,000 employees and developed about 50 key disciplines; (v) Conduct remote consultation by tertiary hospitals and establish remote consultation information platform reaching grass-root medical institutions. Member hospitals adopt systems of digital medical records, remote consultation and clinical pathway management to realize the connectivity of medical information and resource sharing, enabling residents to enjoy medical services provided by tertiary hospitals in other provinces and national specialists, as well as offer strong support for the implementation of medical alliances; (vi) Relying on mental health quality control center, the alliance formulates and implements technical and management standards for mental health services to regulate such services; (vii) The alliance will establish a shared big data platform of clinical and scientific research and multi-center cooperation to promote research on mental health problems; (viii) The alliance will establish a regular platform of counseling, consultation and ward inspection in collaboration with member hospitals through the mental health alliance to realize remote consultation, two-way referral, and community visits for patients with mental disorders, build a regional and even national demonstration base of mental health diagnosis, and support the country's reform of medical system to promote hierarchical medical system.

Haidian medical alliance for mental disease prevention and treatment

(I)   Background: The demand for mental health services in Haidian District of Beijing is increasing, while community health service centers still lack professional counseling services, which require unified management by higher-level centers to provide better services and improve community centers' quality of diagnosis and treatment to serve

the public.

(II)   Establishment time: Wednesday, May 27, 2015.

(III)   Initiator: Peking University Sixth Hospital.

(IV)   Members: Peking University Sixth Hospital, PLA 261 Hospital, Haidian Mental Disease Prevention and Treatment Center, and community health service centers in Haidian District.

(V)   Cooperation model: Based on its advanced treatment technology and theory, quality resources and brand effect, Peking University Sixth Hospital is responsible for the diagnosis and treatment of complicated mental diseases, application of advanced and special diagnosis and treatment technologies, training and instruction for cooperative hospitals, mental disease prevention, technical support for rehabilitation, and promotion of mental health through cooperation in forms of paired support, mental health recovery services, two-way referral, talent training, health education, and information sharing.

(VI)   Goals: To improve mental health services in Haidian district, enhance the district's public service system, and promote the development of mental health industry to benefit local residents.

(VII)   Achievements: The alliance regularly sends attending doctors and higher-level experts to primary and second-grade hospitals or community health service institutions for ward rounds, outpatient services, employee training and consultation; also, key departments are paired to help each other so as to improve medical services of member hospitals.

Beijing-Tianjin-Hebei alliance for mental disease prevention and treatment

(I)   Background: In order to implement the "Beijing-Tianjin-Hebei Coordinated Development Plan", the "Beijing-Tianjin-Hebei Coordinated Development Action Plan for Health and Family Planning (2016–2017)", and the "Beijing-Tianjin-Hebei Agreement about the Cooperation on Mental Health and Oral Health" as well as enhance joint prevention and control of mental diseases, deepen regional cooperation on mental health services, optimize the allocation of mental health resources in the three regions, and meet the public's rising demand for mental health services, Beijing Anding Hospital, Tianjin Anding Hospital, and Hebei Mental Health Center signed the "Framework Agreement on the Beijing-Tianjin-Hebei Cooperation Center for

Mental Disease Prevention and Treatment" under the aegis of health and family planning commissions in the three areas on April 22. To further promote the joint prevention and control of mental diseases in the three places, the three hospitals, as core members of the Beijing-Tianjin-Hebei Cooperation Center for Mental Disease Prevention and Treatment, partnered with specialist psychiatric hospitals and general hospitals owning departments of psychiatry and psychology in the region to form the Beijing-Tianjin-Hebei alliance for mental disease prevention and treatment.

(II)   Establishment time: Wednesday, July 12, 2017.

(III)   Core members: Beijing Anding Hospital of Capital Medical University, Tianjin Anding Hospital, and Hebei Sixth People's Hospital.

(IV)   Other members: mental health facilities at municipal and district (county) levels in Beijing, Tianjin, and Hebei.

(V)   Cooperation model: The alliance upholds the principle of "complementary advantages, reciprocal cooperation, and joint construction and sharing"; capitalize on technical advantages and leadership of tertiary hospitals in Beijing, Tianjin and Hebei; set up platforms of technical instruction, scientific research cooperation and training via the alliance based on the quality of mental health services at local hospitals; promote the improvement of clinical services, discipline construction and coordinated talent training; expand mental health services to grass-root medical institutions; and improve the overall mental health services and creativity in the three regions so as to improve the public's mental health and access to relevant services.

(VI)   Goals: Further promote the joint prevention and treatment of mental diseases in Beijing, Tianjin and Hebei; integrate mental health resources and improve mental disease treatment in the three places; pool quality resources to promote the prevention of mental diseases and innovate diagnosis and treatment technologies.

(VII)   Work content and direction: (i) The alliance will closely work with local mental health service institutions to promote the integration of technical, human and information resources; establish cross-disciplinary cooperation between alliance members; promote standard mental health services at grass-root medical institutions; and constantly improve

mental health services in the three areas; (ii) The alliance implements hierarchical diagnosis and targeted referral service in the alliance to allow patients to receive effective treatment; (iii) The alliance mobilizes mental health staff's enthusiasm and creativity via the alliance's management organization and enhance the development of mental health service teams via staff training, visits for learning, professional instruction, and online consultation; (iv) The alliance will create an open and cooperative environment to unite experts, apply for key technological projects, conduct multi-center clinical research, and share resources to improve the alliance's technical innovation; (v) The alliance organizes academic discussions and exchanges on mental health services in Beijing, Tianjin and Hebei and enhances domestic and foreign cooperation to increase the alliance's influence on domestic and international mental health sectors; (vi) The alliance enables mentally ill patients in Tianjin and Hebei to enjoy high quality medical services without the need to go to Beijing, contributing to diverting non-capital functions and the coordinated development of mental health in the three areas.

