Governance Mechanism of E-health in Chinese Urban Communities: The Case of Zhabei District in Shanghai

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Abstract

E-health governance can be divided into four kinds of models: government-oriented, market-oriented, government-market cooperation, and multi-collaborative governance. With the development of market economy, democratic consciousness and management philosophy, traditional e-health management faces many challenges. And multi-collaborative governance model is becoming a good choice for the community e-health. In order to further analyze the characteristics and applicability of this model and explore the sustainable development path, this paper selects Zhabei District as a typical case and distinguishes the roles of different governance bodies in community e-health. By this study, we recognize that the e-health governance of Chinese urban community has some problems, such as, insufficient involvement of non-governmental body, obvious conflict of interest and the lack of collaboration among the various subjects. Therefore, it is supposed to construct an integrated e-health development mechanism. Based on collaborative governance theory, the mechanism has to follow three basic principles. At the same time, effective operation of this mechanism need five mechanisms which include trust, communication and negotiation, cost sharing, supervision and feedback.

Key words: community e-health, collaborative governance, medical service, Zhabei District

E-health is the application of information and communication technology in the field of health. It has been brewing for many years in Europe, the United States and other developed countries, and gradually been valued by developing countries like China (Eysenbach, 2001; Blaya, 2010; Mars, 2010). In 2006, China issued "Outline of the National Plan for the Development of Science and Technology", claiming the establishment of an e-health system as one of the main contents of China health information construction (Chinese State Council, 2006). And then there follows the relevant pilot work. Since "new medical reform" in 2009, the e-health has achieved a lot of performance in the urban community as an important pillar of health reform. Along with the need of practice, the community e-health study has gradually been concerned by the academia. From the existing literature, the research focuses on the information sharing platform and the construction of e-health records. And the analysis perspective is relatively simple and short of comprehensive research. So it is urgent and meaningful to improve and expand the research depth and breadth. Based on the case study of Zhabei District e-health development, this paper aims to find out the governance of urban community in China, and to explore the mechanism of the multi-collaborative governance of community health and put forward some corresponding policy recommendations.

1. E-health needs a good governance model

1.1 Four models of e-health governance

The development of urban community e-health is a dynamic process, which is the result of participation or interaction among the government, the market and the social sectors. In practice, different countries have different governance models because of the differences in health care system, culture and historical development. According to the roles and functions of various subjects, the governance model of e-health can be divided into four types:

1.1.1 Government-oriented model

This model is typical in the UK, Sweden and other national health insurance countries, which usually integrates e-health construction into strategic plan of National Health Service. In this plan, the government plays a leading role in financial support, technology development and infrastructure construction, promoting the equalization of health service. However, there are some problems because of the shortage of participation with market and social sectors, such as the insufficient technical innovation power, low efficiency and single service project (Mars and Scott, 2010).

1.1.2 Market-oriented model

This type is represented by the United States. Free market mechanism is rewarded in e-health construction. It means that technology development and diffusion is dominated by some large internet companies and the technology and service are mostly purchased by private hospitals, breaking the monopoly of health services and

improving the service quality. However, due to the public nature and complexity of e-health, the market failure is difficult to avoid. The financial capital support is relatively weak, in which case, the e-health construction lack long-term planning and guidance, the development is relatively scattered and along with the overall development ran out of steam (Beratarbide and Kelsey, 2013).

1.1.3 Government - market cooperation model

Influenced by the new public management theory, some countries change the government role gradually from the original "paddle" into "steer" (David and Ted, 2006). That is, when giving macro guidance to the health construction, the government could contract specific parts of some service projects to the market department, forming government market cooperation type e-health governance mode. This type is reflected in Singapore health construction work. In theory, it is beyond the level of government oriented and market oriented, which helps to overcome the drawbacks caused by a single dominant. However, in practice, the discourse power of the two departments is difficult to coordinate, and with the rise of civic consciousness, the neglect of social sector participation in the management ideas is also facing severe challenges.

