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Historical roots of hospital centrism in China (1835-1949): a path dependence analysis

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Abstract

Stronger primary care has been associated with important contributions to health system performance, yet countries struggle to resource it adequately, given competing demands from hospitals. Although historically China has originated influential models of primary health care, it has an enduring problem with hospital dominance in health service delivery. This paper is a historical analysis on the co-evolution of hospitals and primary care providers in China from 1835 (the year when the first hospital was built in mainland China) to 1949 (the year when the People's Republic of China was founded), which aims to shed light on approaches to primary care strengthening. We develop and use a path dependence analytic framework, specifying the critical juncture, conjuncture and post-juncture development of the institutions shaping the balance between hospitals and primary care providers in China. We find that China had historically formed the hospital-centric model involving four sets of regenerating and mutually reinforcing institutions: 1) financial resources were being disproportionally distributed to hospitals; 2) high-quality medical professionals were largely concentrated in hospitals; 3) large outpatient departments were incorporated in hospitals, which functioned as a first point of care for many patients; 4) hospitals answered primarily to the demand of the more privileged social group. The early institutionalization of a hospital-centric model of Western medicine in China from 1835 became resistant to change, and efforts to strengthen primary care eventually took a divergent low-cost and de-professionalized developmental path towards 1949.

As China still has a hospital-centric health system seeded in the nineteenth century, these findings can inform the framing of contemporary options for primary care strengthening. Without addressing these deep regenerating causes using a whole-system approach, China is unlikely to achieve a primary care orientation for health system development.

Key words:

primary care strengthening, hospital centrism, path dependence analysis, China, history

1 Introduction

Stronger primary care has been associated with important contributions to health system performance (Starfield, 1994) and population health (Macinko, Starfield, & Erinosho, 2009; Macinko, Starfield, & Shi, 2003). Yet countries struggle to resource primary care adequately given hospital demands for resources (Mills, 1990). Previous analysis of institutions related to the balance between hospitals and primary care providers has focused on professional regulations and risk pooling (Starfield, 1994). However, Bloom (2014) has stressed the importance of situating health systems development in the context of history and political economy, to understand better the risk of powerful interests narrowing the options of reforming health systems.

China in the 1930s has been regarded as one of the originators of the primary

health care concept, and in the 1970s was seen as one model for the Alma Ata Declaration on Primary Health Care, published 40 years ago (Litsios, 2015). However, an analysis comparing the inputs and outputs of hospitals and primary care providers from 1949 to 2013 suggested lasting dominance of hospitals in China's health system (Xu, 2017: Chapter 4). Recently, "emphasizing the primary care level" was proposed as the first among the government's six new guiding principles for health work and was applied in the government's middle and long term plan for health—"Healthy China 2030" (Xinhua, 2016). Such level of commitment both highlights the importance of strong primary care and reveals the limited success of past efforts. To elucidate the current challenges and lessons from history, it is thus important to understand why China's contemporary balance between hospitals and primary care providers has come about despite the historic primary health care agenda.

Using a path dependence analytic framework, we seek to understand the historical logic behind today's hospital dominance by tracing the formation of the prototypes of todays' primary care providers and hospitals, focusing on the co-evolution of hospitals and primary care providers in China from 1835 to 1949. The year 1835 was when the first hospital was built in mainland China, and 1949 the date the Communist Party of China came to power and consolidated existing health system structures in a state-sponsored health service.

Theories of path dependence originated as researchers tried to explain the endurance of inefficient technologies and found that particular historical events could

affect the adoption of later technologies (Arthur, 1989; David, 1994). Path dependence generally characterises a phenomenon whereby events taking place at an early point of time will have lasting consequences (Sewell, 1996, pp. 262-263), and that once a track has been started, it becomes much more difficult to reverse (Levi, 1997, p. 28). Path dependence is a way of thinking systematically about how policy choices are circumscribed by past decisions (Pierson, 2000). Path dependence analysis has been applied in the context of developed countries to explain the diverging trajectories of health systems (Gorsky, 2012; Hacker, 1998). A recent historical case study on health systems in low- and middle-income countries used the framework of path dependence to facilitate a study of factors contributing to successful health system development (Balabanova, McKee, & Mills, 2011). However, path dependence appears not to have been used systematically for studying either primary care development or the coevolution of hospitals and primary care providers. Path dependence analysis in political sciences has its roots in Western liberal democracy. However, recent Chinese studies using theories related to path dependence have generated valuable insights (Duckett, 2012; Huang, 2000; Luk, 2014; Yu, 2006) and justify its use here.