The priorities for the near future are to explore the "Internet Plus Mental Health" service model, under which dig data about mental disease diagnosis and treatment will be applied to serve the public; establish special digital medical records system to standardize data information in the three places; capitalize on new technologies like big data and cloud computing to offer remote medical services; enhance the disclosure, sharing and usage of data about mental disease prevention and treatment, medical services and psychology in the three places to improve the efficiency of digitalization, support government management and scientific policy-making, and provide strong support for mental health development in three areas.

The Second Xiangya Hospital of Central South University specialist medical alliance

(I) Background: The establishment of special medical alliance is an important and innovative step in deepening medical reform. As early as March 1, 2011, the Second Xiangya Hospital of Central South University set up China's first cross-province medical alliance, which has expanded to include more than 200 hospitals in 21 provinces and cities and made efforts in improving medical services at grass-root hospitals.

(II) Establishment time: July 19, 2017.

(III) Initiators: National Clinical Research Center for Metabolic Diseases and National Clinical Research Center for Mental diseases of the Second Xiangya Hospital of Central South University.

(IV) Members: More than 100 hospitals in 20 provinces and municipalities.

(V) Cooperation model: Internet Plus-based seamless cross-region connection.

(VI) Goals: (i) To expand influence across Hunan and the whole country, interact with other medical alliances, and connect with world's first-class specialties; (ii) To promote the downward mobility of quality resources (e.g., technology and knowledge) toward communities; (iii) To increase the awareness of innovation, promote theoretical, technical and management innovation and enhance coalition and liaison to develop special medical alliance into communities of shared responsibility, development, technology, service and interest.

Anhui First Mental Health alliance

(I) Background: Since 2015, Anhui Mental Health Center has signed agreements on medical alliance with six centers including Maanshan Fourth People's Hospital, Bozhou Fifth People's Hospital, Chizhou Third People's Hospital, Feixi County Mental Hospital, Feidong County Mental Hospital, and Lujiang County Mental Hospital. Since July this year, the center has entered agreements with eight public hospitals including Fuyang Third People's Hospital, Anhui Province Veterans Hospital, Anqing Sixth People's Hospital, Lu'an Second Hospital, Suzhou Second People's Hospital, Chuzhou Second People's Hospital, Shuainan Fourth People's Hospital and Shuaibei Mental Hospital.

(II) Establishment time: August 30, 2017.

(III) Initiator: Anhui Mental Health Center (Hefei Fourth People's Hospital).

(IV) Members: Fifteen mental health facilities in 12 cities of Anhui province, covering the vast majority of areas in this province.

(V) Cooperation model: Based on advantageous medical resources in the province, the alliance improves the ability of members to treat critical mental diseases and mobilize existing medical resources horizontally by forming a special center comprising one core medical institution and its partners. Following the establishment of the alliance, Anhui Mental Health

Center will play a leading role, work closely with other members to promote talent training, academic exchange, standard hospital management, encourage the sharing and efficient use of medical resources, and promote the prosperity of mental health industry in the region.

Zhejiang mental health alliance

(I) Background: The medical reform in Zhejiang is in full swing. Under the "Healthy Zhejiang" strategy, the medical reform aims to address such issues as "difficult access to medical services, high medical costs and complicated medical procedures"; prioritizes functions of medical institutions, improvement of grass-roots services and clarification of two-way referral procedures; upholds the principle of government leadership, coordinated planning, public welfare, ability improvement, convenience to the public and benefits for the public; is demand-driven, problem-driven and effect-driven; strikes a balance between government and market, regulation and deregulation, and equity and efficiency; promotes the coordination between medical insurance, medical treatment, medicine, hospital, traditional Chinese medicine and doctors; pursues the goals of "effective system, quality service, and the public's strong sense of satisfaction about medical reform"; implements pilot reform programs in the province to ensure the completion of seven reform tasks and contribute to the establishment of a medical system with Chinese characteristics.

(II) Establishment time: September 2, 2017.

(III) Initiator: Tongde Hospital of Zhejiang Province.

(IV) Members: Forty-three specialist psychiatric hospitals in Zhejiang Province.

(V) Cooperation model: Balance four relations and solve four problems. (i) The alliance emphasizes the observation, thought, and action to understand issues better. Careful observation, deep understanding and feasible action are necessary to the work of alliance; (ii) Strike a balance between rules and goals to find out motivation. The constitution of the alliance should be formulated to guide the establishment of a community of shared responsibility, risk and interest. The core bond is to set up a community of shared interest, in which all members should develop. Most importantly, the general public can benefit from the alliance. The common vision is to become a top-rate medical alliance in China; (iii) Understand the relations between homogenization, differentiation and application of platforms to identify a pathway. Homogenization refers to the sharing of quality, technology and management and equality of alliance members, with each having advanced management experience to share. Differentiation means that members differentiate in the direction and scope of businesses, priorities of discipline development, and specialties. Application of platforms refers to the adoption of information technologies, such as Internet Plus and mobile terminals, by platforms of effective resource use and medicine, teaching and scientific research; (iv) The alliance strikes a balance among external conditions, internal mechanisms and development models to realize sustainable development. External conditions include state policies such as medical insurance and prices; it is highly important to innovate internal mechanisms and it is necessary to establish a mechanism of operation, work, and dispute settlement. Rules should be set up for management and decision-making, and attempts should be made to establish council of directors or management commission.

(VI) Goals: The alliance will take all necessary steps to enhance exchange and cooperation between members in hospital management and clinical practices; promote common development and progress; realize "resources' downward mobility, ability improvement, convenience to the public and benefits for the public"; address such issues as "difficult access to medical services, high medical costs and complicated medical procedures"; and pursue the goals of "effective system, quality service, high public health level and the public's strong sense of satisfaction about medical reform" to contribute to "Healthy China" and "Healthy Zhejiang" strategies.