With the rapid change of political, economic, and social structure, the failures in providing services by any single subject and linear organization among the government, market and society department has become increasingly apparent. For this kind of situation, collaborative governance gradually receives the public attention. Collaborative governance refers to a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets (Ansell and Gash, 2008). As for e-health, its multi-cooperative governance is about the mutual consultation, resources coordination and cooperation among three departments, which transcends the traditional thinking mode of dualism and pursues the multi-main-body governance hierarchy and the integration and coordination function. And the governance model reflects the reshaping and adjustment of the relationship among government, market and society. E-health in Canada has more obvious multivariate synergy characteristics. Canadian government plays a role with more "service", not "steering"(Denhardt, 2007). Besides fully affirming and giving more power to social sector, in 2001 they also established a special non-governmental organization-Health Infoway. Health Infoway is responsible for guiding national medical information construction. About the financial support, Canadian governments mainly focus on the investment of e-health strategic plan, which is different from direct investment in the software development in British.

1.2 Multi-cooperative governance: the rational choice for community e-health

The practical experience of different countries shows that multi-collaborative governance has obvious advantages. In view of the characteristics of the e-health system, the multi-cooperative governance is also a rational choice for community e-health.

First of all, e-health belongs to quasi public goods (Sun and Fang, 2012). On the one hand, the e-health technology development and application in the community requires the government to provide basic financial, political and legal support, to establish universal coverage of e-health records service and meet the residents' basic health needs. On the other hand, the government investment in e-health is large-scale and systematic. And it is difficult to meet the diverse needs of residents because of the simple service. Therefore, developing e-health should pay attention to the various agencies, including the government, market and social sectors.

Second, e-health is a complicated socio-technological system. It does not only involve the basic technology development and diffusion, but also relates to the social relationship and interest distribution. In the matter of technology development, e-health is the interdisciplinary collaborative governance. It means that technology innovation must focus on the comprehensive use of multi-disciplinary knowledge and the interaction between enterprises and scientific institutions (Wickramasinghe, Geisler and Schaffer, 2005). In social systems, e-health is related to heterogeneity among different organizations and cultures. The traditional link relationship rooted in the physical health affairs is gradually replaced by the network relationship, which is based on the Internet and composed with different stakeholders (Eysenbach, 2008). The mutual interests are intertwined and cooperation can coexist with competition in this new link relationship. Therefore, community e-health must be constructed on the basis of regional information sharing platform. Also, it is important to strengthen interest coordination and resource integration of different sectors.

Third, users' (such as physicians and patients) acceptance and recognition of e-health are the ultimate standards of evaluation. On the one hand, physicians' behaviors of using online system are influenced by their recognition about the "usefulness" of technology (Horan, Tulu and Hilton, 2005). So e-health innovation must focus on the needs of physicians' medical services. On the other hand, e-health has changed the traditional relationship between physicians and patients. No longer do patients accept the service passively. Instead, they use

communication technology to communicate and interact with physicians initiatively, timely and effectively (Ball and Lillis, 2001). That means health needs of patients affect the future of technology innovation and application. In view of this, the e-health construction (such as file system design, the use of remote medical services) must take into account patient's needs and views.

2. Governance problems of e-health in Chinese urban communities

2.1 Case selection and introduction

E-health in China started late, but it has been piloted in some city community, such as Zhabei District in Shanghai. In 2000, the District Health Bureau had explored the medical informatization. After ten years development, Zhabei District formed a model of medical information sharing service based on residents' health records, realizing the clinical diagnosis and treatment process optimization, the whole process of health management and personalization of preventive care. Hailed as "Zhabei model", the trial has been highly commended by the government and academia (Jiang and Yu, 2009), and many cities are emulating this model. In summary, Zhabei e-health model has transformed from the traditional service delivery by single department to the organic combination of government guidance, market competition, social supervision and citizen participation. It focuses on the synergy of multiple subjects to improve the quality and efficiency of medical service. The community e-health of Zhabei District is not mature enough, but it has taken the form of multi-collaborative governance. Therefore, this paper takes Zhabei as a typical case, through summarizing the experience of its development model, analyzing the basic situation and existing problems of urban community health management, and then discusses the governance mechanism of community e-health in China.

