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**Towards Strengthened Primary Care in China:  
An Early Evaluative Study of the Government's Role  
Between 2003 and 2015**

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# Abstract

Since the early 2000s, the Chinese government has significantly increased its subsidies for health care and made new promises. Among different reform areas, primary care has been prioritised. This thesis evaluates the Chinese government's role in strengthening primary care between 2003 and 2015. Two main research questions are addressed: 1. What has the Chinese government done to strengthen primary care? and 2. What were the outcomes of these efforts?

In order to answer these research questions, data were drawn from both secondary research and fieldwork conducted in China between October 2016 and March 2017. More specifically, data were collected from the *China Health Yearbook* and *China Health Statistical Yearbook*, relevant policy documents and academic publications. During my fieldwork, primary data were obtained from semi-structured interviews and observations. These data were analysed using a framework developed from the existing literature. The strengthening of primary care was considered both as a goal in itself and as a means to improve the Chinese health care system. When considered as a goal in itself, the strength of primary care was broken down into structures and processes, which were then further divided into eight dimensions/features. Under each dimension/feature, the Chinese government's intentions were described, followed by what the government did and intervention outcomes.

The major findings of this study can be summarised as follows. To strengthen primary care, the Chinese government has relied heavily on increasing requirements for public primary care facilities and injecting more subsidies. The government has been successful in increasing the inputs of primary care facilities and meeting its own quantitative targets. Primary care facilities have become more spacious, better equipped and staffed by more people. They have delivered a large quantity of essential public health

services free of charge, offered essential medicines at wholesaling prices and provided many medical services at below-cost prices. However, problems also exist. The quantitative targets set by the government are not always well justified. The effectiveness of various government efforts has been compromised by a mismatch between targets and funds, weak monitoring and a poor data foundation, compounded by the fragmented administrative structure.

The strengthening of primary care facilities has been further complicated by their competitive relationship with hospitals. In the past 15 years, hospitals expanded rapidly, and the relative market share of primary care facilities dropped. The government has realised that diverting patients from hospitals to primary care facilities requires a more comprehensive approach. More recently, the government has further stepped up its efforts to strengthen primary care. Some promising initiatives have been initiated. However, the problems identified in this study have not yet been fully addressed, and these may continue to pose challenges for the government to achieving its intended goals.

## **Declaration**

This is to certify that

- (i) The thesis comprises only my original work towards the degree of Ph.D.;
- (ii) Due acknowledgement has been made in the text to all other material used;
- (iii) This thesis is fewer than 100,000 words in length, exclusive of tables, figures and references.

## **Preface**

This thesis benefited from professional editing by Elaine Scanlan and Capstone Editing. In compliance with the University of Melbourne's Graduate Research Training Policy, the services they provided were restricted to copyediting and proofreading, as covered in Parts D and E of the Australian Standards for Editing Practice.

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## **List of Abbreviations**

|         |                                                               |
|---------|---------------------------------------------------------------|
| CCCPC   | Central Committee of the Communist Party of China             |
| CCSEC   | Contemporary China Series Editorial Committee                 |
| CHFPYEC | China Health and Family Planning Yearbook Editorial Committee |
| CHYEC   | China Health Yearbook Editorial Committee                     |
| CMS     | Cooperative Medical Scheme                                    |
| DRG     | Diagnosis Related Group                                       |
| FFS     | fee-for-service                                               |
| GDP     | gross domestic product                                        |
| GIS     | Government Insurance Scheme                                   |
| GMS     | General Medical Services                                      |
| GP      | general practitioner                                          |
| LIS     | Labour Insurance Scheme                                       |
| NBS     | National Bureau of Statistics                                 |
| NEMP    | National Essential Medicines Policy                           |
| NHDRC   | National Health Development Research Center                   |
| NHFPC   | National Health and Family Planning Commission                |
| NHS     | National Health Service                                       |
| NHSS    | National Health Services Survey                               |
| NRCMS   | New Rural Cooperative Medical System                          |
| OECD    | Organisation for Economic Co-operation and Development        |
| OGI     | Open Government Information                                   |
| PHCPI   | Primary Health Care Performance Initiative                    |
| PHAMEU  | Primary Health Care Activity Monitor for Europe               |
| PSU     | public service unit                                           |

|       |                                        |
|-------|----------------------------------------|
| SARS  | severe acute respiratory syndrome      |
| SOE   | state-owned enterprise                 |
| TVE   | township and village enterprise        |
| UEBMI | Urban Employee Basic Medical Insurance |
| UK    | United Kingdom                         |
| URBMI | Urban Resident Basic Medical Insurance |
| US    | United States                          |
| WHO   | World Health Organization              |

# Chapter 1. Introduction

Good population health is desirable for any country. Better health is not only conducive to economic progress, since healthy people tend to work longer and be more productive, but is also central to human happiness and wellbeing, itself a noble and ultimate goal of development. What is debatable, however, is how population health can be maintained and improved in different socio-economic contexts. Among all, two areas of debate are particularly interesting and directly relevant to the theme of this thesis.

The first is whether health care systems should be oriented towards primary care and how this can be achieved. There is almost a consensus that primary care is beneficial—strong primary care is associated with better population health outcomes, reduced avoidable hospital admissions, lower costs and higher care quality (for example, Macinko, Starfield & Shi, 2003; Shi, 2012) (see Chapter 2). Given the desirability of primary care, many governments have implemented reforms to strengthen primary care. However, the progress of reforms is rather disappointing in reality. In many health care systems, hospitals have expanded at a faster speed and the growth of the specialist workforce has been much quicker than that of the primary care workforce. Strengthening primary care seems to be a challenging and difficult task. More knowledge is needed to inform this.

The second area of debate is what role the government should play in health care. Towards this debate, economists have made important contributions by identifying specific conditions for government intervention. In brief, it is only when there are market failures or equity concerns that the government should intervene (World Bank, 1997a). The problematic part, however, is that the features of health care make it qualify for most conditions set by economists. Public health is a public good that tends to be undersupplied

when left to the market. Information between patients and health care providers is far from symmetric. Depending on the context, some form of equity is usually desirable.

While leaving the provision and financing of health care entirely to the market is not the answer, letting the government take full responsibility can also lead to problems. In practice, governments need to make their own calculations to set boundaries for their intervention and decide how to intervene. When making such decisions, each government has to carefully think through its unique situation and find answers that best suit the local circumstances, subject to available resources.

This thesis is about the Chinese government's role in primary care. It evaluates the Chinese government's role to strengthen primary care between 2003 and 2015. This evaluation is needed as there have been many developments since the early 2000s. The Chinese government has significantly increased its subsidies for health care and made new promises. Among different reform areas, strengthening primary care has been prioritised. This development and its implications have not yet been fully examined—a gap filled by this study. This study is also relevant because the Chinese government is still increasing its efforts to strengthen primary care. An evaluation of past efforts can provide lessons for future developments.

The remainder of this chapter elaborates on the background of the increasing importance of health care in the Chinese government's agenda and the prioritisation of strengthening primary care (Sections 1.1–1.2), introduces the aim and scope of this research (Section 1.3) and provides an overview of the thesis's structure (Section 1.4).

## **1.1 Increasing Importance of Health Care in the Chinese**

### **Government's Agenda**

In the past decade, health care has attracted increasing attention from the government. Most evidently, the government has allocated significantly more subsidies for the sector. Between 2003 and 2015, government per annum health expenditure

increased from 112 billion yuan to 1,248 billion yuan (see Figure 1.1). While government health expenditure accounted for 0.8% of gross domestic product (GDP) in 2003, it jumped to 1.8% in 2015 (National Bureau of Statistics [NBS], 2016). This is a substantial increase given the relatively short time frame.

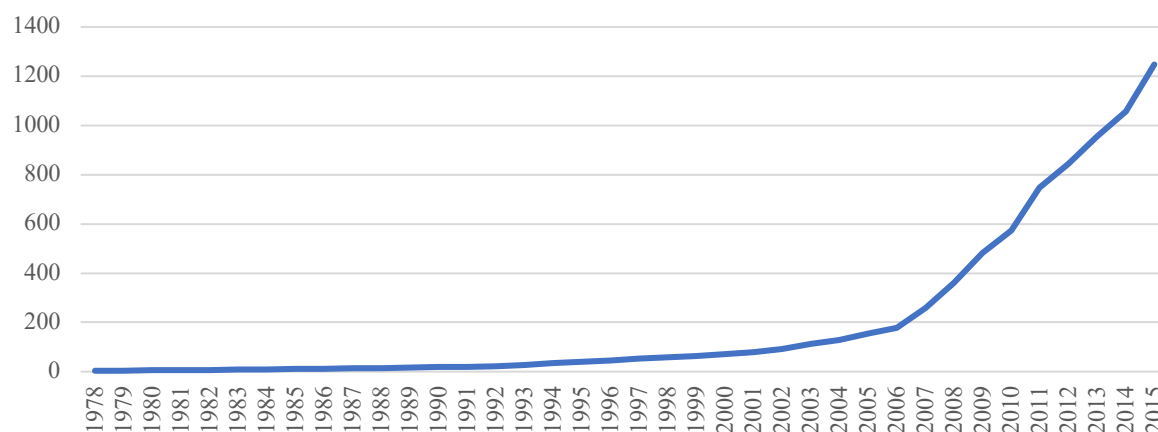


*Figure 1.1.* Chinese government health care expenditure (billion yuan) (1978–2015) (NBS, 2016).

The special attention paid to health care can be identified in annual government work reports which state the government’s priorities and key tasks. While ‘health care’ was relatively unmentioned until the early 2000s, there was a sharp increase in the use of the term after 2003. A similar trend can also be identified in China’s five-year plans. While the description of health care comprised only one short paragraph in earlier plans (e.g., National People’s Congress, 2001), it became increasingly lengthier after the Eleventh Five-Year Plan (National People’s Congress, 2006, 2011, 2016). In addition, earlier five-year plans tended to be general and rather ambiguous in relation to health care, mainly stating the general principles of the government’s approach. From 2006 onwards, the plans provide far more detail on both health care goals and the measures to be adopted. Most significantly, after years of consultation and deliberation, the government launched an ambitious and comprehensive health reform program in 2009 with ambitious goals:

By 2020, the basic health care system covering urban and rural residents shall have been fundamentally established. We shall have set up, across the country, a fairly complete public health and medical service delivery system, a comparatively sound medical security system, a relatively well regulated pharmaceutical supply system, a relatively scientific health care institution management and operational system, a multi-sponsored medical configuration shall be formed, everyone will have access to essential medical and public health services, the multi-level needs of the people for health care shall be basically met, and the health level of the people shall be further enhanced. (Central Committee of the Communist Party of China [CCCPC] & State Council, 2009, p. 2)

In subsequent years, the government issued a wide range of supporting policy documents to outline specific tasks, targets and instructions on how to complete these tasks. Given the complex nature of the reforms and numerous tasks involved, the State Council has prioritised certain reforms over others—strengthening primary care was given top priority (see Section 1.2). The importance of health care has further increased since 2015. In October 2015, at the Fifth Plenary Session of the 18th CCCPC, ‘Healthy China’ was upgraded as a national strategy, signifying an unprecedented emphasis on health care. In August 2016, China held its National Health Care Work Conference, the most important national meeting on health care in 20 years.<sup>1</sup> Following the conference, China’s leaders promised that health would become an explicit national political priority with the approval of the *Health China 2030 Planning Outline*, the first medium- to long-term strategic plan in health care developed at national level since the founding of China in 1949 (World Health Organization [WHO], 2016).

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<sup>1</sup> The previous conference was held in 1996, and six of the seven members of the Standing Committee of the Political Bureau of the CCCPC attended. The 1996 conference summarised the achievements and experiences of health care work since the economic reforms and set goals and principles for the new era. At the 2016 conference, all members of the Standing Committee of the Political Bureau of the CCCPC were present (Wang, 2016).

## **1.2 Strengthening Primary Care as a Top Priority**

Among the different areas of the health care system, the Chinese government has prioritised primary care. This section provides a brief introduction to the Chinese health delivery system (Section 1.2.1) and discusses the government's intentions for primary care (Section 1.2.2).

### **1.2.1 A Brief Introduction to the Chinese Health Delivery System**

The health delivery system in China consists of a public health delivery system and a medical service delivery system. The public health delivery system includes disease prevention and control centres, maternal and child health institutions, health education institutions, health information institutions, and health supervision and management institutions.

The medical service delivery system consists of hospitals and primary care facilities (see Figure 1.2). This system is still very much dominated by public ownership. The organisation of the public sector mirrors the structure of the government.<sup>2</sup> At the county level and above, public hospitals are organised into different administrative levels. There exist central hospitals, provincial hospitals, municipal hospitals and district/county hospitals. Most public hospitals are administered by the Health and Family Planning Commission at the respective level, for example, a provincial hospital is usually administered by the corresponding provincial Health and Family Planning Commission.<sup>3</sup> Below the county level, there exist township health centres and village health stations in

---

<sup>2</sup> The Chinese government has five levels: the central government, provincial governments, prefectural governments, county governments and township governments. In urban areas, a city may set up districts which are in turn divided into streets. Districts are administered by district governments which are at the same rank as county governments, and streets are administered by street offices which are at the same rank as township governments. A street office is not a government in itself, but an agency of the district government (the district government can choose whether to set up street offices). Townships and streets are further divided into villages and neighbourhoods which are administered by village committees and neighbourhood resident committees respectively. These organisations are not formal government agencies, but they work closely with the government and provide assistance when needed.

<sup>3</sup> The National Health and Family Planning Commission was replaced by the National Health Commission in March 2018. However, since this study focuses on health care developments between 2003 and 2015, the Ministry of Health and the National Health and Family Planning Commission appear throughout this thesis.

rural areas, and community health centres and stations in urban areas (although a minority of community health facilities are located in rural areas). These facilities are organised on a catchment area basis. The government’s general principle is to have one township health centre in each township, one village health station in each village, and one community health centre in each street.

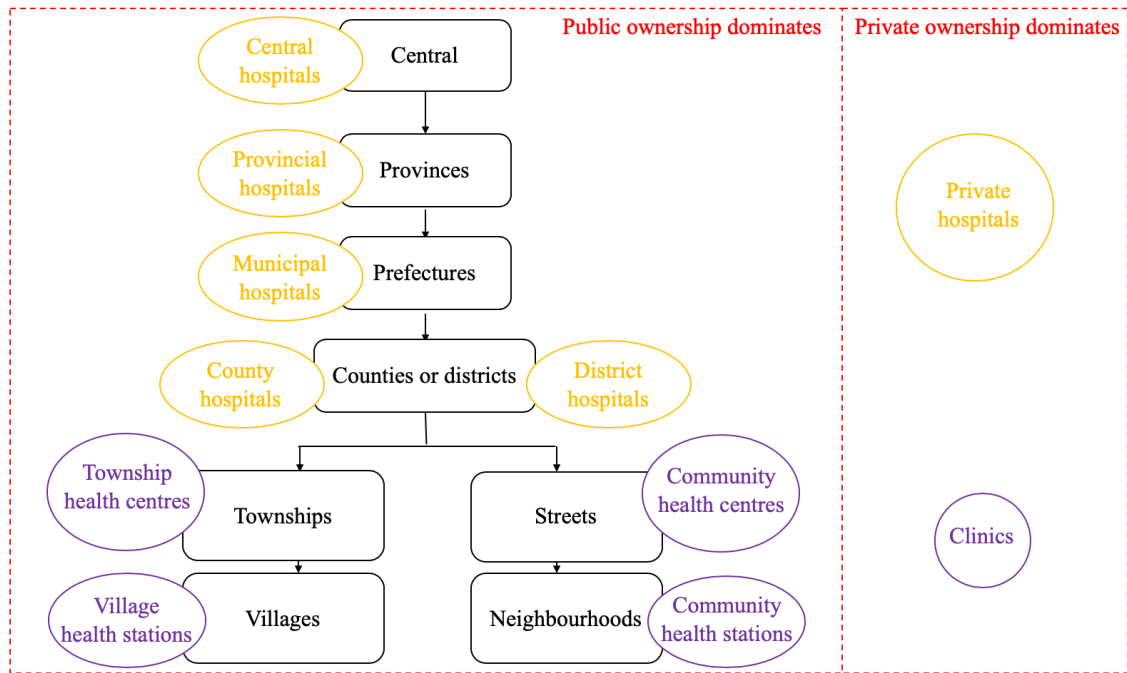


Figure 1.2. The medical service delivery system in China. Yellow circles are hospitals and purple circles are primary care facilities.

In addition to the largely public medical service sector (note, some village health stations and community health facilities are private), there exists a relatively small private sector consisting of hospitals and clinics.<sup>4</sup>

The government classifies township health centres, village health stations, community health centres and stations and clinics as primary care facilities. Clinics differ from the other four types of primary care facilities in two significant ways. First, the majority of clinics are private, while other primary care facilities are mostly public. Second, other primary care facilities have a public health function. The county level is

<sup>4</sup> The number of private hospitals is no longer small, but their average size and market share are still relatively small when compared to public hospitals (see Section 8.1.1).



the lowest level at which specialised public health facilities (e.g., centres for disease control and maternal and child health institutions) exist. Below the county level, public health services are delivered through township health centres, village health stations and community health centres and stations. This means that health centres and stations provide not only medical services, but also public health services at the grassroot level.<sup>5</sup>

Occasionally, the government also counts county hospitals as primary care facilities, but in most cases primary care facilities refer to health centres, health stations and clinics. In some cases, primary care facilities provide services that do not commonly fall under primary care. For example, many township health centres provide surgeries and inpatient care. The provision of primary care is not exclusive to primary care facilities. In large cities, many patients go directly to hospitals, no matter what health problems they have. Hospitals are therefore also involved in the delivery of primary care. With these complications in mind, this study follows the government's approach of treating community health facilities, township health centres, village health stations, and clinics as primary care facilities.

### **1.2.2 The Chinese Government's Intention for Primary Care**

Since the early 2000s, the Chinese government has prioritised the strengthening of primary care facilities. In the initial years, the government's focus was on revamping the rural health care system. A key component of this was capacity building of township health centres which are considered the core of the rural health care system (Ministry of Health, State Administration of Traditional Chinese Medicines, National Development and Reform Commission & Ministry of Finance, 2006). In 2006, the government issued a plan to accelerate the development of community health facilities. It was proposed that community health facilities would become the foundation of the urban health care system, and the strengthening of community health centres and stations would be vital to

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<sup>5</sup> Clinics may also choose to provide public health services, but this is on a voluntary basis.

improving the accessibility and affordability of health care for urban residents (State Council, 2006).

Since the launch of health care reforms in 2009, strengthening primary care facilities has been one of the few top priorities set by the central government. During the first phase of health care reforms (2009–2011), three of the five top priorities directly related to primary care facilities. The government proposed to improve the physical infrastructure of primary care facilities, enhance their workforce and ameliorate their financing and operational mechanisms. The government introduced a national package of essential public health services that are supposed to be delivered through primary care facilities free of charge to all citizens. The government also introduced a new list of essential medicines to be sold at primary care facilities without any mark-up (State Council, 2009). During the second phase (2012–2015), the government continued and reinforced its previous efforts (State Council, 2012a).

More significantly, since the launch of health care reforms in 2009, strengthening primary care has been set as one of the three key principles guiding health care reforms.<sup>6</sup> The government envisioned primary care facilities as forming strong relationships with local residents and playing the dominant role in the health management and treatment of common and prevalent diseases. In this way, everyone would have access to health care within their local village or community, and primary care facilities would serve as the gatekeeper of the health care system (Li, 2011). During the most recent (third) phase of health care reforms (2016–2020), the government assigned top priority to establishing a hierarchical diagnosis and treatment system (State Council, 2016). Within the government's blueprint, primary care facilities would eventually become the cornerstone of the health care system.

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<sup>6</sup> The other two principles are securing essential services through insurance programs and establishing new mechanisms. In Chinese, the three principles are called ‘保基本、强基层、建机制’.

### 1.3 Study Aim and Scope

This thesis aims to evaluate the Chinese government's efforts in strengthening primary care. In the Chinese context, strengthening primary care means to strengthen primary care facilities. Such facilities include township health centres, village health stations, community health centres and stations, and clinics (see Figure 1.2). In most cases, strengthening primary care equates to strengthening health centres and stations, because clinics are mostly private and have a relatively small market share. It should be noted that health centres and stations provide not only medical services, but also public health services—in some cases, they may even provide some hospital services (commonly seen in the case of township health centres).

The thesis focuses on the period between 2003 and 2015. This period has been chosen for several reasons. First, in 2003, the severe acute respiratory syndrome (SARS) epidemic hit China severely. This outbreak revealed a number of serious problems with China's health care system, put these problems under the media spotlight and prompted debates over China's health system reforms. Second, the Hu-Wen Administration succeeded that of Jiang Zemin and Zhu Rongji in 2003, and in this year the central government first launched the guiding governance principle 'scientific approach to development', advocating the full development of people's wellbeing (Ngok & Zhu, 2010). This was the start of an important paradigm shift from the unilateral economic growth model to a more balanced approach (Li, 2013; Chan, 2016). Under this shift, a wide array of social programs was initiated and promoting social welfare became a key task. The government's new promises and more subsidies for health care need to be understood within this context. Third, the Twelfth Five-Year Plan (2011–2015) ended in 2015, and this is also the end year of the second phase of the 2009 health care reforms. Chinese health care reform is ongoing and some new policies have been introduced since 2015. More recent developments are discussed whenever relevant and appropriate.

An evaluative study of the Chinese government's efforts in strengthening primary care is much needed. The Chinese government's increasing involvement in health care and the implications of this are still under-researched and not well understood. These developments are of great empirical significance as they have absorbed substantial public resources and the changes in primary care have direct implications on the health care experiences of the Chinese public. This thesis is also highly relevant because the Chinese government is still increasing its efforts to strengthen primary care. Since 2016, the importance of primary care has still been emphasised, more initiatives have been introduced and more subsidies have been provided. An evaluation of past efforts can identify successes and problems, thereby providing lessons for future health care developments.

The study scope described above has two inherent limitations. The focus is mainly on primary care, but different sectors within the health care system are interconnected and the health care system is constantly shaped by socio-economic transformations and changes. Separating primary care from the health care system is problematic. To address this issue, this thesis attempts to contextualise primary care and understand the changes within the Chinese health care system. However, this thesis does not intend to fully explore the implications of primary care on hospitals and how hospitals resist or respond to the changes in primary care. In this sense, this study is not enough for a complete understanding of the dynamics in the Chinese health care system.

The other major limitation is that this thesis focuses mainly on the period 2003–2015. However, health care is a very dynamic policy field and there have been many important developments since 2015. This thesis discusses some of these developments but does not intend to evaluate these recent changes because there was limited evidence and data for this purpose at the time of writing. From this perspective, this study is an 'early' evaluation, as the thesis title suggests.

## 1.4 Thesis Structure

This thesis comprises nine chapters. Chapter 1 has provided the background, relevance, aim and scope of the research. Chapters 2 and 3 expand on the background of this research. Chapter 2 provides the theoretical and empirical background, introducing the definition of primary care and discussing how the strength of primary care is measured and the main benefits of primary care documented in the public health literature. The chapter also reviews international experiences of organising and strengthening primary care, thereby establishing points of reference for later discussions. Chapter 3 provides the historical background of China's health policy and system between 1949 and 2002. This is important, as these developments precipitated many of the problems that the current health care reforms aim to address.

Chapter 4 outlines the research design, presenting the research questions, proposing an analytical framework and detailing the research methods. Chapter 5 then reviews the context since the early 2000s, the study period of this research. It examines how the socio-economic background described in Chapter 3 has evolved since the early 2000s, and introduces major developments in health care. The chapter also clarifies important concepts used in the thesis, highlights the dynamic relationship between primary care and hospitals in China, identifies the key contextual factors that justify the strengthening of primary care and lists the government's goals and objectives.

Following the analytical framework proposed in Chapter 4, Chapters 6–8 present the findings of this thesis. Chapter 6 discusses the government's role in strengthening the inputs of primary care and Chapter 7 discusses the service delivery attributes. For each input/attribute, the Chinese government's intention is described, followed by the means and outcomes of intervention. While Chapters 6 and 7 focus on primary care itself, Chapter 8 puts primary care back into the context of the Chinese health care system. The chapter reviews the development of hospitals, re-examines the effects of the

government's efforts to strengthen primary care and assesses the extent to which the government's strengthening of primary care has contributed to improving the overall health care system.

Chapter 9 concludes the thesis, summarising the major findings and answering the research questions. It highlights major problems and issues in the Chinese government's strengthening of primary care. This chapter also discusses the contributions of this thesis and directions for future research.

## **Chapter 2. Primary Care: Concept, Measures, Benefits and International Experiences**

This chapter provides the theoretical and empirical background for this research. The purpose of this chapter is threefold: 1) to define the concept of primary care, 2) to investigate how the strength of primary care is measured and the main benefits of primary care by reviewing relevant studies in the public health literature, and 3) to establish points of reference for later discussions by reviewing international experiences of organising and strengthening primary care.

### **2.1 Defining Primary Care**

Perhaps the most influential piece on primary care is the work of Barbara Starfield (1998, pp. 8–9), which defines primary care as

that level of a health service system that provides entry into the system for all new needs and problems, provides person-focused (not disease-oriented) care over time, provides care for all but very uncommon or unusual conditions, and coordinates or integrates care provided elsewhere or by others.

This definition emphasises four essential attributes: first contact, longitudinality, comprehensiveness and coordination. First-contact care implies accessibility to and use of services for each new problem or episode of a problem for which people seek health care. Longitudinality presupposes the existence of a regular source of care and its use over time. Comprehensiveness implies that primary care facilities must arrange for patients to receive all types of health care services, even though some may not be provided efficiently within the primary care facility. Coordination requires some form of continuity, either by practitioners or through medical records or both, and problem recognition.

These elements are widely reflected in the official definitions adopted in different countries. In the United States (US), for example, the Institute of Medicine defines primary care as ‘the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practising in the context of family and community’ (Donaldson, Yordy, Lohr & Vanselow, 1996). In Europe, primary care is considered to be

the provision of universally accessible, integrated, person-centred, comprehensive health and community services provided by a team of professional accountable for addressing a large majority of personal health needs. These services are delivered in a sustained partnership with patients and informal caregivers, in the context of family and community, and play a central role in the overall coordination and continuity of people’s care. (European Commission, 2014, p. 49)

Despite these definitions, the essential elements are not always present in practice. This is especially true for systems where primary care is underdeveloped. In such systems, primary care providers may only partially fit the definitions. For example, they may serve as the first point of contact for patients, but not help with the coordination of care.

More generally, primary care is understood as the first level of professional care of a health care system. Other essential levels include secondary and tertiary care. Compared to primary care, secondary and tertiary care services are more complex and specialised. Secondary care is usually short term, involving sporadic consultation from a specialist to provide expert opinion and/or surgical or other advanced interventions that primary care providers are not equipped to perform. Examples include hospitalisation, routine surgery, speciality consultation and rehabilitation. Tertiary care is the most



complex level of care, needed for conditions that are relatively uncommon. Typically, tertiary care is institution based, highly specialised and technology driven. Examples include trauma care, burn treatment, neonatal intensive care, tissue transplants and open-heart surgery (Shi, 2012).

However, the distinction between primary and secondary care is not always clear. One important indication of this is the great diversity in how health care is organised. For example, similar services might be delivered by different providers. In countries that do not implement gatekeeping, patients can skip all primary care providers and go straight to specialists. This means that specialists in such systems usually need to provide services that could be delivered by general practitioners (GPs). The scope and role of GPs and other primary care providers also vary within countries. Frequently, primary care providers in rural and remote areas need to perform complicated and specialised tasks due to the lack of specialists in such areas. Further complicating the issue is that the interface between primary care and secondary care keeps evolving. In many health care systems, there has been a trend of assigning those tasks traditionally provided by specialists to primary care providers. Organisational structures in many countries are also changing, with an increasing presence of integrated institutions that combine primary and secondary care at one location (Atun, 2004; Willcox, Lewis & Burgers, 2011). These changes have all made it even harder to draw clear boundaries between primary and secondary care.

In health care systems where the boundary between primary care and secondary care is unclear, a more common way to classify health care is ambulatory/outpatient and inpatient care. Ambulatory/outpatient care refers to personal health care provided on an outpatient basis. It includes both first-contact care and some follow-up, referral, or specialist services (Berman, 2000).

The term ‘primary care’ is frequently confused with a similar term, ‘primary health care’. The latter is defined by the WHO (1978, pp. 1–2) as

essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country’s health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.

During earlier developments, there was a tendency to use the terms interchangeably (e.g., in her seminal book, Starfield did not differentiate the terms). More recently, there has been a growing consensus that ‘primary care’ is a narrower concept compared than ‘primary health care’ (Atun, 2004; Muldoon, Hogg & Levitt, 2006; Shi, 2012; Boerma & Kringos, 2015). In most cases, ‘primary care’ refers to the first level of a health system assuming clinical functions and is mainly restricted to the health care system. In contrast, ‘primary health care’ is a broader term that derives from core principles articulated by the WHO. It is a social approach to health and goes beyond the health care system. Briefly, ‘primary care’ is person oriented and longitudinal, usually provided by physicians to individual patients, while ‘primary health care’ is a more philosophical and holistic approach closely tied to the WHO.

This thesis recognises the interchangeability of the two terms in many contexts, but follows the growing consensus that they should be differentiated. In this thesis,

‘primary care’ refers to the first level of professional care of a health care system, following Starfield’s (1998) definition. The term ‘primary health care’ refers to the social and holistic approach advanced by the WHO (the meanings of these terms in this thesis are covered in Section 5.3.1).

## 2.2 Searching for a Benchmark

This section sets a point of reference for later discussions by introducing how primary care is provided and financed in developed countries. This is necessary, because the ideal primary care portrayed in the public health literature is still at an embryonic stage due to many practical constraints. Reviewing how the current situation of primary care in developed countries can help us understand what is achievable in the real world and, thus, set a more realistic benchmark. Also, identifying common patterns can also help us to characterise the Chinese system in the context of international development.

### 2.2.1 Three Models of Health Care Systems

The current pattern of health systems is not the result of independent, multiple inventions, but rather the result of a process of deliberate take-up and adaptation (Marree & Groenewegen, 1997). This means that health care systems share important similarities and, thus, can be clustered into groups. In the literature, the most influential distinction is that between national health service systems, social health insurance systems and private health insurance systems (Freeman & Rothgang, 2010; Organisation for Economic Co-operation and Development [OECD], 1987; Blank & Burau, 2014) (see Figure 2.1).<sup>7</sup>

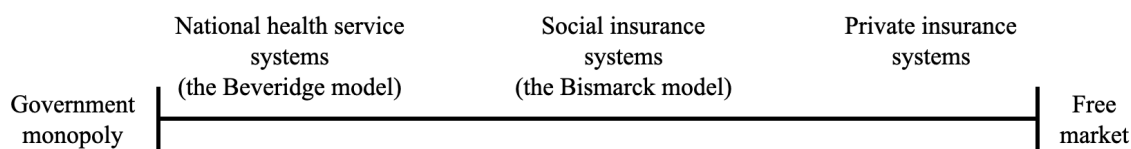


*Figure 2.1.* Spectrum of health care systems (Blank & Burau, 2014, p. 14).

<sup>7</sup> Debates continue over how health care systems should be grouped, but this is beyond the scope of this thesis. The discussions in this section follow only the most common approach to classifying health care systems. Discussions of alternative classification approaches can be found in Wendt, Frisina and Rothgang (2009) and Bohm, Schmid, Gotze, Landwehr and Rothgang (2013).

As shown in Figure 2.1, these three basic models sit on a continuum between government monopoly and free market. The national health service (Beveridge) model has the most state interventions. This model is characterised by universal health care coverage of all citizens funded through general tax revenues. Providers of care are either owned or contracted by the government. The social insurance (Bismarck) model has moderate state interventions. It is based on a concept of social solidarity and characterised by universal coverage health insurance, generally within a framework of social security. This compulsory health insurance is funded by a combination of employer and individual contributions through non-profit insurance funds or societies, often regulated and subsidised by the state. The provision of services tends to be private, although some public ownership is common. The private health insurance model has the least state involvement in the direct funding or provision of health care services. This model is characterised by the purchase of private health insurance, financed by employers and/or individual contributions. It is also largely based on private ownership of health care providers, although it might include a public-funded safety net for the most vulnerable groups such as the poor and elderly. The principal presumption of this approach is that the funding and provision of health care is best left to market forces (Blank & Burau, 2014).

The national health service model is most identified with the United Kingdom (UK). It has been mainly adopted in northern and southern European countries (e.g., Denmark and Spain), New Zealand and Australia. The prototypical country example of the social health insurance model is Germany. This system has been adopted in some western European countries (e.g., France and Austria), Japan and South Korea (Paris, Devaux & Wei, 2010). The classic country example of the private health insurance model is the US. However, it should be noted that this categorisation is used here mainly to outline the major features of different health care systems. In reality, each health care

system is complicated and has moved away from the pure model to varying degrees. For example, the UK health care system also has private insurance and private ownership, while the US health care system also has major public programs and public ownership.

### **2.2.2 Primary Care under Different Models**

To understand primary care within different health care systems, five cases are discussed: England (the UK),<sup>8</sup> Australia, Germany, Japan and the US. These five cases were selected because they cover the three basic models introduced above. The health care systems of England and Australia fall under the national health service model,<sup>9</sup> those of Germany and Japan are examples of the social health insurance model, and that of the US represents the private health insurance model. The discussion's focus is on how primary care is provided and financed within different health care systems—the two most discussed dimensions of health care systems. In particular, the government's role in the provision and financing of primary care is highlighted.

#### **2.2.2.1 England**

Primary care is delivered mainly through GPs in general practices. In 2015, there were 41,877 GPs (7.6 per 10,000 people) working in 7,674 general practices (Health and Social Care Information Centre, 2016). Other practitioners involved in the delivery of primary care are nurses; midwives; health visitors; and allied health professionals such as physiotherapists, chiropractors and occupational therapists. In addition to general practices, primary care can be provided by facilities such as walk-in centres, community health services, pharmacies, dental practices and optometrists (Boyle, 2011, pp. 225–229).

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<sup>8</sup> Health care in the UK is a devolved matter, with England, Northern Ireland, Scotland and Wales each having their own systems of publicly funded health care, financed by and accountable to separate governments and parliaments. As a result of each country having different policies and priorities, a variety of differences now exist between these systems.

<sup>9</sup> As discussed earlier, there is still no consensus on the classification of health care systems. The health care systems in UK and Australia differ in a number of ways: UK is budget financed while Australian is a national health insurance system. UK is a public service system while Australia has a mix of private doctors with public hospitals that have public sector employees but not public servants.

The majority of general practices are privately owned. Besides GPs, general practices also employ other professionals, such as nurses, whose duties include monitoring patients' blood pressure and providing minor treatments (Thorlby & Arora, 2016). GPs act as gatekeeper to secondary care in this health care system. Patients are required to register with a local practice of their choice. On average, each practice maintains a patient list of 7,450 people (Health and Social Care Information Centre, 2016). On average, each person visits a GP approximately 4.6 times each year.<sup>10</sup>

The National Health Service (NHS) covers the entire population and provides comprehensive benefits including GP attendances, prescriptions and dental care (Boyle, 2011). The system is funded by the government through tax. Most general practices are independent contractors of the NHS.<sup>11</sup> NHS funding is supposed to cover all practice expenses including rent, utility bills, staff wages and the cost of providing clinical services. Payment is adjusted by the weighted needs of their population—a practice with a large elderly population and, therefore, a greater workload will receive more funding than a practice with a relatively young and healthy population. Payment mechanisms are complex and include a mix of global sum, quality and outcomes frameworks, additional services, enhanced services, community-based services and premises payments (British Medical Association, 2016).

While GP services are mostly delivered by the private sector, the government is directly involved in the provision of some primary care services. One example is walk-in centres. Unlike traditional general practices, walk-in centres allow patients to access care from a GP or nurse with no need to register or make an appointment. These centres also

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<sup>10</sup> This was calculated based on the following. According to NHS England (2017), general practices provide over 300 million outpatient consultations each year. The population of the UK at 30 June 2015 is estimated to be 65.11 million (British Office for National Statistics, 2016).

<sup>11</sup> General practices are mainly under two types of contracts: General Medical Services (GMS) and Personal Medical Services (PMS). GMS is a national agreement that sets out the services to be provided, financial arrangements and support arrangements. PMS allows the provider to negotiate a local agreement for the services they will provide and payments they will receive, taking into account specific local health care needs. In 2015, 62.6% of general practices were contracted under a GMS contract, while 33.7% were contracted under a PMS contract (Health and Social Care Information Centre, 2016).

remain open for longer hours than typical GP practices. The NHS operates 25% of walk-in centres, with most of the remaining facilities owned by the independent sector (NHS Monitor, 2014). Another type of primary care services that the government provides is community health services. The content of services tends to vary across localities, but many provide services such as district nursing, continence services, podiatry, physiotherapy and diabetes care. Typically, one provider provides all or most services in a geographic area. Most community health services are provided through NHS organisations (NHS Monitor, 2015).

The government's involvement in financing is mainly through commissioning the services from independent general practices (Boyle, 2011). In addition to general practices, the government also commissions services from other types of service providers in the independent sector such as walk-in centres (NHS Monitor, 2014). In addition to commissioning services from the private sector, the government also funds public facilities. For example, the government finances community health services by fixed-sum payment based on block contracts (NHS Monitor, 2015).