West China mental health alliance

(I) Background: As a large tertiary general hospital in western China, West China Hospital has pursued the vision of "let people in the west to receive quality medical services equal to those in developed western areas". The hospital's key strategy to deepen national medical reform and keep up to the development of information technology is to explore feasible medical alliance models themed on "resource sharing and coordinated innovation" and set up open big data platforms. In this forum about regional cooperation on medical services, the hospital aims to partner with

other hospitals to work out a special development model featuring win-win cooperation based on members' complementary advantages, promote the coordinated innovation of psychiatry in medicine, teaching, scientific research and management, and advance the development of mental health industry in western China.

(II) Establishment time: September 30, 2017.

(III) Initiator: West China Hospital.

(IV) Members: Seventy-six organizations from 16 provinces and municipalities.

(V) Cooperation model: The West China Mental Health Alliance adopts an "open and dynamic" model of cross-region resource integration and achievement sharing, under which the mental health specialty connects advantageous disciplines of West China Hospital Mental Health Center with specialist technologies of other members.

(VI) Goals: The alliance aims to optimize mental health resources in the west, bring West China Hospital's successful experience to other medical institutions in the region, establish mental health management systems in grass-root areas to benefit more mentally ill patients, and expand the scope of clinical services and academic development of mental health.

Shaanxi mental health alliance for general hospitals

(I) Background: The department of mental and psychological health of the First Affiliated Hospital of Xi'an Jiaotong University initiated the establishment of the Shaanxi Mental Health Alliance for General Hospitals in order to further capitalize on the department's resources, improve diagnosis and treatment of mental diseases, promote homogeneous mental health services of general hospitals, explore the special medical association model for mental health, and promote the overall development of psychiatry and psychology departments of general hospitals in the province.

(II) Establishment time: October 14, 2017.

(III) Initiator: First Affiliated Hospital of Xi'an Jiaotong University.

(IV) Members: Thirteen institutions including Yulin First Hospital and Baoji Central Hospital.

(V) Cooperation model: The alliance plays a positive role in such aspects as hospital development, rating, two-way referral, talent training, complicated cases, and special medical alliances.

(VI) Goals: Tap resources of the First Affiliated Hospital of Xi'an Jiaotong University's psychiatry and psychology department; improve diagnosis and treatment of mental diseases; promote homogeneous mental health services; explore the special medical association model for mental health; promote the overall development of psychiatry and psychology departments of general hospitals in the province; introduce guide on the diagnosis and treatment of mental and psychological disorders; improve the quality of psychiatry and psychology in the rating of general hospitals; implement hierarchical diagnosis of mental diseases; enhance prevention of mental diseases and mental health services in the province.

South China mental health alliance

(I) Background: As China's first mental hospital and a leading mental health institution in Guangdong, Guangzhou Huiai Hospitals has been committed to improving mental health services. Since 2009, the hospital has signed agreements with 27 specialist psychiatric hospitals. The hospital initiated the establishment of the South China Mental Health Alliance in order to promote the development of medical alliances and improve treatment, teaching, research and prevention of the region's mental health industry.

(II) Establishment time: Sunday, October 22, 2017.

(III) Initiator: Guangzhou Huiai Hospital.

(IV) Members: Thirty-nine specialist psychiatric hospitals and psychiatry departments of general hospitals from Guangdong and other provinces.

(V) Cooperation model: Professional, not-for-profit cross-region medical alliance. Under the articles of association and cooperation agreements, the alliance conducts resource integration, technical support, talent training, two-way referral, and remote consultation.

(VI) Goals: Tap alliance members' advantageous resources via sharing and cooperation; offer technologies and talent training to medical institutions to promote the cultivation of mental health staff in southern China; increase technical innovation and academic influence of mental health; promote the sharing of regional medical resources; improve the ability of alliance members to treat critical and complex diseases; promote coordinated development of mental health in the region; and improve mental health services in southern China.

Chain model of Wenzhou Kangning privately-owned specialist psychiatric hospitals

(I) Background: Kangning Hospital Affiliated to Wenzhou Medical University (Wenzhou Kangning Hospital Co., Ltd.) is the only privately-owned tertiary mental hospital in China. The hospital has set up a mental hospital group that runs a chain of mental institutions, in a bid to further capitalize on mental health resources and institutional advantages of privately-owned hospitals, increase the treatment and diagnosis efficiency, meet mentally ill patients' demands, and explore a model for mental health facilities to share resources and management experiences.

(II) Implementation time: March 2011.

(III) Flagship hospital: Wenzhou Kangning Hospital.

(IV) Members: Eighteen specialist psychiatric hospitals and 4 cooperative institutions across the country, mainly in Zhejiang; school of psychiatry of Wenzhou Medical University established in collaboration with Wenzhou Medical University, which enrolls full-time undergraduates and graduates.

(V) Chain model: The chain operation is realized via establishment, joint establishment, M&A, and entrustment (including that of public hospitals). The philosophy, management model, and service standards of the flagship Wenzhou Kangning Hospital are copied to chain institutions based on local policies. Human, management and technological resources of the chain institutions are coordinated for sharing.

(VI) Goals: To become a large chain of mental health facilities in China; align with national mental health service system plan; strive to increase the total amount of mental health resources; optimize the allocation of resources to meet the public's diversified demands for mental health services; spread the spirit of "professional guardians of mental health" and "decent medical care for patients with mental disorders"; embody the core value of "respect life and serve humbly"; and make contribution to the development of mental health industry in China.

Difficulties in the construction and development of mental health alliance

Model of medical alliance

Most urban medical alliances are led by a tertiary hospital and comprised of several smaller hospitals. This model requires the leading hospital to have strong capital reserves and technology resources, and doctors from the hospital should be additionally rewarded and compensated for their assistance to grass-root hospitals.