2 Methods

In developing our historical analysis, we draw from the path dependence literature in historical institutionalism, which generally distinguishes two types of periodisation. The first type of periodization include critical junctures and conjunctures: critical junctures refer to periods in which a trajectory can potentially be established (Pierson,

2004, p. 135); conjunctures refer to periods in which a convergence of important events potentially can lead to the departure from previous path-dependent trajectories (Wilsford, 1994). The other type of periodization can be called post-juncture development, which refers to the periods displaying "system logics" (Tuohy, 1999) and are characterised by more continuous and gradual policy development structured by existing configuration of the system studied. We developed the protocol of this study based on a modified approach for critical juncture analysis (Capoccia, 2015). Informed by a categorization of health system building blocks (World Health Organization, 2007) and the major institutions governing decision making in health proposed by Tuohy (1999), we focus on four categories of institutions related to hospitals and primary care facilities: professional institutions, which refer to institutional arrangements related to human resources and medical education policies which determine the scale and training levels of the labour force; organizational institutions, which refer to institutional boundaries between hospitals and primary care providers, particularly the presence of large direct-access outpatient departments and the accessibility of public services provided in primary care facilities; financial institutions, which refers to the sources and mechanisms for paying hospitals and primary care facilities; and governance institutions, which refers to the relationship between health facilities and the actors to whom they are responsible.

The study uses a range of primary and secondary sources. We reviewed books on history of medicine in China (such as Wong & Wu (1936) and Chen & Xu (1984),

historical studies on more specific periods or topics (such as Leung (1987) and Lei (2014)) and a wide range of contextual texts. We collected and analysed anthologies or autobiographies of key public health actors (such as Štampar, Grant, and Chen) and journal articles published by medical missionaries and Chinese national medical elites, as well as documents of key organisations (such as the Rockefeller Foundation, the Nationalist Administration and the Chinese Medical Association).

3 Coevolution of hospitals and primary care providers (1835-1949)

Key historical events from 1835 to 1949 are listed in Annex 1. The initial periods after 1835 saw the rise of hospitals as the main providers of Western medicine in China. 1928 is the watershed year, when a Nationalist administration unified most parts of China and created the Ministry of Health, leading towards the agenda of extending modern health services to the mass population. The Nationalists recognised the value of primary care, as well as policies towards strengthening of primary care, within the framework of a state-initiated health service (the state medicine programme).

According to path dependence theory, the initial balance between hospitals and primary care providers may set up a trajectory resistant to change, by encouraging different interests to invest financial, intellectual and cultural resources in its continuation. Hence the key points of analysis are how (including when) the hospital-centric model was constructed and how that affected the later emergence of the primary care agenda. For the analysis before 1928, we used the cut-off years of

1844—when the Treaty of Wangxia, one of the unequal treaties imposed by foreign powers, allowed establishment of Western hospitals in mainland China, and 1901—when the Boxer Uprising (1899-1901) failed, leading to an indemnity fund paid to hospitals. For the analysis after 1928, we used the cut-off year of 1934, when the masterplan of the state medicine programme was issued by the government.

3.1 Introducing Western medicine via a hospital (1835-1844)

The first Western medicine hospital in mainland China (i.e. the Canton Hospital) was built in 1835 by medical missionaries. As Renshaw (2014) pointed out, few medical missionaries had worked at hospitals before coming to China, nor were hospitals the dominant form of medical practice back in their home countries. This implies that missionaries were not only building the first Western medicine hospitals in China during this period, they were also designing a new type of medical service. As we will argue, the period between 1835 and 1844 seemed to witness a critical juncture where the seeds of hospital centrism were sown. This section examines the historical background, first summarizing the situation of indigenous prototypes of hospitals and medical practitioners, and the attempted dissemination of Western medicine in China before 1835.

3.1.1 Indigenous medical and welfare organisation before 1835

Charitable and religious organizations and the medicalization of hospitals played central roles in the rise of modern health systems in the West (Risse, 1999: Chapter 5).