#### ***2.2.2.2 Australia***

Primary care is centred on GPs. In 2014–2015, there were 33,308 GPs (14 per 10,000 people) (Australian Department of Health, 2017). Other primary care practitioners include nurses, midwives, allied health professionals, pharmacists, dentists and Aboriginal health workers. These health professionals work in a variety of facilities including general practices, community health centres, pharmacies, dental practices and allied health practices (Australian Department of Health, 2013).

GPs are typically self-employed. The majority provide services as part of a general practice (Australian Government, 2015). On average, each practice is staffed by four GPs. Most practices also employ nurses, providing services such as chronic disease management and care coordination (Glover, 2016). As gatekeeper of the health care

system, GPs refer patients to other types of providers. In 2014–2015, it was estimated that 15.9% of GP consultations resulted in referrals, most often to medical specialists (9.6%), allied health services (5.2%) and hospitals (0.7%) (Britt et al., 2015, p. 92). On average, each person visits a GP approximately 5.8 times a year.<sup>12</sup>

In Australia, the entire population is covered by the country's public health insurance, Medicare, which provides benefits for most health care services such as GP attendances, prescription medicines and specified items for allied health services for chronically ill people (Healy, Sharman & Lokuge, 2006, pp. 37–38). Medicare is funded directly by the government. The scheme reimburses services according to a national fee schedule on a fee-for-service (FFS) basis (Glover, 2016). Although GPs are allowed to charge above the fee schedule and, therefore, derive income from patients' payments, most of them choose not to do so. In 2014–2015, 83% of GP attendances required no co-payment from the patient (Australian Institute of Health and Welfare, 2016a). The program plays a key role in maintaining the gatekeeping function of GPs, as it stipulates that a referral to a specialist is needed if the patient would like to be reimbursed (Glover, 2016). For GPs, Medicare is their major source of revenue.

Although the government's involvement in the provision of primary care is limited, since private GPs provide the bulk of services, the government is active in the delivery of community health services, providing universal access to services and targeted services for vulnerable population groups. The exact range of community health services varies across jurisdictions (Australian Government, 2015). They may be provided directly by the government, or through a local health service or community organisation funded by the government.<sup>13</sup>

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<sup>12</sup> This was calculated based on the following. In 2014–2015, 139 million non-referred encounters with GPs were claimed through Medicare (Australian Institute of Health and Welfare, 2016a). In June 2015, the population of Australia reached 23.78 million (Australian Bureau of Statistics, 2015).

<sup>13</sup> One special category of community health services is Aboriginal and Torres Strait Islander primary care, which provides services for the Indigenous population (approximately 3% of the total Australian population) (Australian Bureau of Statistics, 2016). Many of these organisations provide services



The government plays a dominant role in the financing of primary care. More than 80% of GP services are covered by government expenditure, most of which is made through FFS payments of Medicare. There are also relatively small amounts of expenditure made under various initiatives (Australian Government, 2015). One such initiative is the Practice Incentives Program. This provides payments to eligible general practices to support quality care and, consequently, improved access and health outcomes. Further, as previously mentioned, the government also funds community health services (Australian Institute of Health and Welfare, 2016c, p. 66). Funding is mainly in the form of grants. For example, the government funds a range of health care activities for the Indigenous population through the Indigenous Australians' Health Program. Organisations receiving funding allocations should deliver services in accordance with the obligations contained in their funding agreement.

#### ***2.2.2.3 Germany***

Primary care is mainly provided by GPs, family internists and family paediatricians. Specialists such as dermatologists are also frequently involved in the provision of primary care, because patients are free to consult a specialist without a referral from primary care physicians. Other health professionals involved in the provision of primary care include dentists, pharmacists and allied health professionals such as physiotherapists and occupational therapists (Blumel & Busse, 2016). Services can be delivered through physicians' practices, pharmacies, dental practices and practices operated by allied health care professionals.

In the outpatient sector, GPs and specialists in private practice have a monopoly, and hospitals have very few outpatient responsibilities (Redaelli, Meuser & Stock, 2012).

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including health promotion, clinical care, substance use prevention and social and emotional wellbeing support. In 2014–2015, there were 203 Aboriginal and Torres Strait Islander primary care organisations. Nearly one-quarter were government run. The majority of non-governmental facilities, about two-thirds of the total, were operated by local Aboriginal and Torres Strait Islander communities (Australian Institute of Health and Welfare, 2016b).

Care is typically delivered by doctors' offices, which tend to be either solo or dual practices (Blumel & Busse, 2016). Employment of other health professionals, such as nurses, is uncommon. Although many practices employ doctors' assistants, they focus mainly on administrative tasks and have a limited clinical role (Schlette, Lisac & Blum, 2009). A national survey conducted between 2008 and 2011 showed that, on average, each person had 9.2 contacts with a physician in the preceding 12 months. Of these, 5.7 were with primary care physicians (3.2 with GPs) and 3.5 were with specialists (Rattay et al., 2013).

Statutory Health Insurance (SHI) is the major source of finance for health care. The scheme is mandatory for employees whose gross income does not exceed the opt-out threshold. Those earning above the threshold may choose to remain with SHI or enrol in private health insurance programs. In 2015, SHI covered 90% of the population through 124 separate insurers (Federal Association of Sickness Funds, 2017). SHI is funded by contributions from employers and employees, supplemented with government subsidies (Busse & Blumel, 2014, p. 119). The insurance provides benefits covering most medical care services including, for example, doctor consultations, dental care, drugs and care provided by allied health professionals.

The great majority of physicians' offices work under contract with SHI. Only a very small percentage of physicians practice solely with private patients. Besides GPs, internists and paediatricians may also choose to work as family physicians when practising as SHI-affiliated physicians. In 2015, there were 60,671 SHI-accredited family physicians (7.4 per 10,000 people), of which 40,324 were GPs (4.9 per 10,000 people), 14,061 were family internists and the remainder were paediatricians (Federal Association of Statutory Health Insurance Physicians, 2017). In general, payment to physicians in the outpatient sector, including both family physicians and specialists, involves two major

steps.<sup>14</sup> First, SHI makes total payments to the regional associations of SHI physicians for the remuneration of all SHI-affiliated doctors within the region (physicians who bill SHI must be registered with their regional association of SHI physicians). Second, the regional associations of SHI physicians distribute the total payments among physicians according to a point scale (Busse & Blumel, 2014, p. 149).

The government plays a limited role in the direct delivery and financing of health care. Instead, it is mainly responsible for setting general rules for SHI through legislation and playing a supervisory role (Blumel & Busse, 2016). Detailed arrangements are delegated to providers and payers that administer SHI.<sup>15</sup>

#### ***2.2.2.4 Japan***

There is little distinction between primary and secondary care. The concept of general practice as developed in other countries has not gained a foothold in Japan. By the end of 2016, only 252 physicians were in general practice, accounting for 0.08% of all physicians (Japanese Ministry of Health, Labour and Welfare, 2017a). Primary care services are made up of various specialisms such as internal medicine, surgery, paediatrics, ophthalmology, otorhinolaryngology and gynaecology (Tatara & Okamoto, 2009). Physicians and pharmacists who practise Western medicine can also provide traditional therapies (WHO & Japanese Ministry of Health, Labour and Welfare, 2012). Other health professionals involved in the provision of primary care include dentists, pharmacists, nurses and allied health professionals.

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<sup>14</sup> The procedure for payments to family physicians and specialists in the outpatient sector is the same, but the two types of physicians are differentiated through different reimbursable service profiles and reimbursement pools (Busse & Blumel, 2014, pp. 185–187).

<sup>15</sup> The provision of health care services is dominated by private providers. The 17 regional associations of SHI physicians are responsible for ensuring that physicians from all specialities are available according to community needs and located within a reasonable distance of each individual's home. The financing of primary care is mostly covered by non-governmental statutory health insurers. These insurers are responsible for collecting premiums from employers and employees and making payments to the services under contract (Busse & Blumel, 2014, p. 77). Much of the decision-making in the SHI system takes the form of horizontal negotiations (Busse & Blumel, 2014, pp. 58–68). Most significantly, the federal associations of statutory health insurers, physicians, dentists, psychotherapists and hospitals together form the Federal Joint Committee, the highest decision-making body of the joint self-government. The Federal Joint Committee issues directives for the benefit catalogue of the SHI funds and, thus, specifies which medical care services are reimbursed.

Patients are free to choose between different types of health care providers. Services can be delivered by either general clinics or hospitals (those with fewer than 19 beds are classified as general clinics, while those with more than 20 beds are hospitals). In general, hospitals are expected to meet higher standards in terms of capacity. In 2015, there were 8,480 hospitals and 100,995 general clinics (Japanese Ministry of Health, Labour and Welfare, 2017b). Hospitals employ the majority of physicians. By the end of 2016, while 102,457 physicians worked in general clinics, 202,302 physicians worked in hospitals (Japanese Ministry of Health, Labour and Welfare, 2017a). Apart from general clinics and hospitals, other types of primary care providers include community health centres, public health centres, dental clinics and pharmacies.

General clinics provide the bulk of outpatient services. In 2014, general clinics received 4,233,000 outpatients per day (1,545 million for the entire year). In comparison, hospitals received 1,642,000 outpatients per day (Japanese Ministry of Health, Labour and Welfare, 2015a).<sup>16</sup> The majority of general clinics are privately owned. In 2014, of 100,461 general clinics, 43,863 (47%) were owned by individuals and 39,455 (39%) were owned by medical corporations (Japanese Ministry of Health, Labour and Welfare, 2015b). The majority of clinics are private solo practices. Clinics also employ nurses and administrative staff. In terms of clinical speciality, internal medicine is offered by most medical clinics, followed by paediatrics and gastroenterological medicine (Japanese Ministry of Health, Labour and Welfare, 2015b).

The majority of total health expenditure is financed by the public health insurance system which covers the entire population. The system consists of different insurers providing coverage to different groups of the population. Broadly speaking, there are three types of coverage: occupation-based (covering employed people), municipality-

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<sup>16</sup> According to the Japanese Ministry of International Affairs and Communications (2014), the Japanese population reached 127.08 million in October 2014. This means that, on average, each person visited a general clinic approximately 12.2 times in 2014. Hospitals provided another 4.4 outpatient consultations for each person.

based (covering self-employed people, the unemployed and pensioners) and separate insurance schemes (for the elderly, aged 75 or above). In 2015, there were 3,422 public health insurers (Japanese Ministry of Health, Labour and Welfare, 2016). Occupation- and municipality-based coverage and separate insurance schemes covered 59%, 26% and 12% of the population respectively (Japanese Ministry of Health, Labour and Welfare, 2016).

Public health insurers raise funds mainly from contributions made by employers and employees. Government subsidies are also a major source of revenue. Benefits packages for health care services are principally uniform across different health insurance schemes and cover most medical services. The insurance discourages patients to self-refer to specialists in large hospitals, as they need to pay extra charges (Tatara & Okamoto, 2009; Matsuda, 2016). Almost all health care providers, public or private, have no other choice but to enter into the contractual relationship with the government, because the public health insurers will not reimburse any non-participating providers. For primary care providers, services covered under public health insurance are paid for by both insurers' reimbursements and patients' co-payments. Payment is based on FFS, according to a national schedule set by the government, after collective negotiation between insurers and providers (Tatara & Okamoto, 2009). For uninsured services, private providers may set their own prices and derive revenue from direct payments (WHO & Japanese Ministry of Health, Labour and Welfare, 2012).

The government provides services not well served by the private sector. Most notably, it administers public and community health centres. Public health centres focus on public health functions, but also provide some targeted primary care services such as consultations for the disabled. Community health centres provide more primary care services such as consultations and screening (WHO & Japanese Ministry of Health, Labour and Welfare, 2012). In 2015, there were 486 public health centres and more than

2,000 community health centres across the country (Japanese Ministry of Health, Labour and Welfare, 2016, p. 61; Japan Society of Public Health, 2016).

The government's involvement in the financing of primary care is mainly through subsidies to public health insurance schemes. In particular, government subsidies are a major source of revenue for municipality-based health insurance programs and the separate schemes for the elderly. For both programs, the gap between insurance premiums and expenses is huge. Therefore, government subsidies play a significant role. The government is also responsible for financing health centres (Powell & Anesaki, 2013).

#### ***2.2.2.5 United States***

Primary care physicians consist of family physicians and GPs, general internists, general paediatricians and geriatricians (US Agency for Healthcare Research and Quality, 2012). In 2015, of the 759,421 active physicians (9.3 per 10,000 people) providing direct patient care, 103,235 were in family medicine/general practice (3.2 per 10,000 people), 101,281 were in internal medicine, 52,163 were in paediatrics, 38,690 were in obstetrics and gynaecology, and 4,422 were in geriatrics (Association of American Medical Colleges, 2016). Since primary care physicians have no formal gatekeeping role, specialists are frequently involved in the delivery of primary care. Facilities providing primary care include physicians' offices, community health centres and retail clinics located in pharmacies.

Outpatient services are mostly delivered through private practices which tend to be small self- or group-owned practices with fewer than five physicians. Physicians' practices often also employ nurse practitioners and physician assistants (The Commonwealth Fund, 2016). In 2015, of the nearly 991 million visits to physicians' offices, 51% were to primary care physicians (US Department of Health and Human Services, 2017).<sup>17</sup>

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<sup>17</sup> According to the US Census Bureau (2016), the population in the US reached 321 million as of 1 July 2015. This means that each resident visited a primary care physician's office approximately 1.6 times.

Both government and private insurance plans contribute significantly to the financing of health care in the US. In 2015, government plans covered 37.1% of the total population, and private insurance plans covered 67.2% (note, being covered by both government and private insurance plans is possible). Approximately 9.1% of the population were uninsured (Barnett & Vornovitsky, 2016). For those covered by private insurance plans, although a small percentage of the population purchase private insurance themselves, the majority obtain their plan from their employer.<sup>18</sup> Insurance plans raise funds from different sources—public insurance schemes are financed by employer and employee contributions, individual premiums, and government subsidies; employer-sponsored insurance plans are mostly financed by employer and employee contributions; and individually purchased insurance plans are financed by individual premiums (Rice et al., 2013). Both public and private insurers are required by law to cover certain essential health care services such as outpatient consultations, prescription drugs and chronic disease management. Specific terms vary across different insurance plans.<sup>19</sup> Services provided by physicians' offices are paid for by a mix of the sources mentioned above and out-of-pocket payments. In 2015, 56% of visits to primary care physicians' offices were expected to be paid by private insurance, and 43% by government insurance plans (US Department of Health and Human Services, 2017). Although different insurance plans reimburse providers differently, FFS is currently the dominant mechanism (Rice et al., 2013; The Commonwealth Fund, 2016).

While the bulk of primary care services is provided by the private sector, the government directly funds some community health centres. For those without insurance

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<sup>18</sup> Private insurance falls predominantly into four categories: preferred provider organisations, high-deductible health plans with saving options, health maintenance organisations and point-of-service plans. In 2015, these respectively covered 52%, 24%, 14% and 10% of covered employees (Kaiser Family Foundation, 2017).

<sup>19</sup> Private insurance plans sometimes use narrow networks of providers, with limited or no coverage if patients receive out-of-network care (The Commonwealth Fund, 2016). Some insurance plans require patients to register with a primary care physician in exchange for a lower premium (Rice et al., 2013).

and residents of rural and underserved areas, community health centres are a major alternative to physicians' offices. Community health centres tend to be located in areas where private providers lack financial incentives to operate, including sparsely populated rural locations with fewer patients or highly populated urban centres where there are high numbers of public insured or uninsured patients (Hansen & Hendrikson, 2011). In 2015, 1,375 community health centres, with 9,754 service delivery sites, provided approximately 99 million patient encounters (Kaiser Family Foundation, 2017).

The government also takes part in the financing of primary care. Its most significant involvement is through government insurance plans. The two major government insurance schemes are Medicare and Medicaid. The former covers adults aged 65 and older and some people with disabilities, while the latter provides coverage to low-income people. In 2015, 16.3% of the total population were covered by Medicare and 19.6% by Medicaid (Barnett & Vornovitsky, 2016). In addition to subsidies for insurance plans, the government provides grants for community health centres as a health care safety net. Community health centres rely on a mix of public insurance plans and grants as their major sources of revenue. In 2015, Medicaid and Medicare respectively made up 46% and 7% of community health centres' revenue (Kaiser Family Foundation, 2017).

### **2.2.3 Patterns, Trends, and Contentions**

Primary care is provided by both doctors and a wide range of health care professionals such as nurses, physiotherapists and pharmacists. The relative role of these health professionals tends to vary across health care systems. In Germany, for example, the delivery of clinical services is mainly restricted to doctors. In contrast, in Australia, nurses in general practice settings provide chronic disease management, care coordination and preventive health education (Glover, 2016). In recent years, many OECD countries have undergone reforms to expand the task profile of nurses (Masseria, Irwin, Thomson,



Gemmill & Mossialos, 2009; OECD, 2017). This has been used as a strategy to ease physician shortages, scale up prevention activities and improve management of chronic conditions (Maier, Aiken & Busse, 2017).

Table 2.1 summaries the key features of primary care in the five health systems. Different systems tend to vary on the gatekeeping role of GPs. In England and Australia, GPs are gatekeepers of the health care system and play a central role in the provision of primary care.<sup>20</sup> Gatekeeping is generally more prevalent in countries with national health systems (Paris et al., 2010). In contrast, in Germany, Japan and the US, GPs have little or no gatekeeping function in relation to secondary care and patients have free access to specialists. In such systems, specialists are frequently involved in the provision of primary care. There is no clear preference for the gatekeeping model over the direct access model among OECD countries (Mossialos, Wenzl, Osborn & Sarnak, 2016).

Either option has pros and cons. Ideally, gatekeeping ensures that patients see specialists only for conditions that could not be managed by a GP and are referred to an appropriate specialist, thereby saving specialists' time and ensuring they are able to focus on more complex cases. Gatekeeping can help reduce inequalities by providing decision-making support to disadvantaged groups and lessening unnecessary specialist use by advantaged groups. Another advantage for gatekeeping is that it can control health care expenditure (through reducing unnecessary specialist care). Conversely, gatekeeping can be associated with adverse outcomes due to delayed diagnosis. In direct access systems, patients have more choices, hence a stronger voice, and more likely a higher level of satisfaction. Providing more choices for patients can also intensify competition between different providers, encouraging higher-quality services and, potentially, lower costs (European Commission, 2014, p. 29; Greenfield, Foley & Majeed, 2016; OECD & European Commission, 2016). However, there is a paucity of strong empirical support

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<sup>20</sup> It is important to note that empanelment is in place in the UK while patients have freedom of choice for GPs in Australia. This is a significant difference in how primary care works in these two countries.

for these statements. This may explain why countries have remained divided on whether to adopt the GP gatekeeping model.

In all systems discussed, outpatient care is delivered mainly through small practices which are either solo practices or group practices with a few physicians (Masseria et al., 2009). Even in Japan, where hospitals are involved in the provision of primary care, albeit rarely, general clinics still deliver more than 2.5 times the outpatient activities provided by hospitals (see Table 2.1).

In all systems discussed, the provision of primary care is dominated by private ownership, even in England, the prototypical example of national health service systems, where the government plays a dominant role in the health care system.<sup>21</sup> In most OECD countries, the provision of primary care tends to be private (Masseria et al., 2009; Paris et al., 2010; Mossialos et al., 2016). Private ownership is usually defended on the grounds that it can promote competition between providers and enhance patient choice. It is also believed that private providers are better at responding to the needs of their patients. However, there is a paucity of empirical support for these statements, because few developed countries rely on public provision for primary care (Majeed & Buckman, 2016).

Overall, governments tend to play a limited role in the provision of primary care. One common type of facility under public provision is community health services. While community health services in England and Australia mainly focus on the provision of allied health services, community health facilities in Japan and the US have more clinical roles. In either case, however, these facilities are mainly supposed to provide services not well served by the private sector.

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<sup>21</sup> In recent years, there has been debate in England over whether self-employed GPs should become NHS employees. Proponents of turning GPs into NHS employees argue that this will bring clearer job plans, career progression and guaranteed employment rights, thereby addressing current problems with the recruitment and retention of GPs. Opponents believe that the current autonomy of GPs should be defended, because it empowers GPs to be more responsive to patient needs and more innovative (Jones et al., 2015).

Table 2.1

*Summary of primary care in different health care systems*

| Country       | Provision of primary care (physicians)                                                                                                                                                                                       | Financing of primary care                                                                                                        | Density of primary care physicians (headcount 2015)                       | Volume of outpatient services delivered by major primary care providers                                                                                          |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| England       | Primary care is centred on GPs, mainly through private practices. GPs play a gatekeeping role.                                                                                                                               | Primary care is financed mainly by the government's tax revenues. Payment is complex and includes a mix of different mechanisms. | 7.6 GPs per 10,000 people                                                 | In 2015, each person visited a GP approximately 4.6 times.                                                                                                       |
| Australia     | Primary care is centred on GPs, mainly through private practices. GPs play a gatekeeping role.                                                                                                                               | Primary care is financed mainly by the government's tax revenues. Payment is based on FFS.                                       | 14 GPs per 10,000 people                                                  | In 2014–2015, each person visited a GP approximately 5.8 times.                                                                                                  |
| Germany       | Primary care can be provided by primary care physicians (including GPs, family internists and family paediatricians) and specialists, mainly through private practices. GPs do not play a gatekeeping role.                  | Primary care is financed mainly by social health insurance programs. Payment is based on FFS capped by a global budget.          | 7.4 primary care physicians per 10,000 people (4.9 GPs per 10,000 people) | Between 2008 and 2011, each person had 9.2 contacts with a physician each year. Of these contacts, 5.7 were with a primary care physician (3.2 times with a GP). |
| Japan         | Primary care is provided by various types of specialists, mainly through private general clinics.                                                                                                                            | Primary care is financed mainly by social health insurance programs. Payment is based on FFS.                                    | -                                                                         | In 2014, each person visited a general clinic around 12.2 times. Hospitals provided another 4.4 outpatient consultations for each person.                        |
| United States | Primary care can be provided by primary care physicians (including GPs, general internists, general paediatricians and geriatricians) and specialists, mainly through private practices. GPs do not play a gatekeeping role. | Primary care is financed mainly by private health insurance programs. Payment is based on FFS.                                   | 9.3 primary care physicians per 10,000 people (3.2 GPs per 10,000 people) | In 2015, each person visited a primary care physician's office approximately 1.6 times, accounting for 51% of visits to physicians' offices.                     |

*Note.* GP = general practitioner, FFS = fee-for-service.

Source: Compiled by author from official sources. Specific sources were given in text.

In terms of financing, the government's role differs significantly across health care systems. This largely reflects the features of the three basic models. The English and Australian governments pay for GP services through tax revenues. In Germany and Japan, outpatient doctors are mainly paid by social health insurance programs funded by employer and employee contributions, and the government provides supplementary subsidies to these insurance schemes. In the US, physicians' offices are paid mostly by private insurers. The government becomes involved mainly by funding the two major government health insurance programs.

The provider payment mechanism is most complicated in the case of England, in which it involves a mix of many methods. In the other four countries discussed, the FFS mechanism dominates. In most developed countries, payment to primary care providers is dominated by traditional forms of FFS and capitation (Masseria et al., 2009; Mossialos et al., 2016). The limitations of these two payment mechanisms have been widely recognised. FFS reimburses primary care only for the volume of activities delivered, which may lead to overprovision of services and does not reward value or quality care. Capitation is good at controlling cost, but may lead to selection of patients who require fewer services. These two mechanisms in their pure form are not well suited to meet the challenges posed by ageing populations and the rising burden of chronic conditions. In recent years, there has been a tendency towards blending different methods of payment for primary care to achieve the multiple objectives of access, quality and efficiency (OECD & European Commission, 2016).

### **2.3 Towards Strengthened Primary Care**

The previous section showed that many differences have remained in the provision and financing of primary care in developed countries. Building on this, this section discusses how the literature has assessed the strength and benefits of primary care.

### **2.3.1 Measuring the Strength of Primary Care**

In contrast to hospital care, in most countries, limited attention has been paid to systematically monitoring primary care development (Boerma & Dubois, 2006; Kringos et al., 2010; OECD & European Commission, 2016). Reflecting this, data on primary care development are often unavailable and, for those available, there is an absence of a uniform definition of the services and providers involved (European Commission, 2014). As previously discussed, primary care can be provided by different providers and the role of primary care providers varies significantly across health care systems. Given these two major constraints, the literature on measuring the strength of primary care is thin.

#### ***2.3.1.1 Developed Countries***

Early work on comparing primary care in different health care systems is limited to the work of Starfield. In a series of international comparisons, Starfield and her colleagues (Starfield, 1994, 1998; Starfield & Shi, 2002; Macinko et al., 2003) analysed a country's primary care system by assessing two domains: structural characteristics and practice features. A structure consists of the characteristics that enable it to provide services, while processes involve actions by the practitioners within the system, populations and patients.

In the most recent work in this series, Macinko et al. (2003) used 10 components to measure the strength of primary care systems. Five characteristics described the structure: 1) health system finance, or whether the health system is funded by taxes, social security or private means; 2) distribution of resources, or the extent to which primary care resources are distributed according to need; 3) physician inputs, or the extent to which primary care providers are actually trained in primary versus speciality care; 4) accessibility, or the ability of patients to use services whenever needed; and 5) longitudinality, or the extent to which care is organised to provide a regular source of care over time. Five variables described the process features: 1) First contact, the extent to

which primary care provides entry into the health system; 2) coordination, the ability of primary care providers to coordinate use of other levels of health care; 3) comprehensive care, including curative, preventive and rehabilitative services; 4) longitudinality, care that is patient-focused over time; and 5) family and/or community orientation, which places the patient within the wider familial and social context necessary for addressing multiple causes of illness or health.

Based on this, Macinko et al. (2003) used publicly available data to score the strength of primary care in different health care systems. Each component was scored from 0 (absence of the characteristic) to 2 (presence of the characteristic), with 20 being the highest possible score. The results are presented in Table 2.2.

Table 2.2

*Primary care scores of different health care systems*

| 1975                   |              | 1985           |              | 1995           |              |
|------------------------|--------------|----------------|--------------|----------------|--------------|
| <i>Country</i>         | <i>Score</i> | <i>Country</i> | <i>Score</i> | <i>Country</i> | <i>Score</i> |
| <i>High performers</i> |              |                |              |                |              |
| Denmark                | 18           | Denmark        | 18           | United Kingdom | 19           |
| United Kingdom         | 17           | United Kingdom | 17           | Denmark        | 18           |
| Netherlands            | 14           | Netherlands    | 15           | Spain          | 16.5         |
| Norway                 | 13           | Italy          | 13.5         | Netherlands    | 15           |
| Australia              | 12           | Australia      | 13           | Italy          | 14           |
| Spain                  | 11           | Norway         | 13           | Finland        | 14           |
| Italy                  | 10.5         | Spain          | 11           | Norway         | 13           |
| Finland                | 10           | Finland        | 10.5         | Australia      | 13           |
| Sweden                 | 9.5          | Canada         | 10.5         | Canada         | 11.5         |
| Canada                 | 8            | Sweden         | 9.5          | Sweden         | 11           |
| <i>Low performers</i>  |              |                |              |                |              |
| Japan                  | 7.5          | Japan          | 7.5          | Japan          | 7.5          |

|               |     |               |     |               |     |
|---------------|-----|---------------|-----|---------------|-----|
| Portugal      | 6   | Portugal      | 7   | Portugal      | 7   |
| Greece        | 4   | Germany       | 4   | Belgium       | 4   |
| Belgium       | 4   | Belgium       | 4   | Greece        | 4   |
| Germany       | 4   | Greece        | 4   | United States | 3   |
| Switzerland   | 2.5 | Switzerland   | 2.5 | Germany       | 3   |
| France        | 2   | France        | 2   | Switzerland   | 2.5 |
| United States | 1   | United States | 1   | France        | 2   |

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Source: Macinko et al. (2003).

More recently, a renewed interest in measuring the strength of primary care systems has arisen from the Europe Commission–funded project Primary Health Care Activity Monitor for Europe (PHAMEU), which aims to develop a primary care monitoring system for application in 31 European countries (Kringos et al., 2010). As part of the PHAMEU project, Kringos, Boerma, Hutchinson, van der Zee and Groenewegen (2010) conducted a systematic literature review and identified a series of indicators from existing studies. On the basis of these indicators, PHAMEU project partners collected data from 31 European countries between 2009 and 2010. Using this dataset, Kringos et al. (2013) measured the strength of primary care by scoring 77 indicators grouped under seven core dimensions. Similar to the framework adopted by Macinko et al. (2003), these seven core dimensions fall into two broad categories: structural characteristics and processes of service delivery.

The three variables of structure include: 1) the existence of primary care policies and regulations, 2) the availability of financial resources for primary care and 3) the population’s coverage for primary care services and development of a workforce for primary care. The four variables that capture the processes of service delivery are: 1) accessibility, measured by the national and geographic supply of primary care services, the way access is organised in primary care practices, and the affordability and acceptability of services as perceived by patients; 2) continuity, measured by conditions

in place for an enduring doctor–patient relationship, provisions in place to establish informational continuity of care, and aspects of the quality of the doctor–patient relationship; 3) coordination, measured by the existence of a gatekeeping system, skill mix of primary care providers, collaboration within primary care and with secondary care providers, and integration of certain public health functions in primary care; and 4) comprehensiveness, measured by the breadth of services offered to patients at the primary care level.

Kringos et al. (2013) grouped health care systems into three categories. The strong primary care group includes Belgium, Denmark, Estonia, Finland, Lithuania, the Netherlands, Portugal, Slovenia, Spain and the UK. The medium primary care group includes the Czech Republic, France, Germany, Italy, Latvia, Norway, Poland, Romania, Sweden and Switzerland. The weak primary care group includes Austria, Bulgaria, Cyprus, Greece, Hungary, Iceland, Ireland, Luxembourg, Malta, the Slovak Republic and Turkey.

The results of Macinko et al. (2003) and Kringos et al. (2013) are not identical, probably due to their use of different indicators and the changes in some health care systems resulting in stronger or weaker primary care. Nonetheless, several top performers remain the same. Both studies identified the UK, Denmark, Finland, Spain and the Netherlands as systems with strong primary care. These countries do share important similarities. Most significantly, GPs play a central role in the provision of primary care. They are the main point of entry to the rest of the health care system. In all five countries, GPs are gatekeepers (Paris et al., 2010, p. 42) and also take a medical advocacy role for individual patients and coordinate patient care, both within and outside primary care (Kringos et al., 2013). The results seem to suggest that having a competent GP workforce is a necessary condition for strong primary care. Also, GPs should be properly



empowered and institutionally enabled to help patients assess their problems, identify appropriate specialists when needed and coordinate their health care.

#### ***2.3.1.2 Low- and Middle-Income Countries***

The Primary Health Care Performance Initiative (PHCPI), a collaboration between the Bill and Melinda Gates Foundation, the World Bank, and the WHO, in partnership with Ariadne Labs and Results for Development, was launched in 2015 with the aim of catalysing improvements in primary health care systems in 135 low- and middle-income countries. The PHCPI team developed the conceptual framework through literature reviews and consultations with an advisory committee of international experts. As such, the team embraced the idea that quality primary care has four core functions: comprehensiveness, continuity, coordination, and a point of first contact. The PHCPI framework retains the principal aspects of the PHAMEU (Veillard et al., 2017).

The PHCPI team has taken a very comprehensive approach to measure the performance of primary care. The conceptual framework has five domains: system, inputs, service delivery, outputs and outcomes. To measure these different domains, the PHCPI team has released two sets of performance indicators (36 Vital Signs to facilitate comparisons across countries and over time, and 56 Diagnostic Indicators to elucidate underlying drivers of performance). The project is still ongoing: even with such a large number of indicators, there is still a lack of validated indicators for important dimensions and more may be added. However, a lack of available data remains to be the key challenge (Veillard et al., 2017).

#### **2.3.2 Benefits of Primary Care**

The importance of primary care is most straightforwardly justified by the pattern of health needs of the population. Existing knowledge suggests that between 75% and 85% of people in a general population require only primary care in a given year, and only a small proportion of patients require referral to secondary care or to a tertiary care

specialist for unusual problems (Starfield, 1994). In England, Australia and the Netherlands, where GPs play a gatekeeping role, around 90% of patients and their health problems are managed within general practice without referral to specialists or hospitals (Willcox et al., 2011). Even in systems where GPs do not play a gatekeeping role, a significant proportion of health care is provided by primary care physicians or through primary care settings (e.g., as previously discussed, in Germany and the US, more than half of physician visits were with primary care physicians). Addressing these needs properly requires good primary care.

More often, primary care is justified by its potential in improving health outcomes while lowering costs. By providing preventive care or curative care at the early stage of diseases, primary care can help prevent the occurrence or worsening of diseases. In the case of chronic diseases, primary care provides long-term management and support for patients, which can reduce or at least postpone complications. In these ways, patients can reduce unnecessary specialist care or hospitalisation. Consequently, strong primary care can improve health outcomes while saving costs for health care systems (Starfield, Shi & Macinko, 2005). When compared to secondary care, primary care is a lower cost environment, because services delivered by specialists tend to involve more expensive technology and curative care instead of preventive medicine. Substituting certain examples of secondary care with primary care is now widely perceived as a promising way to lower health care expenditures (Atun, 2004; World Bank, 2005a). Further, since primary care is usually a cheaper option compared to other levels of care, it is more affordable for vulnerable populations. In most OECD countries, GP care is distributed fairly equally and is often even pro-poor, in contrast to the pro-rich distribution of specialist care (van Doorslaer, Masseria & Koolman, 2006). Expenditure on primary care tends to benefit the poorer segments of a population disproportionately more than richer segments (Starfield, 2005; Shi, 2012). In contrast, an orientation towards narrow

specialists tends to reinforce inequity of access to health care and diminished access to primary care, potentially resulting in worsening health outcomes (World Bank, 2005a).

The evidence base for the benefits of primary care is a complicated landscape. Primary care is a complex concept and involves many different dimensions (Kringos et al., 2010). In empirical research, the concept has been operationalised by very different measures, depending on the availability of data and specific contexts for research. In some studies, it is proxied by the availability of primary care physicians (Section 2.3.2.1), while in others it is measured by whether patients use primary care as their usual source of care (Section 2.3.2.2). Some studies have approached the topic by studying the impacts of specific initiatives that intend to enhance certain primary care features (Section 2.3.2.3). There also exist studies that measure the strength of primary care at the aggregate level and assess its impacts (Section 2.3.2.4).

#### ***2.3.2.1 Benefits of More Primary Care Physicians***

One of the most commonly used proxies for the strength of primary care is the supply of primary care physicians. This is perhaps due to the simplicity of this measure and data availability. A body of literature has examined whether increasing the availability of primary care physicians has benefits. Some studies have identified benefits in having more primary care physicians. For example, Baicker and Chandra (2004), by analysing state-level data in the US for 2000–2001, concluded that states with more GPs have effective care and lower spending. Using county-level data in the US for 1990, 1995 and 1999, Kravet et al. (2008) showed that higher proportions of primary care physicians were associated with significantly decreased utilisation of health care. Contradictory evidence does exist. A study analysing the Medicare spending data between 1995 and 2005 revealed that the proportion of primary care physicians is not associated with health spending growth (Chernew, Sabik, Chandra & Newhouse, 2009). Reviews of this strand of literature suggest that while most studies have shown the positive impacts of having

more primary care physicians, findings are not yet conclusive (Gibson, Segal & McDermott, 2013; Rosano et al., 2013).

The unclear pattern identified by the literature may be due to a lack of proper control for unobserved variables. Ricketts and Holmes (2007) identified strong regional patterns when studying the relationship between the supply of physicians and mortality based on county-level data in the US from 1996–2000. Their study highlighted that regional clustering, when not properly controlled, can lead to unreliable results in other research. Similarly, by applying instruments to a dataset in England between 1998 and 2000, Gravelle, Morris and Sutton (2007) found that the supply of primary care physicians had a positive and statistically significant effect on health, but when instruments were not applied, the result was much less obvious. This indicates the disturbance effect of confounding factors.

#### ***2.3.2.2 Benefits of Primary Care Physicians as Patients' Usual Source of Care***

One body of the literature has focused on the impacts of patients having primary care physicians as their usual source of care. A study in the US indicated that having both a usual place and provider is a key variable in determining whether adults receive recommended screening and prevention services (Blewett, Johnson, Lee & Scal, 2008). Another study conducted in the US found that people who identify family physicians as their usual source of care have significantly lower use of and spending on health care compared to those who identify subspecialists and general internists as their usual source of care (Phillips et al., 2009). Using a random sample of 95,173 people aged 65 years or more in Quebec, Canada, Ionescu-Ittu et al. (2007) showed that having a primary care physician and greater continuity of care with this physician are factors associated with decreased emergency department use by elderly people, particularly those living in urban areas. Based on data collected from the European Union project Quality and Costs in Primary Care in 31 European countries, van den Berg, van Loenen and Westert (2016)

showed that patients with a regular doctor who knows them personally were less likely to attend emergency departments. Systematic reviews of relevant studies also suggested that better longitudinal continuity of care usually leads to reduced avoidable hospitalisations, lower costs and higher patient satisfaction (van Loenen, van den Berg, Westert & Faber, 2014; Friedberg, Hussey & Schneider, 2010; Kringos et al., 2010).