For a loose medical alliance, the tertiary hospital and other members are not part of "a big family". On one hand, there is a conflict of interest between the members—the core hospital will cover extra cost for sending doctors to provide help at other hospitals, while its revenue will decrease because some patients are persuaded to get treated at these hospitals. On the other hand, a series of obstacles are standing in the way to push ahead with the alliance, including: patient information cannot be shared among hospitals due to incompatibility of their information systems; hospitals adopt different standards on medical quality and health test and therefore test results cannot be mutually recognized; large hospitals are reluctant to help smaller ones because of high staff turnover and high cost and low efficiency of knowledge exchange; and patients are reluctant to be transferred to lower-level hospitals because they believe they would get better services at larger hospitals. Therefore, when a medical alliance is formed, the biggest beneficiary might be large hospitals, and smaller ones are still unable to improve their medical expertise and retain patients. A primary challenge for building a specialist medical alliance is that grass-root hospitals must be reliant on academic assistance from a top hospital so as to make the two-way referral mechanism sustainable. Training programs can help grass-root hospitals improve professionalism, but the process must be long enough to be meaningful and effective. There are even more prominent problems surrounding the remote cooperation network. For instance, many test results cannot be immediately available to remote doctors, and remote consultation expenses cannot be covered by the medical insurance; nobody would be held accountable if there is any error or omission in the remote medical consultations; moreover, there are no face-to-face communications between the patients and remote doctors.

Management regime
There is a lack of systematic management regime and operating mechanism for medical alliance
Medical alliance is an alliance of cooperation and coordination between hospitals to break down constraints of the administrative management framework, and the alliance is backed by a stringent medical management system as well as a sound hierarchical medical system. Based on the

existing regional rules and regulations as well as hospital management systems, there has not been any place in China that has a well-established management system and operating mechanism for medical alliance. A large majority of such alliances are governed by self-discipline and internal agreements, and they are lack of rigid requirements and constraints, as well as effective mechanisms to share resources, cost, and economic interest.

Inadequate support from the medical insurance system

A great barrier to medical alliance is the inadequate support from the medical insurance system. For example, some primary and second-grade hospitals have opened wards together with tertiary hospitals, but it remains unclear how much hospitalization cost and outpatient expenses would be covered by the medical insurance. These problems are holding back hospitals from forming or participating in a medical alliance, and threatening the sustainability of the two-way referral.

Establishment of medical alliance is restricted by administrative system

The absence of unified administrative divisions has weakened internal management within the medical alliance. Health authorities may have to cede some administrative powers to the core hospital, so that it can have greater authority to manage other hospitals and distribute resources. Without a sound model of governance and unified economic management, a medical alliance is not going to be sustainable.

Mental health facilities
Regional differences

Due to regional differences in population and economic conditions and different management and operating mechanisms between the health institutions, there are huge disparities in the quality of service and wage levels at these institutions.

Conflict of interests and high cost

The cooperation among public medical institutions involves multiple stakeholders that tend to maximize their own interests. While these stakeholders share the same interest from the long-term perspective, there could be a conflict of interest in the near term. After decades of operation and management, hospitals have different cultures and values, and they might have a potential conflict of interest. Furthermore, the medical alliance can cost a lot of money in the initial stage.

Subject to impact of management system and medical insurance policies

Provincial, municipal and district hospitals are governed

and funded by the same level of governments, and medical alliance involves complicated issues such as the fiscal budget appropriations and medical insurance payments. Medical insurance payment mode has a significant impact on medical services to be provided by public hospitals, and the extent of medical insurance coverage also impacts the operation and development of a medical alliance. Based on the current medical insurance system, hospitals may be reluctant to receive some patients so as to maximize their own interest, which may hurt the interests of the patients and the State. Meanwhile, different expense reimbursement standards at different hospitals can stall the two-way referral, causing excessive or insufficient treatment and damaging the interests of the patients and the State.

Chapter three: development of medical alliances for mental health in China: suggestions and prospects

Section 1: recommended models of medical alliances for mental health

According to the National Health and Family Planning Commission's "*Guiding Opinions of the National Health and Family Planning Commission on Piloting the Construction of Medical alliances*" (GWYF [2016] No. 75) and the General Office of the State Council's "*Guideline on Advancing the Construction and Development of Medical alliance*" (GBF [2017] No. 32), the construction of a medical alliance is typically initiated by a high-level medical institution (hereafter referred to as the "initiator") and participated by medical facilities at different levels or of different categories (hereafter referred to as the "members"). Privately-owned medical facilities are encouraged to participate in the alliances. According to policy documents, medical associations shall be established in cities, medical communities in counties/districts, and medical alliances across different regions; also, telemedicine collaboration networks shall be established for remote and impoverished areas. Due to the special nature of mental health, the availability of mental health associations can be explored via four dimensions (*Table 6*) hospital categories (e.g., psychiatric hospitals, psychiatric departments in general hospitals, and private specialist hospitals), regional distribution (inside or outside a specific region), combination modes (vertical or horizontal), and communication and cooperation approaches (online or offline).

Table 6 Four dimensions that can be considered during the construction of a medical association

Dimension	Category	Mode
I	Hospital category (initiators)	Psychiatric hospitals, psychiatric departments in general hospitals, and private specialist hospitals
II	Regional distribution	Inside and outside a specific area
III	Ways of combination	Vertical and horizontal
IV	Exchange and cooperation approaches	Online and offline

Closely-organized longitudinal medicated alliance
Initiator
Tertiary psychiatric hospitals or psychiatric departments in large general hospitals.
Members
Second-grade hospitals and CHCs inside a region.
Scope of cooperation
Based on its advanced treatment technology and theory, quality resources and brand effect, the initiator is responsible for the diagnosis and treatment of complicated mental diseases, application of advanced and special diagnosis and treatment technologies, training and instruction for cooperative hospitals (i.e., second-grade hospitals and CHCs), mental disease prevention, technical support for rehabilitation, and promotion of mental health through cooperation in forms of paired support, mental health recovery services, two-way referral, talent training, health education, and information sharing.
Implementation pathway
(I)   The initiator appoints sub-regional experts who are responsible for the cooperation and management in the corresponding region of the medical alliance, with defined duties and responsibilities;
(II)   a platform for achieving the interoperability of information on diagnosis and treatment services will be established to promote uniform diagnosis and treatment, professional training, and medical information disclosure;
(III) system will be designed to achieve the coordination of referral and consultation, special checks, clinical quality control, and rehabilitation management.
(IV)   special funds will be established to support the training

of grass-roots first-line mental health workers;
(V)   rating mechanism will be established to assess the achievements of the annual goals of the medical alliance;
(VI)   a sign of "XXX Medical Alliance Member Institution" is hung in each member facility.