Zhabei district is located in the north of Shanghai central district. By the end of 2012, 846 thousands residents live on this area. And today there are 9 community health service centers and 127 medical institutions, including 3tertiary hospitals, 6 second-class hospitals. And the medical institutions content 5314 beds and 6291 health professionals (Zhabei District Bureau of Statistics, 2013). On the whole, e-health in this area has experienced three stages:

The first stage (2000-2004): exploration of medical service informatization construction. This stage mainly focused on the establishment of e-health records and the development of public health system and medical service system. Since 2003, the community health service center had set up the e-health records of residents which are in accordance with national standards. In 2004, Zhabei realized the integration of residents' health records and clinical information, which promoted the "multi-integration" and "dynamic management" of the e-health records (Cao, Pan and Liu, 2011).
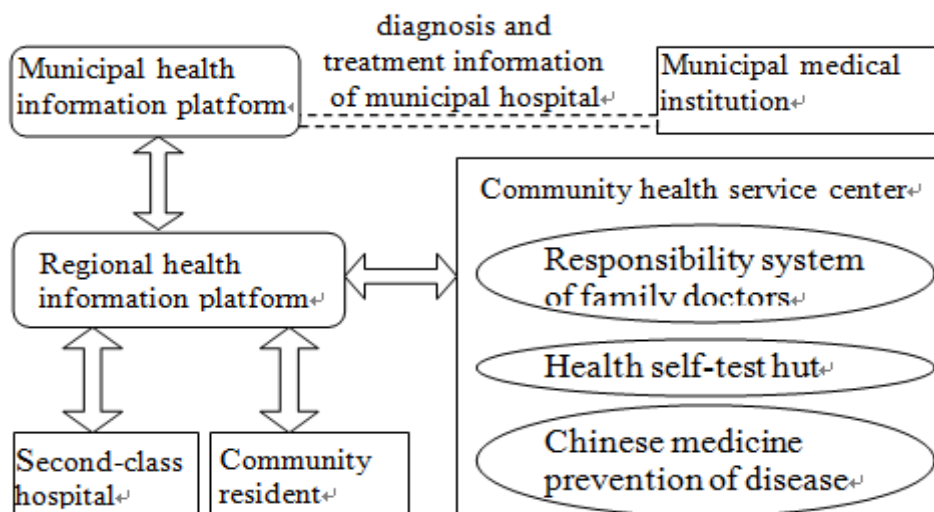

Figure 1. A diagram of Zhabei regional health information platform (Note 1)

The second stage (2005 - 2010): preliminary construction and application of health information sharing platform. The construction of regional health information platform includes community health information platform and regional data exchange sharing platform. At present, Shanghai municipal hospital, district hospitals and community health service centers in Zhabei have access to the platform (Zong, Zhang and Cai, et al, 2012). As shown in figure 1, the platform realizes the integration of community health information system and hospital information system. Health information can be exchanged and shared very well among the city health bureau system, e-health records system, regional medical center and resident. Electronic two-way referral and

results mutual recognition become reality between first and second class medical institutions. And the medical service process is optimized and the quality of medical service is improved with this effort.

The third stage (2011 - present): regional health information sharing and collaborative service. Based on the ministry of health "3521" project and the pilot project- health information network- in Shanghai, Zhabei built a new model of regional health information data sharing and collaborative services. In August 2011, centered on regional health information sharing platform, Zhabei integrated the health self-test hut, health management platform of responsibility system and the resources of Chinese medicine prevention. And it set up the digital health services management department, where residents can get good health service (Wang, Wu and Mu, et al, 2010). (Note 2)

A variety of e-health service is developed based on the information sharing platform. The development can help the doctors, residents and managers share and exchange information. Also, it promotes the horizontal cooperation between different medical institutions as well as vertical cooperation between the community health service center and other medical institutions. For example, the community service center of Pengpu town in Zhabei set up responsibility system of family doctors. Based on "health management platform of responsibility", this system assigned the management responsibilities to the family doctors, such as community health service and chronic disease management. And it persisted the grid management which characterized by principally local leadership, linear and local leadership combined. In this case, health management platform of responsibility is established by Guochen Information Technology Company. The family doctors use special equipment to quickly upload and view the health information of the residents on the platform. And the "health experts" from secondary and tertiary hospitals are invited to guide the family doctors, which promote the building of the full-scale health service and multi-collaborative management (disease treatment and recovery, health education and care and so on).