China had a very long history of charitable and state-sponsored health and welfare institutions (see Annex 2), but such institutions had deteriorated by 1835. Although local communities organized various kinds of benevolent societies with official endorsement (Leung, 1987), their medical function was very limited and focused on temporary disaster or epidemic relief and isolation. While medicalization of benevolent societies was not common, medical institutions did not seem to be providing much hospitalization either, as suggested by an extensive study of local gazettes (Leung, 1987).

To missionaries coming later, a doctor in China suffered from lack of trust by their patients, and except in rare cases “never becomes a family physician” (Balme, 1921, p. 28). Medicine was a low-status alternative for scholars who had no prospects as officials or landlords (Leung, 1987). While medical literature was popularized in the Ming Dynasty, regulation on professional training for doctors beyond the imperial court seemed generally ineffective. There was also a broad range of lay medical and spiritual relief providers besides learned doctors (Andrews, 2014; Chapter 2).

While the recognition of the value of biomedical knowledge by the state (Lei, 2014, pp. 48-50) was key in development of modern health system in Japan, opportunities for potential revolution of medical knowledge and practice were missed in an intellectually conservative climate. In the 1600s, Jesuit missionaries brought with them several medical titles including books on human anatomy unknown to the Chinese (which in Japan led to a revolution in medicine). The books were translated into Chinese at least

twice but shelved in the imperial library, as the materials were considered inappropriate for publication (Fu, 2011; Wong et al., 1936).

Generally, indigenous Chinese society at the time of the early Qing Dynasty just before 1835 lacked the organisational basis, the professional grounding, and the intellectual climate actively to adopt Western medicine, leading to its introduction through external influences.

3.1.2 The first Western medicine hospital

By the early 1830s, a Protestant missionary foothold was established in Guangzhou (or Canton, the port which allowed Western trade before the Opium War), led by Bridgman of the American Board of Commissioners for Foreign Missions. Bridgman developed the idea of a medical mission, encouraged by the example of Colledge, who had already operated a successful ophthalmological hospital in Macau (*The Chinese Repository*, 1834, p. 289). Hence, Peter Parker was sent to China and established the Canton Ophthalmology Hospital in 1835. Eye diseases were considered prevalent in China, but indigenous doctors could not cure these, as surgery was not available even to the rich (Wu, 2000, pp. 301-310). The focus on ophthalmological operations proved a wise decision. A quarterly report by Parker in 1836 showed that the hospital had treated 323 cases with eye diseases, 32 cases with ear diseases, and 66 other cases (Parker, 1836).

The Canton Hospital demonstrated the technical advantage of Western medicine,

particularly in surgery, providing a valuable civil interaction channel for Western powers having tense relationships with China on the eve of the Opium War. The American Board of Commissioners for Foreign Missions commended that "Dr Parker opened the gates of China with a lancet when European cannon could not heave a single bar" (Balme, 1921, p. 44). Colledge, Parker, and Bridgman (1835) jointly proposed establishing the "Medical Missionary Society in China" to promote the medical missionary activities in order to enhance civil engagement, diffusion of Western arts and sciences, as well as spreading Christianity. As a result, the Medical Missionary Society in China was founded in 1838 (Lazich, 2006). After the Opium War had further opened China to Western powers, Parker called for "the maintenance of the Hospitals already established, and for the founding of others at every accessible and eligible part of China" (Parker, 1842, p. 4). With the establishment of the Canton Hospital, mission hospitals were thus embedded centrally in the imperialist expansion of Western powers.

3.2 Further hospitalization of Western medicine (1844-1901)

The establishment of mission hospitals appeared to set in motion a post-juncture self-reinforcing process, by consolidating a viable organisational form. Unlike in Japan's Meiji Reform, medicine was not seen as important for China's parallel Self-strengthening Movement (Lei, 2014, pp. 48-50). The imperial court was doing little to promote Western medical education (Li, 1990, p. 59; Martin, 1896, p. 320) and built only one hospital before 1901, in Tianjin (Ho, 2012). Chinese students at home and overseas rarely chose to study medicine, as there were few career prospects (Ho,

2012). Native benevolent societies and practitioners seemed inactive in learning from Western practitioners, except that a very small fraction mimicked the organisational form of Western medicine hospitals in providing Chinese medicine (Liang, 2013). Therefore, the missionaries' policies for developing their medical services continued to be important in the early institutionalization of Western medicine.