Cross-regional horizontal medical alliance
Initiator
Tertiary psychiatric hospitals or psychiatric departments in large general hospitals.
Members
Psychiatric hospitals or psychiatric departments in general hospitals inside and outside the region.
Scope of cooperation
The alliance will capitalize on technical advantages and leadership of tertiary hospitals in the region; set up platforms of technical instruction, scientific research cooperation and training via the alliance based on the quality of mental health services at local hospitals; promote the improvement of clinical services, discipline construction, and coordinated talent training; expand mental health services to grass-root medical institutions.
Implementation pathway
(I)   The alliance will set up platforms of technical instruction, scientific research cooperation and training via the alliance based on the quality of mental health services at local hospitals;
(II)   the alliance implements hierarchical diagnosis and targeted referral service in the alliance to allow patients to receive effective treatment;
(III) the alliance mobilizes mental health staff's enthusiasm and creativity and enhance the development of mental health service teams via staff training, visits for learning, professional instruction, and online consultation;
(IV)   the alliance will organize experts, apply for key technological projects, conduct multi-center clinical research, and share resources to improve the alliance's technical innovation.
(V)   the alliance organizes academic discussions and exchanges on mental health services in the region and enhances domestic and foreign cooperation to increase the alliance's influence on domestic and international mental health sectors.

Remote medical alliance
Initiator
Tertiary psychiatric hospitals or psychiatric departments in

large general hospitals.

Members

Psychiatric hospitals or psychiatric departments in general hospitals inside and outside the region.

Scope of cooperation

Cooperation model: Cooperation across administrative areas, affiliations, and ownerships. Operating model: Through the remote medical service networks consisted of initiators and medical institutions in grass-root and underdeveloped areas, public hospitals provide remote medical services, remote teaching and remote training to these areas, promote the vertical mobility of resources via digital channels, and improve the accessibility of quality medical resources and efficiency of medical services.

Implementation pathway

(I) A telemedicine service network with uniform hardware and software will be established;

(II) each facility has a special convener who is responsible for the coordination of schedule management and hardware and software support;

(III) a mechanism for regular web-based communication on difficult and complex cases and web-based rounds will be established;

(IV) a remote medical education and training platform will be established to strengthen talent training;

(V) on the basis of remote consultation, the real-world two-way referral will be promoted.

The private hospital chain group

Initiator

Private psychiatric hospital.

Members

Psychiatric hospitals established by chain hospital groups inside and outside the area.

Scope of cooperation

Through stock expansion and system reform, grade A private psychiatric hospitals experience transition from mono-operations to groups, forming hospital chains under the uniform management of a group in regions that lack specialist mental health facilities. Social capital cooperates with experienced public medical facilities to establish medical services. With clear ownership relationships, they establish medical facilities under the corporate governance structure.

Implementation pathway

(I) The private hospitals establish a closely-organized medical group and a chain operation system, allowing the sharing of medical and health resources within the group and the sharing of medical records and free referrals of patients and thus improving the group's overall business capabilities on the premise of ensuring the interests of each private hospital;

(II) utilizing the advantages of social capital in running medical services and with uniform management mode of the group, the private hospitals are equipped with complete hardware and software to promote the standardization and integration of diagnosis and treatment;

(III) the private hospitals jointly run medical services with experienced public hospitals to conduct talent training and resource sharing and to promote hierarchical medical treatment and two-way referral;

(IV) the private hospitals optimize its talent training system, develop effective talent-retaining mechanisms, solve the issues faced by many private hospitals such as insufficient talent pool, irrational talent structure, and high talent turnover rate, and thus promote sustainable development of private hospitals.

The above four medical alliance models are based on the national policy documents, status quo in mental health services, and past experiences. All of them are relatively simple medical alliance models. In the real-world practice, mental health resources can be integrated according to the specific conditions of a facility and the region it is located in to establish a medical alliance with one or more cooperation models, so as to better meet the real situations and optimize the cooperation model of the medical alliance.

Section 2: suggestions on the establishment and development of mental health alliances

Suggestions on the establishment and development of mental health alliances

Enhance top-level design and coordination

The roles, positions and relations of all stakeholders including governments, authorities, institutions, staff, and patients and their families should be clarified so as to learn about their needs, connect relevant policies, and balance interests to develop healthy relations. Top-level design should be improved to coordinate communications between governments and authorities at all levels to break such bottlenecks as regional constraints and separate management. It is important to consider issues of how to fairly allocate benefits among members of a medical alliance and how to phase in medical alliance in such fields as scientific research, teaching, and clinical practice to benefit

the stakeholders, in a bid to avoid loosely-organized ones that lack binding interests and sharing mechanisms.

Principles of top-level design include:

(I)   leadership under core hospitals: Establish a medical alliance led by one or more leading hospitals and set up an effective management organization to ensure efficient performance of the alliance;

(II) hierarchical medical system: Specify functions and responsibilities of each medical institution in a medical alliance, establish and improve the pathways for the implementation of hierarchical medical system of at different levels, and take into account the consolidation of mental health resources via hierarchical medical system during the establishment of regional vertical alliance;

(III) equality: Make sure patients can get equal access to services provided by any member of the medical alliance;

(IV) informatization: Capitalize on up-to-date information and Internet technologies to keep up with the requirements of the new era, improve the collection, integration, analysis, and utilization of data inside and outside a medical alliance, and promote the advances in clinical practice, teaching, and scientific research by means of information technology.