Overall, e-health development in Zhabei District has taken the form of multi-collaborative governance. (1) The central government and the ministry of health give guidance by applying the unified data element, data set and the structure of residents' health records. Shanghai municipal government and Zhabei government promote the regional e-health construction to the strategic level of health reform and development, and give some protection from the system, funding, personnel and other aspects. The health administrative departments play the important role in disease prevention and control because of the responsibility, by using their own information resources and public power. (2) The market stakeholders are also involved in the governance with the advantages of information and technology. The cooperation in the tender form promotes the operation of e-health records system and health management platform of "responsibility". For example, Huawei, Shanghai Yikesi, Wanda information companies and Zhabei North Hospital work together for the health cloud service. China Telecom and Microsoft also participate in the health project. (3) The participant of the social sector mainly includes community residents' committees, research institutions, non-profit organizations and residents. With the geographical advantages, the community residents' committee plays an important role in the information collection and basic services. Harvard, Fudan University and other research institutions have knowledge and technology advantages. Their cooperation promotes health care reform and plays an active role in local governance. With the help of "health key", like the U disk, residents have access to the health knowledge at home, such as diagnosis and treatment information, medication usage, laboratory reports, and inspection reports. In addition, some volunteer organizations like "Love health" work positively in Zhabei.

2.2 Problems of e-health governance in urban community

Zhabei e-health development has the prototype of the multi-agent cooperation, but it still has following problems:

2.2.1 The lack of participation of non governmental bodies

The intervention of the government department and the functional department is everywhere and the whole reform is under the high control of the government. (1) Good e-health governance is inseparable from effective participation of the pharmaceutical suppliers. However, pharmaceutical suppliers are not included in the network, which cause the pharmaceutical monopoly, inadequate market competition and then high prices. (2) Due to the current stage of community governance in China, the community residents' committee lacks the capacity of self-governance according to the residents' wishes. (3) The medical security system and the medical services can't be separated from each other. The information construction of basic medical security system is also an important part of the e-health. But there are still short of interaction between e-health construction and social security departments. (4) Residents collide with e-health services because of the lack of trust in the government and the lack of understanding about health management services to the community, blocking the benefits of e-health system in managing personal health.

2.2.2 Obvious conflicts of interest

From the resource occupancy and benefit distribution, there are common interests among different governance bodies: the government, non-profit organizations and community residents pay close attention to the problem of medical service allocation; the government, medical institutions, systems and communication equipment suppliers are concerned about the cost; medical institutions, system and equipment suppliers and residents are concerned about the interests and responsibility distribution. However, there are obvious conflicts of interest.

(1) Cost and service: how to provide high level of health care with lower cost and prices, to solve the problem of "expensive medical service".

(2) Privacy protection and information sharing: how to protect the privacy of community residents when the health information spreads on the internet.

(3) Security and convenience: protect the security of e-health system, and to ensure all kinds of users, including doctors and patients can use e-health information system conveniently and quickly.

2.2.3 The lack of normal cooperation among the main bodies

On the one hand, the cooperation among the government, the market and the social sectors is defective. First of all, the information technology providers, hospitals and other departments usually provide a wait-and-see attitude to the development of e-health technology and service, which reflects the poor communication and interaction between the government and the marketing department. Secondly, the participatory and initiative of social organization is not enough. They lack substantive discourse power during the e-health management process, limited to "passive participation". In addition, community residents have limitations on e-health cognition and application and they cannot cooperate with the government and other social department very well.

On the other hand, various subunits in each department have limitations on collaborative cooperation. First of all, due to fragmentation, each competent authority manages e-health in its own way, appearing the buck-passing phenomenon. For example, the construction and management of e-health records, electronic medical records and regional health care centers belong to different medical and administrative departments. The standard of e-heath implementation has not been scientifically and effectively coordinated. It is difficult to make a unified planning, design, implementation and control (Li, 2011). Secondly, the collaboration and cooperation between hospital information management and business departments, hospitals and community medical service centers need to be improved.