The medical missionaries consolidated their preference for hospitals (Conference Committee, 1907, pp. 256-257) (see Annex 3). Because hospitals treated the most severe patients, religious work for such conditions was thought to be influential even if medical intervention failed. Hospitals also provided a place for lengthy and continuous interaction between patients and missionary staff. The medical missionaries "universally agreed that the hospital is the centre, and that all other work must, to a large extent, lead to or proceed from it" and that dispensaries should be built mainly "to feed hospital(s)" (Conference Committee, 1907, pp. 256-257). The direct-access outpatient care was important for the medical missionaries to preach to a wide range of potential believers (Balme, 1921, pp. 72-74).

Although the medical missionaries won few spiritual converts (Yang, 2006, pp. 1-44) and did not popularize Western medicine (Balme, 1921, pp. 60-81), the concentration of missionary medicine on hospitals had important consequences. In terms of governance and financing institutions, the mission hospitals were primarily sponsored by their home churches, though a significant proportion of funding came from local donations and paying patients. Organizationally, these hospitals integrated a

large proportion of outpatient care, as hospital-based ambulatory services were a major source of patients (Liang, 2013) and revenue (Renshaw, 2003, p. 153). Professionally, a career as missionary doctor emerged in hospitals, forming a common identity between Western medicine and hospitals. Leaders of missionary medicine encouraged separation between professional and missionary activities to address the tension between the two roles (Lockhart, 1861, p. 119), further contributing to the formation of a medical professional identity associated with hospitals. Due to heavy workload at hospitals, missionary doctors were also tied to hospitals (China Medical Commission 1914, pp. 74-77).

3.3 Consolidation of hospital-based professionalization (1901-1928)

The years between 1901 and 1928 saw further post-juncture institutionalization of hospital-based professionalization. Amid constant warfare and fragmentation, development of health services under the state was limited to local initiatives, sectors such as railways and customs, and a small number of national medical schools and hospitals (Andrews, 2014: Chapter 5; Renshaw, 2014). Medical schools emerged largely outside the sponsorship of government (China Medical Commission 1914, pp. 92-98), with the indemnity for mission hospitals after the failed Boxer Uprising (1899-1901), the abolishment of the traditional examination system (1905) and the growth of modern universities in China, and donation from the China Medical Board founded by the Rockefeller Foundation in 1914 (Deng & Cheng, 2000; Wong et al., 1936: Book Two, Chapters 11 and 13). The Rockefeller Foundation became interested

in the situation of health and medicine in China and decided to focus on elevating the standard of medical education, as public health work seemed not feasible due to the chaotic situation of the country (China Medical Commission 1914, pp. 91-98). Emboldened by the newly found resources and encouraged by rapid medical development in the West and Japan, medical missionaries started to demand modernization of hospitals and became increasingly assertive of professional values.

The Rockefeller Foundation created the China Medical Board to provide aid to mission hospitals for recruiting additional doctors and improving diagnostics and other services, in order to prepare mission hospitals for training medical students (China Medical Commission 1914, pp. 92-98). An illustration of the high standard adopted was the overspending on building palatial premises for the Peking Union Medical College, the cost of which was among the main reasons why another planned union medical college in Shanghai was never built. Besides luxurious facilities, the Foundation was also hiring world-class professors with very generous salaries and recruiting students who could afford a high tuition fee (Bullock, 1980: Chapter 4). Although there were only 45-55 Chinese doctors trained in Western medicine serving more than 400 million Chinese, the Peking Medical Union College's approach of training a small number of elitist medical graduates was welcomed by key Chinese officials (Bullock, 1980: Chapter 1), probably because such elitism resonated with the Chinese *zeitgeist* of scientific enlightenment. The Rockefeller Foundation also concentrated on supporting medical-school-affiliated hospitals in areas which were

perceived as strategically important (Rockefeller Foundation, 1922; China Medical Commission 1914, pp. 41-52).