While these studies are relatively consistent in demonstrating the positive impacts of having primary care physicians as the usual source of care, they are usually subject to one common methodological weakness. Patients who choose to maintain a usual source of care are likely to differ from those who do not, and these differences are not easily controlled for. Many studies have attempted to deal with potential confounding through statistical adjustment, such as controlling for the socio-economic characteristics of patients. However, this may be insufficient, because how people select their physician can be influenced by factors that are difficult to observe, or for which data are not readily available.

#### ***2.3.2.3 Benefits of Programs to Enhance Primary Care Features***

Some studies have assessed interventions that enhance the key features of primary care. One commonly studied topic is managed care plans, which usually involve assigning a gatekeeping role to primary care physicians. One such study, for example, investigated the period of a ‘natural experiment’ during which there was a substantial increase in the use of managed care in California, US (Bindman, Chattopadhyay, Osmond, Huen & Bacchetti, 2005). Results suggested that a managed care intervention that provided and required beneficiaries to have a regular source of primary care was associated with lower preventable hospitalisation rates. In Aarau, Switzerland, a group of four health insurance companies introduced a gatekeeping plan in the late 1990s. By comparing the health care costs of gatekeeping and fees for service beneficiaries, a study showed that gatekeeping can help generate significant cost savings (Schwenkglenks, Preiswerk, Lehner, Weber &

Szucs, 2006). However, these results are contradicted by other studies. For example, one study evaluated the effects of eliminating the gatekeeping requirement within a health management plan in the US. After analysing visits during six-month periods for the three years before and 18 months after gatekeeping was eliminated, the study found little evidence of substantial changes in the use of speciality services by adults (Ferris, Chang, Blumenthal & Pearson, 2001). A literature review concluded that while many studies are available regarding the effects on health care utilisation and expenditures, the effects on health- and patient-related outcomes have rarely been examined (Garrido, Zentner & Busse, 2011).

Another commonly researched intervention that involves enhancing primary care is disease management programs. A large diversity of chronic disease models exist in the literature and different models emphasises different elements (Grover & Joshi, 2015). One particularly influential model is the self-management model advocated by Kate Lorig and her colleagues. In contrast to traditional care models, the self-management model highlights the partnership between patients and physicians. Instead of being passive receivers of orders from health care professionals, patients actively accept responsibility to manage their own conditions, with professionals' support (Lorig, 1996; Bodenheimer, Lorig, Holman & Grumbach, 2002). Some evidence from the literature suggests that programs involving self-management elements can improve outcomes while reducing costs for certain diseases (Lorig et al., 1999). However, because interventions are not standardised across clinical trials, it is difficult to generalise about the benefits (Bodenheimer et al., 2002).

Disease management programs have been widely introduced in different countries for specific groups of patients, such as the elderly or those with chronic diseases. In Germany, under disease management programs, primary care physicians take on the role of coordinating care for their patients over time, referring them to specialists when

necessary and documenting the care process (Schlette et al., 2009). After four years of follow-up, Stock et al. (2010) showed that overall mortality for patients and drug and hospital costs were all significantly lower for patients who participated in this program, compared to other insured patients with similar health profiles who were not in the program. Landon et al. (2007) performed a large-scale controlled pre-intervention and post-intervention study of community health centres in the US. The intervention centres implemented quality-improvement techniques for patients with asthma, diabetes and hypertension. The study showed that interventions resulted in great improvement in the quality of care for patients with asthma and diabetes, but not for those with hypertension. Systematic literature reviews concluded that redesigning care using the chronic care model leads to improved patient care and better health outcomes. However, there is a paucity of evidence for the cost effectiveness of such disease management programs (Coleman, Austin, Brach & Wagner, 2009; Friedberg et al., 2010).

In general, this body of literature seems to be of better methodological quality, because many studies have better control of unobserved variables compared to the observational studies previously discussed. However, they are usually limited by their generalisability. The successes and benefits of these programs appear to be highly dependent on the exact design of specific programs and the context of the health care system. It is questionable to what extent these experiences can be generalised or replicated in other contexts.

#### ***2.3.2.4 Benefits of a Strong Primary Care System***

Several studies comparing OECD countries suggest that the primary care orientation of a health system is associated with better health outcomes. Based on a series of correlation analyses of statistics from 13 OECD countries during the early and mid-1990s, Starfield and Shi (2002) concluded that health systems with a strong primary care component tended to have lower health expenditure and better performance on major

aspects of population health (e.g., infant mortality, life expectancy and years of potential life lost). A study employing regression analyses for the panel data of 18 OECD countries between 1970 and 1998 indicated that stronger primary care was associated with lower all-cause and several categories of cause-specific premature mortality (Macinko et al., 2003).

More recently, benefiting from the data collected within the PHAMEU project, several studies have further examined the impacts of the overall strength of primary care. One study showed that strong primary care was associated with better population health, lower rates of unnecessary hospitalisations and relatively lower socio-economic inequality. However, in contrast to previous studies, overall health expenditures were found to be higher in countries with stronger primary care structures (Kringos, Boerma, van der Zee & Groenewegen, 2013). Another study found that people with chronic conditions were more likely to be in good or very good health in countries that had a stronger primary care structure and better coordination of care. The self-rated health of patients with more than two chronic conditions was higher if they lived in countries with a stronger primary care structure, better continuity of care and more comprehensive package of primary care services (Hansen, Groenewegen, Boerma & Kringos, 2015).

Results of these cross-national comparisons need to be interpreted with caution due to the potential existence of unobserved variables. For example, some countries may have a culture that promotes the use of primary care and is beneficial to population health. Thus, these areas may attract more primary care physicians and positive health care outcomes (Friedberg et al., 2010). The correlation between primary care and health outcomes does not necessarily indicate causal relationships.

#### ***2.3.2.5 Key Messages and Limitations***

A large number of studies have been devoted to examining the impacts of primary care. Systematic literature reviews can identify thousands of research publications on this



topic (e.g., Kringos et al., 2010). Despite the existence of contrary findings, the literature has largely reached a consensus that primary care is beneficial. These studies form a massive evidence base for claims that strong primary care is associated with reduced avoidable hospital admissions, lower costs, higher care quality and better population health outcomes.

However, the evidence base is still far from being perfectly solid. It suffers from a lack of standardisation in measures. Primary care has been variably defined and operationalised by many different indicators. Further, different studies have looked at different benefits of primary care. Some have examined quality and patient health outcomes, while others have focused mainly on cost-related factors. These dimensions have all been variably measured. This discrepancy has made it very difficult to compare results of different studies, synthesise findings and draw convincing conclusions. Methodological shortcomings also exist. As previously discussed, despite statistical adjustments, unobserved variables are not always adequately controlled for, frequently due to limited data availability. This means that bias and confounding factors cannot be entirely ruled out with reasonable confidence. On the other hand, for those studies with a more rigorous design, such as randomised control trials, the results are usually heavily dependent on the exact content of interventions and their context. The generalisability of such studies is therefore constrained.

### **2.3.3 Strengthening Primary Care in Developed Countries**

Despite the many imperfections of the evidence base for the benefits of primary care, strengthening primary care has been widely adopted by different countries across the world as a strategy to improve health outcomes and contain costs (WHO, 2008). In developed countries, such endeavours have been predominantly driven by two factors. The first is demographic and epidemiological changes. The population is ageing, and elderly people are more likely to have chronic and multiple health problems

(Groenewegen, Dourgnon, Greß, Jurgutis & Willems, 2013). Compared to patients with acute problems, patients with chronic conditions usually need to use the health care system more frequently and are more likely to see multiple health care professionals and have long-term relationships with them. They are usually in need of care coordination, long-term monitoring and additional support such as health education to help with their self-management of problems (Kane, Priester & Totten, 2005). Primary care is ideally placed to take care of the needs of these patients, and most developed countries have attempted to introduce initiatives to improve the continuity and coordination of primary care.

The second compelling factor in favour of strengthening primary care is a strong pressure to contain health care expenditures, which has particularly intensified since the 2007 global financial crisis. In response to the crisis, many countries introduced policy initiatives to reduce the costs of health care. Such efforts have usually included speeding up the existing process of restructuring the hospital sector and shifting towards outpatient care (Mladovsky et al., 2012).

In all of the five health care systems discussed in Section 2.2.2, concerted endeavours have been made to strengthen primary care:

- England: In recent health reforms, the role of general practices has been strengthened within the NHS commissioning system. While the system previously comprised Primary Care Trusts and Specialised Commissioning Groups, both were abolished and replaced by Clinical Commissioning Groups. These are groups of local general practices that come together in each area to commission services for their patients and population.<sup>22</sup> Essentially, the establishment of Clinical Commissioning Groups puts GPs at the centre of the commissioning process. The government's rationale for giving GPs such

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<sup>22</sup> They are responsible for approximately two-thirds of the total NHS England budget and there are currently 207 such groups throughout England.

power is that they have responsibility for defined populations and, therefore, are the best placed to identify and meet those populations' needs (Roland & Guthrie, 2012).

- Australia: One major development to strengthen primary care has been establishing Primary Health Networks (PHNs) (Hall, 2015). PHNs are independent primary care organisations that are intended to play three main roles: 1) commissioning health services that meet the needs of the people in their regions and fill identified gaps in primary care, 2) working closely with GPs and other professionals to build workforce capacity and provide the highest quality standard of care through practice support activities and 3) working collaboratively to integrate health services at the local level. As implied by these roles, the establishment of the PHNs is intended to improve the accessibility and quality of primary care and promote the integration of different services. The devolved governance model is supposed to facilitate PHNs being embedded within their communities and allocate funding based on locally identified need (Ernst & Young, 2018).
- Germany: One major effort has been to strengthen the gatekeeping role of primary care physicians. For this purpose, the government requires SHI insurers to offer their members the option to enrol in a 'family physician care model', whereby patients register with a family physician and are required to go to this physician as first point of care. In exchange, insurers offer enrolled insured members special evening office hours, shorter waiting times for the family physician and exemption from co-payments on some pharmaceuticals (Busse & Blumel, 2014, pp. 188–189).
- Japan: As previously discussed, Japan stands out as a singular example of having almost no distinction between primary care physicians and specialists.

People have free access to doctors working either in clinics or hospitals. This feature has been criticised as contributing to high inpatient numbers, a high burden for health care workers and reduced efficiency and quality of treatment (WHO & Japanese Ministry of Health, Labour and Welfare, 2012). In response to these problems, the Japan Medical Association has encouraged people to register with *kakaritsuke* physicians since 2012. The roles of *kakaritsuke* physicians are very similar to those of GPs. People can consult *kakaritsuke* physicians on any health issue and receive referrals to another specialist when needed. However, unlike GPs, *kakaritsuke* physicians are usually specialists and they may work in hospitals (Yokokura, 2018). To encourage doctors to become *kakaritsuke* physicians, the Japanese Ministry of Health, Labour and Welfare has increased their medical remuneration. The government has also introduced a special charge for patients who visit hospitals containing over 500 beds or advanced treatment hospitals without a referral letter from a primary care physician (Kaneko & Matsushima, 2017).

- US: The Patient Centred Medical Home is an initiative underway to strengthen primary care (Rice et al., 2013, p. 231). The Patient Centred Medical Home is not defined as a place, but a model that delivers the core functions of primary care. The medical home is committed to providing comprehensive, patient-centred, coordinated, accessible, quality and safe care. Intrigued by the potential of the Patient Centred Medical Home model, major employers, private insurers and various government agencies are rolling out pilots and demonstrations of this concept (Peikes et al., 2012).

This highlights only some of the recent reform efforts to strengthen primary care in these countries. Many other programs have been pursued, both within these health care systems and in other developed countries (Willcox et al., 2011; Groenewegen et al., 2013;

van Loenen et al., 2016). As can be seen, these reforms share similar aspirations, such as promoting the integration and coordination of different health care services, enhancing the capacity of GPs or other primary care providers, and discouraging patients from using specialist services and large hospitals.

Specific reforms vary greatly across different countries. The contents of reforms differ according to the context of health care systems. In Japan, where general practice is underdeveloped, the focus is on introducing GP roles to the existing workforce of specialists. In England, where the commissioning system is mature, the focus is on enhancing the role of GPs in the commissioning process. While gatekeeping is well established in England and Australia, Germany is introducing incentives to promote the use of primary care physicians.

## **2.4 Transitioning from the Planned Past**

The above discussions focused on the experiences in developed countries. There are two reasons for this. First, experiences in these countries have been studied the most thoroughly. Information and data are significantly more accessible and reliable in these countries compared to less developed regions. Second, these countries have been used as models for emulation in developing countries. Therefore, their experiences are of general relevance.

However, for developing countries, transplanting experiences from developed countries is usually fraught with difficulties. This is not only due to a lack of resources, but also because of significant differences in institutional structures and other socio-economic contexts. This section explores the experiences of eastern European and former European countries. In these countries, health care systems used to be modelled after the Soviet health care system (or Semashko model) which has very distinctive features compared to the models adopted in developed countries today (Section 2.2). Most significantly, while the Semashko model was designed to be an integral part of a planned

economy, the three models previously discussed all operate under the market economy. In eastern European and former Soviet countries, strengthening primary care has been part of the transition from a planned to market economy, and also a major strategy to overcome the main weaknesses of the Semashko model.

Their experiences are of particular relevance to this study, because China adopted the Semashko model to establish its health care system in the early 1950s. Since the late 1970s, China has also been transitioning from a centrally planned to a market economy. Studying the experiences in eastern European and former Soviet countries can help us better understand why strengthening primary care is necessary in the transition from a planned to market economy and highlight some specific challenges and problems that result from the remnants of a planned economy.

#### **2.4.1 An Introduction to the Semashko Model**

Established shortly after the Russian Revolution, the Soviet health service was an integral part of the Soviet planned system.<sup>23</sup> Under the Soviet system, health care was recognised as a right of citizenship, which translated into free provision of health care to the entire population. The Soviet health care system was the first socialist health care system in the world and remained the only socialist system until the end of the Second World War, when communist parties gained power in other countries. In their health care organisation, as in other social sectors, these countries emulated the Soviet Union (Roemer, 1991).

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<sup>23</sup> Health care played a special role in communist countries. The Semashko model was conceived as part of an ambitious and progressive design to remake man and society (Field, 1967). It was an important element of communist propaganda. The socialist state was portrayed as the only state that truly cared about the health of its population (Zhuk, 1976). Socialised medicine gained great popularity among people at the time (Field, 1967, 1990). It was frequently contrasted with the health care systems in capitalist countries (particularly the US), where health care was expensive and, consequently, unaffordable to many. In this way, socialised medicine provided an important source of legitimacy for communist governance.

#### ***2.4.1.1 The State's Absolute Role***

In the Soviet health system, the role of the state can hardly be overemphasised. Health care, including public health and personal medicine, was recognised as a state concern and the responsibility of the government (Field, 1988, p. 314). The state served almost as the exclusive provider of health care. As enshrined in the 1977 Soviet Constitution, citizens' right to health protection should be ensured by medical care provided by state health institutions. Private medical and dental practice by individuals was not entirely prohibited, but it was expected to disappear eventually (Field, 1967). In reality, private providers were discouraged through very high taxation on earnings and restrictions (Hyde, 1974; Kaser, 1976). Despite an absence of specific data, it could be inferred that private businesses were suppressed to an almost negligible level (Roemer, 1991). Nonetheless, there was a small private sector running within the public outpatient system. In several large cities, sanctioned paying polyclinics existed. Specialists worked there on a part-time basis, and patients had to pay fees personally in return for more choices and services of better quality (Hyde, 1974; Ryan, 1978). These clinics were estimated to account for about 1% of outpatient services nationally (Roemer, 1991).

The overwhelming bulk of financial support for the health care system was derived from general government revenues, which came mainly from the earnings of all state enterprises and individual income taxes. Nonetheless, there were a few areas where out-of-pocket payments were required. First, pharmaceuticals prescribed for outpatients were sold at state-controlled prices. Second, the paying polyclinics within the public system required patients to make direct payments. Third, despite being almost negligible in scale, the private outpatient sector charged patients for treatment. All these private payments together contributed to a rather small percentage of the total health expenditure. In 1968, they comprised only 4% of total health spending (Kaser, 1976). However, in reality, one problem was the prevalence of informal payments. It was common practice

to make under-the-table payments within the public system in return for better treatment. In other words, private expenditure should have been larger in scale within the Soviet health system than the official data suggest.

The importance of the state under the Semashko model was most profound, in the sense that the development of the health system reflected the government's deliberate planning process (Field, 1988, p. 314). It was the government that calculated and determined the needs of the population, and the government translated these health needs into estimates of the necessary resources (including facilities, health professionals, equipment, medical supplies and pharmaceuticals), subject to the availability of economic resources and political priorities at the time (Roemer, 1991, p. 234–236). These estimates then became various norms or standards that served as the central guidelines for the development of health care. For example, the norms or standards included the number of health professionals required to staff a polyclinic, the number of patients that a physician was supposed to see within one hour, and the number of beds needed to equip a hospital.

In fact, the Beveridge model (national health service systems) has many elements in common with the Semashko model. The state plays a dominant role under both models. However, the government's role is more profound under the Semashko model, government regulation is stronger and there is little room for private services and private insurance.

#### ***2.4.1.2 Service Delivery in the Soviet Health Care System***

Primary care was organised based on the neighbourhood principle. Soviet cities, towns and rural areas were divided into districts (*rayons*), which in turn were subdivided into neighbourhoods (*uchastoks*). The model district had a population of 40,000, divided into 10 neighbourhoods of 4,000 each (Fry, 1969, p. 22; Field, 1967, p. 88; Roemer, 1991, p. 227). People were assigned to a physician (internist for adults or paediatrician for children and adolescents) in their neighbourhood, who was required to provide initial



medical, diagnostic and clinical care (Field, 1967; Fry, 1969). Within the government blueprint, a neighbourhood internist would be responsible for about 2,000 adults, while a neighbourhood paediatrician would take care of 800–1,000 children and adolescents (Popov, 1971).

Neighbourhood physicians were attached to a local polyclinic, a community outpatient facility that provided both first contact and specialist services. At these polyclinics, neighbourhood physicians were supported by a range of specialists such as surgeons, obstetrician-gynaecologists, ophthalmologists and psychiatrists. The polyclinics formed the mainstay of the network through which the majority of the population received their outpatient care. In urban areas with higher population densities, the neighbourhood had no medical facilities of its own. The district was the first unit to have such facilities, usually a polyclinic. In large cities, there were usually several separate polyclinics catering for different groups of people or specific diseases.

In the countryside, due to the low population density, neighbourhoods tended to be geographically much larger than those in the city, making it more difficult for the local people to visit their neighbourhood doctor or receive other health services. To address this issue, two arrangements were made. First, health posts were set up throughout rural areas. Such posts were under the supervision of a neighbourhood physician and staffed by *feldshers*. *Feldshers* were a special category of health professionals in the Semashko system. They were less trained than physicians, but when no physician was available, they would fulfil many medical functions. However, the *feldshers* were supposed to deliver a narrow range of clinical services and focus on prevention. Anything other than minor ailments would be referred to physicians in the nearest polyclinic or hospital. The second arrangement in rural areas was that a polyclinic could also provide some hospital services. Such polyclinic hospitals were small in scale, but they brought inpatient care closer to the population (Field, 1967; Fry, 1969).

While outpatient care was provided by polyclinics, inpatient care was delivered by hospitals. Hospitals were vertically organised into tiers, mirroring the public administrative system. At the lowest level, district hospitals were equipped with full facilities to deal with common acute and non-acute surgical, gynaecological and obstetric conditions. Regional hospitals were centres for super-specialities and complex cases would be referred there. They had more specialised hospital units such as thoracic surgery, cardiology and neurology. At the pinnacle of the hospital hierarchy were the republic hospitals. These hospitals served as the teaching hospitals and medical schools in each of the republics. Outside the general hospital system there were also special hospitals including mental hospitals, hospitals for tuberculosis, maternity hospitals and children's hospitals. These special hospitals functioned separately on a district or regional basis with their own buildings (Fry, 1969). The network of polyclinics and hospitals is shown in Figure 2.2.

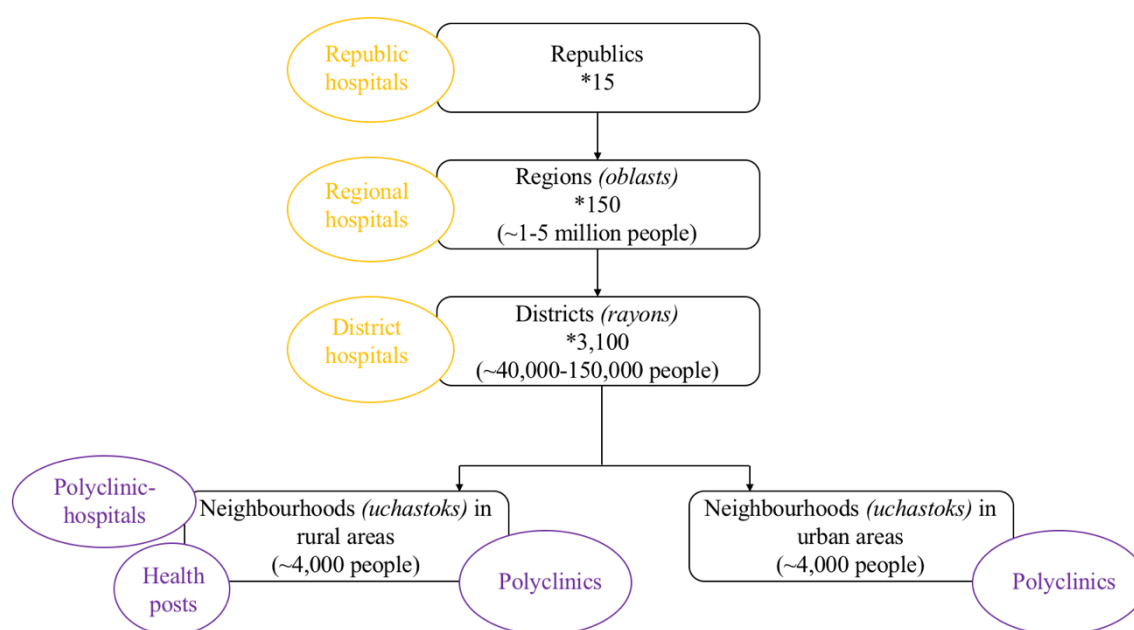


*Figure 2.2.* Delivery of health care services in the Soviet health system (Roemer, 1991). Statistics are for the mid-1980s. Yellow circles are hospitals and purple circles are primary care facilities.

The majority of the population received medical care from the polyclinics and hospitals described above. However, some people received their health care through a parallel closed network of health facilities.<sup>24</sup> The majority of people served by the closed network were industrial workers. Large factories were obliged to establish their own health facilities for their staff. The establishment of these facilities was originally part of the special priority that workers enjoyed during the early years of industrialisation, when the medical care available to the general population was poorer. Top political elites and their families, members of the armed forces and members of a few ministries (communications and internal affairs) also had access to separate health facilities (Field, 1967, 1988; Ryan, 1978).

The Soviet health care system was hospital centric, with the underlying belief being that only hospitals could provide the best medical care (Zhuk, 1976; Ho & Ali-Zade, 2001).<sup>25</sup> A plentiful supply of hospitals was regarded as the main measure of a good health care system (Healy & McKee, 2002a). An accompanying priority was the preoccupation with specialisation. In contrast to many other health care systems, specialisation was implemented down to the first contact level in the Soviet health care system. This was accepted as a principle as early as the late 1930s (Fry, 1969, p. 24). The belief was that, due to advances in medical science, the ‘all-round’ doctor could not offer adequate preventive and therapeutic care (Hyde, 1974, p. 138). Driven by this belief, neighbourhood doctors in polyclinics were ‘backed up’ by specialists such as surgeons, obstetrician-gynaecologists and ophthalmologists. By the mid-1960s, neighbourhood doctors accounted for 25% of doctors in the Soviet Union, while first-contact doctors

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<sup>24</sup> The scale of the closed network was much smaller than that of the general one. According to Schultz and Rafferty (1990), hospitals and clinics under the territorial network accounted for 94% of all health care facilities.

<sup>25</sup> The emphasis on hospitals can be most clearly observed in the distribution of financial resources. While hospitals absorbed a significant share of health expenditure in most health systems, they had particularly high status and prestige in the Soviet health care system. Between the 1960s and 1980s, approximately 80% of Soviet health spending was allocated to hospitals, while only 10% was spent on primary care (Rowland & Telyukov, 1991, p. 81).

accounted for 40% of doctors in both the US and UK (Fry, 1969). Concentration of specialisation continued to be reinforced in the Soviet Union, and both the number and role of neighbourhood doctors continued to shrink during the 1970s and 1980s (Ryan, 1978; Sheiman, 2013; Gerry & Sheiman, 2018).

The equivalent of GPs who provided comprehensive and continuing care to an individual did not exist within the Soviet health care system. Neighbourhood doctors were significantly different from GPs in at least two aspects. First, although neighbourhood doctors were first-contact doctors and responsible for the basic care of patients within their assigned neighbourhood, they focused mainly on preventive services and were relatively uninvolved in curative services (Grielen, Boerma & Groenewegen, 2000). Second, neighbourhood doctors performed only a minimal gatekeeping role. Although patients were assigned to a specific neighbourhood doctor with little choice, they could always skip their neighbourhood doctor and directly consult a specialist (Field, 1967; Fry, 1969). Neighbourhood doctors usually served as dispatchers, simply referring patients on to their specialist colleagues instead of actually treating patients themselves (Ryan & Stephen, 1996; Healy & McKee, 2002a).<sup>26</sup>

#### ***2.4.1.3 Achievements and Problems***

The greatest achievement of the Soviet health system was that it delivered an acceptable level of health care to treat common diseases and ensured coverage for the whole population (Fry, 1969, p. 23; Roemer, 1991; Sheiman, 2013). This made the Soviet Union one of the first countries to achieve something close to universal coverage of basic health care, which is still a priority objective of the WHO and a major goal of health reforms in many countries today. Essentially, there were two components to the Soviet achievement. First, in terms of provision, the system offered universal coverage through

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<sup>26</sup> The lack of financial, material and human resources at the primary care level meant that referral was frequently required (Ryan & Stephen, 1996; Gedik, Oztek & Lewis, 2002). This pattern was reinforced by the fact that doctors working on salaries had an incentive to minimise their workload by referring complex problems up the line (Miller, 2003).

an extensive network of services. Second, in terms of financing, services were made free to the public at the point of use, with costs covered by the state budget.

To enable universal coverage, the fundamental feature of the Soviet health system was an impressive amount of resources, most notably in terms of hospital beds and physicians. Between 1940 and the late 1980s, the increases in the number of hospital beds, physicians and semi-professional medical personnel were remarkably rapid (see Table 2.3). Although the multiplication of health resources was also common in other countries during the decades following the Second World War, the Soviet Union outperformed all in this regard. By the mid-1960s, the density of physicians in the Soviet Union was higher than that in the US and UK (Fry, 1969). The gap widened thereafter. By the mid-1980s, the number of physicians in the Soviet Union was more than double that in the US or UK.<sup>27</sup> A similar pattern can also be observed in the density of hospital beds.

Despite providing universal coverage, the Soviet health system never provided equal access to its services.<sup>28</sup> On the contrary, the system consisted of several subsystems, each targeting a specific group of the population. It should be noted that the Soviet regime supported a differentiated approach. Access to medical care was governed by a priority order determined by the regime's evaluation of the importance of the individual to the fulfilment of state goals and programs. It was believed that distribution according to need would be appropriate only in the future under full communism.

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<sup>27</sup> According to the World Bank's world development indicators, in 1985 the density of doctors per 1,000 people was 1.7 in the US and 1.4 in the UK. Comparisons between the Soviet Union and these countries need to be interpreted with several caveats in mind. First, while dentists were counted as physicians in the Soviet Union, they were counted separately in the US and UK. About 10% of the physicians in the Soviet Union fell under the category of dentistry (Fry, 1969; Field, 1988; Roemer, 1991). Second, physicians in the Soviet Union had shorter work days compared to their counterparts in the US and UK (Roemer, 1991; Ryan, 1978, pp. 45–47). Third, the Soviet Union created a unique category of health professionals called *feldshers*. In practice, they worked as 'second-class' physicians and performed regular clinical tasks in rural areas.

<sup>28</sup> Most studies of the Soviet medical system have discussed the equality issue. In particular, Field (1967, 1988), Ryan (1978) and Davis (1979, 1988) explored this topic in detail.

Table 2.3

*An overview of key statistics for the Soviet health system (1940–1985)*

| Indicator                                              | 1940 | 1950 | 1960 | 1970  | 1980  | 1985  |
|--------------------------------------------------------|------|------|------|-------|-------|-------|
| <i>Physical and human resources (per 1,000 people)</i> |      |      |      |       |       |       |
| Hospital beds                                          | 4.0  | 5.6  | 8.0  | 10.9  | 12.5  | 12.9  |
| Doctors                                                | 0.7  | 1.4  | 2.0  | 2.7   | 3.8   | 4.2   |
| Intermediate-level medical workers                     | 2.4  | 4.0  | 6.4  | 8.7   | 10.6  | 11.4  |
| Feldshers/feldsher-midwives                            | 0.5  | 1.1  | 1.9  | 2.2   | -     | -     |
| Midwives                                               | 0.3  | 0.4  | 0.6  | 0.9   | -     | -     |
| Nurses                                                 | 1.1  | 1.8  | 2.9  | 4.2   | -     | -     |
| <i>Financial resources</i>                             |      |      |      |       |       |       |
| Health expenditure (% of national income)              | -    | -    | -    | 4.1%  | 4.1%  | 3.9%  |
| Health expenditure (% of total government expenditure) | -    | -    | -    | 6.0%  | 5.0%  | 4.6%  |
| <i>Health activities</i>                               |      |      |      |       |       |       |
| Hospitalisation rate                                   | -    | -    | -    | 21.5% | 23.7% | 25.1% |
| Outpatient visits per capita                           | -    | -    | -    | 8.0   | 10.0  | 11.4  |

Source: Data for material and human resources compiled from Field (1988). Data for financial resources and health activities compiled from Davis (1988).

Overall, there was a significant variation between republics and between urban and rural areas, with the density of various health care resources being much higher in western republics and urban areas. Further, certain occupational groups and political elites were provided with preferential care, mainly through the closed network described previously. Large enterprises maintained their own facilities that tended to be better financed than those catering for the general population, as they received considerable subsidies from their associated enterprise (Balabanova, McKee, Pomerleau, Rose &

Haerpfer, 2004). Polyclinics and hospitals for political elites were also allocated the best equipment and the most outstanding health professionals (Roemer, 1991).<sup>29</sup> Access to the best services was reserved only for those with the strongest influence in society.

Services were free to patients because they were financed by government spending and payments from industrial enterprises. In theory, financial barriers to health care would be eliminated. However, this was undermined by the prevalence of informal payments.<sup>30</sup> Throughout the health care system, it was common practice for health personnel to demand large sums of money from patients to provide services that were intended to be free. Any slightly better service, or access to otherwise available items, was invariably obtained by tips or influence. In this way, the differentiated structure of delivery was further consolidated. Those with the most financial resources and personal connections had access to better services.

Although the Semashko model incorporated an impressive number of hospital beds and physicians, the productivity of these two key health inputs was low. The average length of stay was long and the average workload of physicians in the Soviet Union, measured by the number of consultations, hospital beds and bed-days, was also lower than that of their equivalents in many Western countries (Roemer, 1991; Popov, 1971). There were at least two ways through which the planning approach contributed to the inefficient use of resources. First, this approach failed to promote optimal coordination of resources. Although the health plans set out to play a coordinating role, thereby achieving the most efficient use of these resources, imbalances were abundant. Hospital beds and physicians were not matched with the necessary resources to work effectively.

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<sup>29</sup> Such a pattern became so extreme that in the final years of the Soviet Union, half the national health care budget went to finance care exclusively for political elites who accounted for less than 1% of the population (Barr & Field, 1996).

<sup>30</sup> Again, most studies of the Soviet medical system have touched on this topic. Kaser (1976) compiled some standards for informal payments during the 1960s. However, the true extent of the problem is unknown (Roemer, 1991).

Most notably, the development of health care was not supported by sufficient financial resources. Compared to most developed countries, the Soviet Union spent little on health care (Roemer, 1991). Tight financial constraints had direct impacts on health inputs. Salaries for health personnel were kept at an artificially low level. The medical system average wage was significantly lower than that for the whole national economy (Kaser, 1976). These low wages affected the quality of entrants to medical and nursing schools, making it difficult to retain medical personnel.<sup>31</sup> The limited financial resources also had negative implications for material inputs. The financial norms that governed capital construction and repair were unrealistically low, making it difficult to complete buildings on time and maintain them. Similarly, the miserly budget norms governing the purchase of pharmaceutical goods and medical equipment hampered production of these items (Davis, 1988). The whole system suffered from endemic shortages of pharmaceuticals, equipment and supplies (Knaus, 1981). These shortages then posed problems for the efficient use of hospital beds and physicians. For example, patients usually needed to stay for a relatively long period in hospitals to wait for diagnosis, because lack of equipment meant diagnostic departments were overburdened. Many physicians referred their patients to higher-level institutions instead of treating them, because they were unable to provide services due to the outdated condition of facilities and lack of supplies.

The second channel through which the planning approach contributed to the inefficiencies of the Semashko model was that the approach provided poor incentives. Administrative targets and standards of coverage were set in terms of hospital beds and doctors, and maximising their numbers was the principal objective (Ho & Ali-Zade, 2001). Policies seldom considered in any detail how to increase the effectiveness of what already existed or how to manage people or the infrastructure (Healy & McKee, 2002b;

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<sup>31</sup> This was partly intention on the part of the Soviet regime, because the ultimate priority of industrialisation necessitated the most talented people work in the industrial sector (Roemer, 1991).



Danishevski, 2008; Rechel et al., 2013). Such an incentive structure had negative impacts on the productivity of health care providers. At the institutional level, polyclinics estimated their annual budget by multiplying the planned number of outpatient visits by an expenditure norm. Hospitals used a financial norm linked to planned patient bed-days (Davis, 1988). In this way, the allocation of funds depended on existing capacity, historical expenditure and reported costs. The management of health facilities was not incentivised to develop any strategic planning functions to introduce innovation or adapt to environmental changes (Belli, 2001). At the individual level, health workers, including physicians and non-physician health professionals, were paid by salary. Wages were based on the number of years worked and type of speciality practised (Ho & Ali-Zade, 2001). Therefore, similarly to health facilities, medical personnel were not incentivised to improve their productivity or performance.

#### **2.4.2 Strengthening Primary Care in Transition Countries**

The Semashko model lost its popularity upon the dissolution of the Soviet Union (Borowitz & Atun, 2006). Since the late 1980s, former Soviet countries and satellite states have embarked on transition from centrally planned to market economies. Reflecting this broad change, there has been widespread rejection of the Semashko model due to its symbolic association with the communist system (Rechel & McKee, 2009). Drastic health care reforms have been attempted in eastern European and former Soviet countries. Reform efforts have focused on introducing publicly managed health insurance systems and out-of-pocket user charges, establishing new provider payment mechanisms and decentralising and/or privatising public sector services (Staines, 1999; Belli, 2001; Smith & Nguyen, 2013).

Strengthening primary care while reducing overcapacity in the hospital sector has also been an important element of the health reforms in eastern European and former

Soviet countries.<sup>32</sup> Strengthening primary care has been promoted because, as previously discussed, the Semashko model was overwhelmingly oriented towards hospitals—there was no equivalent to GPs and neighbourhood doctors provided little curative care. The Semashko model relied heavily on secondary care, which is considered to be inefficient and wasteful. Thus, strengthening primary care has been a major strategy to reduce utilisation of hospital and specialist services, increase the efficiency of health care services, provide better access for the population and improve the equity of health care provision (Kuhlbrandt, 2014; Kuhlbrandt & Boerma, 2015).

Despite sharing similar reform themes, the progress in health care reforms has varied significantly across countries, usually due to their respective economic, political and social contexts. Comparatively, eastern European countries have taken a more radical approach to reforming their health care systems, while former Soviet countries have had a much slower transition (Balabanova et al., 2004).

#### ***2.4.2.1 Eastern European Countries***

Among eastern European countries, the general trend has been moving towards the Bismarck model (Borowitz & Atun, 2006). This has been inspired and informed by two major sources of alternative ways to organise a health system. The first is past experience. The insurance-based system was dominant throughout continental Europe prior to the Soviet occupation, thus providing a source of knowledge about organising social health insurance systems. Communist rule ended with an aversion to state-dominated and centralised health care systems, making tax-based systems (i.e., the Beveridge model) less attractive. The second is inspiration and knowledge from external sources. The social health insurance systems in western European countries served as a positive point of reference (Marree & Groenewegen, 1997; Rechel & McKee, 2009). Returning to the Bismarck model appeared natural for policymakers in eastern Europe.

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<sup>32</sup> International agencies, especially the World Bank and WHO, have played key roles in this particular area of reform (Rechel & McKee, 2009).