3. The multiple collaborative governance mechanism of community e-health

3.1 Comparative analysis of governance mainstay

The construction of the governance mechanism of community e-health need clear the target, resource and function of the different participants. In order to clarify the game relationship and action direction among governance subjects, we compare the roles of the government, the market and social sectors in three aspects of the target, resource and function. (Table 1)

Target is the important variable of coordination. Its coupling or separation directly affect the result of what kind of cooperation mechanism can be formed and will decide whether or not it needs a certain subject to play a key role(Wang, 2012).In the e-health development, different departments also have different participatory motivation for their own organization's mission and nature. Government departments as the public affairs manager, actively take various measures to promote the reform and improvement of the medical and health services for the construction of community health system. Maximizing profit have been seen as the market department' core objective, there is no exception to e-health. For instance, systems and equipment suppliers get profits mainly through information technology and infrastructure; private hospitals attract more customers and reap rich benefits by providing quality medical service (EMR, e-prescribing and telemedicine).Social departments including communities, scientific institutions, non-profit organizations and individual citizens aim to achieve equal health services, especially for vulnerable groups. For example, the non-profit organization participate the e-health construction, use and service, which is mainly affected by the public awareness and its mission; community residents actively participate in the construction and application of e-health for more health knowledge and health information, aiming at self health management.

Table 1. The governance body of E-health development

Governance body	Target	Resource	Function
Government departments	constructing community health system	public power, public capital	strategic plan, policy support, service purchase, supervision
Market department	maximizing profit	e-health technology and equipment, medical resources	technological development, equipment provision, medical service
Social departments	equalization of health service	public consciousness, social capital, human resources	service, supervision, feedback

The resource is related to power, goods, capital, technology, manpower and other aspects. And its equilibrium influences the participation in the entire process of collaboration (Day and Gunton, 2003). Resources of government, market and social sectors have different characteristics. The government owns the advantages of public power and capital. The market departments are abundant in technology and equipment resources, such as the internet technology and equipment provided by system and equipment suppliers, advanced medical technology in hospitals, etc. In social sector, the community residents' committee has an advantage over others in mobilizing social capital and residents' participation. Research structure has some knowledge and technology advantages and non-profit organizations are more abundant in capital, manpower and organizational level. Besides, the economic ability and knowledge level of citizens are the basis for their participation in health self-management.

According to the action target and resources possession, it is clear what function can be played in the e-health project. As a gesture of service-oriented, the government plays an important role in strategic planning, political support and policy implementation. The market department has the nature of profit and competition. The suppliers of the Internet and the information communication equipment are responsible for the development of related technology, the provision of basic equipment and the maintenance of information; private hospitals make full use of EMR, e-prescribing and telemedicine to improve the quality of medical services. Community residents' committees in the social sector use self organization and management ability to improve service; non-profit organizations can make full use of manpower and capital advantages to provide health care for the chronic and elderly, such as promoting health knowledge, providing door-to-door service and supervising the medical institutions. The main function of the individual citizens is to improve their health literacy, use the advanced equipment of community health service center for health self-management, use personal health files to get health information or communicate with doctors, and provide feedback for the construction of related e-health program according to their own health service demands.

3.2 The basic principles of building governance mechanism

3.2.1 Guide technological innovation by health needs

Technological innovation is the power to promote the development and improvement of e-health. It is only as a means, but the ultimate goal of satisfying people's growing health needs. So the technology innovation must be guided by the health demands of the residents. That is, technology should be completely bound up in the e-health needs from the idea to the operation. We must clear the requirements of doctors, residents and public managers on the system interface and function and then develop technical innovation into a participatory process. We should determine the ultimate technology development trend according to people's assessment and feedback to improve the operability and practicability of the system.

3.2.2 Integrate the multi-cooperation and responsibility allocation

E-health need adopt multi collaborative governance, but it does not mean the fuzziness of responsibility. In practice, not only should we pay attention to the cooperation among multiple subjects and give full pay to collective strength , but also try to avoid disorder and confusion resulting from excessiveness or absence of public power. That is to say, it is important to clear and definite the responsibilities and ways to undertake of different departments in different projects. For example, who should be mainly responsible for the establishment of the basic file information, specifically in the capital, technical and logical areas?

3.2.3 Combine resource integration with interest coordination

Considering the different governance bodies have difference in occupying resources type, quantity and quality,

we must integrate resources in three dimensions according to different levels, different functions and public and private sectors to achieve multi-cooperative governance (Zhang, 2014). Meanwhile, reintegration of resources need combine with the interest coordination. Achieving "seek common ground and reserve differences". Specifically, the development of e-health need to play their own technological advantages, rely on the government's authority and financial support, use the advantages of professional and social welfare organizations and at the same time fully mobilize the enthusiasm of residents to participate under the premise of respecting the autonomy of the community.