The Rockefeller Foundation's arrival intensified the pressure upon mission hospitals to modernize (Austin, 1986, p. 168). In the same year that the Peking Union Medical College opened, the Chinese Medical Missionary Association published a report based on a large-scale survey of mission hospitals, exposing their poor conditions (Balme, 1921, pp. 82-106) and warning that mission hospitals would become discredited as the Chinese experienced more modern care overseas. The mission hospitals were also allowed to charge patients money (Conference Committee, 1907, pp. 261-263). Indeed, they covered most of their non-staff expenditures by local sources in richer urban and coastal areas (China Medical Commission, 1914). Besides, medical graduates from overseas also set up locally adopted copies of their alma maters (Austin, 1986, pp. 169-170). At least from the perspective of Western medicine advocates, the central role of hospitals was obvious in both quality of care (attention to patients' conditions, quarantine against infections, etc.) and professional development (development of specialities, use of sophisticated technologies) (Anonymous, 1928), while private practitioners of Western medicine (usually disciples/apprentices of mission hospital doctors) were stigmatized along with other primary care providers and Chinese medicine doctors as outdated practitioners in an era of scientific medicine (China Medical Commission 1914, pp. 6-8).

3.4 Emergence of the state medicine agenda (1928-1934)

The period between 1928 and 1934 constituted a conjuncture that witnessed a major turn towards extending modern medicine to the mass rural population living in dire socio-economic conditions, with a vast number of preventable deaths (Štampar, 1936). In 1934, the Public Health Technical Conference proposed implementation of state medicine as a national policy that involved a multi-level system of health facilities organized by the state and staffed by both professional and lay health workers (Jin, 1946). Here we focus on the converging factors that shifted the medical development agenda.

In 1928, the Ministry of Health was established with a mandate to coordinate health development in the country. Upon a request of the ministry, the League of Nations Health Organisation (LNHO) dispatched technical advisers to help China design and establish its own health system based on international consensus and experiences related to social medicine (Bullock, 1980b: Chapter 6; Grmek, 1966, p. 16). A critical figure among the advisers was Dr Štampar, a pioneer of social medicine who had played a critical role in Yugoslavia's establishment of a publicly funded social medicine system (Borowy, 2009; Zylberman, 2004). Compared to the practice of the Western countries in developing national health services, the experience of Yugoslavia which required much fewer practitioners was considered by key Chinese medical leaders as particularly relevant in China's development of a national health service (Wu, 1931).

In parallel, there was also active exploration of the idea of a state medicine agenda on the ground, the most influential being Chen's rural health programme in Ding County (Lei, 2014: Chapter 10). An active advocate for state medicine (Bullock, 1980: Chapter 7), Chen attempted to address the villagers' primary health problems (mainly infectious diseases) and satisfy the low ability to pay of villagers--who spent only 30 cents (US $0.10) per person per year on traditional medicine (Chen, 1933). The backbone of the Ding County model was the village health personnel. They were selected from graduates of a local school organized by the Mass Education Movement and supervised by villagers organized through the school. They went through a training programme for about ten days that covered registration of births and deaths, small-pox vaccination and first-aid (Chen, 1933). Above the village health personnel were sub-district health stations whose doctors were graduates of provincial medical schools, with primary responsibility, besides attending daily clinics, to train and supervise village health workers in both curative and preventive medicine (Chen, 1933). At the top of the technical ladder was a county health centre, which combined a hospital with fifty beds, a laboratory and administrative staff. The health centre coordinated and supplemented the activities of the sub-district health stations and accepted mainly patients referred from these stations. The low-cost model based on task-shifting appeared sufficient in addressing the most basic health needs and providing the most basic functions (disinfection, vaccination, etc.).

The Ding county model eventually became the national prototype of the state

medicine programme (Wong et al., 1936, p. 801). On the one hand, the state medicine programme shifted the agenda towards low-cost primary care combining preventive and curative care embedded in social reconstruction. On the other hand, it attempted to institutionalize professional doctors via a multi-level professional hierarchy for both technical supervision and task-shifting between professional doctors and lay health workers. In the Ding County model, professional primary care doctors were the vital link between the professional medical sphere and the local community health work.

The mission hospitals continued to upgrade their technology by 1933-1934 (e.g. 50% had an X-ray as compared to 13% in 1919), though they were generally small and had on average had only 4.9 physicians and 64.7 beds (Wong et al., 1936, p. 815) (see Annex 4).