For primary care, the most significant transition has been privatisation. All eastern European countries legalised private practice in the early 1990s (Kornai & Eggleston, 2001). The privatisation process has resulted in a high number of solo practices (Seifert et al., 2008).<sup>33</sup> Alongside this privatisation has been the establishment of general practice as a major discipline for the delivery of primary care. However, this reform has been far less complete than privatisation. In general, GPs are still not the exclusive type of physician for providing primary care services in eastern European countries (Oleszczyk, Svab, Seifert, Krzton-Krolewiecka & Windak, 2012). In many countries, the functions of primary care are divided among GPs, paediatricians and gynaecologists.

Given the fragmentation of primary care, it is unsurprising that gatekeeping is weak (Oleszczyk et al., 2012). In fact, there is general tension over whether to pursue the GP gatekeeping model. In the Czech Republic and Hungary, for example, patients can obtain care directly from a specialist of their choice without a referral (Alexa et al., 2015; Gaal, Szigeti, Csere, Gaskins & Panteli, 2011). In Slovakia, an obligatory referral system was introduced in 2008, but it was quickly abolished in 2010 as part of measures aiming to promote patient choice (WHO, 2012). In Poland, the government embraces the concept of primary care to a fuller extent, with a clear separation between primary and secondary care. Primary care physicians are gatekeepers within the system, and a referral from a primary care physician is needed to access specialist care (Sagan et al., 2011).

In terms of financing, the transition path has been more unified. Eastern European countries have exchanged their predominantly tax-based models for a social insurance-based system. General taxation is no longer the single source of the health budget and payroll-based contributions have become a major source of revenue. Together with the reintroduction of social health insurance, there have been reforms of provider payment

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<sup>33</sup> The degree of privatisation varies across different sectors of health care. Compared to primary care, dental care and pharmacies have been more extensively privatised. Conversely, the dominance of public ownership has been maintained in the hospital sector (Kornai & Eggleston, 2001).

mechanisms. Eastern European countries have generally moved from input-based budgeting to contract-based payments. Social health insurers and service providers negotiate the terms of contracts including service items, volume and price (Marree & Groenewegen, 1997; Kornai & Eggleston, 2001; Belli, 2001; Rechel & McKee, 2009). In the primary care sector, capitation, sometimes mixed with FFS, has become the most common form of provider payment mechanism (Oleszczyk et al., 2012; Alexa et al., 2015; Gaal et al., 2011).

#### ***2.4.2.2 Former Soviet Countries***

As with their counterparts in eastern Europe, the governments in former Soviet countries have pursued reforms to cope with the problems of the Semashko model. However, these reforms have been undertaken under more constrained economic and fiscal situations and made much slower progress (Belli, 2001; Rechel & McKee, 2009; Borowitz & Atun, 2006).

The large-scale privatisation observed in eastern Europe has not happened in former Soviet countries. Instead, public ownership has been largely retained. In the primary care sector, despite the existence of private practices, state ownership is still the dominant form for the delivery of primary care (Rechel & McKee, 2009; Borowitz & Atun, 2006; Kuhlbrandt, 2014). Further, a hierarchical organisation has been retained to a large degree. Primary care is provided by several layers of facilities, with those at the lowest layer providing the most limited range of services and those at higher levels offering more extensive functions. The concept of family doctors has been introduced, but in most former Soviet countries, such as Russia, Kazakhstan and Uzbekistan, the workforce of GPs has remained small, their service profile tends to be narrow and they play a limited role in the delivery of primary care (Grielen et al., 2000; Popovich et al., 2011; Katsaga, Kulzhanov, Karanikolos & Rechel, 2012; Ahmedov et al., 2014).

Two notable exceptions to the partial implementation of family medicine exist. In Kyrgyzstan and Moldova, Soviet primary care facilities have been fully transformed into family medicine centres and the gatekeeping function of primary care is operational (Rechel et al., 2013; Kuhlbrandt, 2014; Kuhlbrandt & Boerma, 2015). In Kyrgyzstan, family medicine was introduced in 1996, and 98% of the country's primary care doctors have been retrained in family medicine, mainly through short-term retraining programs (Hardison, Fonken, Chew & Smith, 2007). Most of primary care facilities are public and the private sector is limited. Primary care practitioners act as gatekeepers to more specialised services (Ibraimova, Akkazieva, Ibraimov, Manzhieva & Rechel, 2011). In Moldova, primary care services are provided by family doctors and family medicine nurses. Primary care providers can be either public or private, but the former is predominant. Family doctors act as gatekeepers to specialist care (Turcanu, Domete, Buga & Richardson, 2012).

In contrast to eastern European countries, which have transitioned to social insurance-based health systems, former Soviet countries have encountered more difficulties in adopting insurance schemes. In Kazakhstan, a social health insurance was introduced but soon abandoned. In Uzbekistan, there is still no social health insurance at all. In those former Soviet countries where social health insurance has been installed, the role of these schemes is mostly moderate (Katsaga et al., 2012; Ahmedov et al., 2014). Among the former Soviet countries, due to the dominance of public provision, primary care workers are mostly paid on a salaried basis. Their facilities are usually paid on a capitation basis (Popovich et al., 2011; Katsaga et al., 2012; Ahmedov et al., 2014; Ibraimova et al., 2011; Turcanu et al., 2012).

#### ***2.4.2.3 Differences Between Transition and Developed Countries***

Unlike developed countries, transition countries have taken steps to strengthen primary care for a rather different set of reasons. As previously discussed, in developed

countries, interest in strengthening primary care has arisen from the challenges of population ageing, increasing prevalence of chronic diseases and a demand to receive care closer to home. Strengthening primary care has also been adopted as a strategy to contain health care expenditure and improve the quality of health care. In eastern European and former Soviet countries, strengthening primary care has been part of the broad transition from a planned to market economy. The public in these countries was generally discontented with the planned system and there was a strong impetus to pursue radical reforms. The rush to establish health insurance systems and general practice was motivated by a political desire to create distance from the previous communist systems (Rechel & McKee, 2009).

During this process, transition countries have actively learned from the experiences of developed countries. Family medicine has been introduced as a separate discipline and training GPs and the existing workforce to take up the GP role has been a reform priority. This is a tremendous change; under the Semashko model, there was no equivalent to GPs. Some countries have gone further, introducing a gatekeeping role to GPs. In comparison, eastern European countries have been more radical in their approach to reforms, probably due to their better economic performance and accession to the European Union. In these countries, the provision of primary care has been privatised, public polyclinics have been turned into private practices, the financing source of their health care systems has shifted from tax revenues to social health insurances. Essentially, these countries have largely transformed their Semashko model to the Bismarck model. Former Soviet countries have made much less progress in their primary care reforms, and many have retained major features of the Semashko model in their health care systems.

## **2.5 Summary**

Primary care is a complex concept defined by four essential attributes: first contact, longitudinality, comprehensiveness and coordination. While this definition lays

out the ideal form of primary care, these conditions are not always met in practice. More generally, primary care is loosely understood as the first level of professional care in a health care system. However, the boundary between primary and secondary care is fluid and keeps evolving in different health care systems.

Among developed countries, which are frequently research subjects and provide models for developing countries, there exist two broad approaches to primary care. In national health service systems, the provision of primary care is usually centred on GPs who play a gatekeeping role in their health care systems. Primary care is mainly paid for by the government using tax revenues. In social and private health insurance systems, the direct access model is more dominant. Specialists are frequently involved in the provision of primary care and the boundary between primary and secondary care is ambiguous. Outpatient care is mainly financed by insurance payments funded by employer and employee contributions. Despite these significant differences, in both approaches the government tends to play a limited role in the delivery of primary care. In most developed countries, the provision of primary care is dominated by private ownership under the assumption that this arrangement promotes better quality, innovation and responsiveness to patient needs.

The complex nature of primary care has resulted in a range of different measures. The literature has proposed grouping these measures under two broad dimensions, structural characteristics and process features. A massive volume of studies has been accumulated on the benefits of primary care. These studies have confirmed the potential of primary care in reducing avoidable hospital admissions, containing health care expenditures and improving care quality and health outcomes. However, the literature suffers from a lack of standardisation in measures and methodological shortcomings.

Despite the imperfections of the evidence base for the benefits of primary care, strengthening primary care has been widely pursued internationally. Developed countries

have initiated different reforms to strengthen primary care as part of their strategy to address the challenges of population ageing, increasing prevalence of chronic diseases, consumers' changing demands and economic crises. In eastern European and former Soviet countries, the need to strengthen primary care has stemmed from a rather different set of reasons. The starting point for many transitional countries is the Semashko model, an integral part of the planned economy. The Semashko model has significant differences to the major models adopted in developed countries today. It is characterised by the state's absolute role and a hierarchical structure in the delivery of health care. The model places strong emphasis on hospitals and specialisation, with primary care workers focusing on preventive medicine and delivering limited curative care. After the dissolution of the Soviet Union, drastic reforms took place in eastern European and former Soviet countries. Reforming the health care system has been part of this transition. Health care reforms have usually included strengthening primary care to reduce the utilisation of hospital and specialist services, increase the efficiency of health care services, provide better access for the population and improve the equity of health care provision.



## **Chapter 3. A Historical Overview of China's Health Policy and System (1949–2002)**

This chapter reviews the developments in China's health policy and system between 1949 and 2002. This is important for later discussions because, as Chapter 2 illustrated, the strengthening of primary care is highly dependent on context. Many of the problems that the current Chinese health reforms intend to address emerged from past developments in the health policy and system. Therefore, studying this history is essential to understand how these problems came about and why the strengthening of primary care is necessary.

Developments in China's health policy and system reflect its macro socio-economic context. Between 1949 and 1977, health care was an integral part of the planned system. Since the late 1970s, the health policy and system has been constantly shaped by economic reforms (Grogan, 1995; Hsiao & Liu, 1996). This chapter discusses the broad contexts, focusing on those most relevant to primary care. This chapter has relatively limited coverage of hospitals and minimal discussion of public health facilities (such as anti-epidemic health facilities and maternal and childcare facilities) and the patriotic health campaigns carried out intensely from the 1950s–1970s. The limited coverage of these issues is not due to their lack of importance, but because primary care is the central research subject of this study.

### **3.1 Mao Era (1949–1977)**

During the Mao era, health care was organised as an integral part of the planned system in which the state played an absolute role. This section reviews how the economy was organised and the resources available to, and the systems for, the provision of social services (Section 3.1.1). It then turns to health care, discussing the early developments of

China's health policy (Section 3.1.2) and the health care system in the 1970s (Section 3.1.3).

### 3.1.1 Planned Economy, Resources and Systems for Social Services

During the planned economy period, overwhelming priority was given to channelling the maximum feasible investment into heavy industry. In the early 1950s, the government established compulsory procurement of grain from farmers, creating a government monopoly over key agricultural goods that lasted more than 30 years. Farmers were forced to meet procurement quotas set by the state at low fixed prices. The government also owned the factories and set high prices for factory products. This made state-owned industrial enterprises extremely profitable. In this way, the government was able to extract resources from agriculture in the countryside to support industrialisation (Naughton, 2007). Industry was prioritised and expanded rapidly—while industrial output (including construction) accounted for only 25.8% of national income in 1949, this more than doubled to 67.3% of national income in 1977 (NBS, 1983, p. 15). Major socio-economic indicators for this period are summarised in Table 3.1.

Table 3.1

*Major socio-economic indicators for China (1950–1975)*

| Indicator                  | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 |
|----------------------------|------|------|------|------|------|------|
| Population (million)       | 552  | 615  | 662  | 725  | 830  | 852  |
| Urban population (million) | 62   | 66   | 131  | 130  | 144  | 160  |
| Urbanisation rate (%)      | 11   | 12   | 20   | 18   | 17   | 17   |
| Total employment (million) | -    | 223  | 259  | 287  | 344  | 382  |
| State-owned units          | -    | 19   | 50   | 37   | 48   | 64   |
| Urban collective units     | -    | 3    | 9    | 12   | 14   | 18   |
| Rural communes             | -    | 195  | 198  | 235  | 281  | 299  |
| Per capita GDP (yuan)      | 77   | 129  | 183  | 194  | 235  | 273  |

Source: NBS (1983).

### ***3.1.1.1 The Rural Commune System***

In the countryside, people were organised into communes.<sup>34</sup> The system consisted of three administrative levels, with production teams at the lowest level and the next higher levels being brigades and communes. The production team was the basic production unit, and each team contained 10–50 households (Unger, 2002, p. 10–14). It owned all the land its members farmed and the tools they used, except for large machinery (World Bank, 1983). The production teams were all part of a brigade. On average, each brigade had seven to eight production teams (NBS, 1983, p. 147). The brigade controlled and coordinated the irrigation system that fed into production teams' fields. Above the brigade sat the commune, comprising an average of 8–20 brigades, or 50,000–70,000 people (NBS, 1983, p. 147). The commune administration owned and operated small rural factories and sometimes a few orchards (World Bank, 1983).

The economic activities of these rural collectives were very much determined by the state. Agricultural inputs and consumer goods were allocated according to government plans. A large proportion of above-subsistence output was procured by the state according to fixed quotas and prices. For rural individuals, they could hardly leave their communes, because the government imposed strict restrictions on rural-to-urban migration.<sup>35</sup> Apart from a small income from family activities, virtually all incomes were distributed through the production team, which depended on the gross output of their team and labour contributions, most frequently measured by work points (World Bank, 1983).

### ***3.1.1.2 The Urban Work Unit System***

In cities, the state economy dominated, employing around 80% of urban employees (see Table 3.1). In principle, collectives were owned by their members instead

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<sup>34</sup> Communes were established during the Great Leap Forward campaign. The commune system remained in place from 1958–1983.

<sup>35</sup> There were fluctuations. In fact, during the 1950s, many farmers migrated to cities to take up factory jobs. The urbanisation rate peaked at 19.7% in 1960 (NBS, 1983, p. 104). However, as a response to the economic difficulties triggered by the Great Leap Forward, the government tightened its control on rural-to-urban migration (World Bank, 1983). Thereafter, the urbanisation rate was kept at a very low level.

of the state. However, in urban areas, they were almost indistinguishable from state-owned units. The three most important categories of work units were enterprises, government agencies, and public service units (PSUs). PSUs are organisations that deliver public services to citizens (e.g., hospitals and universities). All these work units were woven into a formal hierarchy, with the government administration at the centre. Both enterprises and PSUs were affiliated with government agencies at different administrative levels. Urban individuals were assigned jobs by the government. Once allocated to a particular work unit, individuals could expect to spend the rest of their working life there. Wages were set by the government and distributed through the work units (World Bank, 1983).

The only major category of work units that engaged in production was enterprises. Reflecting the state's emphasis on heavy industry, many enterprises were factories and mines during the planned economy period. These enterprises were subject to tight control by the state. All managers of these enterprises were appointed by higher-level governments. Work units were obliged to employ the people assigned by the government, with little choice for employers to hire or discharge. All fixed and working capital were funded by the state. The economic activities revolved around an annual plan drafted by the government. These annual plans listed physical and financial targets to be met. In addition to these annual plans, enterprises also followed government directives, including input sources and the channels through which output should be disposed of, and prices. Profits were to be remitted to the state (World Bank, 1983).

### ***3.1.1.3 Economic Performance and Fiscal Resources***

China remained a very poor country from 1949–1977. However, the economy was growing rapidly. As shown in Table 3.1, per capita GDP increased from 77 yuan in 1950 to 273 yuan in 1975. Average annual growth in per capita GDP was high compared to other low-income countries. However, partly due to the very low starting point, this

growth was not sufficient to lift China out of the low-income group. By the end of the 1970s, per capita GDP in China was only slightly higher than the average of low-income countries (World Bank, 1983, p. 77).

The limited aggregate economic resources set an upper limit on the resources for social services. Between 1952 and 1977, the government raised around 30% as fiscal revenues (see Figure 3.1), relatively high for a low-income country.

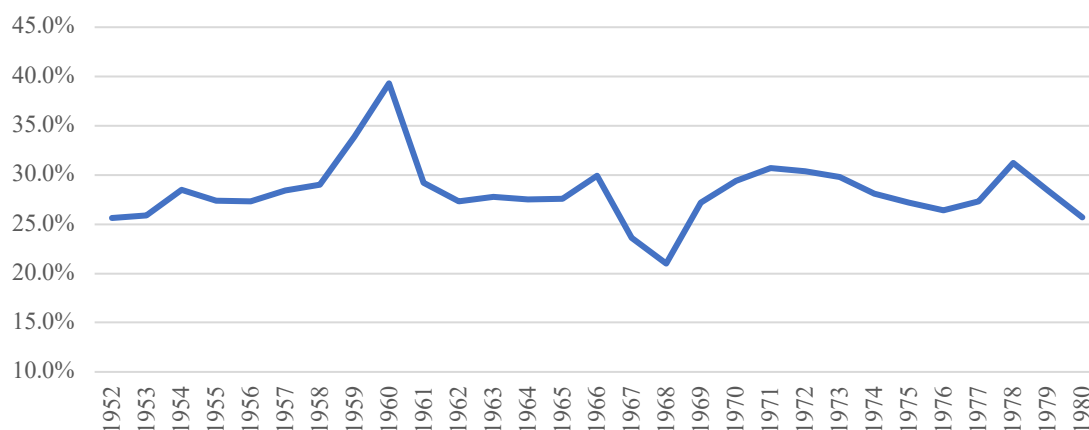


*Figure 3.1.* China's annual fiscal revenue as a percentage of gross domestic product (1952–1980) (NBS, 2001).

Reflecting the prioritisation of industrialisation, the majority of fiscal revenue was spent on investment in industry. Very limited resources were allocated to other areas. As shown in Figure 3.2, only around 10% of annual total fiscal expenditure was spent on science, education, culture and health. Despite an increasing trend, less than 2% of annual total government expenditure was spent on health from 1953–1975. China's direct government spending on social services was very low, even for a low-income country.

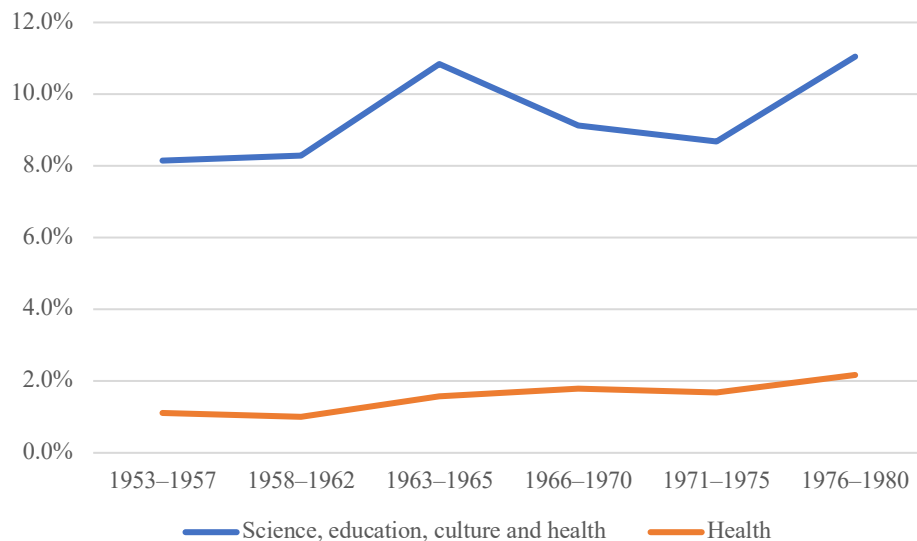


*Figure 3.2.* China's annual fiscal expenditure on science, education, culture and health as a percentage of annual total fiscal expenditure (1953–1980) (Ministry of Health, 2003).

#### ***3.1.1.4 Social Services under the Planned Economy***

A significant portion of fiscal expenditure was used to fund PSUs. As with enterprises, PSUs were subject to very tight state control. Their material inputs and human resources were allocated and funded by the government. They received government instructions on the range of services to be delivered, service targets and prices. PSU employees and salaries were dictated by the government (Liu, 2009, pp. 66–69).

In addition to PSUs, the rural commune system and urban work unit system were widely engaged in the provision of social services. In rural areas, brigades usually ran a local primary school and perhaps a health station, while communes might have run a local secondary school and a health centre (Unger, 2002). These social services were mainly funded by local resources, a mix of collective welfare funds maintained by brigades and communes and individual payments. In urban areas, work units provided a range of benefits, from pensions, health, work injury, maternity and sick leave payments to services such as creches, schools, clinics and collective subsidies including housing (Croll, 1999). These benefits were treated as an addition to the wage bill, funded by collective welfare funds maintained by enterprises (World Bank, 1983). In contrast to

rural communes, which funded their collective welfare through local resources, the collective welfare funds of urban work units were indirectly financed by the state, because collective consumption was counted as costs and deducted from revenues before all profits were remitted to the state.

### **3.1.2 Early Developments of Health Policy**

Periodic epidemics and a high level of infectious disease morbidity and malnutrition earned pre-1949 China its reputation as the ‘sick man of Asia’ (World Bank, 1984). The supply of health care was minimal. When the People’s Republic of China was founded in 1949, there were around 20,000 doctors trained in Western medicine for a population of 500 million. People tended to consult a traditional Chinese doctor and take some herbal remedies for illnesses. However, for most people, health care was unaffordable and huge numbers died from epidemics. Facing this dire situation, the government developed four guiding principles for the development of health care: 1) health care should be geared to the needs of workers, farmers and soldiers; 2) prevention should be given absolute precedence; 3) medical workers engaging in traditional Chinese medicine should be united with medical workers trained in Western medicine; and 4) health care services should be combined with mass movements (Qian, 1992).

To establish the health care system, China adopted the Semashko model (see Chapter 2). Between 1949 and 1960, Soviet consultants came to China in large numbers and provided considerable advice on how to develop the health care system (Roemer, 1991). Following the Soviet experience, the government drafted plans for the types and number of health facilities needed, allocated funds and materials to build and/or expand hospitals, and then organised these based on an administrative hierarchy. Hospitals were set at county, municipal or provincial levels and affiliated with different government agencies. To staff health care facilities, the government set up medical schools to train a health workforce. Again, following the Soviet experience, the key strategy was to focus

on middle-level health workers (Ministry of Health, 1951a). In contrast to higher-level doctors, who underwent five-year medical training after graduating from high school, middle-level doctors (i.e., assistant doctors, modelled after the Soviet *feldsher*) attended medical training for two years after middle school. The relatively short period of training for middle-level health personnel made it possible to increase the number of health workers more rapidly. The government also drafted plans for the types and number of health personnel needed. Once a person graduated from medical school, they would be assigned by the government to a health care facility and expected to work there for their entire life.

In cities, the government established two major health insurance programs: the Labour Insurance Scheme (LIS) for state-owned enterprise (SOE) employees and their dependents, and the Government Insurance Scheme (GIS) for government employees, PSU employees, university students and veterans. Both schemes offered almost free health care for beneficiaries (except for workers' dependents, who were compensated only partially). To meet the enormous demand generated by these two programs and control their costs, work units set up their own clinics or even hospitals. These clinics and hospitals were part of those work units and outside the jurisdiction of the Ministry of Health (Jewell & Hillier, 1983; Qian, 1992, p. 53). In rural areas, developments were much slower in the early 1950s. The Ministry of Health invested its limited resources mainly at the county level with the goal of covering each county with either health centres or clinics (Ministry of Health, 1951b). Below the county level, doctors were encouraged to form united clinics (Ministry of Health, 1951c, 1957). These united clinics were group practices run on a cooperative basis with fees pooled to meet expenses and pay salaries. Despite being under collective ownership, they were more similar to private practices, because they relied on user charges and were not recipients of government subsidies. Between 1950 and 1956, the number of united clinics increased rapidly (Contemporary



China Series Editorial Committee [CCSEC], 1986a, p. 13; Qian, 1992, p. 53). Private practices were also allowed (Ministry of Health, 1951d, 1957). These united clinics and private practices provided the bulk of health care in the countryside.

In the early 1950s, major health policies were issued, and they remained relatively stable thereafter. However, the primary care sector experienced several rounds of major restructuring, mainly due to the Great Leap Forward and Cultural Revolution.<sup>36</sup> In 1958, Mao launched the Great Leap Forward, the key element of which was to collectivise individual households into communes. As a free and accessible rural health service was thought to be a tangible incentive for communism, it was one of the first welfare functions initiated (Huang, 2013). Communes and brigades were encouraged to set up their own health centres or stations, as well as the Cooperative Medical Scheme (CMS) which provided partial coverage for farmers when seeking health care (Ministry of Health, 1959). These two measures were soon popularised. United clinics and private practices were rapidly transformed into brigade or commune health facilities. By 1960, almost all communes had a health care facility (Lampton, 1977). The percentage of brigades implementing the CMS jumped from 10% in 1958 to 46% in 1962 (Cao, 2009). In some localities, commune health centres even came under state ownership and the CMS evolved into free medical care (Qian, 1992; Huang, 2013). These radical changes suddenly released a huge demand, overwhelming brigade and commune health facilities and county hospitals (Lampton, 1977; Jewell & Hillier, 1983).

The Great Leap Forward quickly developed into an agricultural crisis. After several rounds of reflections and adjustments, the government significantly restructured communes. Individual peasant households were given much more freedom and the role

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<sup>36</sup> The discussions here are brief. For more details, see Lampton (1977) and Jewell and Hillier (1983). Another good source of information on changes is the local histories (地方志) of different counties, cities and provinces. Usually, there are specific chapters or volumes for health care, with some details on how health care was provided throughout the planned economy period (e.g., Shanghai Office of Local History, 1998; Jiangsu Office of Local History, 1999; Huoshan Office of Local History, 1993).

of private markets was expanded (Naughton, 2007). The government instructed that those commune health centres that had come under state ownership be returned to collective ownership (Ministry of Health, 1962; Qian, 1992, p. 8). Commune health centres and brigade health stations were soon disaggregated into their original state of united clinics, or even turned into private practices (CCSEC, 1986b).<sup>37</sup> The CMS was abandoned in many localities. Throughout the country, the percentage of brigades maintaining the CMS dropped from 46% in 1962 to 30% in 1964, then to 20% in 1968 (Cao, 2009).

The trend of returning more autonomy to individuals was reversed during the Cultural Revolution, a movement launched by Mao to eliminate ‘bourgeois elements’ in society. From the beginning, the Ministry of Health was a major target. In his famous June 26 Directive in 1965, Mao expressed strong dissatisfaction with the Ministry of Health for its urban bias. To redirect emphasis to the countryside, two major measures were proposed. First, a large number of well-trained and experienced senior doctors were sent out to the countryside. Second, medical education was significantly shortened to speed up the training of health manpower for rural areas (Huang, 2013). In 1968, under the instruction of Mao, an official newspaper, *Red Flag*, published a study on ‘barefoot doctors’ in Shanghai. These ‘barefoot doctors’ were local peasants who had received a short period of medical training and still worked as farmers while practising medicine. This model was widely adopted, resulting in a workforce of over one million barefoot doctors throughout the country (Cao, 2009).

In addition to the sudden increase in the number of paramedical workers, the practices of brigades and communes maintaining their own health facilities and the CMS were revitalised and fully developed. Communes and brigades were required to take over

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<sup>37</sup> In Jiangsu, for example, there were 1,170 commune health centres and 6,948 brigade health stations in 1958. The number of commune health centres dropped to 663 in 1961 and the number of brigade health stations dropped to 635 in 1962. Conversely, the number of united clinics jumped from 408 in 1958 to 7,642 in 1962. The number of individual practitioners also increased, from 1,369 in 1960 to 7,806 in 1962 (Jiangsu Office of Local History, 1999).

united clinics (Ministry of Health, 1965). The capacity of commune health centres grew rapidly. Between 1965 and 1975, the number of doctors and nurses employed by commune health centres more than tripled (Qian, 1992, p. 77). The coverage of the CMS was substantially increased. In 1976, the percentage of brigades implementing the CMS reached 90%, covering around 85% of the rural population (Cao, 2009).

The Cultural Revolution had highly disruptive effects on the Ministry of Health, medical schools and urban hospitals. By the late 1960s, all of the Ministry of Health's principal leaders had been purged and the Ministry was made irrelevant to major policymaking (CCSEC, 1986a). Medical schools and universities were closed. Some were reopened in 1972, but the training was politicised. Selection was related to political attitude and the training emphasised Mao's thought, instead of medical knowledge. Hospitals were also in disarray. Large numbers of experienced doctors in urban hospitals were either persecuted or sent out to do manual work in the countryside (Hesketh & Zhu, 1997a). Nurses and paramedical workers were encouraged to treat the sick and even perform operations (Jewell & Hillier, 1983).

The Cultural Revolution had much more limited impacts on urban health care financing (Lampton, 1977). Since their initial implementation, the LIS and GIS maintained relatively stable expansion throughout the three decades of the planned economy period. In 1980, the number of beneficiaries covered by the LIS and GIS reached 117.79 million and 15.98 million respectively, together accounting for approximately 70% of the urban population (Gu & Tang, 1995; NBS, 1983). In contrast to the disruptions experienced by hospitals, the grassroots clinics in the cities actually benefited from the Cultural Revolution, due to the sudden increase in the number of paramedical workers. Also, some hospital doctors were sent to neighbourhood and factory clinics, which further boosted the capacity of such facilities (Jewell & Hillier, 1983).

### **3.1.3 Health Care System in the 1970s**

The health care system experienced major changes during the planned economy period. This section describes the system in the 1970s. The system during this period is particularly interesting for two reasons. First, this is the system that China had directly before the economic reforms starting in 1978. Second, this system was promoted an exemplar to the world, teaching other countries about how to achieve significant improvements in health outcomes at a low level of economic development.<sup>38</sup>

#### ***3.1.3.1 Delivering Health Care***

The medical service delivery system is illustrated in Figure 3.3 and some statistics are provided in Table 3.2. For rural people, the first point of contact was brigade health stations. Staffed by barefoot doctors and midwives, these brigade health stations implemented preventive health measures and provided some rudimentary curative care. When a patient's health problems could not be dealt with at brigade health stations, they would be referred to commune health centres. A commune health centre was typically staffed by assistant doctors, occasionally fully trained doctors, nurses and paramedical workers. Commune health centres were responsible for providing more extensive outpatient services and some basic inpatient care. County hospitals then took referrals from commune health centres. County hospitals were typically staffed by fully trained doctors and provided a comprehensive range of outpatient and inpatient services (CCSEC, 1986b). In urban areas, the point of entry was likely to be an enterprise or street clinic. Similar to brigade health stations in rural areas, these urban clinics were typically staffed by paramedical workers and provided preventive and some simple curative services. When these clinics were unable to treat a patient, they would be referred to a

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<sup>38</sup> Since it was promoted as an exemplar, the health care system in the 1970s was also studied extensively. In the late 1970s and early 1980s, several international organisations such as the WHO and World Bank sent research teams to study the Chinese health care system (e.g., WHO, 1983; World Bank, 1984). The Chinese health care system also drew interest from some foreign individuals and organisations. Their work (e.g., Sidel & Sidel, 1974, 1983; Wilenski, 1979; US Department of Health and Human Services, 1980) provides some useful information on how the system worked.

street/enterprise hospital, or directly to a district hospital (CCSEC, 1986b; Gong & Gu, 1987). Finally, there were hospitals at municipal and provincial levels. These hospitals sat at the top of the referral system, receiving patients from rural and urban areas. They tended to be staffed by the best doctors and provided the most comprehensive curative services.

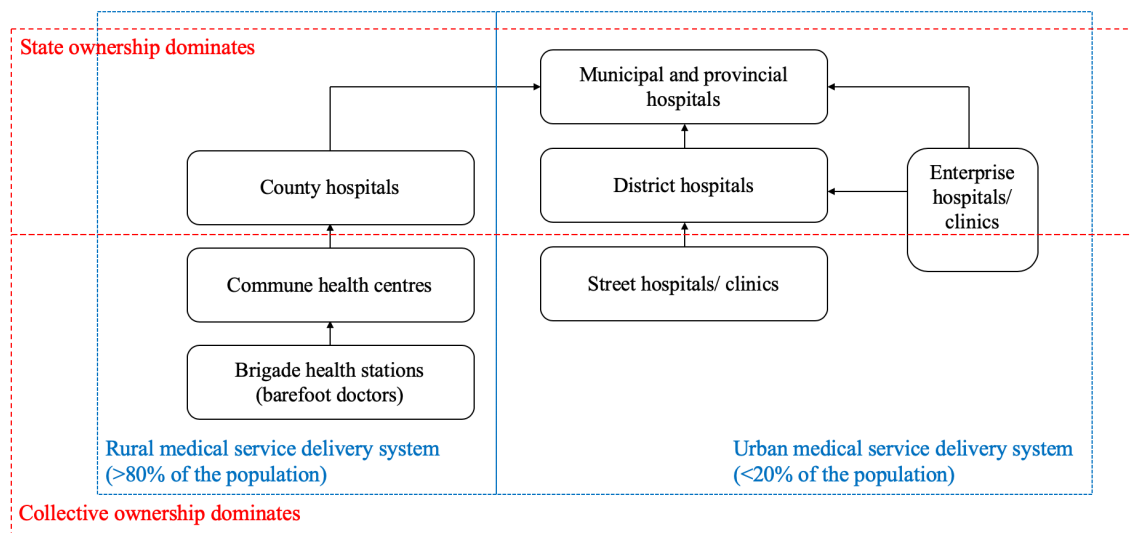


Figure 3.3. The medical service delivery system in the 1970s.

The most salient feature of this delivery system was the vast numbers of paramedical workers who worked without direct doctor supervision at the primary care level. The majority of barefoot doctors were brigade members elected by their fellow members. Most frequently, they received formal trainings for only three to six months, either in a county hospital or commune health centre. After their initial training, barefoot doctors received some on-the-job supervised experience at commune health centres. Barefoot doctors had a range of health work responsibilities including environmental sanitation, health education, immunisation, first aid and some aspects of curative care and post-illness follow-up. To carry out their work, barefoot doctors themselves trained some health aides who worked on a part-time basis and assisted with specific tasks (Sidel, 1972). In 1975, there were over 5.5 million rural paramedical workers, compared to around 1.26 million (assistant) doctors and nurses (see Table 3.2).

Table 3.2

*Some statistics for the Chinese health care system (1975)*

| Health care facilities        | Number    |
|-------------------------------|-----------|
| Hospitals                     | 7,654     |
| Commune health centres        | 54,026    |
| Clinics                       | 80,739    |
| Brigade health stations, 1983 | 610,000   |
| Health care workers           | Number    |
| (Assistant) doctors           | 877,716   |
| Nurses                        | 379,545   |
| Barefoot doctors              | 1,559,214 |
| Health aides                  | 3,282,481 |
| Midwives                      | 726,532   |

Source: Data for hospitals, commune health centres, clinics, (assistant) doctors and nurses collected from Ministry of Health (2003). Other data from CCSEC (1986b, pp. 42, 111).

### ***3.1.3.2 Financing Health Care***

The financing of the health care network was fragmented (see Figure 3.4). At the aggregate level, health care expenditure could be broadly grouped into four categories: the state budget, LIS, CMS and out-of-pocket payments. The bulk of the state budget was used to directly finance government health facilities which served the entire population. Government health care facilities included all hospitals at or above the county level and one-third of commune health centres (World Bank, 1984, p. 41). However, the state budget was not supposed to fully cover all the costs incurred at government health facilities. Instead, ‘gap budgeting’ was adopted from 1960. The principle of this system was that health budgetary allocations were used to fill the gap between their essential expenditures and the finance they raised. There were many variants of gap budgeting, but

in general, government subsidies were intended to cover the staff salaries and capital development of state-owned units (Tang & Meng, 2004, p. 23).

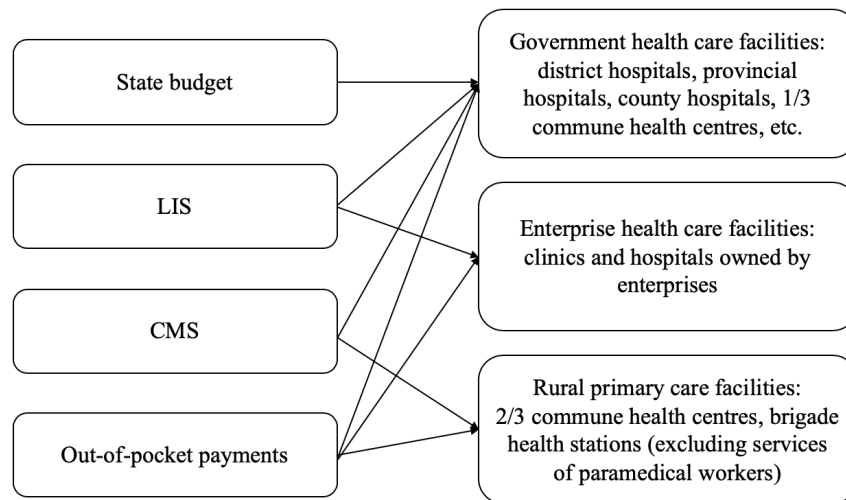


*Figure 3.4.* Financing of the Chinese health care system in the 1970s.