3.3 Key mechanisms for effective operation of collaborative governance

The e-health information system is the emphasis of whole e-health system. It refers to multi-governance bodies, different resource integration and interest coordination, during the e-health development process from conception, design, implementation, feedback to perfection. So its governance should focus on the technology development and application process and assistant with a variety of mechanisms, on the basis of perfect health information sharing platform. (Figure 2)
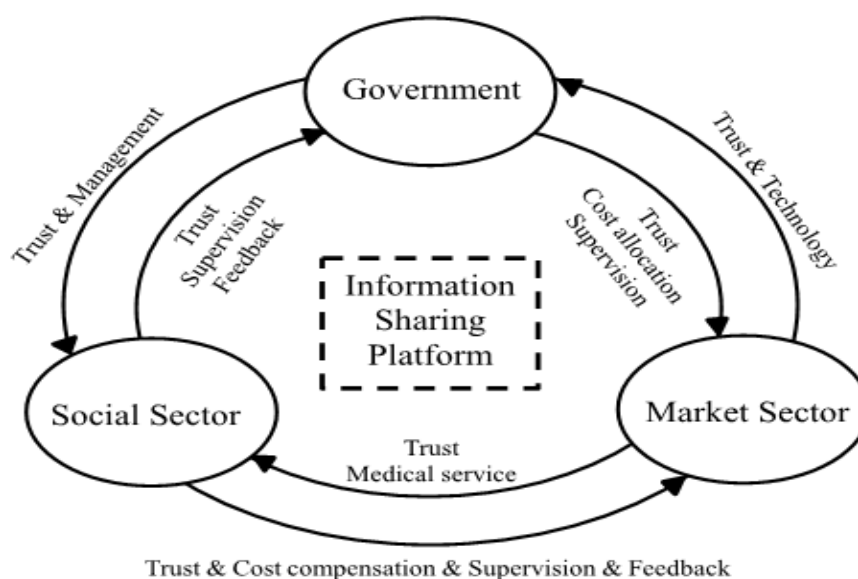

Figure 2. The multi-cooperative model about the market, social and public sectors

3.3.1 Trust mechanism

Collaborative governance theory shows that the process of multi-cooperation is not only about the compromise, but also based on the trust between stakeholders (Imperial, 2005). As a kind of value, trust has a direct impact on people's value choice and restricts the creation and realization of value. So trust and consensus among stakeholders is the foundation of the e-health, from initial situation investigation to the formation of basic value (Li, Seale and Ray, et al., 2013). To build a good trust mechanism, on the one hand, participants can pay attention to the social capital in the form of legal contract, to avoid free riding and other risk problems (Liu, 2013) and promote the formation of trust relationship among the main cooperation bodies. On the other hand, improving the external security of trust mechanism (legislation, public opinion and social restriction) is a good choice to promote the formulation of trust mechanism in the application of e-health system.

3.3.2 Communication and negotiation mechanism

The synergy among different subjects is based on the consensus game principles (Giest and Howlett, 2014). On the one hand, the information communication between physicians and patients is beneficial to understand health knowledge and improve the patients' trust in physicians. The communication could improve the quality and efficiency of disease diagnosis and treatment and relieve the "low effectiveness" about citizens' participation. Even in medical disputes, the negotiation mechanism is also a more moderate and effective way than the mediation and litigation. On the other hand, communication and consultation of three sectors will help to avoid the obstruction, distortion or delay of information transmission among the multiple subjects, and complement the shortage of market exchange and government regulation. Therefore, this mechanism should be practiced throughout the e-health development. Besides, relying on the platform of health information, related bodies should communicate and negotiate issues like disease prevention and treatment methods, the policy plan, the

bidding design of medical equipment by holding joint conference or price hearings, aiming at forming a satisfactory decision.

3.3.3 Cost-sharing mechanism

Cost is the primary concern of all kinds of e-health governance subjects. Massive funds are needed in the development and operational phases of e-health technology. The character of constructing e-health is a huge investment, a long term and a slow capital return. The market sector is difficult to make full investment, and the government is also difficult to bear all the costs. Therefore, the establishment of the cost-sharing mechanism is an effective way to solve this problem. Governments encourage the market sector by paying for medical and information services, and use appropriate policy incentives to share the high cost of e-health. In addition, the market sector can obtain some compensation from the social sector. For example, charge a portion of the cost for some service.