3.5 Divergent trajectories (1934-1949)

The years between 1934 and 1949 witnessed the post-juncture development of hospitals and primary care providers under the state medicine programme. From the perspective of medical reformers, popularization of modern medicine could only be achieved via a multi-tier transfer of knowledge from hospital-based medical schools to the community. This represented a fundamental shift away from the previous elitist focus on building high-standard academic hospitals. The theory of path dependence would imply that the implementation of the state medicine programme would face challenges from the medical establishment, which had invested expectations in

continuation the status quo. Here we focus on the situation in Nationalist-controlled areas and discuss briefly health service development in the Communist-controlled areas at the end of the section.

There was further development down the state medicine trajectory introduced between 1928 and 1934. In 1937, the Chinese Medical Association organized a high-profile conference to discuss state medicine, and publicly endorsed the programme (Wu, 1937). The state medicine agenda became the fundamental policy in health governance during the Republic of China (Jin, 1946). Some radically pro-primary-care ideas emerged. Chen (1937) questioned the cost-effectiveness of hospitals and suggested prioritizing recruitment of medical school graduates as "general practitioners for public health" at sub-district health stations, who could use their professional medical services as a vector for their public health functions--particularly training de-professionalized health workers.

In reality, the quantity and skill-sets of medical practitioners were far from sufficient to provide the professional supervision needed for developing lay health work according to the primary care model of Ding County. By the late 1940s, there were only 436 sub-district health stations under the county health centres, and almost all were of poor quality (Compiling Committee, 1984, pp. 9-16; Jin, 1946). Several factors related to the developmental path of Western medicine in China accounted for this lack of institutionalization of professional primary care doctors. First, there were few Western medicine practitioners—China had about one thirtieth of the number of

Western medicine physicians in Yugoslavia, the model example of European social medicine. Almost all of them were located in urban areas, while eighty percent of Yugoslavian doctors lived in rural areas (Watt, 2013, p. 62).

Second, as primary care was previously neglected, the Chinese state lacked control over the private practitioners who accounted for more than half of Western medical doctors, compared to Yugoslavia where most were state-employed. They also predominantly practised in China's main ports of coastal provinces, where the government had difficulties to control the allocation of health professionals (Sze, 1943, pp. 18-19). Third, attempts to redirect medical education also faced challenges from prestigious medical schools, where medical curriculum administrators resisted calls for revising their elitist curriculum (Bullock, 1980: Chapter 4). Medical school graduates had little training in needed skills like birth control, diagnosis of prevalent diseases, and vaccination, nor was admission and education geared towards a rural career (Chen, 1935). Fourth, the champions of state medicine were generally reluctant to engage Chinese medicine practitioners, as dislodging Chinese medicine was an effective rallying point for those upholding the scientific agenda within the state medicine campaign (Lei, 2014: Chapter 10).

Primary care development within the state medicine programme also faced serious contextual constraints in terms of both funding and community development. As the country experienced economic difficulties during that period (Štampar, 1936), the government budget for health represented only 0.7% of total state expenditure and

0.027 *yuan* (about US $0.01) per capita (Sze, 1943). Recruitment and supervision of village health workers in the implementation of state medicine at village level was unachievable because of the absence of an effective community (Lei 2014: Chapter 10). The "community" development emphasized in the original Ding County model was fundamentally hindered in the state medicine programme by the lack of social reform. The already restricted rural social reconstruction was cut short by the all-out Japanese invasion in 1937 (Hayford, 1990) .

As a result, the state medicine movement saw a rapid development of public hospitals. 60 government hospitals existed in 1943, mostly built after 1927 (Sze, 1943, p. 16). By 1947, there were 110 provincial hospitals and 56 municipal hospitals (Compiling Committee, 1984, pp. 9-16), though these hospitals were treating mainly patients in cities (Štampar, 1936). With rising nationalism, leadership of mission hospitals was gradually transferred to Chinese practitioners of Western medicine (Hume, 1935). Emboldened by Chinese nationals' control of financing and management of mission hospitals, some key medical leaders outlined a plan to take over all mission hospitals and make them either provincial hospitals or county health centres, and warned that the state could withhold or withdraw registration if they did not comply, thus forcing mission hospitals to follow government regulations (Sze, 1943, pp. 16-19). The number of county health centres grew from 181 in 1937 to 1440 in 1947 (Compiling Committee, 1984, pp. 9-16; Lucas, 1980, p. 156). However, as there were few primary care facilities below the level of county, most county health centres were

isolated and tended to provide epidemic prevention mainly to the people in county seats where the county governments were located (Lim & Chen, 1937; Štampar, 1936).