As previously discussed, there were three major health insurance schemes providing coverage for different populations (see Table 3.3). The LIS was the first scheme set up by the government and entitled workers and staff in state enterprises to free health care. It also provided 50% reimbursement of health costs for the dependents of its primary members. The financing of the LIS was treated as an addition to the enterprise wage bill, with no individual prepayment. The LIS covered the salaries of health workers in enterprise clinics and hospitals and reimbursement for referrals to government health facilities. The GIS was the second scheme established and covered government employees, employees of PSUs (including university students) and veterans. The GIS was directly funded by the state budget. Under the GIS, beneficiaries did not need to make any prepayment and their health costs were fully reimbursed (World Bank, 1984). In rural areas, the CMS provided entitlement to reimbursable services and drugs at brigade health stations and higher-level facilities such as commune health centres or county hospitals. However, the CMS did not cover the services of barefoot doctors, midwives and health aides, which were financed separately on the basis of work point claims by collectively distributed income. In contrast to the GIS and LIS, the CMS required annual prepayments

from individual members of a brigade or a commune. It was also partially subsidised by collective welfare funds maintained by brigades or communes. Due to this financing method, the exact level of benefits varied substantially across CMS schemes (World Bank, 1984). In general, the CMS was far less generous than the GIS and LIS.

Table 3.3

*The three pillars of China's health insurance system (1950s–1990s)*

| Scheme | Details                                                                                                                                                                                                                                                                                                |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LIS    | Institutionalised in 1951. For workers of state-owned enterprises and, to a lesser extent, their immediate family members. Funded by collective welfare funds maintained by enterprises.                                                                                                               |
| GIS    | Institutionalised in 1952. For government employees, PSU employees (including university students) and veterans. Funded by the state budget.                                                                                                                                                           |
| CMS    | Spontaneously launched by local farmers in the mid-1950s and encouraged by President Mao during the Cultural Revolution. For peasants and their families. Funded by collective welfare funds maintained by brigades or communes (depending at which level it was pooled) and prepayments from members. |

*Note.* LIS = Labour Insurance Scheme, GIS = Government Insurance Scheme, CMS = Cooperative Medical Scheme, PSU = public service unit.

Source: Information for the LIS collected from the *Labour Insurance Regulations of the People's Republic of China*, issued in 1951 and amended in 1953. Information for the GIS collected from Administration Council (1952). Information for the CMS collected from Ministry of Health (1965), Carrin et al. (1999, p. 962) and Xia (2003, p. 111).

The GIS, LIS and CMS did not provide full coverage for the entire population. As previously discussed, the CMS covered around 85% of the rural population in 1976 (Cao, 2009). In 1980, 70% of the urban population were covered by the LIS and GIS (Gu & Tang, 1995; NBS, 1983). The remainder (i.e., 15% of the rural population and 30% of the urban population) had to pay for their health care entirely out of pocket. Also, for the beneficiaries of CMS and dependents of the primary members of LIS, their health care



was not fully covered by their respective insurance schemes, with the gap being paid out of pocket.

### ***3.1.3.3 An Exemplar to the World?***

In the 1970s and early 1980s, the Chinese health care system drew wide interest internationally. The system demonstrated outstanding performance in improving health outcomes. When the People's Republic of China was founded, the infant mortality rate was around 200‰ and life expectancy was 35 years. By 1981, the infant mortality rate had dropped to 34.7‰ and life expectancy had increased to 67.9 years (National Health and Family Planning Commission [NHFPC], 2016).<sup>39</sup> The Chinese health care system repeatedly appeared in WHO publications (e.g., Djukanovic & Mach, 1975; Newell, 1975). In particular, the training of agricultural workers to meet rural health needs was a challenge to the dominant health manpower models in the developed world. The ideas and experiences of how China organised its rural health care inspired the WHO to formulate a new approach to health systems development, which later became known as 'primary health care' (WHO, 2008). In 1982, an interregional seminar took place in China to explore some aspects of primary health care in China, with particular attention to 1) the three-tier network of the health care system, 2) the people's involvement in and management of health care, 3) health manpower development and 4) financing of health care (WHO, 1983, 2011). These experiences were promoted for the development of primary health care in other countries.

However, these achievements should be considered with some caveats. First, they were relative to the problems faced by China at the time and the extremely limited resources available. The model was effective in reducing the morbidity and mortality of infectious diseases at a low level of economic development, but was not necessarily

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<sup>39</sup> The Chinese official figures are cited here. Other organisations have different estimates. For example, the World Bank (1984) suggests that the infant mortality rate was 270‰ between 1945 and 1950 and dropped to 70‰ between 1975 and 1980, and that life expectancy increased from 30.5 years to 64.2 years during this period. Despite the differences in figures, the trends are the same.

effective in addressing the challenges from chronic and noncommunicable diseases that required more complicated curative care. Despite the enormous admiration for barefoot doctors, quality concerns were raised by international observers (Hsu, 1974; Rogers, 1980). Second, attributing the changes in life expectancy and mortality rates to the health care system is problematic. As is widely recognised in the current literature, population health is determined by many factors and the interactions between these are very complex. The health care system, despite its importance, is one of the many factors contributing to population health.<sup>40</sup> In China, the cessation of wars, increase in agricultural output and campaigns to improve the hygiene environment were also likely to have played significant roles. It is hard to single out the contribution of the health care system. Third, it was after the Cultural Revolution that rural primary care was fully developed. The Cultural Revolution was a period of China's history when the Ministry of Health, higher medical education and hospitals were in disarray; senior and regularly trained doctors were persecuted or sent to the countryside; and paramedical workers were encouraged to be bold in treatment that often exceeded their skillset. The rural health facilities, CMS and barefoot doctors were seen as politically correct at the time, and were intended to be widely adopted and highly praised. The costs of sustaining this system were huge.

### **3.2 First Two Decades of Economic Reforms (1978–2002)**

At the end of 1978, China launched its far-reaching economic reforms. Since then, the government has gradually introduced market elements to different parts of the system. This section reviews the key economic reforms and how they changed the resources and systems for social services (Section 3.2.1). It then focuses on health care, tracing how health policy evolved after the economic reforms and major developments of the health

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<sup>40</sup> The literature highlights five major categories of health determinants: genetics, behaviour, social circumstances, environmental and physical influences, and medical care. Determining the correct weights for each category remains a major challenge for population health research. Nonetheless, studies suggest that medical care contributes a relatively modest percentage, 10–20%, to population health (McGovern, Miller & Hughes-Cromwick, 2014).

care system (Section 3.2.2.). The section concludes by summarising the achievements and major problems of China's health care system in the 1980s and 1990s (Section 3.2.3).

### **3.2.1 Transition, Fiscal Decline and Implications for Social Services**

China's approach to economic transition was different to that of most of the other socialist countries. It has been characterised by an incremental approach. Instead of having a blueprint of how to transition from a planned to market economy, reformers focused on seeking ways to ameliorate the obvious serious problems of the planned economy. Since the late 1970s, experimental reforms were launched in almost every sector of the economy.

#### ***3.2.1.1 Rural Reforms***

The reforms first succeeded in the countryside. The government stabilised and even slightly reduced its procurement targets, raised procurement prices and, most importantly, significantly raised the prices for farm deliveries above the procurement target. Among a wide range of local initiatives, the household responsibility system became the most popular form. Under this system, farm households took over management of the agricultural production cycle on a specific plot of land. This system provided strong incentives for farmers to increase their productivity and significantly weakened the role of collectives (Naughton, 2007). The reform was very successful: agricultural output grew rapidly and vast numbers of labourers were freed from agricultural work. By the end of 1983, the household responsibility system became universal and the commune system came to an end. Township governments were established throughout the country.

Another major development in the countryside was the growth of township and village enterprises (TVEs). The predecessors of TVEs were commune and brigade enterprises, which were required by the government to focus exclusively on the industries that served agriculture. After the economic reforms, TVEs were allowed to expand the

range of their products and enter many industries previously exclusive to state enterprises (Qian, 2000). TVEs benefited significantly from the freed labour from the agricultural sector. The number of people employed by TVEs more than quadrupled from 30 million in 1980 to 129 million in 1995 (see Table 3.4).

After the economic reforms, the government gradually relaxed its population control. Initially, the government only allowed rural people to move to small cities. After the 1990s, realising the potential benefits of migrant labour to the urban economy, the government adopted a more flexible attitude, allowing the freed labour from the countryside to move to urban areas (Cai, Park & Zhao, 2008). While the urbanisation rate was artificially fixed at lower than 20% during the planned economy period, it started to grow rapidly after the 1980s. By 2000, the urbanisation rate reached 36%, almost doubling the level in 1980 (see Tables 3.1 and 3.4).

Table 3.4

*Major socio-economic indicators for China (1980–2000)*

| Indicator                                | 1980 | 1985  | 1990  | 1995  | 2000  |
|------------------------------------------|------|-------|-------|-------|-------|
| Population (million)                     | 987  | 1,059 | 1,143 | 1,211 | 1,267 |
| Urban population                         | 191  | 251   | 302   | 352   | 459   |
| Urban population (% of total)            | 19   | 24    | 26    | 29    | 36    |
| Urban employment (million)               | 105  | 128   | 147   | 173   | 213   |
| State-owned units                        | 80   | 90    | 103   | 113   | 81    |
| Urban collective units                   | 24   | 33    | 35    | 31    | 15    |
| Private and individual businesses        | <1   | 5     | 7     | 21    | 34    |
| Rural employment (million)               | 318  | 371   | 420   | 450   | 499   |
| Township and village enterprises         | 30   | 70    | 93    | 129   | 128   |
| Per capita gross domestic product (yuan) | 460  | 855   | 1,634 | 4,854 | 7,078 |

Source: NBS (1991, 1996, 2001).

### ***3.2.1.2 Early Reforms of SOEs and Reintroduction of the Private Sector***

In cities, the government introduced various measures to reform SOEs under the main themes of power delegating and profit sharing. The government relaxed control and

allowed enterprises to make some business decisions. For example, enterprises were granted autonomy to increase supply and appoint middle-level managerial staff. Also, while enterprises used to be required to remit all their profits to the state, they were now allowed to retain a certain portion of profits to be used for further development, employees' welfare and bonus payments to employees (Wu, 2005). Enterprises were also given an important channel to make profits: the government officially permitted the market track alongside the planned track for industrial goods from the mid-1980s onwards. Under this system, the planned prices and quotas for delivery were maintained, but the above-quota quantities produced by SOEs were allowed to be sold on the market at prices freely determined by market supply and demand (Qian, 2000). Enterprises were also given limited autonomy in hiring. The government formally introduced labour contracts to the labour market in the mid-1980s (Cai et al., 2008). New workers were hired for five-year contracts after 1986, with contracts renewed only when both sides were satisfied (Naughton, 2007). However, state and collective jobs were very much protected until the 1990s. Publicly owned enterprises were not allowed to lay off workers (Cai et al., 2008).

The government also reintroduced the private sector into the economy, lifting the ban on individual businesses and permitting them to hire up to eight people. Some larger private businesses were also set up, but these faced official discrimination in the 1980s and early 1990s (Wu, 2005; Naughton, 2007). Under these policy changes, private and individual businesses, after almost being eliminated during the Cultural Revolution, started to grow alongside the state and collective sectors (see Table 3.4).

### ***3.2.1.3 Deepening Reforms in the 1990s***

While the initial purpose of the economic reforms was to incrementally introduce some market mechanisms, the efforts to establish a market economy became more fundamental and thorough in the 1990s (Naughton, 2007). SOEs were required to

withdraw from ordinary competitive industries and concentrate on some strategic industries that needed to be controlled by the state sector (Qian, 2000). Large numbers of SOEs and urban collectives were closed down or privatised. This was the turning point when public employment started to shrink after decades of expansion. Between 1995 and 2000, the number of urban people working for either the state or collective sector declined from 144 million to 96 million. In the countryside, TVEs experienced a parallel development and the majority were privatised. By 2000, 96% of TVEs were privately owned, employing 70% of employees (China Township and Village Enterprise Yearbook Editorial Committee, 2001). Essentially, much of the state and collective sectors became privatised in the 1990s. Private businesses finally received official recognition in the late 1990s (Qian, 2000). Their development significantly accelerated thereafter.

#### ***3.2.1.4 Economic Growth and Increasing Inequality***

China's economic reforms turned out to be a huge success. The economy expanded at an unprecedented speed after the late 1970s. Per capita GDP grew from 460 yuan in 1980 to 7,078 yuan in 2000 (see Table 3.4). According to the World Bank's classification, China moved from the low-income group and became a lower-middle income country in 2000 (World Bank, 2001, p. 334).

However, the gains of China's remarkable economic growth have not been shared equally. Inequality has significantly intensified since the economic reforms. According to the World Bank (2009), the Gini index of income inequality in China rose from 0.31 in 1981 to 0.45 in 2003. A key dimension of the inequality was the gap between rural and urban incomes. The rural–urban inequality can be traced back to the Mao era, when the development policy prioritising heavy industry kept extracting resources from agriculture to support industrialisation in the cities. After the 1978 economic reforms, the income gap initially reduced due to the success of rural reforms in raising farmers' relative earnings. However, as economic reforms accelerated in urban areas, inequality increased

rapidly to historically high levels (Fan, Kanbur & Zhang, 2011). In 2003, the annual income of urban residents was three times that of rural residents (NBS, 2004). Internationally, the urban–rural income ratio rarely exceeds two to one (World Bank, 1997b). Another key dimension of inequality is regional disparities. Unlike the rural–urban gap which has its roots in the pre-reform period, the inland–coastal disparity emerged and has risen rapidly since the 1978 economic reforms (Fan et al., 2011). In the late 1970s, the government decided to expand foreign trade and welcome foreign investment. In the following years, a number of coastal cities were opened up. These coastal cities enjoyed a special institutional and policy environment and increased control over their economy (Qian, 2000). Coastal provinces have benefited significantly from this development and become significantly richer than their central and western counterparts, increasing interprovincial inequality (Yang, 2002).

### ***3.2.1.5 Fiscal Reforms***

Despite the unprecedented economic growth, the government experienced a major fiscal decline during the 1980s and early 1990s. As shown in Figure 3.5, fiscal revenue as a percentage of GDP dropped from 24.2% in 1981 to 10.7% in 1995.

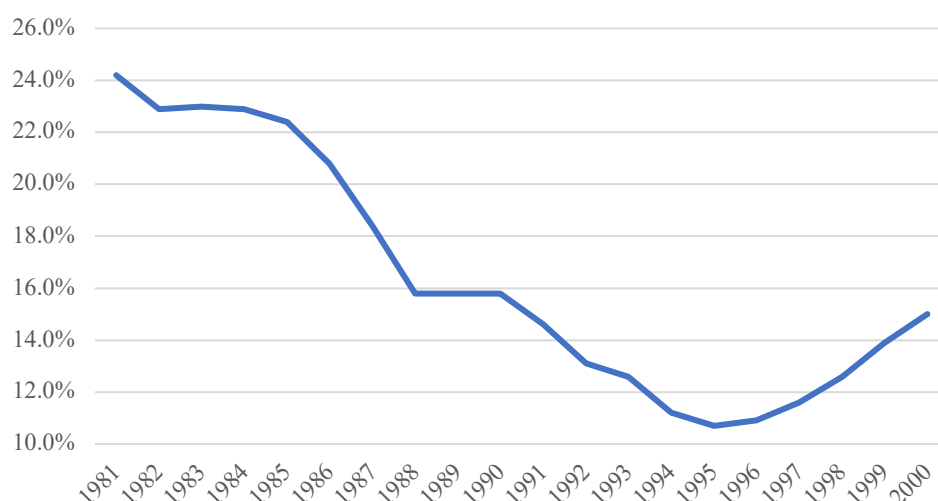


*Figure 3.5.* China’s annual fiscal revenue as a percentage of gross domestic product (1978–2000) (NBS, 2001).

Faced with this fiscal decline, the government reduced expenditure on social services. While the fiscal expenditure on science, education, culture and health as a percentage of total fiscal expenditure increased from 15.1% in 1981 to 21.5% in 1995 (see Figure 3.6), spending as a percentage of GDP actually dropped from 3.7% to 2.3%. The decline was more significant for health expenditure. From 1981–1995, government health expenditure decreased from 2.9% to 2.4% of total fiscal expenditure, and from 0.7% to 0.3% of GDP.

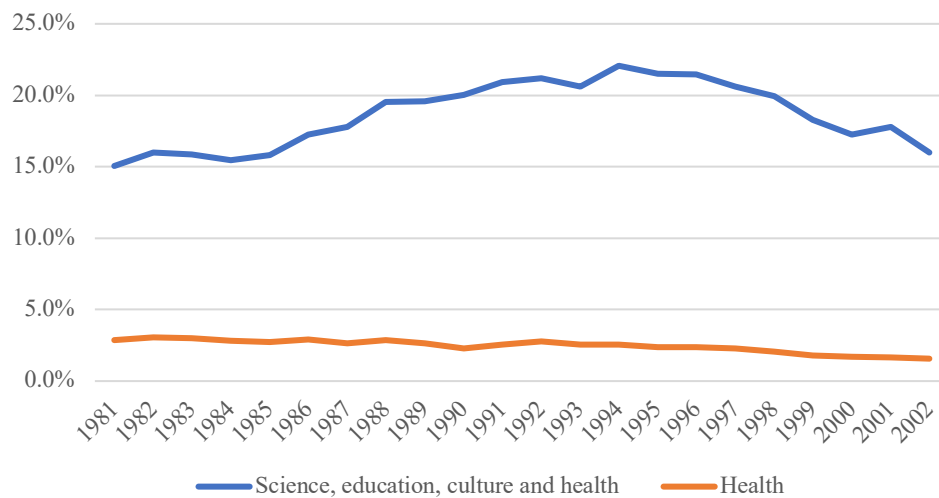


*Figure 3.6.* China's annual fiscal expenditure on science, education, culture and health as a percentage of total fiscal expenditure (1981–2002) (Ministry of Health, 2003).

The other key development in public financing was decentralisation. During the planned economy period, the central government collected all revenues and allocated them to local governments. Following the economic reforms, governments at various levels retained taxes and profits from the enterprises they owned directly. They were also responsible only for public services directly under their control (Wong, 1991). Under this new arrangement, the provision of public services depended very much on the prosperity of the local economy. While economically developed localities were able to finance generous provision of public services, poor areas usually had little to offer.

Alongside many major reforms during the 1990s, the government introduced a major fiscal reform in 1994. Among its key provisions were a major reform in taxes and



a new national tax system. This reform stemmed the fiscal decline. As shown in Figure 3.5, fiscal revenue as a percentage of GDP increased after 1995. The other major effect of the reforms was that fiscal revenue was significantly centralised. Between 1993 and 1994, central revenues as a percentage of total government revenues jumped from 22% to 56%. Since then, the central government has continued to collect around half of total government revenues (NBS, 2016). However, while the reform significantly changed revenue sharing, it did not adjust expenditure assignments accordingly. After the fiscal reform, local governments collected a significantly lower proportion of fiscal revenues but were still expected to shoulder heavy expenditure responsibilities. The central government did transfer a significant part of its revenues, but the redistribution was in favour of rich localities. These developments exacerbated the longstanding regional disparities (World Bank, 2002).

#### ***3.2.1.6 Implications of Economic Reforms on Social Services***

The fiscal decline in the 1980s had significant impacts on PSUs. In general, the government cut the budget to PSUs, forcing them to generate their own revenues to survive. Additionally, a contract responsibility system, in various forms, was introduced. Under this system, the government allocated a predetermined amount of funds, and PSUs could retain profits but needed to make up for their losses. To facilitate revenue generation activities, managers of research institutes, universities, schools, hospitals and other PSUs were granted a great deal of autonomy over operational decisions such as planning, budgeting, spending of self-generated revenues on investment and incentive schemes for employees, setting prices for services that were not regulated, and borrowing from banks. However, the power to appoint managers remains with government agencies, and few PSUs have been granted the full set of decision-making rights over hiring and firing. The remuneration system has also been only partially reformed. The general direction was to ‘grow out of’ the old system. Employees are still entitled to their fixed

salaries, based on qualifications, set by the government. The reform added bonus payments funded by self-generated revenue (World Bank, 2005b). In this way, it was hoped that the incentives could be improved, thereby increasing the productivity of PSUs.

The provision of social services was significantly influenced by the previously discussed economic reforms. In the countryside, the disbandment of the communes resulted in a welfare vacuum (Leung, 1999). Most townships and villages had little revenue to provide social services and maintain welfare programs. The only exception was prosperous coastal areas, where local governments were able to derive extra resources from their profitable TVEs (Croll, 1999).

In cities, for those people within the state and collective sectors, their employers continued to serve as the major provider of social services and welfare benefits until the mid-1990s. The major change was in financing. As previously discussed, before the economic reforms, collective welfare funds were treated as an addition to the wage bill. Funds were deducted before enterprises remitted their profits to the state. After the economic reforms, SOEs gained more autonomy and welfare expenditures were to be drawn from their own profits (Gu, 2001). However, as with the approach under the planned economy, the system remained cellular, with each enterprise covering its own welfare costs and little sharing among enterprises. The costs of social welfare increased significantly due to the increase in the number of beneficiaries, higher costs of medical and other services and ageing of the workforce (Liu & Hsiao, 1995). Between 1978 and the early 1990s, the overall costs of social insurance and welfare funds as a proportion of the total wage bill more than doubled, from 13.7% to 30% (NBS, 1996, p. 733). Faced with an increasingly competitive market and withdrawal of government subsidies, SOEs were significantly burdened by their welfare responsibilities. Partial or even non-payment of wages and benefits became frequent in the state and collective sectors (Croll, 1999). A

rapidly growing population in urban areas, who did not work for either the state or collective sector, were entitled to few welfare benefits.

After the mid-1990s, the restructuring of SOEs brought significant changes to the welfare arrangements in cities. As SOEs shrank, millions of their employees were laid off each year. SOEs were officially required to separate the provision of social services from their business activities. There was also a strong need to restructure the financing of health care, pensions and housing to ease the burden on SOEs and improve risk sharing. In response to this need, the government introduced a series of insurance schemes. In the 1990s, a basic pension system was set up, a basic health insurance program established and a housing provident fund introduced. These welfare initiatives share several important commonalities. Firstly, they were originally developed to address only the needs of SOE workers. Although other types of employers were encouraged to participate, these programs were unpopular due to their high costs (Li, 2013). The programs were all employment related and offered little protection to those who were unemployed (Cook, 2002; Chan, 2016). Also, such programs all had individual accounts, and the funds within them were reserved for individual use and not pooled. Essentially, these programs placed the financing responsibility on employers and individuals. In this way, the government avoided making significant contributions, which made sense given the broad context of fiscal decline.

The implications of the economic reforms were far-reaching. As an integral part of the social services system, the health sector was not exceptional. The broad themes of economic reforms all played out in the health sector. The overall logic of the economic reforms was applied to the health sector, with market principles introduced to health care facilities. The fiscal decentralisation and intergovernmental transfer system intensified the fiscal pressure at local levels: the local governments were generally short of funds to fully assume their responsibilities. As a result, the government funds for health care

tended to be limited. This was further compounded by the increasing inequality between different localities: the local governments in richer areas can usually spend much more on health care than their poorer counterparts (further discussed in Section 3.2.4.1).

That the government has taken an incremental approach to economic reforms also implies that many important governance features developed during the planned economy period have been maintained. The central government is still responsible for making policy intent, leaving the operationalisation/implementation of various policies to lower levels of government. Targets (and indicators) used for planned economy investments have remained a key method for policy development and implementation monitoring in the post-planned economy era.

### **3.2.2 Evolution of Health Policy since the Economic Reforms**

Since the economic reforms, major developments made during the Cultural Revolution were reversed. The Ministry of Health was rehabilitated, medical schools refocused on medical education and hospitals were restored. In the countryside, the collective economy collapsed due to the introduction of the household responsibility system. This meant that the CMS suddenly lost its financial base. Despite a brief period of support in the late 1970s, the Ministry of Health changed its stance in the early 1980s and labelled attempts to extend the CMS as a ‘leftist’ error and abandoned it (Duckett, 2011). The government did not make any serious attempt to replace the CMS with another type of financial protection (Liu, Hsiao, Li, Liu & Ren, 1995; Duckett, 2011) and the CMS fell apart. While the CMS had been implemented in about 90% of villages by the mid-1970s, this fell to around 5% in the late 1980s (Liu et al., 1995).

Commune health centres were transferred to the newly established township governments, renamed as township health centres, and remained under public ownership. However, there was much ambiguity in the meaning of this public ownership, which could be variably interpreted as all staff members of the health centre, all residents of the

township, or the township government (Xu, 2010). For barefoot doctors, those who attended additional training and passed the exam organised by the Ministry of Health were certified as village doctors. Those who failed the exam but remained working in rural health care were renamed health aides (China Health Yearbook Editorial Committee [CHYEC], 1985, p. 132). Many barefoot doctors abandoned health work for full-time farming, which became much more profitable after the economic reforms. Many of those who stayed in health care chose to work on a full-time basis (Hsiao, 1984). The government reintroduced the private sector (Ministry of Health, 1980). Within this context, many of the barefoot doctors who remained in the health profession set up their own private practices. By 1985, 42% of village health stations were run by individuals (Ministry of Health, 2003). For those facilities that remained publicly owned, ownership was also ambiguous. Whether public or private, village health stations were given very limited government subsidies.

Reflecting the pattern of economic reforms, the government adopted an incremental approach to introduce market elements into the planned health care system. The government continued to decide the number of beds and personnel for each class of hospitals and township health centres and reserved its authority over setting prices (Hsiao, 1995). However, the government changed its financing and payment method from gap budgeting to block grants. The amount of a block grant tended to be much less than actual operating costs (Ma, Lu & Quan, 2008). Meanwhile, the government introduced some autonomy for health care providers (Ministry of Health, 1985, 1992; State Council, 1989). Most significantly, health care providers were allowed to retain profits and their managers were given power over how to allocate the surplus, including what proportion should be spent on bonus payments and capital investment. A surplus became possible because, although services that involve intensive labour work were maintained by the government at below-cost levels, health care providers were allowed to mark up their drugs by 13-

15% above the wholesale price for western drugs, and 25% for Chinese herbal drugs. Also, the prices of services involving new equipment, such as CT, MRI, and multi-channel blood analysers, were set according to the average cost. Since low volume was used to calculate average cost, providers could make profits by increasing the use of new equipment (Hsiao, 1995). Using the surplus, managers could pay bonuses to their employees on top of their basic salaries, thereby motivating them to generate more revenue. Health managers were also given autonomy to hire new employees on job contracts and terminate contracts if their work was unsatisfactory. However, firing those employed on a permanent basis remained difficult (Tang & Meng, 2004). These attempts to reform the health care system, though of a piecemeal nature, resulted in a series of problems (discussed in Section 3.2.4). In the 1990s, serious debates arose around where health care reforms should go, and in particular, whether it is appropriate to apply the overall logic of the economic reforms to the health care system. The debates reflected not only technical policy questions but also views about the Ministry of Health, which is at times criticised for looking after the interests of hospitals, rather than the needs of the population.

As the SOE reforms proceeded, there were two major changes in the urban health care system after the mid-1990s. First, the Urban Employee Basic Medical Insurance (UEBMI) scheme was introduced to replace the GIS and LIS (Economic Restructuring Office of the State Council, Ministry of Finance, Ministry of Labour & Ministry of Health, 1994; State Council, 1998).<sup>41</sup> In contrast to the GIS and LIS, the UEBMI provided a more limited package of benefits and was financed by employer and employee contributions. It also involved risk pooling at higher levels. Second, under the reform to separate social functions from business activities, SOEs were required to close or transfer

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<sup>41</sup> The establishment of UEBMI was shaped by the debates around health care reforms. Most evidently, it was the Ministry of Labour and Social Security that took over the responsibility of UEBMI, which reflected a lack of faith in the Ministry of Health.

their hospitals and clinics, either to the government or private sector (State Economic and Trade Commission, State Education Commission, Ministry of Labour, Ministry of Finance & Ministry of Health, 1995; State Economic and Trade Commission et al., 2002).

In 1997, the government launched a very comprehensive round of health care reforms. Unlike the previous reforms, which had a relatively limited focus on power delegating and profit sharing, this round of reforms was more radical and aimed at separating the government from the management of health facilities (CCCPC & State Council, 1997). It took several years for the government to provide detailed instructions on how different reforms should be carried out. For urban health care facilities, the government proposed classifying facilities into for-profit and not-for-profit categories and administering them separately. It also determined to further expand the autonomy of public hospitals and separate the sales of pharmaceuticals from the operation of medical facilities (Economic Restructuring Office of the State Council et al., 2000). The government also proposed the establishment of community health facilities and reorganisation of the urban health delivery system into two tiers, with hospitals focusing on complex cases and community health facilities providing basic preventive and curative care (Ministry of Health et al., 1999, 2002).

For rural health care, the government proposed strengthening the network, further expanding the autonomy of the presidents of township health centres and improving the qualifications of rural health care professionals. While township health centres were administered by township governments in the 1980s and 1990s, it was decided in 2001 that township health centres should instead be administered by county governments (Economic Restructuring Office of the State Council et al., 2001). Perhaps the most important development was that the government decided to tilt its financial resources to rural areas. In 2002, the government promised to allocate most of the increase in government health expenditure to rural areas. The government also decided to provide

finances for the establishment of the New Rural Cooperative Medical System (NRCMS) (CCCPC & State Council, 2002).

### **3.2.3 The Health Care System in the 1980s and 1990s**

The health care network was expanded in the 1980s and 1990s. There were some major increases in hospitals and clinics (see Table 3.5). The number of township health centres decreased, but this was largely in line with the change in the number of townships. In 2002, the number of townships was 39,054, while the number of township health centres was 44,992 (Ministry of Health, 2003). This suggests that, on average, each township was covered by one township health centre. The number of village health stations underwent more fluctuations, but the percentage of villages having at least one village health station was stable, remaining at around 90% throughout the 1980s and 1990s (Ministry of Health, 2003, p. 15).

Hospitals and township health centres remained dominated by public ownership in the 1980s and 1990s. As shown in Table 3.5, in 2002, 82% of hospitals were state owned and another 8% were collectively owned, and 58% of township health centres were state owned and another 41% were collectively owned. In contrast, village health stations and clinics were significantly privatised. Around 42% of village health stations had been privatised in 1985, and this remained relatively stable thereafter. As for clinics, some were newly opened by private practitioners, while others were converted from those clinics previously part of SOEs. In 2002, 63% of the clinics were privately owned.

The government significantly cut its financial contributions to health care facilities. Between 1980 and 2000, government subsidies as a percentage of total hospital revenues dropped from 21.4% to 8.7% (Tang & Meng, 2004, p. 28). For township health centres, around 60% of the basic wages of their employees were financed by local governments, accounting for about 20% of the government's total budget. Village health stations could usually receive a lump sum payment from the government to carry out



public health work, but all other income had to be derived from user charges (Hsiao, 1995). Due to the fiscal developments discussed above, there was significant variation across localities. Poorer localities tended to cut their spending further.

Table 3.5

*Some statistics for the Chinese health care delivery system (1985–2002)*

| Health care facilities           | Number    |           |           |           |           |
|----------------------------------|-----------|-----------|-----------|-----------|-----------|
|                                  | 1985      | 1990      | 1995      | 2000      | 2002      |
| Hospitals                        | 11,955    | 14,377    | 15,663    | 16,318    | 17,844    |
| State ownership                  | -         | -         | -         | -         | 14,623    |
| Collective ownership             | -         | -         | -         | -         | 1,398     |
| Township health centres          | 47,387    | 47,749    | 51,797    | 49,229    | 44,992    |
| State ownership                  | -         | -         | -         | -         | 25,904    |
| Collective ownership             | -         | -         | -         | -         | 18,546    |
| Village health stations          | 777,674   | 803,956   | 804,352   | 709,458   | -         |
| Run by villages                  | 305,537   | 266,137   | 297,462   | 300,864   | -         |
| Run by individuals               | 323,904   | 381,844   | 283,431   | 255,179   | -         |
| Clinics <sup>a</sup>             | 126,604   | 129,332   | 104,406   | 240,934   | 219,907   |
| Private ownership                | -         | -         | -         | -         | 138,240   |
| Health care workers              | Number    |           |           |           |           |
|                                  | 1985      | 1990      | 1995      | 2000      | 2002      |
| (Assistant) doctors <sup>b</sup> | 1,413,281 | 1,763,086 | 1,917,772 | 2,075,843 | 1,843,995 |
| Nurses <sup>c</sup>              | 636,974   | 974,541   | 1,125,661 | 1,266,838 | 1,246,545 |
| Village doctors                  | 643,022   | 776,859   | 955,933   | 1,019,845 | -         |
| Rural health aides               | 650,072   | 454,651   | 375,084   | 299,512   | -         |

*Note.* <sup>a</sup> The increase in the number of clinics in 2000 is due to the inclusion of private clinics after 1996. <sup>b</sup> From 2002, the number of (assistant) doctors refers to (assistant) practising doctors.

<sup>c</sup> From 2002, the number of nurses refers to registered nurses.

Source: Ministry of Health (2003).

In terms of financial protection, the CMS almost collapsed by the mid-1980s and its coverage rate remained low thereafter.<sup>42</sup> In 1993, 1998 and 2003, the coverage rate of

<sup>42</sup> In 1989, the government launched a nationwide ‘rural primary health’ program with the intention of encouraging the rebuilding and improvement of the CMS, and the coverage rate rebounded slightly to 7% in 1990 (Carrin et al., 1999; Gu & Tang, 1995, p. 185). Xia (2003, pp. 113–114) documents some of these government efforts in detail.

the CMS in rural areas was 9.8%, 6.6% and 9.5% respectively (see Figure 3.7). As the state sector expanded during the 1980s and early 1990s (see Table 3.4), the coverage of the GIS and LIS increased. Between 1980 and 1990, the number of GIS and LIS beneficiaries (including dependants) almost doubled, from 15.98 and 117.79 million to 26.84 and 203.16 million respectively (Gu & Tang, 1995, p. 184).<sup>43</sup> In 1993, the majority of people living in urban areas were covered by either the GIS or LIS (see Figure 3.8). From the outset of the SOE reforms and introduction of the UEBMI, the coverage rates of the GIS and LIS started to drop. While the GIS and LIS covered 18% and 35% of the urban population respectively in 1993, this decreased to 4% and 5% respectively in 2003. In 2003, the UEBMI, five years after its full implementation, covered 30% of the urban population (see Figure 3.8).<sup>44</sup>

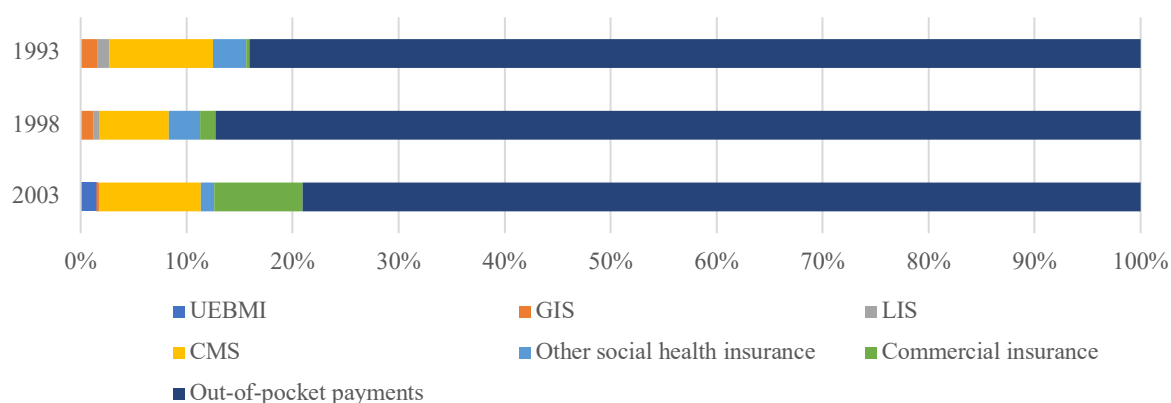


*Figure 3.7. Rural health insurance coverage (% of total population) (1993, 1998 and 2003) (Centre for Health Statistics and Information of the Ministry of Health, 2004). UEBMI = Urban Employee Basic Medical Insurance, GIS = Government Insurance Scheme, LIS = Labour Insurance Scheme, CMS = Cooperative Medical Scheme.*

<sup>43</sup> According to Liu and Hsiao (1995), when excluding the number of dependents, the number of beneficiaries of the GIS and LIS together was 84.26 million in 1978 and 153.75 million in 1989.

<sup>44</sup> The UEBMI was intended to be fully implemented in all urban work units. However, non-compliance was common during the first few years after the government's mandate (Duckett, 2001).