3.3.4 Supervision mechanism

In multi-collaborative governance, all kinds of subjects negotiate for their own interests. The interaction of the interests that leads any party's breach of contract will cause damage to other subjects. So it is necessary to restrict each other through mutual supervision. On the one hand, the government departments monitor the equipment suppliers and medical institutions by legislation and policy system. On the other hand, the social departments supervise medical institutions, network service providers and other departments. The supervision here includes both the basic services and the protection of civil privacy issues. For example, third party monitoring platform that includes consumers and media exercises a close supervision over the drug pricing, examination and approval (Zhang, 2014). Of course, citizens and social organizations in the process of supervision must also follow the law and policy and accept the guidance and management of the government.

3.3.5 Feedback mechanism

The development of community e-health is a whole process of management. After summative evaluation, feedback is very necessary to confirm whether the governance results are consistent with the legal system and community residents' needs. It means that we need to compare the actual results with the coordinated target and criteria of value to find the development problems and then realize process reengineering. As for the design of the e-health records, the citizen can provide feedback to the government and the market sector according to their own needs. And other stakeholders can also make depth discussion and confirmation on the basis of consensus that has reached before.

4. Conclusions and Inspiration

In summary, the community e-health needs to experience a long-term development process. Its public goods properties and complexity of the system determine its development need organic combination of different kinds of supply subjects, providing methods and service content. The case of Zhabei District in Shanghai shows that Chinese community e-health (especially in developed city) has achieved good results. It has formed the multi agent collaboration with the market, the government and the social sectors. But it is barely in embryo. There are still problems such as the lack of participation of the main bodies, the obvious conflict of interest, and the lack of normal coordination. By the analysis above, we believe that the establishment of the multi-collaborative governance mechanism of urban community e-health in China should follow these basic principles: technology innovation based on health requirements, the combination of multi-collaboration and shared responsibility, and the combination of resource integration and interests coordination. The effective operation of the mechanism need five key mechanisms—trust, communication, shared costs, supervision and feedback. In addition, the mechanism construction should pay attention to the following points:

4.1 Play the guiding function of government

"Governance" emphasizes the government role transfer from management and control to the "empowerment" (Leicester, 2009). The government should moderate or relax the control to other stakeholders, to provide appropriate policies and funds for e-health development (Khoja, Scott, and Casebeer, et al., 2007). In system and policy, government could unify the technical standards to promote information sharing; and use legal means to protect information security. In the capital, the government can set up a reasonable strategic investment, to give a certain financial benefits, to attract the active participation of the market and the society sectors and to promote e-health development with shared benefits and equalization.

4.2 Gradually improve the market competition mechanism

The healthy market competition mechanism is the soil of the community e-health. We should establish the compensation mechanism of information investment to guide and support enterprises to invest in capital and

technology; and promote the close cooperation between IT enterprises and medical institutions, to explore the best technology and solutions; and promote the relevant pharmaceutical suppliers to use the information system to carry out healthy competition; and open tender for development of health file system, data exchange and sharing technology to achieve effective competition mechanism.

4.3 Stimulate the enthusiasm of the social organizations and individuals

The involvement of the social sector and individuals will be the foundation of the community e-health development. E-health development should pay attention to the relative social preparation, such as community culture, the development of social organization, the health literacy of residents and so on. Therefore, to get good e-health governance, besides mobilizing the enthusiasm of the community health service center, public manager also need to give NGO and individuals more right to talk and supervision.

In the long run, many countries attach great importance to e-health, but its development is not an overnight process. In addition to the technological innovation and capital investment, the management and service model is worth further consideration. At present, multi-participation has become a tendency, but it will be a challenge in the future that how different stakeholders to interact, game and collaborate effectively with each other in the e-health practice.

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Notes

Note 1. The bidirectional arrows indicate the upload, subscription and use of disease report, diagnosis and treatment information and body detection information.

Note 2. "3521" project is the functional framework of information management system for regional medical and health institutions, which including 3 levels of health information platform (national, provincial and municipal), 5application systems (public health, medical service, medical security, drug supply system and general management) and 2 databases (a resident electronic health records database and a resident electronic medical records database) and a dedicated network.

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