Overall, the years between 1935 and 1949 saw the consolidation of two divergent trajectories: one with hospitals providing high-cost medical care using increasingly qualified professionals serving urban populations; the other with primary care providers mainly providing low-cost health services relying on task-shifting to lay health workers and focusing on epidemic control. The bridging professional primary care doctors did not materialise. The private practitioners were marginalized during the state medicine programme, which focused on developing the health facilities either owned or regulated by the government to provide public health care services. In the areas controlled by the Communist Party of China, a low-cost model of medical and health work based on medical cooperatives was central in response to the harsh conditions under the hostility of the Nationalists (Ouyang, 1984). The communist low-cost health work focusing on rural areas paralleled the low-cost model of primary care that had developed under the Nationalists, and paved the way for future development of the divergent trajectories after 1949.

4 Discussion

4.1 Historical legacies before and after 1949

We have developed and used an approach of path dependence analysis to examine the coevolution of hospitals and primary care providers from 1835 to 1949. The study is limited by the lack of materials on some detailed policy processes. Nevertheless, we

found that the earlier focus on a hospital-centric model of Western medicine before 1928 contributed to difficulty in building a primary-care-centred national health service afterwards (see Table1). The founding of the first Western medicine hospital between 1835 and 1844 introduced a hospital-centric model of Western medicine, leading to a self-reinforcing process that institutionalized hospitals as the main provider of Western medicine combining medical professional development, substantial ambulatory care, urban-based financing, and a coalition of strong interests by 1928. We also showed that a policy shift towards primary care emerged from 1928 to 1934 with the convergence of a unified government structure, the recognition that primary care was the mechanism to address major causes of mortality, as well as a local model of primary care practice. However, the hospital-centric model remained effective in resisting a shift of professional medical staff towards primary care, leading towards diverged developmental trajectories for hospitals and primary care facilities.

Table 1. Summary of the coevolution of hospitals and primary care providers in China (1835-1949)

Periods	Historical processes
1835-1844	The first Western medicine hospital built by the missionaries introduced a critical juncture with a hospital-centric model of Western medicine.
1844-1900	Post-juncture development saw the consolidation of mission hospitals as the main providers of missionary medicine, incorporating direct-access outpatient care and a unique group of medical professionals.
1901-1928	With further post-juncture development, Western medicine hospitals were becoming elitist academic hospitals and the main ladder to progress within the medical profession. The career of Western medicine professionals was bound to hospitals. Hospitals also had local sources of funding.
1928-1934	An opportunity for change emerged as the Nationalist government unified the country and established the Ministry of Health. The international and domestic practice in developing primary care became absorbed into the national state medicine programme.

1934-1949	Post-juncture development towards primary care strengthening faced the challenge from a medical establishment developed in a hospital-centric environment, preventing the shift of medical professionals towards primary care, and prompting divergent developmental trajectories for hospitals and primary care facilities.

Towards 1949, hospitals established a stable source of financing from wealthy people with higher ability to pay, while state-sponsored primary care were poorly funded; hospitals were staffed by increasingly high-quality medical professionals, while the state-sponsored primary care were staffed mainly by lay health workers; hospitals relied heavily on direct-access ambulatory care, while primary care focused on public health services; and hospitals answered primarily to the demands of the privileged social group, while primary care was designed for the mass population. Efforts to build primary care in the 1960s led to the placement of a significant number of professional doctors in rural areas who trained peasants as health workers (barefoot doctors) to provide a basic package of curative and preventive services. However, the link between the medical profession and primary care was not stable; many of them left rural and primary care facilities (Liu, Xu & Wang, 1996). In recent years, the government has sought to train medical graduates in the specialty of general practice and attract them to primary care facilities, yet resources were allocated primarily to hospitals while the medical care function of primary care facilities weakened in comparison to hospitals (Xu, 2017: Chapter 4; Xu & Mills, 2017). In other words, development since 1949 reflects the strong historical legacy.