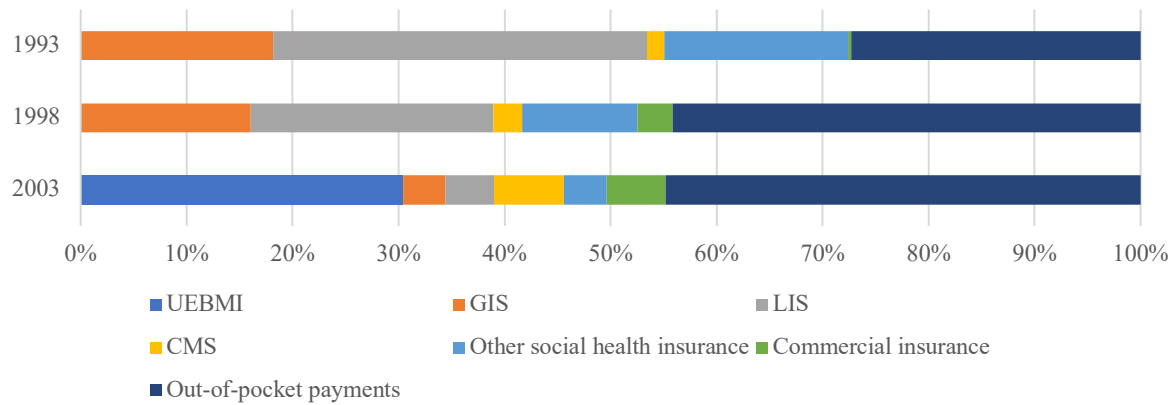


*Figure 3.8.* Urban health insurance coverage (% of total population) (1993, 1998 and 2003) (Centre for Health Statistics and Information of the Ministry of Health, 2004). UEBMI = Urban Employee Basic Medical Insurance, GIS = Government Insurance Scheme, LIS = Labour Insurance Scheme, CMS = Cooperative Medical Scheme.

### 3.2.4 Achievements and Problems

The Chinese health care system retained some of its major strengths in the 1980s and 1990s. Geographical barriers remained modest for all but a minority living in mountainous or remote rural areas. The government made some public health services widely available and kept subsidising and minimising financial barriers to these services. The cost of routine and basic outpatient health services was kept low so that most non-poor households could afford them (World Bank, 1997c).

Some major health outcomes improved, but the evidence suggests that, given its outstanding economic performance, China could have achieved better improvements. Between 1981 and 2000, life expectancy increased from 67.9 years to 71.4 years (NHFPC, 2016). However, while China was a positive outlier in the world in the 1970s, with longer life expectancy than expected based on the level of economic development, it became unexceptional by the 1990s (Tang et al., 2008). Using cross-country regressions, Wagstaff, Lindelow, Wang and Zhang (2009) concluded that although China was an overperformer given its under-five mortality and per capita income in the 1960s and 1970s, it became an underperformer in the 1980s and 1990s. The same study also

revealed that China reduced tuberculosis mortality at a slower rate than other countries. In other aspects of health outcomes, the trends were more worrisome. There was a resurgence of some infectious diseases, particularly those that are sexually transmitted, such as gonorrhoea and syphilis, which had almost been eliminated in the 1970s (Ma et al., 2008; Wang et al., 2008). The overall communicable disease mortality rose in the early 2000s. This reflected, in part, the arrival of HIV/AIDS and the SARS outbreak, but also the growth of hydrophobia and viral hepatitis (Wagstaff, Lindelow et al., 2009).

### 3.2.4.1 Worsening Affordability

Despite some fluctuations, total health expenditure as a percentage of GDP showed a considerable increase, from 3% in 1978 to 4.6% in 2000 (see Figure 3.9). As previously discussed, the government cut its health expenditure due to financial constraints, and insurance coverage dropped to very low levels. These together meant that the financing responsibility was transferred to users. Reflecting this pattern, out-of-pocket payments as a percentage of total health expenditure jumped from 20% in 1978 to 59% in 2000.

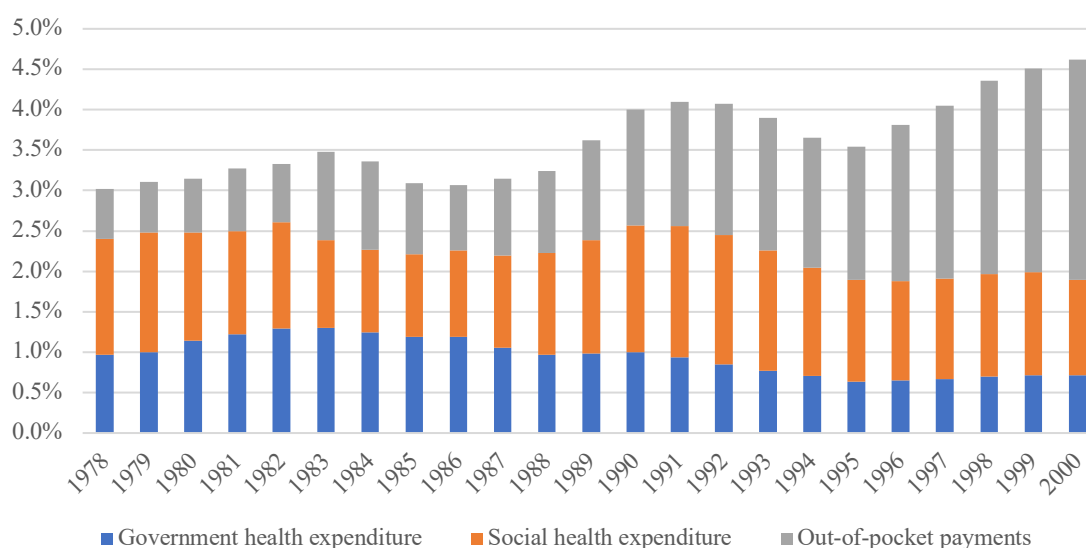


*Figure 3.9.* Three major components of total health care expenditure in China (as % of gross domestic product) (1978–2000) (NHFPC, 2016).

In response to the rapidly increasing out-of-pocket costs, many people started to suppress their demand for health care. The results of the National Health Services Surveys (NHSSs) conducted in 1993, 1998 and 2003 are shown in Table 3.6. The percentage of patients who sought care when becoming sick dropped from 63.6% in 1993 to 61.5% in 1998, then to 51.1% in 2003. More people chose self-treatment. Among those who neither sought care nor pursued self-treatment, an increasing percentage did so for financial reasons. Unfortunately, due to the survey design, there was no question asking why people chose self-treatment. It is likely that some made this choice due to financial concerns. Between 1993 and 2003, the percentage of patients who declined hospitalisation, despite their doctor's advice, dropped slightly from 35.9% to 29.6%. However, an increasing proportion of patients declined hospitalisation for financial reasons. Among those who were hospitalised, many required early discharge because they found the services beyond their financial capacity (Centre for Health Statistics and Information of the Ministry of Health, 2004).

Table 3.6

*Suppressed demand for financial reasons (1993, 1998 and 2003)*

|                                                                         | 1993                          | 1998                          | 2003 |
|-------------------------------------------------------------------------|-------------------------------|-------------------------------|------|
| % of patients who seek care when sick                                   | 63.6                          | 61.5                          | 51.1 |
| % of patients who choose self-treatment                                 | 20.8                          | 28.4                          | 35.7 |
| % of patients who forgo treatment                                       | 15.6                          | 10.1                          | 13.1 |
| % of patients who cited financial reasons for forgoing treatment        | 33.3                          | 35.8                          | 38.2 |
| % of patients who decline hospitalisation despite doctor advice         | 35.9                          | 32.3                          | 29.6 |
| % of patients who cited financial reasons for declining hospitalisation | 39.8 (urban),<br>58.8 (rural) | 63.1 (urban),<br>65.3 (rural) | 70.0 |

Source: Centre for Health Statistics and Information of the Ministry of Health (1994, 1999, 2004).

These results were corroborated by independently conducted research. For example, one survey in three representative provinces in 2001 showed that half of the respondents had experienced at least one occasion in the past 12 months when they did not see a doctor even though they felt the need to see one. Of these, 49% cited cost as the main reason (Lim, Yang, Zhang, Feng & Zhou, 2004). Clearly, health care became increasingly unaffordable for many.

#### ***3.2.4.2 Inequality in Financing, Access to Services and Health Outcomes***

In the World Health Report 2000, China was ranked 188 out of 191 countries in terms of the fairness of financing (WHO, 2000).<sup>45</sup> Most evidently, the poor were less likely to be protected against financial risks. Those likely to lack any health insurance cover included rural residents, children, the unemployed, the temporarily employed and migrant workers—people who tended to have a low income (Ma et al., 2008). Government health expenditure was pro-rich. As previously discussed, the financing system was significantly decentralised in the 1980s and, consequently, local governments had to cover social expenditure in their own jurisdiction. Thus, government health expenditure was proportional to the local economy. Although the 1994 fiscal reform recentralised revenues, redistribution was in favour of rich localities and disparities between localities were exacerbated. In the early 2000s, the disparity in government health expenditure was huge. For example, government health expenditure in Gansu, one of the poorest provinces, amounted to just 46 yuan per person 2003, while government health expenditure in Shanghai was 218 yuan per person (Wagstaff, Lindelow et al., 2009). On the demand side, the bulk of government subsidies were for the GIS and LIS, which disproportionately benefited people who were employed and had more economic resources. On the supply side, most fiscal subsidies were allocated to facilities at higher

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<sup>45</sup> This report was very influential in China. Such a low ranking was shocking to Chinese leaders. The report was prepared by the WHO, which had promoted China's health care system as a model for emulation in the 1970s and 1980s.

levels, which disproportionately served the better-off. In 2002, municipal hospitals absorbed 50% of supply-side subsidies, county hospitals absorbed 9% and township health centres received only 7% (Wagstaff, Yip, Lindelow & Hsiao, 2009).

The inequality of insurance coverage and government subsidies further compounded the already high economic inequality previously discussed. In 2000, average health spending in urban areas was 647.8 yuan per person, more than three times the average of 211.9 yuan per person in rural areas. This made it very difficult for rural health care providers to make profits. As a result, many rural doctors moved to urban cities and rural hospitals could not afford to renovate their facilities (Ma et al., 2008). Similarly, there was serious inequality across regions. In 2002, the number of health professionals per 1,000 people in Beijing reached 9.58, including 4.13 (assistant) doctors and 3.40 nurses per 1,000 people. In contrast, in Guizhou there were only 2.06 health professionals per 1,000 people, including 0.98 (assistant) doctors and 0.56 nurses per 1,000 people. Similarly, while Beijing had 6.31 hospital beds for every 1,000 people, Guizhou had only 1.50 (Ministry of Health, 2003). Such a huge difference in resources meant very unequal access to health care services.

Given these inequalities, it is unsurprising to observe unequal health outcomes. While life expectancy in Shanghai reached 78.1 years in 2000, life expectancy in Tibet was 64.6 years, and life expectancy in Yunnan was 65.5 years (NHFPC, 2016). The under-five mortality rate in 2002 was 39 per 1,000 in rural areas, compared to 14 per 1,000 in urban areas (Blumenthal & Hsiao, 2005). In 2003, while the maternal mortality rate among the poorest fifth of the population was 73 per 10,000 live births, the rate in the richest fifth was only 17 per 10,000 live births (Wagstaff, Lindelow et al., 2009). According to Zhang and Kanbur (2005), the overall, within-rural and within-urban inequalities in infant mortality rate all increased between 1981 and 2000. The infant

mortality in rural areas was significantly higher than that in cities, and the gap widened from 1.5 in 1981 to 2.1 in 2000.

#### ***3.2.4.3 Problematic Incentives and Inefficiencies***

As previously discussed, prices were distorted. Most of the medical services available before the economic reforms were kept at prices significantly lower than costs, while health care providers could derive profits from services involving newly introduced equipment and drugs. According to one study in the mid-1990s, the recovery rate for hospital registration procedure was only 16%, for hospital bed and board it was only 25%, for surgical operations it was about 30% and for general examinations and treatments it was 40%. In only 4% of services (especially high-tech services such as CT scanning and X-ray examination) were fees set higher than their costs (Liu, Liu & Chen, 2000).

Given the declining government budget and right to claim residual profits, health care providers were given strong incentives to apply high-tech services and prescribe drugs. In the late 1990s, China had more MRI scanners per million people than Thailand or Mexico, and around two-and-a-half times as many as would be expected on the basis of its per capita income (Wagstaff, Lindelow et al., 2009). Between 1980 and 2000, the sale of drugs as a percentage of hospital income increased from 37.7% to 47.1% (Tang & Meng, 2004, p. 28). At the aggregate level, pharmaceuticals accounted for 44.4% of total health expenditure in 2001 (CHYEC, 2003, p. 170). Over-prescription became common. One study in Shandong province found that more than one-third of drug expenditure was unnecessary based on the judgement of panel doctors according to clinical guidelines (Liu & Mills, 1999).

Interconnection and cooperation among different rural health facilities significantly weakened. During the planned economy period, brigade health stations, township health centres and county hospitals were closely integrated. County hospitals and township health centres provided regular technical assistance and supervision to



lower-level organisations. There was also a working referral system. After the collapse of the CMS, rural health care facilities became independent institutions and competed for patients to increase revenues (Liu et al., 1995). Given more freedom, wealthier people started to bypass primary care facilities and sought care directly at hospitals (Hesketh & Zhu, 1997b; Blumenthal & Hsiao, 2005). Lower-level facilities were increasingly underused, while hospitals at higher levels became swamped. In 2000, the occupancy of beds in hospitals affiliated with the Ministry of Health was 95.5%, compared to 33.2% in township health centres (Ministry of Health, 2003).

### **3.3 Summary**

This chapter reviewed the history of China's health policy and system before the early 2000s. Between 1949 and 1977, China was a planned economy with very limited resources. Social services were provided through PSUs buttressed by vast numbers of social service providers within the rural commune system and urban work unit system. These services were financed by a mix of government subsidies, collective welfare funds and user charges. Health care was embedded in the planned system. Despite this basic framework, however, there were strong policy oscillations, resulting in several rounds of restructuring. It was only after the Cultural Revolution that the CMS, barefoot doctors and brigade health stations were fully developed. In the 1970s, the Chinese health care system received international recognition for its achievement in improving health outcomes and making a set of basic services universally available to the population, at a low level of economic development.

Since the 1978 economic reforms, the government followed an incremental approach to introducing market elements into various parts of the planned system. The economy grew, but there was a deep fiscal decline in the 1980s and early 1990s, impeding the government's capacity to fund social services. This was compounded by the collapse of the commune system at the beginning of the 1980s, which reversed developments in

rural health care during the Cultural Revolution. The CMS collapsed, many barefoot doctors left the health profession and a significant percentage of brigade health stations were privatised. The government cut its budget and introduced some autonomy for hospitals and township health centres, most importantly, allowing them to claim residual profits. In the 1990s, SOE reforms were accelerated, with their social functions separated from business activities. The government introduced the UEBMI and required SOEs to restructure their hospitals and clinics. In 1997, the government finally launched thorough reforms to make the health care system more compatible with the changes introduced by the economic reforms.

In the 1980s and 1990s, the health care system maintained its network and increased resources. The domination of public ownership also continued, and privatisation was mainly limited to village health stations and clinics. While China had a modest increase in life expectancy and the system managed to provide a basic set of services at low prices to the population, many problems emerged. The increase in total health expenditure, cuts to government subsidies and contraction of health insurance significantly privatised the financing of health care. A growing percentage of people suppressed their demand for health care by forgoing treatment and declining hospitalisation despite doctor advice. The rural population and urban poor were disproportionately exposed to financial risks and the distribution of health care resources and outcomes became increasingly unequal. Problematic incentives gave rise to over-prescription of drugs and diagnostic tests. The health care system also disintegrated. An increasing percentage of patients bypassed primary care facilities and sought care at more expensive hospitals.

## **Chapter 4. Research Design**

This chapter outlines the research design, specifying the research questions and introducing the analytical framework. This framework is derived from the literature on the strength of primary care (discussed in Chapter 2) and China's health policy and system (discussed in Chapter 3). This chapter also details the research methods with particular attention paid to the context within which the data were generated. The research design and methods have been particularly shaped by limitations in the availability of data and constraints on fieldwork-based qualitative research in China.

### **4.1 Research Questions**

This study aims to evaluate the Chinese government's role in strengthening primary care between 2003 and 2015. The thesis is guided in this undertaking by two research questions:

1. What has the Chinese government done to strengthen primary care between 2003 and 2015?
2. What were the outcomes of these efforts?

### **4.2 Analytical Framework**

This thesis answers the research questions by focusing on the government (see Figure 4.1). The starting point is the government's intentions, followed by the subsequent interventions and intervention outcomes. These different components are all discussed in the Chinese context.

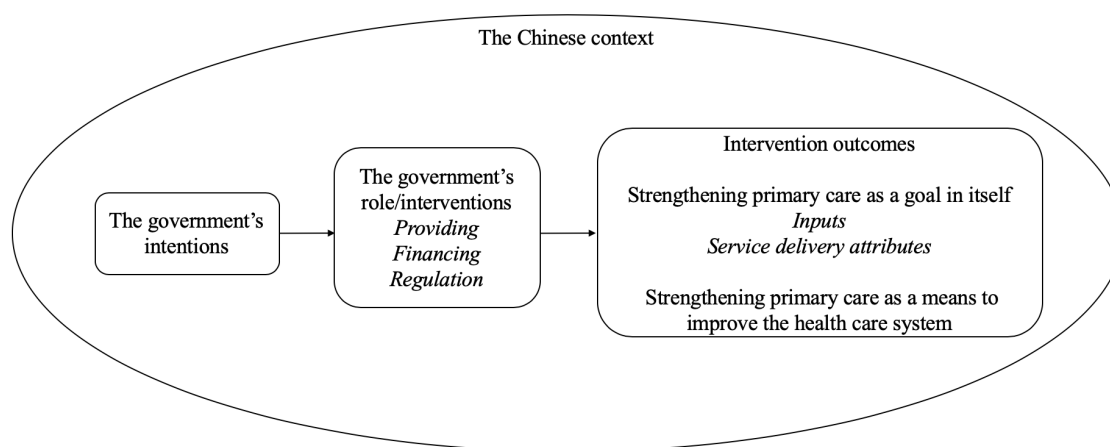


Figure 4.1. Analytical framework.

### 4.2.1 Understanding the Government's Role

To understand the Chinese government's role in primary care, this thesis adopts a framework adapted from Zhang, Wong and Mountfield (2005) and Wong and Zhao (2017). The original framework was developed to capture the role of the Chinese government in service delivery for a World Bank study on China's PSU reforms (World Bank, 2005b). It is highly relevant, because the present thesis also explores the Chinese government's role in service delivery. The main difference is that this thesis examines the primary care sector, which falls partly under PSUs.<sup>46</sup>

The government plays its role by choosing whether to intervene in a certain sector. In most countries, the government intervenes in health care. Once having decided to intervene, the government chooses the means of intervention. Broadly, there are three basic options: regulation, provision and financing. The government may employ any one of these and often a combination.

Governments adopt the regulation approach by setting and enforcing necessary rules to govern the market transactions between providers and consumers. Government regulation can take a wide range of forms. First, entry can be regulated to cope with

<sup>46</sup> Township and community health centres are PSUs. However, health stations and clinics are usually not counted as PSUs. This is because, in the past, health stations and clinics were usually part of a rural brigade or urban work unit and, thus, not separate units themselves (see Chapter 3).

potential negative consequences caused by unqualified providers (e.g., licensing for medical providers and registration of physicians). Second, the price of services can be regulated to address the efficiency loss of natural monopoly and protect consumers disadvantaged by asymmetric information. This is frequently used in the health care sector. For example, one most important measure taken by the Chinese government in health reforms has been to change the profit margins allowed for the sale of pharmaceuticals at medical facilities. Third, government regulation can also focus on quality of services. Many services, including medical services, are characterised by difficulties for consumers in assessing their qualities due to asymmetric information. Some governments may choose to develop quality management systems to ensure the quality standard of services.

In providing services directly, a government mobilises government ownership which can take the form of a variety of governance structures. In essence, the governance structure of a government-owned service provider is about the principle–agent relationship between the government and the managers and staff of service providers. Different governance structures vary in their degrees of autonomy and accountability. At one extreme, core government departments have almost no degree of autonomy, and at the other extreme, SOEs enjoy full legal autonomy. In between the two extremes are government-owned public service agencies which vary greatly across countries in terms of governance structure.

Government provision is not necessarily coupled with financing. In other words, it is always a government's choice to engage in the provision or financing of a service, and sometimes both. When the government chooses to finance a service, the fundamental difference is that the cost of the service is shifted from individual users to all taxpayers. Therefore, financing is the most commonly adopted means to improve equity.

Financing can take different forms, the broadest categories of which are subsidising the supply side or demand side. In the health care sector, the former means the financing of medical facilities directly, thereby lowering the prices of services or providing free services to consumers. The latter is commonly observed in the use of subsidised insurance for targeted groups of the population, most often the poor or severely ill patients. In general, the supply-side approach is administratively straightforward, but often involves an overexpansion of services and waste. This is because there is a lack of incentives for suppliers to control the size of their businesses and provide services to those in most need. There has been a universal trend in the health care sector to move from supply-side to demand-side subsidies.

#### **4.2.2 Measuring Intervention Outcomes**

As the Chinese government's discourse and international literature suggest (see Chapters 1 and 2), the goal of strengthening primary care is complicated. Generally speaking, it has two dimensions. First, strengthening primary care is a goal in itself, because the great majority of the population need primary care from time to time, the bulk of health care is delivered through primary care facilities and high-quality primary care is desirable to meet this demand. Second, strengthening primary care is pursued as a means to improve the broad health care system. The exact purpose can vary significantly across different contexts.

##### ***4.2.2.1 Strengthening Primary Care as a Goal in Itself***

In the literature on public health, the strength of primary care has been assessed in relation to two domains, structural dimensions and process features (see Chapter 2). This thesis follows this approach by exploring the strength of China's primary care from the perspective of these two domains.

Structures include all of the factors that affect the context in which care is delivered. They refer to the resources needed to provide services including material

resources such as facilities and equipment; human resources such as the number, variety and qualifications of professional and support personnel; and organisational characteristics such as staff training and payment mechanisms (Donabedian, 2003). In some ways, structural components are the major determinant of the quality of care that health care providers are able to offer. Structures are frequently an important dimension in the assessment of primary care systems, because the attributes of structures are more readily observable and measurable.

Processes are the activities that constitute health care including diagnosis, treatment, rehabilitation, prevention and patient education. These activities are usually carried out by professional personnel, but also require contributions from patients and their families (Donabedian, 2003). In primary care, processes are frequently assessed based on how well the four ideal functions (first contact, comprehensiveness, longitudinal care and coordination) have been fulfilled. In contrast to structures, processes are the outputs of health care services. Therefore, they provide a more direct reflection of the quality of care.

To facilitate an easier understanding, ‘structural dimensions’ will be replaced with ‘inputs’ and ‘process features’ will be replaced with ‘service delivery attributes’ in this thesis.

#### ***4.2.2.2 Strengthening Primary Care as a Means to Improve the Health Care System in the Chinese Context***

The strengthening of primary care is not always pursued in its own right. Primary care has been justified by its potential to reduce avoidable hospital admissions, lower costs, enhance the quality of health care and improve population health outcomes. However, as discussed in Section 2.3.2, the evidence base for these statements is still far from perfectly solid, and such claims depend on how primary care is operationalised, the context and how primary care is strengthened.

In developed countries, strengthening primary care has been pursued as a strategy in response to population ageing, increasing prevalence of chronic diseases, changing demands of the population and strong pressures to contain health care expenditures (see Chapter 2). In eastern European and former Soviet countries, strengthening primary care has been part of the transition from a planned to market economy. In these countries, the strengthening of primary care was particularly needed, because the Semashko model was overwhelmingly oriented towards hospitals. There was no equivalent of GPs and neighbourhood doctors provided little curative care. The model relied overwhelmingly on hospitals and specialisation, which is inefficient and wasteful compared to other models. Strengthening primary care has been adopted as a major strategy to reduce utilisation of hospital and specialist services, increase the efficiency of health care services, provide better access for the population and improve the equity of health care provision (see Chapter 2). As shown, the purpose is highly dependent on context and, broadly speaking, strengthening primary care has been adopted as a means to improve the health care system.

In China, the transition from a planned to market economy gave rise to a series of problems in the health care system. The affordability of health care worsened; the inequality of financing, access to services and outcomes was intensified; and early economic reforms provided problematic incentives to health providers resulting in inefficiencies (see Chapter 3). Building on this knowledge, this thesis examines the context since the early 2000s, what the Chinese government intends to achieve through strengthening primary care, and to what extent the strengthening of primary care has helped to achieve these broader goals.



Since the assessment criteria involve several confusing concepts. Their use in this thesis requires some clarification. Equality/equity in health care has many dimensions.<sup>47</sup> Several common principles include equality of utilisation, distribution according to need, equality of access and equality of health. There is still a debate as to which definitions of equity and efficiency are the most appropriate (Culyer & Wagstaff, 1993; Wagstaff & van Doorslaer, 2000). Efficiency measures whether health care resources ‘are being used to get the best value for money’ (Palmer & Torgerson, 1999). Similar to equality/equity, efficiency also has multiple definitions. Conceptually, the most commonly discussed three are technical, productive and allocative.<sup>48</sup> In the literature on the Chinese health care system, various types of inequality and inefficiency have been identified. The distribution of health care resources and the allocation of government health expenditure are unequal; and access to health care and health outcomes are also unequal. Two types of inefficiency that have received the most academic attention are the overuse of drugs and high-tech services and underuse of lower-level facilities (Section 2.4.2.3).

Not all of the above dimensions will be analysed in this study. As elaborated earlier, the starting point of the analytical framework is the Chinese government’s intention. Section 5.3.3.2 lists the channels through which the government envisions that the strengthening of primary care contributes to improving the affordability, equality and efficiency of the health care system. The thesis will focus on these channels in later analysis (Section 8.3).

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<sup>47</sup> Some suggest differentiating the two terms, arguing that equality implies equal shares of something while equity emphasises a ‘fair’ or ‘just’ distribution (Rice, 2003). In this study, the two terms are used interchangeably.

<sup>48</sup> According to Palmer and Torgerson (1999, p. 1136), ‘technical efficiency refers to the physical relation between resources (capital and labour) and health outcome’; productive efficiency ‘refers to the maximisation of health outcome for a given cost, or the minimisation of cost for a given outcome; allocative efficiency is achieved when resources are allocated so as to maximise the welfare of the community’.

### 4.3 Research Methods

This thesis is a qualitative study. Per Flick (2014, p. 12), ‘the main reason for using qualitative research should be that a research question *requires* the use of this sort of approach’. In this thesis, the research questions query the effects of the government’s role on primary care outcomes in China. This is a complex set of relationships. The government has intervened in a variety of ways in different aspects of primary care, and the effectiveness of these interventions has been influenced by many factors. Exploring and describing such a complex set of relationships require the consideration of many factors that cannot always be quantified. More importantly, the purpose of this thesis is not to quantify the effects of the government’s role on primary care, but to shed light on the processes through which the government’s interventions have led to different outcomes in primary care. Consequently, a qualitative research design was considered more appropriate.

One of the common motives for conducting qualitative research is the ability to study events within their real-world context (Yin, 2016). This was also a major motive for this thesis. As previously discussed, governments in different countries become involved in primary care in different ways, with the different intervention approaches and outcomes depending very much on the respective historical, political, institutional, social and cultural contexts. Qualitative research explicitly embraces contextual conditions and encourages the interpretation of data within their specific context. For this reason, a qualitative research design is suitable for this thesis.

This thesis employed a wide range of data collection methods. Secondary research included data from official documents, yearbooks, reports, journal articles and news reports. In addition to secondary research, I conducted fieldwork in China, including interviewing government officials, directors of primary care facilities and health policy experts. I also conducted observations through site visits to primary care facilities and

attending events involving government officials. The research methods and types of data collected are elaborated below.

The purpose of collecting data from such a diverse mix of sources was to construct a relatively unbiased and comprehensive account of the government's role in primary care. Collecting data from as many sources as possible was needed, because any single source of data was insufficient. The fieldwork was undertaken under many constraints. However, secondary data from any single source is usually incomplete in terms of contents. Data from different methods and sources were thus able to complement each other. Another reason for using data from different sources was to enable data triangulation, thereby increasing data credibility (see Section 4.3.3).

#### **4.3.1 Secondary Research**

The aim of conducting secondary research was to collect data on what the Chinese government did to strengthen primary care between 2003 and 2015 and the intervention outcomes.

##### ***4.3.1.1 Transparency Reforms***

This study required a great deal of information on the Chinese government. Such information is not always available or accessible in China. Even collecting policy documents is not a simple task. In China, policy documents are produced mainly for higher-level governments to provide instructions for lower-level governments. They are more for internal use and not all are publicly available (Thogersen, 2006).

This culture of government secrecy has only recently been eased. A milestone development is the *Open Government Information (OGI) Regulations*. Effective in 2008, These regulations provide the legal basis for China's first nationwide government information disclosure system. The central government has continued to reaffirm a commitment to gradually expanding the scope of government transparency (Horsley, 2007, 2016). The *OGI Regulations* Article 10(9) states health care as one of the key areas

in which the government should disclose its policies, measures and means of implementation. Consequently, the availability of Chinese government information on health care has increased tremendously.

The most important channel through which the government discloses information is its official websites.<sup>49</sup> Under the central government's push, the number of government official websites has proliferated in the past decade.<sup>50</sup> The central government has clarified that official websites should be the first platform for disclosing information and that when disclosing major policies related to economic and social development (including health care), the government should explain its reasoning. This can be in the form of additional explanations provided by policymakers, professional institutes or interviews with experts (General Office of the State Council, 2014). These developments have made locating and understanding policy documents easier. In recent years, policy documents can usually be found on official government websites.

However, the enforcement of the OGI Regulations does not mean that transparency has been achieved. As with other reforms, transparency reforms have encountered many hurdles. The culture of government secrecy is still difficult to navigate and compliance with regulations has been uneven. The general pattern is that compliance is better at the top, but more problematic at the lower levels of government (General Office of the State Council, 2015a). As a result, it is usually easier to locate policy documents at the central level. Local governments do not always disclose their policy documents consistently.

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<sup>49</sup> The internet penetration rate in China has increased tremendously in the past decade. In 2005, there were only 111 million internet users, a penetration rate of 8.5% (China Internet Network Information Center, 2015). By the end of 2015, the number of internet users had grown to 688 million, a penetration rate of 50.3% (China Internet Network Information Center, 2017).

<sup>50</sup> In 2015, the State Council conducted the first national census on the number of government websites. It was found that, as of November 2015, there are 84,094 government websites (General Office of the State Council, 2015a). After the census, the government's emphasis shifted from the quantity of websites to the quality of content. As a result, a large number of 'zombie websites' have been closed. As of June 2018, there are 22,206 official government websites (General Office of the State Council, 2018).

#### 4.3.1.2 Types of Data

This study collected longitudinal data (2003–2015) from two sets of government documents. The first set is the *China Health Yearbook*. The Ministry of Health started to publish the *China Health Yearbook* annually in 1983.<sup>51</sup> These yearbooks document the government's health work in relation to key aspects. Each volume includes significant speeches from the leaders of the Ministry of Health, major policies and regulations, progress reports on health work in different aspects of health care including primary care, and also brief accounts of government health work in different localities (mainly at the provincial level). By December 2017, more than 30 volumes had been published. This series, particularly the volumes published between 2003 and 2015, were a major source of data for this thesis, providing credible and relatively comprehensive information on what the government has done within primary care.

The second set of documents is the *China Health Statistical Yearbook*. The Ministry of Health started to publish the *China Health Statistical Yearbook* annually in 2003.<sup>52</sup> These statistical yearbooks provide national data on health facilities, personnel, equipment, health care expenditures, outpatient and inpatient activities and other health-related statistics. By December 2017, 15 volumes had been published. This series was also used as a major data source, providing quantitative data.

Despite their usefulness, these two sets of government documents alone were insufficient for the investigation of government interventions in primary care, as they lack most policy documents—those published in the *China Health Yearbook* series are restricted to the most important policy documents (e.g., the guiding opinions for the

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<sup>51</sup> The Ministry of Health was replaced by the NHFPC in March 2013. The *China Health Yearbook* was renamed the *China Health and Family Planning Yearbook* in 2014.

<sup>52</sup> This is not to say that the Ministry of Health only started to publish health statistics in 2003. The *China Health Yearbook* series also provide some statistics and data. The two series have similar names, but their contents are different. The *China Health Statistical Yearbook* series only present statistics and the data are more comprehensive than those available in the *China Health Yearbook* series. The *China Health Statistical Yearbook* was renamed the *China Statistical Yearbook of Health and Family Planning* in 2013.

development of community health services in 2006). This is useful in the sense that they help identify the work priorities of the government. However, to understand in detail what the government had done within primary care, there was a need to also collect supporting policy documents. This study benefited significantly from the previously discussed transparency reforms. Many policy documents were collected directly from official government websites. These policy documents provided detailed information on how the government translated its goals into specific targets and intended to meet different targets.

In addition to the three types of document described above, this study also used a number of documents generated from surveys. One of these, for example, is the NHSS. This survey is conducted by the Ministry of Health every five years and provides valuable information on residents' use of medical services.<sup>53</sup> The government has also commissioned its affiliated research institute, the National Health Development Research Center (NHDRC), or external research institutes to evaluate the effectiveness of health policies on an ad hoc basis. To monitor the progress of health care reforms, the government collects data on an ongoing basis from selected localities or facilities. However, these data are generally for internal use and not publicly available. Some government-commissioned projects present some of these internally collected data. These papers can therefore provide some helpful complementary information. For example, in 2015, the NHDRC published a report on the development of primary care between 2009 and 2014. This report presents the salary of employees of public hospitals and health centres, which cannot be found in other publicly available sources.

Apart from government-commissioned projects, various academic or research institutions also investigate the performance of China's primary care independently. These studies have conducted surveys with households, patients and primary care providers to describe the current situation and identify problems in the delivery of

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<sup>53</sup> This series of surveys is the most authoritative health service survey in China. By December 2017, five surveys had been carried out (in 1993, 1998, 2003, 2008 and 2013).

services. Some studies have evaluated the effects of particular health policies on the behaviours of primary care facilities in selected localities. Statistics and findings yielded from these studies offer a good source of data for this thesis to reach an understanding of the outcomes of government interventions.

Lastly, data from news reports were also used. Materials of this type provided contextual and complementary information on how policies were implemented and the consequences of government interventions. Some also involved interviews with government officials, primary care providers, patients or health policy experts. These reports sometimes provide valuable insights and add to the information gained from government documents and scholarly publications.

#### **4.3.2 Fieldwork in China**

In addition to secondary research, I conducted fieldwork in China between October 2016 and March 2017. The aims of the fieldwork included collecting primary data from the field to supplement the secondary data and studying the contexts of the data collected to verify and make sense of the data.

##### ***4.3.2.1 Fieldwork Context***

My fieldwork was conducted in four provinces in China: Beijing, Sichuan, Heilongjiang and Fujian (see Figure 4.2). During most of the time, I stayed in Beijing, at the China Center for Health Economic Research of Peking University, both to collect data in Beijing and to interact with staff members at the university. I also made three trips to Sichuan, Heilongjiang and Fujian to collect data. Travelling to these provinces was helpful to increase my understanding of understanding of the Chinese government's role at local levels and regional variations.

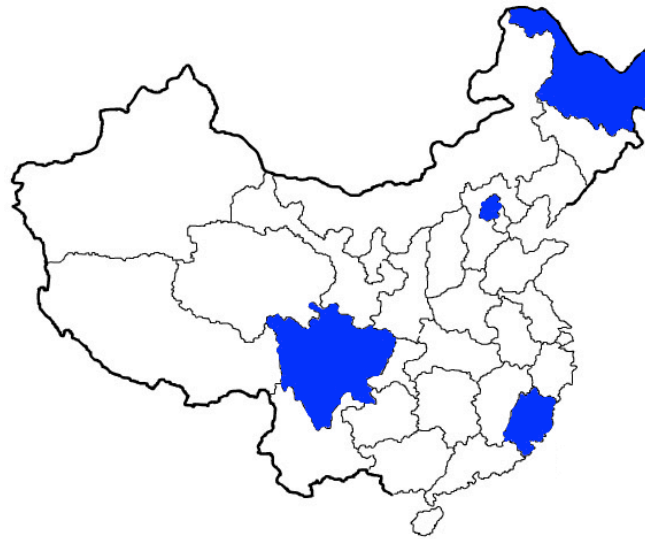


Figure 4.2. Fieldwork sites. The highlighted provinces are, from the top down, Heilongjiang, Beijing, Sichuan and Fujian.

Fieldwork in China is ‘an eye-opening but sometimes also deeply frustrating experience’ (Thogersen & Heimer, 2006). For my research, challenges arose from several sources. First, access to government officials depends very much on *guanxi*, which can be loosely translated as ‘connections’ and/or ‘relationships’. *Guanxi* plays a central role in different aspects of Chinese life (Gold, Guthrie & Wank, 2002). Despite my background of being born and raised in China, *guanxi* still presented a challenge as I left mainland China before attending university. I was not connected to the individuals required for interview and lacked an appropriate identity to facilitate the research. This challenge was addressed by two arrangements. Initial access to interviewees was greatly facilitated by my co-supervisor, who has taught in China since the early 1990s and has strong connections with his former students and colleagues in China. With his help, I was introduced to several key informants. In addition, I also applied for a fellowship program at Peking University. Under this arrangement, I was able to present as a research fellow at Peking University, which created the image of a credible researcher and made it easier for me to build trust with interviewees.