From phased consolidation to in-depth consolidation of quality resources

The *Guiding Opinions* sets a two-stage goal of establishing medical alliance from setting up institutional framework to improving policy system. Mental health is a major public health issue, and the establishment of medical alliances should highlight the interests of patients and enable member institutions to complement each other so as to break their respective bottlenecks. Short-term and medium- to long-term targets should be set in accordance with the requirements of medical reform and implemented in a phased manner.

(I)   Short-term targets: To improve service quality and efficiency by standardizing the professional services, optimizing the discipline layout, and achieving differentiated development, with clear institutional functions, improved hierarchical medical system, and reasonable patient triage as the breakthrough points. Medical alliance under different modes may focus on different directions in clinical practice, teaching, and scientific research.

(II) Medium- to long-term targets: (i) To improve the

utilization efficiency and consolidation of mental health resources by innovating management systems and adopting information technology; and (ii) to conduct property right reforms in closely-organized medical alliances to motivate medical staff and improve service quality.

Systematic design covering various mental health resources including talents, funds, and materials

(I)   Human resources: On condition that hospitals are basically well equipped, medical alliances should give special support to brain gain, team building, and career development. For instance, psychiatrist teams comprising leading experts and researchers can be established to give regular lectures, home visits and ward rounds as a way of enhancing the mobility of psychiatrists and talents based on complementary advantages; or, the medical service quality of psychiatrists can be further improved via standard training systems for residents and specialists at psychiatry departments.

(II) Ensure the quality of medical services: Medical alliance should follow uniform quality control standards for synchronized management; remote consultation centers and multi-site practices should be introduced to increase patients' access to diagnosis and treatment services by senior psychiatrists; and, a two-way referral fast-track for patients with severe diseases should be established to enhance coordination among alliance members.

(III) Special funds: Governments should earmark funds for vertical medical alliance to cover expenses on public mental health services. Governments should increase funding in mental health services to maintain medical alliance' nature of serving the public good and improve the utilization efficiency of government funds via the medical alliances. Horizontal medical alliances should raise funds for internal information platforms, data connectivity, and sharing of teaching and clinical experience to facilitate the mobility of mental health resources but not at the price of affecting compulsory public services for local mental health.

(IV) Enhanced support from insurance payments: The medical insurance system should introduce mental health accounts to support various payment methods inside medical alliance. Health economics should be used to estimate the cost-effectiveness of treating mental diseases inside the alliance and assess the

efficiency of different reimbursement methods, such as capitation and payment per diem, so as to tap the alliance' functions of integrating mental health resources of hospitals at different levels and promoting downward mobility of medical resources.

(V) Investment from the private sector: Private-sector investment is supplementary to insufficient government investment. On one hand, private-sector investment can narrow the shortage of government investment, promote the development of hospitals, and meet the demands for medical services at different levels; on the other hand, it helps introduce competitors and reduce the possibility of monopoly by oversized medical alliances. Meanwhile, feasible measures, such as tax credits, should be adopted to encourage social investment via multiple channels as well as regulate the size of medical alliances through the market mechanism, which also protects the interests of patients.

Suggestions on promoting hierarchical medical system under the framework of medical alliance (30)
Improve the two-way referral model and enhance cross-level connection

The core hospitals in a vertical medical alliance are mainly responsible for diagnosis and treatment of complicated diseases, technical support, training and performance assessment of lower-level psychiatric institutions, and two-way referral. Lower-level mental health facilities are mainly responsible for the diagnosis and treatment, rehabilitation, and two-way referral of common chronic mental diseases as well as for the recruitment and training of family psychiatrists for communities. To protect the privacy of patients, the trained family doctors will take the responsibilities of awareness-raising, screening, assessment, preliminary diagnosis and treatment, and rehabilitation of mental diseases in an assigned area and be responsible for two-way referral with higher-level mental health facilities. Possible losses caused by this should be minimized via increased value and income of high-end medical services as well as policy and financial supports from lower-level institutions and relevant government authorities.

Promote the "multi-site practicing" to encourage famous doctors to visit grass-root communities

Multi-site practicing is a prerequisite for implementing hierarchical diagnosis. Aside from completing their work, famous clinicians at core hospitals can engage in medical activities including outpatient services, ward rounds, and lectures at grass-root clinics in spare time. Expenses on these activities are paid by the grass-root clinics to the clinicians and municipal-level medical institutions at certain proportions according to job performance. Besides, grass-root medical institutions can bid for services offered by famous clinicians, and higher-level medical institutions can deduct a percentage from the receipts. The model promotes the reallocation of high-end medical resources, enhances the attractiveness of grass-root medical institutions to patients, encourages doctors at higher-level hospitals to visit grass-root ones, mobilizes doctors to improve professionalism and personal value, protects economic benefits of municipal-level hospitals, and reduces the resistance of large hospitals to hierarchical diagnosis. It is easier to implement multi-site practicing among alliance members to promote the downward mobility of quality mental health resources.

Adjust psychotropic drugs in basic health insurance categories and optimize drug circulation channels

While many psychotropic drugs have been included in the national and provincial basic health insurance categories, their applications in grass-root mental health facilities are unsatisfactory. In future, more commonly used psychotropic drugs should be included in drug catalogues of medical alliances according to big data analysis on drug usage at mental health facilities. Relevant training should be performed on grass-root doctors, so as to improve the uniformity of clinical drug use. Gradual reducing outpatient prescription dosages at core hospitals of closely-organized medical alliance and increasing dosages at grass-root medical institutions can facilitate the implementation of hierarchical medical services. Besides, further measures should be taken to optimize drug circulation channels, such as allowing patients to buy prescribed drugs at designated pharmacies or online drugstores.