4.2 Policy implications

These findings on historical coevolution of hospitals and primary care providers in China have the following implications for contemporary efforts to strengthen primary care. First, a shift in the orientation of health services is required. In the 1928-1934 conjuncture, the emphasis on the importance of public health was one of the key drivers in the development of primary care. The state medicine agenda became a bandwagon that engaged medical reformers who were professionals as well as bureaucrats. The recent National Congress on Health and the issuance of the Healthy China 2030 plan represents a potentially effective bandwagon to engage and mobilise key stakeholders to reposition health system development towards health improvement. This shift will require a focus on people-centeredness, with primary care as the central hub of services (World Health Organisation, 2015). Such reorientation could provide the political support needed for a fundamental shift of health system focus towards primary care.

Second, primary care strengthening in China still faces the challenge from a historically constructed hospital-centric medical model. When primary care development was prioritized after 1928, it faced enormous challenges within a pre-existing hospital-centric medical model and went on a separate track of development antithetical to hospital's reliance on professionals and expensive health care approaches. The contemporary dominance of good quality doctors and financial resources in hospitals means that a hospital-centric model still exists in professional medicine. Without a strong clinical basis, it is difficult for primary care to attract good

quality doctors, and hence to satisfy much of clinical care demands of patients. Development of primary care has been trapped in a vicious cycle (Xu & Mills, 2017). Township health centres focused on public health services, as they were unable to compete with county hospitals for curative care patients.

Third, our findings suggest that the dynamic interrelationship between multiple policies and the feedback of these policies was the main source of resistance to policy changes, suggesting that a whole-system approach is required to shift the balance of health system towards primary care. Organizationally, the function of primary care facilities needs to be clarified and updated. Contemporary efforts to strengthen primary care face the dual challenge of the need to reconstruct the community-oriented health services, as well as taking more responsibility in treating chronic illnesses. Thus organizational positioning of primary care facilities should include both strong professional medical competence as well as a grassroots community-orientation to services. Professionally, the historically constructed professional dichotomy of lay/grassroots primary care provider versus professional hospital doctor needs to be replaced by the institutionalization of professional primary care doctors as the vital link between these two perspectives. China can draw experiences from the team-based approach of the Family Health Programme of Brazil (Macinko & Harris, 2015). Medical education also needs to be an integral component of human resources for health policies, in order to build up a sustainable group of professional primary care doctors sufficiently trained to satisfy a large proportion of the health need of the

population.

Financially, fiscal space for primary care needs to be secured. The common practice of restricting payment to primary care facilities based on the low and generally fixed historical budget should be replaced by one that allows them to offer competitive wages to attract high quality general practitioners. A policy coalition with strong political, professional and managerial actors is needed. An integrated governance structure capable of coordinating reform in the financing, organisational restructuring, and staffing (including medical education) of health facilities is also likely to be critical in maintaining progress towards primary care strengthening, along with timely exploration in local settings.

5 Conclusion

This study has developed and used an approach of path dependence analysis, which has facilitated the examination of the coevolution of hospitals and primary care providers from 1835 to 1949. We have shown that China had historically formed the hospital-centric model involving four sets of regenerating and mutually reinforcing institutions: 1) financial resources which were disproportionally distributed to hospitals; 2) high-quality medical professionals which were largely concentrated in hospitals; 3) large outpatient departments incorporated in hospitals which functioned as a first point of care for many patients; 4) hospitals which answered primarily to the demands of the privileged social group. The early institutionalization of a

hospital-centric model of Western medicine in China since 1835 became resistant to change, and efforts to strengthen primary care eventually took a divergent low-cost and de-professionalized developmental path by 1949. The pre-1949 hospital-centric structure foregrounded post-1949 development, and China still has the hospital-centric health system seeded in 1835.

Our findings can inform the framing of contemporary options for primary care strengthening. Without addressing the deep regenerating causes mentioned above using a whole-system approach, it is unlikely that China can achieve primary care orientation of health system development. The findings argue for a better understanding of history and its role in health system development, to help us interpret and design contemporary interventions. Our study is one of the first of its type in a developing country context and thus offers the possibility to compare the history of China with that of other developing countries, as the literature develops.

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Research highlights

- Hospitals' dominance in China's modern health system has its roots in 1835.
- Path dependence of hospitals' dominance affected later primary care development.
- Primary care development from 1928 to 1949 became antithetical to hospitals.
- The diverged trajectories of hospitals and primary care sector still exist today.
- A shift towards primary care orientation requires a whole-system approach.