Second, my fieldwork was undertaken during a time when the anti-corruption campaign was in full swing.<sup>54</sup> The implications of the campaign are far-reaching. From time to time, there was news coverage on the dismissal of top government officials, and such news frequently triggered discussions among the people I met. On several occasions, when I attended the activities of government officials, they discussed the changes brought about by the Eight-point Regulation. Stricter rules were applied to their office space, work settings and the use of cars owned by their work unit, and they had to practise thrift in networking activities, with specific rules for how much they could spend and what they could order. During my fieldwork, there was also an education campaign going on. The campaign was named “Two Studies, One Action”, and required party members to study the Party Constitution and remarks made by party leader Xi Jinping and become qualified party members. ‘Two Studies, One Action’ banners could be found in many places (e.g., government buildings, parks and communities). It was within this broad context that my fieldwork was carried out. A cautious atmosphere among government officials was evident. It is hard to tell in what ways and to what extent my interviewees were affected, but it is likely that government officials avoided expressing opinions inappropriate or disloyal to the party.

Fortunately, health care is not a highly sensitive topic to research. The Chinese government has adopted a relatively open attitude to problems in health care. In 2005, the Development Research Centre,<sup>55</sup> a policy research and consulting institution directly under the State Council, concluded that the health reforms over the previous 20 years had failed. The results of this report were published on *China Youth Daily* and triggered a

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<sup>54</sup> The anti-corruption campaign was launched following the conclusion of the 18<sup>th</sup> National Congress of the Communist Party of China in 2012. The campaign has quickly grown into one of the largest campaigns against corruption in China’s modern history and is intended to crack down on both ‘tigers’ (senior leaders) and ‘flies’ (grassroots bureaucrats) (Yuen, 2014).

<sup>55</sup> According to its official website, the Development Research Centre is mainly responsible for conducting advanced research on the overall, comprehensive, strategic and long-term issues in economic and social development, as well as relevant key and hot issues related to reform and opening up. The centre provides policy options and consulting advice to the Central Committee and State Council. For more details, see [http://en.drc.gov.cn/2013-08/29/content\\_16955102.htm](http://en.drc.gov.cn/2013-08/29/content_16955102.htm).

fierce public debate. Despite some initial resistance, the Ministry of Health publicly acknowledged that there were many problems with the health care system (Zhu, 2012, p. 53; Wang & Fan, 2013, p. 132). The following year, the issue of ‘getting health care is difficult and expensive’ was one of the hottest topics during the annual meetings of the national legislature and top political advisory body (the ‘two sessions’).<sup>56</sup>

Since the mid-2000s, different views and attitudes regarding how to reform China’s health care system proliferated in the public space. Independent professionals and research groups began to report the results of various independent case studies (Korolev, 2014). The media took diverse positions, with lively discussions on the market and state roles in health care (Duckett & Langer, 2013). These efforts evoked a response from the government. In 2007, the government took a proactive approach by requesting proposals from a number of independent research institutes and experts (Wang & Fan, 2013, p. 136). Between October and November 2008, the government released the first draft of the reform plan and invited the general public to submit suggestions. Such an approach of inviting the general public to participate in the development of public policies was unprecedented in China (Liu, 2009; Li, Chen & Powers, 2012). This indicated that the government had an open-minded attitude towards health care, or at least that the leadership wanted to be perceived as being open to criticisms and suggestions. More recently, despite censorship in many areas, there still exist some relatively critical reports, journalists’ undercover stories and public discussions on the problems of the health care system. Clearly, the government has some tolerance of debates around health care and, to some degree, welcomes the identification of problems.

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<sup>56</sup> The former reviews the annual work report of the government, while the latter discusses important political, social and economic issues and makes proposals. The two sessions are intended to serve as arenas for government consultation with professional elites. Members of the Chinese People’s Political Consultative Conference gather to discuss important political, economic and social matters; exchange views; debate issues; and make proposals. As noted by Kornreich, Vertinsky and Potter (2012), the two sessions also provide some opportunities for deliberation.

Even though health care is not a sensitive topic and my co-supervisor has sufficient *guanxi* to connect me to informants, there was still a cautious attitude towards my visits. On several occasions, I was asked by interviewees to provide a reference letter. This letter was supposed to be provided by a domestic unit and officially stamped. In terms of content, the letter should state the purposes of my research and request cooperation from the work unit of my interviewee. Ideally, the administrative rank of the domestic unit should be as high as possible, because government agencies tend to take requests from an upper level more seriously. In my case, the reference letters were provided by Peking University. As the university is a vice-ministerial unit, the reference letters were perceived as appropriate in most cases and served as an important ‘ticket’ to some interviews.<sup>57</sup>

#### ***4.3.2.2 Interviews and Observations***

Since this research involves gathering information on human subjects through interviews, ethics clearance was applied for prior to commencing data collection. The application was approved by the Faculty of Arts Human Ethics Advisory Group at the University of Melbourne (Ethics ID: 1647404).

As with many universities in the Western world, the default requirement of the University of Melbourne is that researchers should seek written consent from participants. However, for cultural reasons, Chinese interviewees are reluctant to give written consent. Also, as previously discussed, the ongoing anti-corruption campaign during my fieldwork period made people, especially government officials, more cautious and sensitive. Requiring written consent would have meant losing potential interviewees or pushing my interviewees to be unnecessarily stressed. For these reasons, I applied for implied consent rather than written consent. This arrangement was approved.

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<sup>57</sup> As discussed in Chapter 3, under the planned economy universities were categorised as PSUs and had administrative ranks. The fact that Peking University is a vice-ministerial unit is a legacy of this.

Three groups of people were targeted for interview: government officials, directors of primary care facilities and health policy experts. As previously discussed, my co-supervisor's *guanxi* enabled initial access to several key informants. To expand the sample size, I asked the informants to suggest others who might have useful information on my research topic. I also tried to contact potential subjects through people I met during fieldwork or cold call emails. In total, I managed to conduct 30 interviews (see Table 4.1). Detailed information has been withheld to maintain the anonymity of interviewees.

Table 4.1

*List of interviews*

| No. | Basic information                                                          |
|-----|----------------------------------------------------------------------------|
| 1   | Official of the National Health and Family Planning Commission             |
| 2   | Official of the Ministry of Finance                                        |
| 3   | Researcher at the Sichuan Institute of Medical Information <sup>a</sup>    |
| 4   | Official of a county-level health bureau in Sichuan                        |
| 5   | Official of a county-level health bureau in Sichuan                        |
| 6   | Official of a county-level health bureau in Sichuan                        |
| 7   | Director of a township health centre in Sichuan                            |
| 8   | Director of a community health centre in Sichuan                           |
| 9   | Official of the Sichuan Provincial Centre for Disease Control              |
| 10  | Official of the Sichuan Provincial Health and Family Planning Commission   |
| 11  | Former official of the Sichuan Provincial Centre for Disease Control       |
| 12  | Official of the National Health and Family Planning Commission             |
| 13  | Scholar at Peking University                                               |
| 14  | Researcher at the National Health Development Research Center <sup>b</sup> |
| 15  | Scholar at Peking University                                               |
| 16  | Scholar at Renmin University                                               |

| No. | Basic information                                                             |
|-----|-------------------------------------------------------------------------------|
| 17  | Official of the Heilongjiang Provincial Health and Family Planning Commission |
| 18  | Official of the Heilongjiang Provincial Social Health Insurance Centre        |
| 19  | Director of a community health centre in Heilongjiang                         |
| 20  | Official of the Heilongjiang Provincial Health and Family Planning Commission |
| 21  | Official of the Heilongjiang Provincial Health and Family Planning Commission |
| 22  | Scholar at the World Health Organization                                      |
| 23  | Official of a prefecture-level health bureau in Fujian                        |
| 24  | Official of a prefecture-level health bureau in Fujian                        |
| 25  | Director of a township health centre in Fujian                                |
| 26  | Official of a county-level health bureau in Fujian                            |
| 27  | Official of a county-level health bureau in Fujian                            |
| 28  | Director of a township health centre in Fujian                                |
| 29  | Official of a prefecture-level health bureau in Fujian                        |
| 30  | Official of the National Health and Family Planning Commission                |

<sup>a</sup> The Sichuan Institute of Medical Information is the provincial version of the National Health Development Research Center. It is affiliated with the Sichuan Provincial Health and Family Planning Commission. <sup>b</sup> The National Health Development Research Center is affiliated with the National Health and Family Planning Commission. The centre conducts research and provides policy suggestions for the government on a regular basis.

The sampling approach adopted was not what standard social sciences research textbooks advise. *Guanxi* played a significant role in access to government officials. Nonetheless, due to many constraints, such an opportunistic way of gaining access to interviewees is almost the norm in fieldwork-based studies in China (Heimer & Thøgersen, 2006). Despite its wide use and evident influence, *guanxi* has rarely been investigated for its important methodological implications (Kriz, Gummesson & Quazi, 2014). In this study, I devised two coping strategies. First, the sample was diversified as

much as possible. Besides my co-supervisor, I asked different people I met during the fieldwork to suggest potential interviewees for my study. I also tried to contact potential interviewees myself through cold call emails, although the success rate was very low due to the reasons discussed previously. In these ways, I attempted to minimise the bias caused by sampling. Second, interview data were not used as the main source of information for this thesis. As previously discussed, a wide range of secondary data were collected. Interviews complemented the secondary data and provided additional information and insights.

Most of interviews were conducted inside the offices of interviewees during work hours. Interviews were sometimes interrupted by phone calls and other issues arising from interviewees' work. Whenever this happened, I waited quietly and stopped taking notes to respect their confidentiality. This provided me with a valuable opportunity to better understand the work of my interviewees and also to pose some follow-up questions.

My interviews were semi-structured and revolved around three broad questions. What was the role of the government in primary care in the 2003–2015 period? Why has the government played the role it played? What are the problems of the government's role in primary care? The use of semi-structured interviews left space for interviewees to generate new ideas and reflect on their own experiences. Before each interview, I always prepared by collecting as much information as possible from the internet. In particular, I searched for information on the institutional and/or personal background of my interviewee and prepared some specific and relevant questions. During interviews, I always started by discussing the work of my interviewee. In this way, I was able to encourage my interviewee to share more information with me. On average, each interview lasted between one hour and one and a half hours.

The interviews were not recorded, again to reduce the stress and uncertainties due to both cultural reasons and the sensitive atmosphere under the anti-corruption campaign

described previously.<sup>58</sup> Instead, I took notes during interviews and after each interview, I found the nearest convenient place to write down as many details as possible. This is not ideal because memory cannot record interviews like an audio recorder. However, this may be the best alternative under the circumstances.

In addition to interviews, I made observations through site visits to primary care facilities. Unlike interviews, no formal arrangements were made in advance for site visits. Instead, whenever I travelled to a new place during my fieldwork, I did some research on the internet and identified the nearest primary care facilities. I walked to those facilities to observe how these facilities looked, the atmosphere there, how busy they were, and some interactions between patients and staff in common spaces. In total, I visited 24 primary care facilities (including both rural and urban facilities, two in Sichuan, six in Fujian and 16 in Beijing). Two health centres were visited after I came across news coverage of them (stating that they were very popular among local residents and had long waiting lines) to verify the accuracy of the news reports. These health centres were found to have much fewer patients than the reports suggested. The purpose of these observations was not to generate descriptive data to represent all primary care facilities in the country (that would require more widespread and systematic sampling); rather, these observations served as a supplementary source of data to help me interpret and verify information obtained from other sources.

Observations were also made through attending events involving government officials. In China, various institutions organise conferences on a regular basis. Government officials and directors of primary care facilities are frequently invited to such events to present up-to-date information on policies and their implementation. For example, one event I attended was a seminar organised by the government to discuss the

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<sup>58</sup> These constraints can possibly be coped with by stronger *guanxi*/connections. Government officials may be willing to be recorded if they have sufficient trust in a researcher. Such trust can be established through long-term personal relationships. Alternatively, if the researcher conducts a research for an upper-level government agency, recording is also unlikely to be a problem.

UK model of GPs. The panel included government officials from the NHFPC, researchers from the NHDRC, local government officials from different localities and several representatives from the UK. The panellists made presentations to share local experiences and lessons learned from the implementation of primary care reforms. Unfortunately, interactions tended to be limited during such events, with little or no time left for Q&A. Nonetheless, attending events of this kind provided valuable opportunities to better understand how the government plays its role in primary care and gain insights into the concerns of government officials. A full list of the events I attended during fieldwork is provided in Table 4.2.

Table 4.2

*List of events attended during fieldwork*

| No. | Event details                                                                                                                                                                                  |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Western General Practice Conference, organised by the Sichuan Medical Association, Chengdu, Sichuan, 16 October 2016                                                                           |
| 2   | Training Session for the Pricing of Medical Services, organised by the National Health Development Research Center, Beijing, 11–12 November 2016                                               |
| 3   | Public Governance During Economic and Social Transformation, organised by the Chinese Academy of Social Sciences, Beijing, 3 December 2016                                                     |
| 4   | Improving the Universal Health Insurance System, organised by the China Center for Health Economic Research of the Peking University, Beijing, 10 December 2016                                |
| 5   | Supply-side Reform of the Medical and Health System, organised by the China Health Economics Association, Beijing, 23 December 2016                                                            |
| 6   | International Seminar of Contract Based Service Delivery and Incentive System of General Practitioners, organised by the National Health and Family Planning Commission, Beijing, 8 March 2017 |



### 4.3.3 Data Analysis

To conduct data analysis, qualitative content analysis was adopted in this study. According to Hsieh and Shannon (2005, p. 1278), ‘qualitative content analysis is defined as a research method for the subjective interpretation of the content of text through the systematic classification process of coding and identifying themes or patterns.’ It is one of the classical procedures for analysing textual material (Flick, 2014). Content analysis was applied to both secondary data (including official documents, yearbooks, reports, journal articles and news reports) and primary data (including interview and observation notes taken during fieldwork).

The core feature of qualitative content analysis is creating categories (Graneheim & Lundman, 2004). In this study, a series of categories and subcategories were derived from previous studies (summarised in Section 4.2). Three pre-determined categories were ‘inputs’, ‘service delivery attributes’ and ‘primary care as an integral part of the health care system’. These categories were further divided into subcategories. ‘Inputs’ were further divided into ‘physical resources’, ‘human resources’, ‘staff training’ and ‘financing’ while ‘service delivery attributes’ were further divided into ‘first contact’, ‘comprehensiveness’, ‘longitudinal care’ and ‘coordination’. As for ‘primary care as an integral part of the health care system’, the analytical focus was on ‘cost containment’, ‘equality’ and ‘efficiency’. Some degree of flexibility was also allowed during the coding process: additional subcategories were developed from data. Under the subcategories, the ‘government’s intention’, ‘government’s role/interventions’ and ‘intervention outcomes’ were sub-subcategories to further group data.

During the coding process, the emphasis was to make sure that all the data relevant to each category were identified and examined (Pope, Ziebland & Mays, 2000). Data coded under the same categories and subcategories were collated, compared and then summarised.

The pre-determined categories and subcategories were created primarily because they tend to the focus of analysis in the relevant literature (discussed in Chapter 2 and Chapter 3). The use of such literature-based categories and subcategories is supposed to make qualitative content analysis more systematic (Flick, 2014). However, they are not entirely exhaustive. More dimensions can always be added to the list. For example, ‘information systems’ and ‘drugs and medical supplies’ could be added under ‘inputs’; ‘continuity of care’, ‘family centredness’ and ‘community orientation’ could be added under ‘service delivery attributes’, and additional criteria could be added to assess the contribution of primary care to the health care system. However, that would result in a research of a much larger scale. Given the time and word constraints of a doctoral thesis, there was a need to strike a balance between comprehensiveness of coverage and feasibility. It is recognised here that the analytical framework of this study does not cover all important aspects of primary care.

In the past decades, there has been much debate on what constitutes rigour in qualitative research and how to ensure it (Gibbs, 2007). Among all, one commonly recommended approach to improve research validity is triangulation, which refers to ‘an approach to data collection in which evidence is deliberately sought from a wide range of different, independent sources and often by different means’ (Mays & Pope, 1995, p. 110). The underlying logic is that, by getting more than one different view on a subject, a more accurate view of the subject matter can be obtained. Even though triangulation cannot be used in any ultimate sense to create a single, valid and accurate interpretation of reality, it can reveal new dimensions of reality (Gibbs, 2007). In this study, different methods (secondary research, interviews and observations) were used to collect data. Interviewees have different backgrounds. The government officials interviewed work in different geographical locations and also different administrative levels (Section 4.3.2.2). Such a diversity made it possible to triangulate data. If different ideas or perceptions

expressed by the interviewees were found, more research was conducted to explore the potential source of difference, with particular attention to institutional and/or personal background of the interviewees.

Another widely recognised dimension of analytic quality is generalisability. Gibbs (2007) warns that the danger is that researchers use exotic but untypical examples to make a general point. To guard against this, particular attention was paid to always referring to specific interviews, observations, policy documents, or research studies. When needed, further information was given for readers to understand the context in which a point was made. In this way, I attempted to make the presentation of data as specific as possible to avoid over-generalisation.

#### **4.4 Summary**

This chapter has outlined the research design, research questions and analytical framework. Guided by the questions, this study drew from the literature and proposed an analytical framework that categorises the government's role into three means of intervention (providing, financing and regulation) and intervention outcomes into two dimensions (strengthening primary care as a goal in itself and strengthening primary care as a means to improve the health care system).

This thesis collected data via secondary research and fieldwork in China. Through secondary research, this thesis compiled information from the *China Health Yearbook* and *China Health Statistical Yearbook*, two series of official documents that provide longitudinal information on different aspects of government health interventions. These data were supplemented by relevant documents and statistics. Through fieldwork, this study also collected primary data through 30 semi-structured interviews and observations during site visits to primary care facilities and attendance of events involving government officials. Information collected during the fieldwork supplemented and assisted in the interpretation of secondary data.

## **Chapter 5. The Chinese Context Since the Early 2000s**

Before examining in detail the government's role in strengthening primary care (see Chapters 6–8), this chapter introduces the context within which these efforts took place. This is important because primary care is an integral part of the health care system. To understand developments in primary care, we need to be aware of and understand the wider context, namely, that of the health care system and nation. In the case of China, the significant socio-economic transformations in the 2000s are particularly relevant.

### **5.1 Socio-economic Background**

Since the early 2000s, China continued to transition from a planned to market economy. The economy continued to grow, but the government's focus shifted. While the focus was on economic growth in the 1980s and 1990s, in the early 2000s the government committed to tackling social problems, backed by the fiscal recovery after the mid-1990s.

#### **5.1.1 Continued Market Transition and Further Economic Growth**

As discussed in Chapter 3, in the mid-1990s, SOEs withdrew from ordinary competitive industries and concentrated on some strategic industries that need to be controlled by the state sector. By the early 2000s, ownership reforms for small and medium-sized enterprises were essentially complete. Subsequently, the government's intent shifted to the new aim of maintaining state control of a number of important industries and key areas (Wu & Ma, 2016). The result is that the dominant position state firms enjoyed in certain sectors was eroded only slightly (Lardy, 2014) (see Table 5.1). In terms of employment, the number of people employed by state-owned units decreased from 65 million in 2005 to 62 million in 2015. However, because the private sector expanded rapidly during this period, the relative share of employment in state-owned

units shrank sharply. In 2005, state-owned units provided 24% of the employment in urban areas, but by 2015 this had dropped to 15%.

Table 5.1

*Major socio-economic indicators for China (2005, 2010 and 2015)*

| Indicator                         | 2005   | 2010   | 2015   |
|-----------------------------------|--------|--------|--------|
| Population (million)              | 1,308  | 1,341  | 1,348  |
| Urban population                  | 562    | 670    | 771    |
| Urban population (% of total)     | 43     | 50     | 56     |
| Urban employment (million)        | 273    | 347    | 404    |
| State-owned units                 | 65     | 65     | 62     |
| Private and individual businesses | 62     | 105    | 190    |
| Rural employment (million)        | 485    | 414    | 370    |
| Private and individual businesses | 45     | 59     | 91     |
| Per capita GDP (yuan)             | 14,368 | 30,876 | 49,992 |

Source: NBS (2006, 2011, 2016).

Previous efforts to expand the market's role in the economy have accelerated. The government has kept issuing policy documents to reduce restrictions on entry into various sectors and has also taken other steps to make the expansion of private activities possible. The positive policy environment has nurtured the rapid expansion of private and individual businesses. In several arenas, such as manufacturing, construction, retailing, wholesaling, and catering, private businesses have largely displaced state companies. These private businesses have become the main driver of China's economic growth and employment (Lardy, 2014). As shown in Table 5.1, between 2005 and 2015, the number of people employed by private and individual businesses more than tripled from 62 million to 190 million in urban areas, and more than doubled from 45 million to 91 million in rural areas. By the end of 2015, private and individual businesses employed 281 million people. This understates the scale of the private sector, because China has many hybrid forms of ownership, including collectives, cooperatives, joint ownership enterprises, limited liability companies and shareholding limited companies. Either state units or

private entities might be the underlying owner of such hybrid firms (Lardy, 2014). Overall, the economy has been considerably privatised since the early 2000s.

The rapid economic growth begun in the 1980s and 1990s has continued. As shown in Table 5.1, per capita GDP more than tripled from 14,368 yuan in 2005 to 49,992 yuan in 2015. According to the World Bank's classification, China became an upper-middle-income country in 2010 (World Bank, 2011, p. 391).

### **5.1.2 Fiscal Recovery, the SARS Outbreak and Building a Harmonious Society**

Despite the extraordinary economic performance, many social problems emerged in the 1980s and 1990s.<sup>59</sup> In the early 2000s, evidence consistently showed that the relationship between China's economic and social development was looser than it could be (Zhao, 2013; Wagstaff, Lindelow et al., 2009; Huang, 2011). China ranked first in economic growth since 1970, but 79<sup>th</sup> of 135 countries in improvement in education and health (United Nations Development Programme, 2010). Education and health outcomes became increasingly unequal (Zhang & Kanbur, 2005). In 2005, the human development indices for rural and urban areas were 0.81 and 0.67 respectively (United Nations Development Programme, 2005). This suggested a very high level of inequality in human development within a country. Various opinion polls in the early half of the 2000s indicated that widening inequality, inadequate pension, unaffordable health care, soaring prices of education and housing and deteriorating environment were among the most serious social problems (Yuan & Zhang, 2007; Li, Cheng & Li, 2007). These problems triggered strong public discontent. The number of protests, demonstrations, riots and petitions increased dramatically.

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<sup>59</sup> The relationship between economic development and social problems is complicated. The unprecedented economic growth can be attributed to various economic reforms. At the same time, however, the economic reforms had far-reaching impacts and significantly changed the way how social services were provided (Section 3.2.1.6). The breakdown of the original social services system, without a proper alternative, contributed to the emergence of certain social problems.

These problems gradually manifested and worsened, but were not seriously addressed in the 1980s and 1990s. The government lacked the necessary financial resources to do so. Between the late 1970s and mid-1990s, fiscal revenue as a percentage of GDP shrank rapidly (Section 3.2.1.5). Perhaps more importantly, the government's top priority at the time was economic growth. Inequality was perceived as desirable under the belief that unequal wealth distribution provided a fair reward to workers, helped facilitate economic development and would eventually benefit all the population (Chan, 2016). Driven by this idea, the introduction of social assistance, pension programs and medical insurance was mainly to support SOE reforms. The beneficiaries were limited to workers, and the benefits were considered a reward for work. The non-working population, not considered 'productive', were provided with minimal welfare benefits<sup>60</sup>.

The 2002 SARS outbreak was a turning point. The outbreak exposed many problems for the new government to fix during the next decade. Crucially, the most noticeable lesson learned by the government was that the country's public health system had to be revamped.<sup>61</sup> The importance of the health care system as a whole was elevated to a new level. For years after the SARS incident, health care remained a highly popular topic during the annual meetings of the national legislature and top political advisory body (the 'two sessions'). The 2004 government work report describes the requirements for the health sector in lengthy paragraphs—of 16,000 words total, 1,100 are about health. This was unprecedented (CHYEC, 2007, p. 79). The SARS outbreak not only triggered reinvestment in the control of infectious diseases, it also created a momentum for the government to revamp the entire health care system.

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<sup>60</sup> Details of the social security system in the 1990s can be found in Croll (1999) and Cook (2002).

<sup>61</sup> In 2003, soon after this disease was brought under control, the CCCPC and State Council held a conference to summarise the work done. During the conference, the government asserted its determination to significantly improve the public health sector within three years (CHYEC, 2004, p. 5). In particular, emphasis would be placed on constructing a public health emergency response system and enhancing the disease control system.

More broadly, the SARS outbreak demonstrated that focusing solely on economic development while ignoring social welfare can have catastrophic consequences. The Hu–Wen government made a strong case for the health care system to be overhauled and, more broadly, stressed that the imbalance between economic development and social progress must be addressed (Hu, 2003; Wen, 2013). The single-minded pursuit of GDP growth needed to be replaced by a more balanced model of development. The rural–urban gap, regional disparities, imbalanced relationship between economic and social development and various social problems needed to be addressed.

From a financial perspective, the government was in a favourable position. The 1994 fiscal reform restored the government’s revenue mechanisms and recentralised fiscal revenues (see Chapter 3). As shown in Figure 5.1, between 2001 and 2015, the percentage of fiscal revenues as a percent of GDP increased significantly from 14.8% to 22.2%.<sup>62</sup> In particular, the central government kept collecting around half of the total government revenues since the mid-1990s (NBS, 2016).

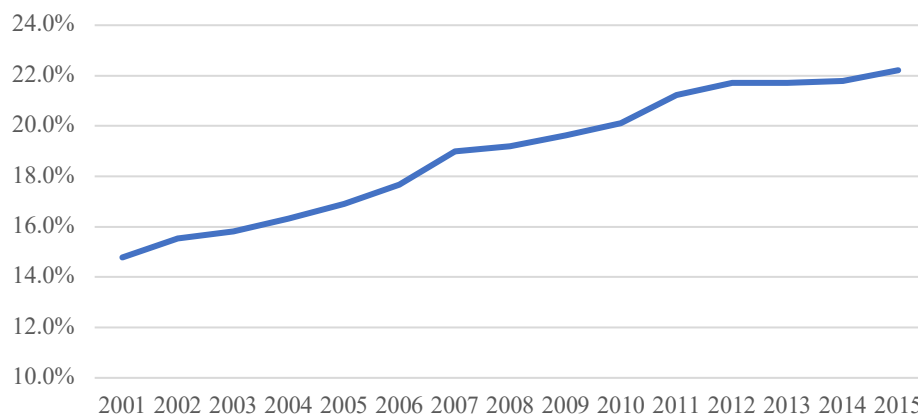


*Figure 5.1.* China’s budget revenues as a percentage of gross domestic product (2001–2015) (NBS, 2016).

Backed by this income, the Hu–Wen administration proposed a more balanced model of development. Economic growth was still crucial, but no longer the only priority.

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<sup>62</sup> The growth rate has slowed significantly since 2015, while public expenditures, especially those on social services, have grown rapidly. This has placed great pressure on the government more recently (Interview No. 2).



A series of ambitious social programs were rolled out.<sup>63</sup> The pension system was expanded to cover workers in the informal sector. New health insurance schemes were established to protect those not covered by the UEBMI introduced in the 1990s (see Chapter 3). Nine-year compulsory education was made free to all students. In contrast to the earlier pattern of social protection being employment related, initiatives since the early 2000s have a much broader coverage. In many cases, providing services for the entire population is the goal. Another key development is that, while the central mandate used to be unfunded, the central government has started to provide matching funds, to better support the initiatives. Clearly, this has been made possible by the recentralisation of fiscal revenues.

In addition to various social programs, concerted efforts have been made to balance rural and urban development. On the one hand, the central government began to reduce agricultural tax, to the point that it was entirely phased out in 2006. On the other hand, financial support has been significantly increased for the provision of public services in the countryside (Lin & Wong, 2012). For example, the NRCMS was established to pay for the health care costs of rural residents, educational subsidies were provided to deprived rural families to help with their children's schooling, the rural minimum living standard guarantee program was introduced to provide income for the poor and the new rural pension scheme was initiated to support the retirement of the rural population.

Efforts have also been made to reduce regional disparities. A series of regional development programs were launched. The 2000 western development initiative was followed by a program to revive the north-eastern region in 2003, and another program to develop the central region in 2004 (Zhao & Lim, 2010). Under these programs, central

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<sup>63</sup> There is a growing body of literature documenting the government's various efforts in social policy. See, for example, Chan, Ngok and Phillips (2008); Zhao and Lim (2010); Ngok and Zhu (2010); Zhao (2013); and Chan (2016).

government funding is tilted towards the central and western provinces (Lin & Wong, 2012). The social programs launched since the early 2000s have usually been matched by subsidies for central and western provinces. The purpose is to address poor regions being unable to properly finance the provision of public services, which significantly undermined the accessibility and affordability of public services in the 1980s and 1990s.

Health care is one of the social policy areas and has been impacted by the above initiatives. The government has introduced ambitious welfare programs for health care. Examples include the establishment of new health insurance schemes, investment in the infrastructure of health care facilities and the project to provide essential health services for the whole population. With growing financial strength and political will, the government has significantly increased its financial support for different programs in health care. Central government subsidies have been tilted towards rural areas and inland provinces. This pattern echoes the government's broad agenda of reversing the widening inequalities previously discussed.

Compared to other social policy areas, health care has received special attention from the government. As shown in Figure 5.2, health spending grew from 4% of total government expenditure in 2007 to 7% in 2015. In comparison, government expenditure on education and social security and employment, while higher than that on health care, remained stable.

The increase in the government health spending is a significant development. As discussed in Chapter 3, government health expenditure fluctuated between 1% and 3% of total fiscal expenditure between the 1950s and 1990s (see Figures 3.2 and 3.6). The increase in health expenditure observed since the 2000s is both substantial and unprecedented.

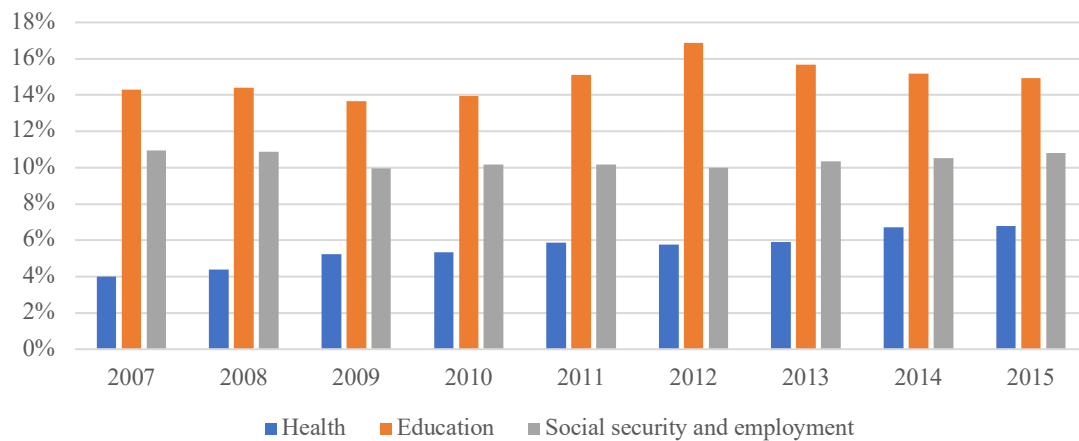


*Figure 5.2.* Fiscal expenditure on health, education and social security and employment as a percentage of total fiscal expenditure (2007–2015) (NBS, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016). Only post-2007 data are shown here as the classification methods for budgetary items changed significantly in 2007, making pre-2007 data incomparable with post-2007 data.

## 5.2 New Developments in Health Care

The previous section discussed the broad socio-economic background since the early 2000s and the government’s new approach to social policy. This section focuses on health care and discusses three major developments: the changing health needs of the population, universalisation of health insurance programs and launch of health care reforms in 2009.

### 5.2.1 Surging Health Care Demand

As previously discussed, China started from being one of the poorest countries in the late 1970s and became an upper-middle income country in 2010. The economic growth considerably changed the living conditions and lifestyles of its population. Increasing income has contributed to increased consumption of nutritious foods (Lange & Vollmer, 2017). Undernutrition and being underweight have become less common, while being overweight and obesity have become more of a concern. As the economy expanded, China has significantly urbanised (see Tables 3.4 and 5.1). Similar to other

countries, urbanisation in China has led to more sedentary occupations that promote physical inactivity (Monda, Gordon-Larsen, Stevens & Popkin, 2007). People consume more fat and smoke more. Through changes in these lifestyle behaviours, urbanisation has been found to be associated with poorer health (van de Poel, O'Donnell & van Doorslaer, 2012; Gong et al., 2012). Furthermore, since China very much relied on and prioritised the industrial sector without careful attention to the environment, pollution problems were significantly aggravated (World Bank, 2007). In particular, air pollution has become one of the top contributors to health problems (Yang et al., 2013).

These factors have significantly changed the health needs of the population. Most notably, the prevalence of chronic diseases has increased considerably (Yang et al., 2013). Between 2002 and 2012, the prevalence of hypertension grew from 18.8% to 25.2%, while the prevalence of diabetes grew from 2.6% to 9.7% (Wang, 2005; Bureau of Disease Prevention and Control, 2015) (see Table 5.2). It should be noted, however, that many patients are unaware of their problems, because the symptoms of hypertension and diabetes are not always easily identifiable. However, this pattern has been changing. In 2003, self-reported rates of hypertension and diabetes were only 3.3% and 0.7% respectively. Given the prevalence rates above, only 17% and 27% of patients were aware of their conditions. In 2013, however, self-reported rates significantly increased, to 14.2% and 3.5%, suggesting that 56% of hypertensive patients and 36% of diabetic patients became aware of their conditions. This change means that a much higher percentage of patients have become aware of their conditions, and when compared with unknown conditions, these self-reported problems are much more likely to be translated into demand for health care.

Table 5.2

*Prevalence and self-reported rates of hypertension and diabetes*

| Prevalence rates                            | 2002 | 2012 |
|---------------------------------------------|------|------|
| Hypertension (% of people aged 18 or above) | 18.8 | 25.2 |
| Diabetes (% of people aged 18 or above)     | 2.6  | 9.7  |
| Self-reported rates                         | 2003 | 2013 |
| Hypertension (% of people aged 15 or above) | 3.3  | 14.2 |
| Diabetes (% of people aged 15 or above)     | 0.7  | 3.5  |

Source: Prevalence rates from Wang (2005) and Bureau of Disease Prevention and Control (2015). Self-reported rates from Centre for Health Statistics and Information of the Ministry of Health (2015).

Overall, self-reported morbidity rates have increased very rapidly since the early 2000s. As shown in Table 5.3, between 2003 and 2013, the two-week morbidity rate jumped from 143‰ to 241‰. This sharply contrasts to the pattern in the 1990s, when morbidity rates remained relatively low and stable. The increasing prevalence of certain diseases together with rising awareness should have played significant roles in this.

Table 5.3

*Self-reported two-week morbidity rates (‰) (1993–2013)*

| Population | 1993 | 1998 | 2003 | 2008 | 2013 |
|------------|------|------|------|------|------|
| Total      | 143  | 150  | 143  | 189  | 241  |
| Rural      | 130  | 137  | 140  | 177  | 202  |
| Urban      | 174  | 187  | 153  | 222  | 282  |

Source: Centre for Health Statistics and Information of the Ministry of Health (1994, 1999, 2004, 2009, 2015).

Importantly, the Chinese people have become much richer during this period. Per capita GDP more than tripled from 14,368 yuan in 2005 to 49,992 yuan in 2015 (see Table 5.1). People have more financial resources to meet their health needs. As will be discussed, this has been further enhanced by the universalisation of health insurance since the early 2000s.

### **5.2.2 Universalisation of Health Insurance**

Since the early 2000s, the government has worked to universalise the coverage of health insurance. That the great majority of the population was without any form of risk protection in the 1990s was widely criticised and also recognised by the government as a major social problem. In response, the government started pilot tests of the NRCMS in 2003 to provide coverage for the rural population. Four years later, the government introduced pilot tests of the Urban Resident Basic Medical Insurance (URBMI) which targets the urban non-working population. In contrast to the UEBMI introduced in the 1990s, both the NRCMS and URBMI are heavily subsidised by the state budget, with the government responsible for the great majority of premiums and enrollees paying for only a small part of premiums. In particular, the central government provides the majority of subsidies for the central and western provinces. These patterns all reflect the broad changes in the government's approach to social policy. The UEBMI, NRCMS and URBMI together form the three new pillars for China's health insurance system (see Table 5.4).

As with many post-2003 government initiatives, the NRCMS and URBMI started out relatively modest, but were expanded to large-scale programs. As shown in Figure 5.3, the per enrollee premium increased from 20 yuan in 2003 to 500 yuan in 2015. The government's subsidy has significantly fuelled this growth (it kept contributing to more than three-fourths of the total premium). From 2003–2015, the per enrollee government subsidy jumped from 10 yuan to 380 yuan. During this period, the coverage of both schemes has also expanded rapidly (see Figure 5.4). By the end of 2008, the two programs covered 933 million rural and urban residents who were previously without any public risk protection against medical expenses.

Table 5.4

*The three new pillars of China's health insurance system (1998–present)*

| Scheme | Details                                                                                                                                                       |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UEBMI  | Pilot tests since 1994. Fully implemented since 1998. For urban workers and retirees. Mandatory. Funded by employers (6% of wage) and employees (2% of wage). |
| NRCMS  | Pilot tests since 2003. Fully implemented since 2007. For rural residents. Voluntary. Funded by governments and individuals.                                  |
| URBMI  | Pilot tests since 2007. Fully implemented since 2009. For urban residents ineligible for the UEBMI. Voluntary. Funded by governments and individuals.         |

*Note.* UEBMI = Urban Employee Basic Medical Insurance, NRCMS = New Rural Cooperative Medical System, URBMI = Urban Resident Basic Medical Insurance.