Strengthen policy support and accelerate personnel reform

Due to the non-profit-seeking nature of mental health services, the more the core hospitals invest in such services, the greater their losses will be. It is not enough to depend on the spirit of devotion alone to formulate a long-term mechanism, so policy and financial support from relevant government authorities and institutions are needed, such as support from disabled persons' associations and civil affairs system, investment from national and local governments, and reforms on medical insurance policies and payment methods. New medical insurance policies should try to tilt toward the grass-root level and increase disease-specific payments covered by medical insurance. Medical insurance

payments should shift to the capitation gradually. A cap should be imposed on the payment amount covered by medical insurance for critical diseases at core hospitals. As the ineffective personnel systems and performance assessment systems at grass-root medical institutions severely hinder the implementation of hierarchical medical services, the reform on the systems should be accelerated to mobilize grass-root medical staff.

Enhance homogeneity of medical resources by establishing "medical group"

Many disciplines, such as heart and blood vessels, brain surgery, dentistry, and ophthalmology, have introduced the operating model of "medical group". Medical group is an important way to realize multi-site practicing: doctors can form a group to be independent of administrative operation, play to their potential, have a bigger say, and increase their incomes; patients can receive quality medical services and resources as efficiently as possible; and medical institutions can cooperate with outstanding doctors on advanced technologies to improve medical services. The development of medical groups faces grand policy opportunities and takes on three models: in-system groups like Wanfeng Cardiovascular Expert Alliance and Dajia Medical Alliance; outside-system groups like Zhang Qiang Medical Group and Xing Xiang Yuan; and mixed model groups like We Doctor and Sanjia Medical Group.

Similarly, medical groups can be established at tertiary psychiatric hospitals. Each sub-discipline can form a team of doctors at different levels led by top clinical experts. Meanwhile, second-grade mental health facilities can select outstanding psychiatrists to join the teams for training and receive regular rotation and assessment according to specialist training models. During rotation, a tutorial system is adopted. Heads of medical groups are tutors who make learning plans and instruct learners; learners have to receive an examination by a group of experts from municipal-level and district-level hospitals. If they fail the examination, their tutors will be punished. Learners who succeed in the examination will train doctors at their own medical institution to improve the professionalism of district-level mental health facilities.

The Division of Mood Disorders and the Division of Child & Adolescent Psychiatry of the Shanghai Mental Health Center have signed a contract with Shenzhen's "Three Famous Project" to provide high-end mental health services to the city, which is an attempt of in-system medical group.

Realize effective communication and resource sharing through information technology

Some tertiary psychiatric hospitals have digitalized outpatient medical records and hospitalization medical records and basically completed the establishment of digital clinical pathways to promote digital medical records and clinical pathway systems to grass-root mental health facilities, realizing resource sharing and facilitating hierarchical medical services. Due to its dependence on face-to-face communications rather than medical devices, the department of psychiatry is especially suitable to adopt a mobile medical model. Tertiary psychiatric hospitals can set up remote diagnosis and treatment centers for complicated diseases by providing partners with remote consultation services through information technology, so as to save resources and improve efficiency.

In view of the enhanced influence of media publicity on the public due to new information technologies and the leading role of media in the publicity of high-end medical resources, it is important to increase the publicity of medical alliance, hierarchical medical services, and relevant preferential policies to enhance the general public's access to information on mental health resources, guide the public toward more reasonable medical services, increase the consultation rate and treatment rate of mental diseases, and destigmatize mental diseases.

Section 3: outlook of the construction of mental health alliances in China

In the United States and most European countries, mental health has long been part of their public health care systems. All people, poor or rich, can get access to government-funded mental health services. We are now striving to build socialism with Chinese characteristics, and all stakeholders, especially government leaders, should be fully aware of the imperativeness and importance of strengthening efforts to develop a sound mental health system. Fiscal authorities should increase budget appropriations for mental health services based on the socioeconomic levels and the public demand for such services. Health departments should provide a range of mental health services, ensure the sustainability of mental health services, introduce advanced foreign models, approaches, and technologies on mental health management, establish a set of mental health service standards based on China's national circumstances, and develop effective supervision mechanisms and reasonable

performance assessment mechanisms to promote the standard and orderly development of mental health services in communities. In addition to cost, service quality, and efficiency, equal access to mental health services is also an important consideration.

Medical alliance has been an effective means of organic combination of medical resources in China. Since the 1980s various practices such as merger, trust management, and setting up enterprise group have been explored to integrate medical resources. The launch of healthcare reform and the release of the latest policies and regulations have put medical alliance in the spotlight. Medical alliance is a primary approach to integrate medical resources and offer coordinated healthcare services, and also an important solution to build a hierarchical medical care system that enables first diagnosis at root-grass clinics, two-way referral, triage of chronic and acute diseases, and cross-level connection.

There have been growing calls in recent years to set up medical alliance for mental healthcare, and some progress has been in sight. However, some significant questions have yet to be clearly answered, such as the best framework of the medical alliance, the major forces behind it, and the development trends. Some medical institutions under an alliance are associated but not closely integrated, and the lack of sufficient integration has made it harder for medical alliance to unleash its full potential and hampered the push to build a hierarchical health care system. Several issues require further considerations as we continue with practical explorations to develop well-functioning medical alliance in the field of mental health (41).

(I)   Development of the medical alliance model. There are different types of medical alliance based on the disparity in rights, responsibilities, and interests at different medical institutions, as well as changes in their assets, management authority, and resource distribution. In most cases, core hospitals and partner hospitals are separately operated and managed although they share resources like technologies, talents, medical equipment, and training. Due to a lack of administrative relations between the partners and their different management and operation mechanisms, their alliance is very limited and loose. Because of administrative, personnel and management obstacles, these medical institutions are unlikely to form a strong community of shared interests,

hindered by the formidable challenge to push for institutional reform. Conducting centralized management of personnel, assets and resources at all medical institutions and forming a community of shared interests and responsibilities is the right path to success. To that end we must work out effective solutions to ownership restructuring and institutional reform.

(II) Leading forces behind the development of medical alliance. What roles should the government and the market play in the healthcare services? That has always been a central and tough question during China's medical reform. Should the government or the market play a leading role in the formation and development of medical alliance? That's the first question to be answered, because the answer will tell us whether the government has to push for the formation of medical alliance, and which model of medical alliance is the best choice. There are both advantages and disadvantages for an alliance led either by the government or by the market. If the government leads the process, some medical institutions may be reluctant and forced to join the alliance, and their lack of enthusiasm would fuel skepticism about the benefits supposed to be brought by a medical alliance. If the process is dominated by market forces, it will trigger monopoly concerns that the healthcare market might be largely controlled by hospitals operating under the alliance. Since medical alliances are formed under different backgrounds and different models at different regions, we cannot jump to conclusions that the government, or the market, should lead the process. But we believe that both sides can play positive roles based on special conditions and demands at different places.

Therefore, we should make further explorations and improvements to build better medical alliances from the following perspectives (41).

(I)   The process can be spearheaded by the government and supported by the market. Firstly, when a medical alliance is established on the basis of various models or developing at different stages, the process should be spearheaded by the government and supported by the market. We do not have to overstate the role played by the government or the market; rather, we should understand that

they are supplementary and helpful to each other. Secondly, we should get a clear picture about the organizational structure of a medical alliance, the means of cooperation as well as the functions and positions of each partner. The government should not try to forcibly pull together several hospitals and forge a medical alliance, instead it should call for voluntary participation in an alliance headed by a core hospital and joined by a couple of grass-root clinics, so that the alliance can be strong and sustainable. Meanwhile, during the development of a medical alliance, the government should streamline administrations and delegate powers and focus on effective regulations and oversight by drafting laws, rules and policies, while medical institutions should be granted greater autonomy to conduct and manage their medical practices.

(II) Work out appropriate measures in response to different alliance models. Property right reform and asset ownership are two crucial factors to develop effective medical alliances. Property right represents the legal nature of an economic relationship, including the right to own, the right to possess, the right to use, the right to claim benefits, and the right to dispose of. When we push for the formation of a medical alliance, we should carry out property right reform or property restructuring, or clarify property ownership in the first place. That's a progressive process, and we can get started by setting up a service alliance, which involves no constraints on management and operation mechanisms. Building on the initial success we can move to address more complicated issues like fragmented management regime, administrative rankings and fiscal budget appropriations, and create a balanced governance structure led by the board of directors and board of supervisors. The two boards are mandated to make important decisions and oversee day-to-day operations so as to develop close cooperation between the medical partners and realize the preset goals.

(III) Increase government funding commitments to drive the construction and development of medical alliances. Under different models of medical alliance or different development stages of the same model, the government should make reasonable estimates about the development cost. In the initial stage, government funding should be focused on infrastructure, such as building a regional information platform, buying medical equipment, constructing medical buildings, and establishing resource-sharing centers. After the medical alliance becomes operational, the government should offer subsidies to the core hospitals for their instructions and assistance to grass-root hospitals.

(IV) Attract private investments to promote the development of mental health alliances. The number of private mental health agencies has seen explosive growth in recent years. China added 423 private specialist psychiatric hospitals between 2010 and 2015, and 22.31% of all specialist psychiatric hospitals are now operated by private entities. Continued private investments have accelerated the development of mental health in China. Some private hospitals joined hands with public ones to open mental health clinics, and some even opened chain clinics to provide mental health services. These market-oriented moves are evidence of the complementary roles played by private capital in the establishment of mental-health medical alliance.

As previously mentioned, mental health features distinctive characteristics. Mental health centers should strive to pursue multidimensional development so as to build bigger and stronger medical alliances.

(I) Stand at a high position. Mental health centers shall hold a sense of mission and a sense of responsibility about mental health services, have a profound understanding about the public nature of such services, shoulder social responsibilities and protect the dignity of mental patients, strengthen public education to eliminate discrimination against mental patients, and support government policies and measures.

(II) Hold a long-term view. Mental health centers shall make sure mental patients can receive longstanding treatment, beef up efforts in clinical therapies and community management to sustain the healthy development of mental clinics, build sound hospital culture from the perspective of discipline construction and talent training, so that medical staff can benefit from the creation of a medical alliance and the alliances can bring better and more convenient services to patients with

mental disorders. Based on the implementation of a raft of policy documents, including the Guideline of the General Office of the State Council on Advancing the Building of a Hierarchical Diagnosis and Treatment System, the Guideline of the General Office of the State Council on Advancing the Construction and Development of Medical Alliance, and the Guideline of the National Health and Family Planning Commission on Further Strengthening Management on Drug Supplies and Use at Gross-root Medical Institutions, we can introduce the hierarchical health care system to grass-root clinics, scrap drug price markups and increase reimbursements for mental patients who get treated at these clinics.

(III) Broaden the perspective. We should view mental health as part of the big medical science, make good use of the specialized mental health agencies' expertise to develop psychosomatic medicine, and launch clinical consultations to provide professional mental health services. The integration of psychiatry with clinical psychology offers more professional mental health services, which are no better choice to advance the development of mental-health medical alliance and to meet public expectations for a better life, which is urgently required by the society and also the major issue to be addressed in the management of mental diseases. In addition, we can use information tools like Internet Plus and big data analysis to optimize the establishment and operation of the medical alliances.

Many issues such as the positive role to be played by the medical alliances on grass-root clinics at different stages, the possible connections between medical alliances and rising medical costs, as well as the development trend of medical alliance remain unresolved and require further investigations. The construction and development of mental health alliance is a longstanding process requiring exploration and practicing, and the government should play a guiding and coordinating role to devise the framework, roll out supportive policies and measures, and achieve the original objectives of the medical reform - medical services should be more accessible to more people at affordable prices.

Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/jhmhp.2018.07.03). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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