Source: Information on the UEBMI collected from Economic Restructuring Office of the State Council, Ministry of Finance, Ministry of Labour & Ministry of Health (1994) and State Council (1998). Information on the NRCMS collected from Ministry of Health, Ministry of Finance & Ministry of Agriculture (2003) and CHYEC (2008). Information on the URBMI collected from State Council (2007a) and Ministry of Labour and Social Security (2009).

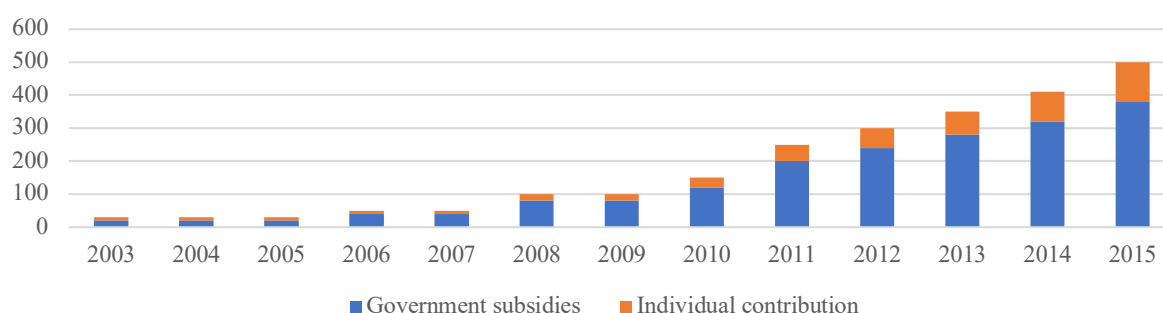


*Figure 5.3.* Contribution level of NRCMS and URBMI (yuan per enrollee) (2003–2015)

(CHYEC, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013; China Health and Family Planning Yearbook Editorial Committee [CHFPYEC], 2014, 2015, 2016).

The government subsidies listed in this figure indicate the minimum subsidy level set by the central government. Some localities have offered subsidies at higher levels.

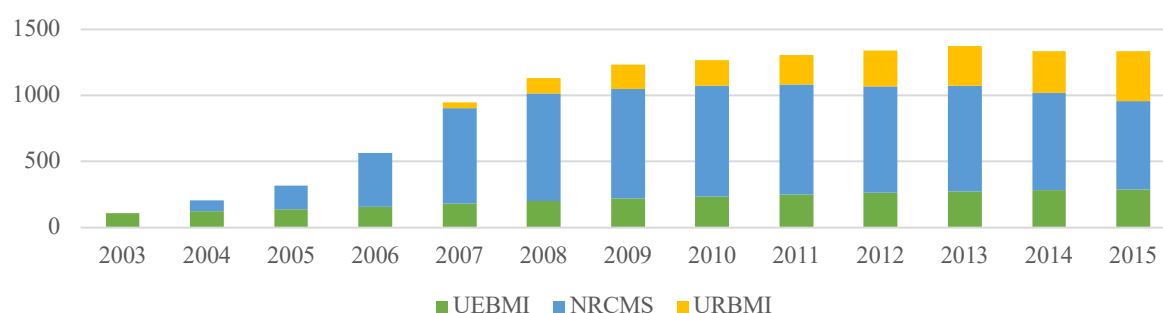


*Figure 5.4.* Number of people covered by UEBMI, NRCMS and URBMI (million) (2003–2015) (NBS, 2016; Ministry of Health, 2008). UEBMI = Urban Employee Basic Medical Insurance, NRCMS = New Rural Cooperative Medical System, URBMI = Urban Resident Basic Medical Insurance.

The rapid universalisation of health insurance programs totally changed the picture of financial risk protection. As discussed in Chapter 3, only 22% of the population was covered by social health insurance schemes in 2003 (Centre for Health Statistics and Information of the Ministry of Health, 2004). This grew to 95% by 2013 (Centre for Health Statistics and Information of the Ministry of Health, 2015). Such an achievement is laudable and has received international recognition (Liang & Langenbrunner, 2013).<sup>64</sup> This huge improvement has also further boosted the demand for health care. Results of studies with rigorous evaluation methods show that both the NRCMS and URBMI have increased health care use (Yip et al., 2012; Li & Fu, 2017; Liu, Vorthier & Hong, 2017). As previously discussed, since the early 2000s, health needs have grown rapidly. In particular, there were dramatic increases in the self-reported rates of chronic disease. Personal income grew rapidly during this period, enhancing residents' financial capacity to purchase medical services. The sudden increase in demand is accompanied by expectations that the demand be met by the health care system (discussed in Chapter 8).

<sup>64</sup> While China has successfully extended the breadth of health coverage, its scope of coverage appears to be insufficient and the programs have been criticised for providing limited financial risk protection (Liang & Langenbrunner, 2013). The programs have also been criticised for being fragmented, which aggravates the inequitable access to health care (Huang, 2014, 2015; Meng, Fang, Liu, Yuan, & Xu, 2015). Other criticisms include poor portability and ineffective supervision and administration of funds (Shan, 2017).



### 5.2.3 The Launch of Health Care Reforms

While there was a consensus in the 2000s that the health care system needed to be overhauled, there were many debates on the cause of the problems.<sup>65</sup> Mirroring the debates on economic reforms, opinions were divided into the pro-market and pro-government camps.<sup>66</sup> The former camp (see, for example, Gu [2008] and Zhou [2008]) saw incomplete market reforms as the main reason for the failures in China's health care system. It was argued that the government relied too heavily on administrative measures. Controls of entry, pricing and personnel created distortions and limited the supply increase. The relative shortage of supply was the reason why health care services had become expensive. To solve these problems, various controls should be removed to encourage a stronger role of the market in service delivery. At the same time, it was suggested that the government allocate more financial resources to improve the coverage of health insurance. In this way, health care providers would compete with each other, prices would be lowered and quality of care improved.

To the pro-government camp (see, for example, Ge and Gong [2007] and Li [2010]), the problem was precisely the opposite. According to such criticisms, cutbacks to government subsidies in the 1980s and 1990s had resulted in the public shouldering too much financial burden. The lack of government regulation in industries of pharmaceuticals and diagnostic equipment facilitated price increases. The use of market mechanisms in service delivery, most notably through allowing medical facilities to charge mark-ups when providing diagnostic tests and selling drugs, provided problematic incentives to health care facilities. Health care facilities and professionals were incentivised to overprescribe drugs and high-tech services, driving up health care

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<sup>65</sup> This triggered a round of intense research activities. Many studies were produced around this time to examine China's health care system. *The Lancet*, a top international journal, published a series of studies in 2008 to discuss different aspects of China's health care system. Two other journals, *Health Economics* and *China Economic Review*, produced special issues on China's health care reforms in 2009.

<sup>66</sup> More detailed descriptions of the debate can be found in Gu (2009, 2010) and Blomqvist and Qian (2010).

expenditure. To improve the affordability of health care, the problematic incentives should be removed. The government was advised to allocate more financial resources to compensate the losses of health care facilities and enable them to provide services at low prices to the population.

Facing the divergence of opinions, the government chose a middle path through engaging in both managing public facilities and administering a health insurance system (Wang, 2009). As shown in Figure 5.5, since the early 2000s, subsidies for health care services and insurance both increased.<sup>67</sup> In this way, the government followed the suggestions from both the pro-market and pro-government camps (Yip & Hsiao, 2008).

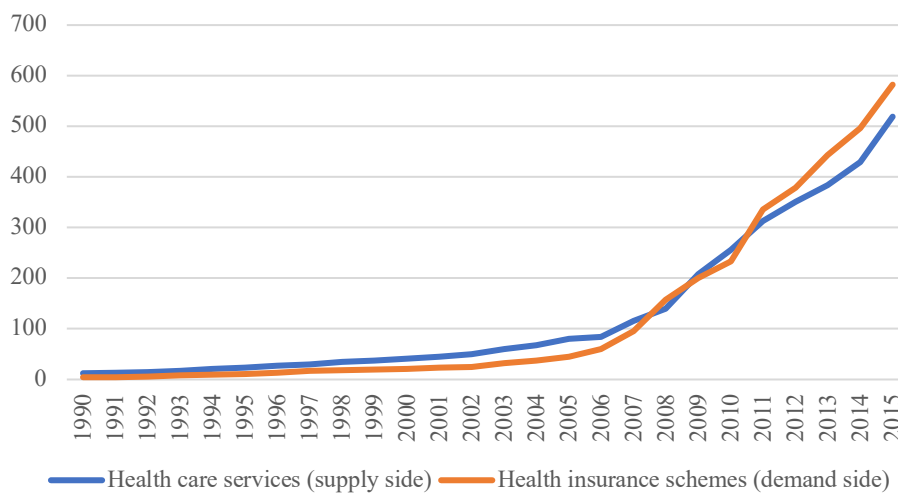


*Figure 5.5.* The two major categories of government health expenditure (billion yuan) (1990–2015) (NHFPC, 2016).

After several years of intense debate, the Chinese government unveiled its health care reform plan in 2009 (Chen, 2009). This is an ambitious and complex plan that intends to make essential health care affordable and accessible to the entire population by 2020 (CCCPC & State Council, 2009). When launching the reforms, the government listed five priority tasks during the first phase of implementation (2009–2011): 1) expanding the coverage of health insurance, 2) establishing a national essential medicines system, 3)

<sup>67</sup> The government funds for ‘health care services’ were mainly used to subsidise the personnel costs of public health facilities or procure public health services, thereby enabling public health facilities to provide services at low prices.

strengthening primary care facilities, 4) promoting the equalisation of essential public health services and 5) piloting public hospital reforms (see Table 5.5). The second phase of implementation (2012–2015) was mainly a continuation of the first phase, but had some minor adjustments. Given that the health insurance schemes had been universalised, the task changed from expanding coverage to making further improvements. The second, third and fourth tasks in the previous plan were merged into strengthening the national essential medicines system and operating mechanisms for primary care facilities. As for public hospital reforms, the task changed from ‘piloting’ to ‘accelerating’.<sup>68</sup>

Table 5.5

*Priority tasks in China’s recent health reforms (2009–2015)*

| Ranking | First phase of implementation<br>(2009–2011)                   | Second phase of implementation<br>(2012–2015)                                                                  |
|---------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 1       | Expanding the coverage of health insurance                     | Ameliorating the health insurance system                                                                       |
| 2       | Establishing a national essential medicines system             | Strengthening the national essential medicines system and new operating mechanisms for primary care facilities |
| 3       | Strengthening primary care facilities                          | Accelerating public hospital reforms                                                                           |
| 4       | Promoting the equalisation of essential public health services |                                                                                                                |
| 5       | Piloting public hospital reforms                               |                                                                                                                |

*Note.* Highlighted tasks are directly related to the primary care sector.  
Source: State Council (2009, 2012a).

<sup>68</sup> During the third phase of implementation (2016–2020), the new six priorities are: 1) establishing a hierarchical diagnosis and treatment model, 2) establishing an efficient system for modern hospital management, 3) establishing an efficient national medical insurance system, 4) establishing an orderly mechanism for medicine supply, 5) building a diversified regulation system and 6) coordinating relevant reforms (State Council, 2016).

As can be seen, the health care reforms involved both demand-side and supply-side elements. Universalising the coverage of health insurance was the top priority. This was supposed to provide better financial protection for people against catastrophic expenses (Cheng, 2008). The government also carried out reforms on the supply side. In particular, the primary care sector received considerable attention. In the first phase of implementation (2009–2011), the second, third and fourth tasks were directly related to primary care facilities (see Table 5.5). The National Essential Medicines Policy (NEMP) was implemented at primary care facilities. The policy provided a national list of essential medicines. It was required that primary care facilities could no longer charge any mark-up when selling these medicines. The task to strengthen primary care facilities was to be done through increasing physical and human resources and improving financial and operating mechanisms. The task of promoting the equalisation of essential public health services included a national package of essential public health services. These services are supposed to be provided by primary care facilities free of charge to the population.

In terms of financing, the demand and supply sides both received about half of the government health expenditure. On the demand side, government funds were used to subsidise different health insurance programs. On the supply side, government health expenditure can be divided into three main categories, public hospitals, primary care facilities and public health. It should be noted, however, that the funds for essential public health services (under the category of public health) were allocated to primary care facilities. As a result, primary care facilities received the entire sum of the subsidies to primary care facilities and the subsidies for the provision of essential public health services (highlighted in Table 5.6).<sup>69</sup>

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<sup>69</sup> Primary care facilities also receive government subsidies indirectly through insurance programs. The government subsidies to medical insurance schemes are paid to primary care facilities only when insured patients consume services.

Table 5.6

*Composition of government health expenditure (%) (2010–2015)*

| Items                            | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|----------------------------------|------|------|------|------|------|------|
| Administration                   | 3    | 2    | 2    | 2    | 2    | 3    |
| Public hospitals                 | 18   | 15   | 14   | 14   | 13   | 14   |
| Primary care facilities          | 9    | 9    | 12   | 11   | 9    | 9    |
| Public health                    | 16   | 17   | 15   | 15   | 13   | 13   |
| Essential public health services | 4    | 5    | 5    | 5    | 4    | 5    |
| Health insurance schemes         | 46   | 51   | 50   | 52   | 48   | 47   |
| NRCMS                            | 22   | 27   | 28   | 29   | 27   | 26   |
| URBMI                            | 4    | 6    | 6    | 7    | 7    | 8    |

*Note.* NRCMS = New Rural Cooperative Medical System, URBMI = Urban Resident Basic Medical Insurance. Highlighted cells are directly received by primary care facilities.

Source: Calculations based on statistics compiled from the national final accounts released on the official website of the Ministry of Finance (<http://yss.mof.gov.cn/zhengwuxinxi/caizhengshuju/>).

### 5.3 Strengthening Primary Care in Context

Sections 5.1 and 5.2 examined the broad socio-economic context and major developments in health care since the early 2000s respectively. They complement the discussions in Chapter 3 of China's health policy and system between 1949 and the early 2000s. The rationale to strengthen primary care in China needs to be understood in this context. This section clarifies the terminology related primary care and brings together the key contextual factors that justify the strengthening of primary care in China. It also lists the government's specific goals and objectives for primary care.

#### 5.3.1 Terminology

Chapter 2 discussed the concept of primary care and international experiences in organising primary care. This section contextualises the concepts related to primary care and clarifies their meaning in this thesis.

### ***5.3.1.1 Primary Health Care, Community Health Services and Primary Care***

As discussed in Section 3.1, in the 1960s and 1970s, China developed a rural health care system, the ideas and experiences of which inspired the WHO to formulate a new approach to health systems development. This later became known as ‘primary health care’ (WHO, 1983, 2008, 2011). In Chinese, the term is ‘初级卫生保健’.<sup>70</sup> Despite the international recognition, the Chinese model of organising rural health care underwent significant changes in the 1980s and 1990s (Section 3.2).

At the policy level, attempts were made to further develop primary health care in China.<sup>71</sup> The contents of primary health care can be captured by two government plans made in the 1990s (Ministry of Health, 1990; Ministry of Health et al., 1995). As shown in Table 5.7, much focus was put on public health, including health education, water and food safety, toilet and public space hygiene, infant and maternal mortality, and morbidity of communicable diseases. Little was mentioned about the clinical function of primary care facilities.

In the 1990s, there were many discussions and trials directed towards the development of ‘community health services’ (in Chinese, ‘社区卫生服务’) in urban areas (Liu, 2003). In cities, for those people within the state and collective sectors, their employers continued to serve as the major provider of social services and welfare benefits

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<sup>70</sup> Xu (2014) and Xu and Wang (2015) make the criticism that ‘primary health care’ was mistranslated into ‘初级卫生保健’ and that this mistranslation led to a limit on the scope of primary health care to only rudimentary health care.

<sup>71</sup> Since December 1979, the Chinese government, in collaboration with the WHO, UNICEF and other international organisations, established five primary health care cooperative centres in different provinces, launched pilot counties, and implemented a large number of water improvement and EPI cold chain projects in rural areas. In 1989, the Ministry of Health held the first national primary health care conference in Jinzhou, Tianjin. During this conference, experiences of pilot counties were summarised; objectives, strategies, and evaluation criteria for the development of rural primary health care were formulated (Liu & Cao, 2007; Chen et al., 2008). A few months after the conference, the Ministry of Health (1990) issued a series of indicators and targets for rural areas to develop its primary health care. The urban developments of primary health care lagged behind but followed the rural developments. Since 1985, pilots were rolled out in cities, the first urban primary health care cooperative center was established by the WHO in 1990 in Hongqiao, Shanghai, and the first national urban primary health care conference was held by the Ministry of Health in the same year (Wang & Yang, 1991). Five years later, the Ministry of Health et al. (1995) issued a series of indicators and targets for the development of primary health care in urban areas.

until the mid-1990s. After the mid-1990s, however, the restructuring of SOEs brought meant the original system could no longer work. As SOEs shrank, millions of their employees were laid off each year. SOEs were officially required to separate the provision of social services from their business activities. The financial responsibility of health care was also shifted a new health insurance program, the UEBMI (see Chapter 3).

Table 5.7

*Indicators for primary health care in the 1990s*

| Rural                                                                                              | Urban                                                                                                                |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 1. Health policy support.                                                                          | 1. Health policy support.                                                                                            |
| 2. Percentage of health expenditure in total government expenditure at county and township levels. | 2. Health resources allocated to primary health care (public expenditure, coverage of social health security, etc.). |
| 3. Coverage of health education.                                                                   | 3. Coverage of health education.                                                                                     |
| 4. Coverage of village clinics & percentage of A-class village clinics.                            | 4. Coverage of community health care.                                                                                |
| 5. Coverage of pooled-fund health care.                                                            | 5. Hygiene inspection at public spaces.                                                                              |
| 6. Coverage of safe water.                                                                         | 6. Inspection of drinking water and food hygiene.                                                                    |
| 7. Coverage of hygienic toilets.                                                                   | 7. Hygiene inspection at industrial and entrepreneurial poisonous and harmful sites.                                 |
| 8. Conformity rate of food hygiene.                                                                | 8. Infant mortality rate.                                                                                            |
| 9. Infant mortality rate.                                                                          | 9. Maternal mortality rate.                                                                                          |
| 10. Maternal mortality rate.                                                                       | 10. Morbidity rate of communicable diseases.                                                                         |
| 11. Immunisation rate for children.                                                                |                                                                                                                      |
| 12. Morbidity rate of communicable diseases.                                                       |                                                                                                                      |

Source: Ministry of Health (1990); Ministry of Health et al. (1995).

It was in this context that the government proposed the establishment of a community health services system. The government intended to reorganise the urban health delivery system into two tiers, with hospitals focusing on complex cases and community health facilities providing basic preventive and curative care (Ministry of Health et al., 1999, 2002). The development of community health services was supposed

to restrict the role of hospitals to the diagnosis and treatment of acute and difficult cases. For other cases, urban patients are encouraged to seek care from community health facilities. Community health services are supposed to have six designated functions, including preventive care, disease treatment, health maintenance, rehabilitation, health education, and family planning. Such a positioning is referred to as ‘six-roles-one body’ (‘六位一体’).

With the launch of health care reforms in 2009, the government started to adopt the term ‘primary care’ (‘基层医疗卫生’ or ‘初级保健’) and use this one more often. When the term ‘primary care’ appears in Chinese, it is usually combined with ‘facilities’ and thus ‘primary care facilities’ (‘基层医疗卫生机构’). According to the government’s classification, primary care facilities include township health centres, village health stations, community health centres and stations and clinics (see Figure 1.2).

Primary care facilities are supposed to provide a comprehensive set of services including both public health services and treatment of common and frequently occurring diseases (CCCPC & State Council, 2009). Since 2009, the government has gradually added more missions for primary care facilities. The primary care facilities are supposed to become the first point of contact for patients and set up proper referral mechanisms with hospitals (CCCPC & State Council, 2009; State Council, 2009, 2012a). They are also supposed to gradually establish an ongoing relationship between GPs and residents, thereby providing continuous health management for residents (State Council, 2012a).

Clearly, the three terms ‘primary health care’, ‘community health services’, and ‘primary care’ overlap with each other. All three include some public health elements such as health education and immunisation. However, the emphasis of each term is different. ‘Primary health care’ is more about public health, with a greater emphasis on items such as access to hygienic toilets and safe water; ‘community health services’ is a model of health delivery in urban areas; ‘primary care’ includes both public health and



treatment of common and frequently occurring diseases. In addition, ‘primary care facilities’ are supposed to become the gatekeeper of the health care system, providing coordinative and continuous services to patients.

The Chinese government’s envisioned functions of primary care facilities are close to the ideal ‘primary care’ described in the international literature, which highlights the four essential attributes including first contact, longitudinality, comprehensiveness and coordination (discussed Section 2.1). However, key differences remain. In the public health literature, the emphasis is more on services/functions. This means that primary care can be provided by a wide range of different providers. In contrast, in the Chinese context, the term ‘primary care’ seldom appears by itself. It always appears in the form of ‘primary care facilities’ and refers to the services provided by such facilities.

#### ***5.3.1.2 Types of Primary Care Facilities***

Communes and brigades started to organise and maintain their own health facilities during the planned economy period. These commune health centres and brigade health stations were the predecessors of township health centres and village health stations. It was in the late 1990s that the government started to develop community health services (Ministry of Health et al., 1999). As discussed already, the development of community health services was part of the government’s plan to reorganise the urban health delivery system. While township health centres and village health stations are located in the countryside, the great majority of community health facilities are in urban areas.

Township health centres, village health stations and community health facilities are all responsible for providing both public health services and treatment of common and frequently occurring diseases. However, their functions are different from each other. Health stations are smaller than health centres and expected to assume a narrower range of clinical functions. Given that many township health centres are located in relatively

sparsely populated countryside, they are expected to provide some hospital services such as inpatient care or surgeries. There is no such expectation for community health centres (elaborated in Chapter 7).

From the early development of community health services, there was an explicit focus on general practice. It was proposed that community health facilities should be staffed by a health workforce that is centred around general practitioners (Ministry of Health, 2002). The idea of developing a GP workforce also to staff township health centres and village health stations appeared after the 2009 health reforms (National Development and Reform Commission et al., 2010).

### ***5.3.1.3 Practising Doctors, Assistant Practising Doctors, Village Doctors and General Practitioners***

China adopted the Semashko model when developing its health workforce. Health workers were divided into high, middle, and primary levels. At the high level, there were doctors who underwent the longest period of medical training; at the middle level, there were assistant doctors (modelled after the Soviet *feldsher*); and at the primary level, there were large numbers of paramedical workers who had very limited medical training (see Chapter 3). Despite changes in medical training and practising requirements, this three-level structure has remained unchanged. At the top of the health workforce are practising doctors (‘执业医师’). To become a practising doctor, one should have completed a bachelor’s degree in medical sciences, worked in a medical facility for one year, passed the licensure exam for practising doctors, find an employer and register with the government to practise in that facility. The procedure to become assistant practising doctors (‘执业助理医师’) is similar. However, holding a bachelor’s degree is not expected and a shorter period of medical training is acceptable. Assistant practising doctors are required to work under supervision of practising doctors, but they can practice independently in primary care facilities such as township health centres.

During the planned economy period, China trained large numbers of primary-level health workers, or paramedical workers in the countryside. In the 1980s, the Ministry of Health introduced a category of health care professionals called village doctors (‘乡村医生’). Barefoot doctors could choose to either attend additional training or quit health care. For those who attended training and passed the exam organised by the Ministry of Health, they were certified as village doctors; those who failed the exam but remained working in rural health care were renamed health aides (CHYEC, 1985, p. 132) (Section 3.2.2). The government has encouraged village doctors to pursue further study and become assistant practising doctors (CCCPC & State Council, 2002; State Council, 2012b). However, until now, there are still large numbers of village doctors and they are a particularly important workforce in rural health care.

In fact, it is perhaps misleading to adopt the term ‘village doctors’ because instead of doctors, the Chinese village doctors are more similar to paramedical workers in other health care systems. However, without a better alternative, the term ‘village doctors’ is still used in this thesis.

The concept of general practice (‘全科医学’) was introduced to China in the late 1980s. In the following decade, several pilot projects in family medicine were conducted in Beijing, Shanghai and Zhejiang. In the late 1990s, the central government required that the development of general practice should be accelerated and in particular, community health facilities should be staffed by a health workforce that is centred around general practitioners (Ministry of Health, 2002). The importance of general practice was raised again by the central government when introducing policies to accelerate the development of urban community health services in 2006 (State Council, 2006). However, initial development of general practice was sluggish, and the branch remained marginalised.<sup>72</sup>

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<sup>72</sup> Early developments of general practice have been reviewed by Wang, Kushner, Frey, Du and Qian (2007); Chen, Du, Sohal and Underwood (2007); and Wu, Cheng, Yan, Qian and Zhang (2018).

As will be discussed in Chapter 6, the Chinese government has become more determined to develop a GP workforce for primary care facilities since the launch of health care reforms. The government has since organised large-scale programs to retrain practising doctors and assistant practising doctors in township and community health centres to become GPs. These doctors have formed the majority of the GP workforce in China today.

Currently, both practising doctors and assistant practising doctors are categorised into Western doctors, traditional Chinese medicine doctors, public health doctors and dental doctors. At the national level, there does not exist a separate category for general practitioners (‘全科医生’). To become a GP, one should become a (assistant) practising doctor first and then certified by a local government.

### **5.3.2 Competition Between Primary Care Facilities and Hospitals**

As discussed in Chapter 3, since the economic reforms, many patients have started to skip primary care facilities and go straight to hospitals for outpatient care. Generally speaking, hospital outpatient departments can offer several key advantages for patients. First, hospitals are usually staffed by doctors with higher qualifications. This is particularly important, because it is hard to gauge the quality of medical care. Even after consumption, it is still common to be uncertain about whether one has received quality care. Against this background, choosing a doctor with a high qualification usually offers a sense of security, because this means the doctor has at least gone through some rigorous training and has a better chance of providing proper care. Second, compared to primary care facilities, hospitals offer more types of diagnostic tests and stock a wider variety of drugs. This provides convenience to patients, because they are more likely to receive needed tests and drugs within one setting.

Since the economic reforms, many wealthier patients started to bypass primary care facilities and sought care directly at hospitals (see Chapter 3). This trend has

continued. A body of literature has examined why some people prefer hospitals over primary care facilities. A recent review of such studies concludes an extensive list of factors. In particular, existing studies highlight that the limited drug variety and obsolete medical equipment are the most important provider factors that push patients from lower levels towards higher levels. In addition, perceived poor quality of primary care facilities is also frequently reported to repulse patients (Liu, Kong, Yuan & van de Klundert, 2018).

Closely linked to the perceived poor quality of primary care facilities is trust issues. Several surveys since the mid-2000s consistently suggest that the Chinese urban residents do not generally trust community health centres (Pan, Dib, Wang & Zhang, 2006; Yang & Yang, 2009; Zhang et al., 2015; Duckett, Hunt, Munro & Sutton, 2016). The common perceived functions of community health services include minor illness management, drug dispensing, managing patients with chronic diseases and patient education. However, there is a distrust in primary care providers' competence for confirming the initial diagnosis and management plan and their role as coordinators is not well established (Wu, Lam, Lam, Zhou & Sun, 2017a). Distrust for primary care facilities forms a sharp contrast with public trust for hospitals. However, while existing studies show that distrust for primary care facilities cannot be fully accounted for by poor evaluations of their competence, the reasons for distrust in primary care facilities are still not well understood in the literature (Duckett et al., 2016).

### **5.3.3 Rationale for the Strengthening of Primary Care**

In rural areas, the strengthening of primary care can be justified by its poor development in the 1980s and 1990s. After the collapse of the rural commune system, many primary care facilities deteriorated. The increasing inequality between rural and urban development since the mid-1980s and the collapse of the CMS constrained the demand for health care. Intergovernmental fiscal arrangements resulted in only limited government subsidies for rural primary care facilities. Many township health centres and

village health stations experienced financial difficulties in the 1980s and 1990s. They were unable to renovate their facilities or upgrade their personnel. Strengthening rural primary care facilities has been a response to these problems.

China has an unusually large gap between rural and urban development. The government has attempted to rebalance rural and urban development, partly through providing better social services for rural residents. In addition, the poor are disproportionately concentrated in the countryside. A national survey in 2003 suggested that virtually all of the China's poor were in or from rural areas (World Bank, 2009). Another national survey in the same year suggested that, among 4.5% of households identified as poor in the NHSS, 30% was caused by illnesses and injuries (Centre for Health Statistics and Information of the Ministry of Health, 2004). Clearly, expensive health care constitutes a major cause of financial hardship (Wagstaff, Lindelow et al., 2009). To the government, improving the rural health care system is an integral part of the policy agenda to revitalise the countryside and further reduce poverty. It is considered to be essential for both economic development and social stability in rural areas (CHYEC, 2004, p. 10). Given that the cornerstone of the rural health delivery system is township health centres and village health stations, strengthening primary care facilities fits well into the government's agenda.

In urban areas, strengthening primary care became essential for a different set of reasons. As economic reforms proceeded, the work unit-based primary care system was no longer suitable. Vast numbers of people moved to urban areas, but there was a near absence of primary care facilities to cater to their needs. Many sought health care services directly from hospitals or suppressed their demand. From the mid-1990s, SOEs started to separate social functions from business activities. This ended the work unit-based primary care system and resulted in a vacuum to be filled. Strengthening urban primary care facilities has been proposed in this context (Liu, 2003).

As with other countries, China is facing the changing health needs of its population. In particular, the prevalence of chronic diseases has rapidly increased. The costs of failing to address the challenge properly could be considerable. Poor management of these conditions usually results in more invasive care, at greater cost, and worse outcomes. Strengthening primary care can potentially help chronic patients better manage their health. In this way, it can help contain the escalation of health expenditures.

The strengthening of primary care has the potential for addressing some of the problems of China's health care system (see Chapter 3). Health care became increasingly unaffordable in the 1980s and 1990s. The strengthening of primary care can potentially improve the affordability of health care through delivering low-cost services and making preventive care more available. The equality of the health care system also worsened in the 1980s and 1990s, with resources concentrated at hospitals, disproportionately serving the better-off. By diverting more resources to primary care facilities, the government can play a redistributive role and correct its past pro-rich pattern. The health care system is inefficient in the sense that facilities at higher levels are overwhelmed by patients, while the utilisation of primary care facilities is low. Hospitals are expensive, and the high use of hospitals drives up the health care expenditure, and low utilisation of primary care facilities generates wastes. The strengthening of primary care can make primary care facilities more attractive to patients. Through rediverting patients from hospitals to primary care facilities, the strengthening of primary care can potentially make the health care system more efficient and services more affordable. The system is also inefficient due to the lack of coordination between facilities. Patients frequently receive repetitive services from different providers, generating waste. The strengthening of primary care can improve the coordination between facilities.

### 5.3.4 The Government's Goals and Objectives

Since the early 2000s, the government has proposed many goals and objectives for primary care facilities. These are listed in various policy documents. The most important ones can be found in five-year health work plans and major documents guiding health care reforms.<sup>73</sup> As previously discussed, the task of strengthening primary care is both a goal in itself and a means to improve the health care system (see Chapter 4). The government's objectives are grouped under these two categories.

When the strengthening of primary care is considered as a goal in itself, the government's objectives include the following:

- In urban areas, each street or area with 30,000–100,000 residents should have one community health centre (State Council, 2006, 2007b, 2012a). Basic infrastructure should be in place and meet a certain standard (CCCPC & State Council, 2002; State Council, 2006, 2009, 2012b). In rural areas, each township should have one government-run township health centre, and each administrative village should have one village health station (CCCPC & State Council, 2002, 2009; State Council, 2007b, 2012a).
- There should be more physicians working in community settings and more graduates from the discipline of general medicine (Ministry of Health, 2001; CCCPC & State Council, 2002; State Council, 2006, 2012a, 2012b).

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<sup>73</sup> Every five years, the Chinese government issues a five-year health work plan to map out strategies to develop the health care system. The plans offer policy guidelines for reforms and provide numerical targets. The five-year plans are significant, because they offer a glimpse of the government's priorities for the next five years. This thesis's study period is covered by the Tenth (2001–2005), the Eleventh (2006–2010) and the Twelfth (2011–2015) Five-Year Plans/Guidelines (Ministry of Health, 2001; State Council, 2007b, 2012a). Since the early 2000s, the government has issued several major documents to guide reforms. These documents are accompanied by policy documents on different aspects to specify how reforms should be carried out. For this thesis's study period, the most significant policy documents covering health care reforms are *Decisions on Further Strengthening Rural Health* (CCCPC & State Council, 2002), *Guiding Opinions on the Development of Urban Community Health Services* (State Council, 2006), *Opinions on Deepening the Reform of the Health Care System* (CCCPC & State Council, 2009), *Notice on Issuing the Plan on Recent Priorities in Carrying Out the Reform of Health Care System 2009–2011* (State Council, 2009) and *The 12<sup>th</sup> Five-year Guideline for Health Care Reforms and the Implementation Plan* (State Council, 2012b).



- The qualifications of health professionals should be continuously improved (Ministry of Health, 2001; CCCPC & State Council, 2002; State Council, 2009, 2012a, 2012b). Village doctors should gradually become assistant practising doctors (CCCPC & State Council, 2002; State Council, 2012b).
- Primary care facilities should provide proper incentives for employees to be productive (CCCPC & State Council, 2002, 2009; State Council, 2006, 2012b).
- In urban areas, community health centres and stations should gradually become the first point of contact for patients (CCCPC & State Council, 2009; State Council, 2009, 2012a).
- Primary care facilities should provide a comprehensive range of services, including health education, prevention of diseases, health maintenance, rehabilitation, family planning, and treatment of common and frequently occurring diseases (CCCPC & State Council, 2002; State Council, 2006).
- Traditional Chinese medicine should be offered at primary care facilities (CCCPC & State Council, 2002, 2009; State Council, 2006, 2012a, 2012b).
- Services provided by primary care facilities should be safe and effective (Ministry of Health, 2001; State Council, 2007b; CCCPC & State Council, 2009).
- The family doctor model should be promoted to gradually establish an ongoing relationship between GPs and residents. In this model, primary care facilities should provide continuous health management for residents (State Council, 2012a).
- Primary care facilities should set up proper referral mechanisms with hospitals (State Council, 2006, 2009, 2012a; CCCPC & State Council, 2009).

When the strengthening of primary care is considered as a means to improve the health care system, the government's objectives include the following:

- Primary care facilities should provide a range of essential public health services to the population free of charge (State Council, 2009).
- Government-run primary care facilities should sell essential medicines at wholesale prices. Essential medicines should be covered by social health insurance programs and the reimbursement rate of essential medicines should be higher than that of non-essential medicines. In this way, essential medicines will be more affordable for the population (CCCPC & State Council, 2009; State Council, 2009).
- Primary care facilities should apply appropriate health technologies, appropriate equipment and essential medicines to lower health care costs for residents (State Council, 2007b, 2009).
- Primary care facilities should provide medical services at low prices (Ministry of Health, 2001; State Council, 2007b).
- Health services should be available to the rural population and people in the central and western regions (Ministry of Health, 2001).
- Primary care facilities should focus on women, children, the elderly, patients with chronic medical conditions, people with disabilities, poor people and other disadvantaged social groups (State Council, 2006).
- In urban areas, the general treatment of diseases, rehabilitation and nursing services should gradually be shifted from hospitals to community health centres and stations (State Council, 2006). In rural areas, the treatment and rehabilitation of common diseases, frequently occurring diseases, emergency and severe cases, and some difficult and complicated diseases should be carried out within the counties where patients reside (State Council, 2012b).

## 5.4 Summary

Since the early 2000s, China's transition from a planned to market economy continued and the economy kept growing robustly. Backed by fiscal recovery, the government shifted its focus to pursue a more balanced model of development. A series of ambitious social programs have been rolled out, and health care has attracted more government resources than other social sectors.

From 2003–2015, the health needs of the Chinese population changed significantly, with substantial increases in self-reported morbidity rates, partly due to an increase in the prevalence of certain diseases and partly due to improved awareness. This development was accompanied by the increasing financial capacity of the population and universalisation of health insurance, both of which increased the demand for health care. After years of intense debate, the government launched a new round of ambitious health care reforms in 2009. The overall goal is to make essential health care affordable and accessible to the entire population by 2020. To achieve this goal, the government allocated substantial subsidies to the demand and supply sides of health care. The strengthening of primary care has been a high priority within the health care reforms. This is a response to both past problems and new challenges. Reflecting this complexity, the government has multiple goals and objectives for primary care.

## **Chapter 6. Strengthening Primary Care as a Goal in Itself:**

### **Inputs**

This chapter discusses the Chinese government's role in strengthening the inputs of primary care. Following this thesis's analytical framework (see Chapter 4), this chapter analyses the government's interventions in four inputs: physical resources, human resources, staff training and financing. The government's intentions and means of interventions and these interventions' outcomes are discussed for all dimensions.

#### **6.1 Physical Resources**

The government's intention to strengthen the physical resources of primary care facilities has two dimensions. First, the government is aiming for a complete primary care network, meaning that primary care facilities should cover all of the population. Second, the government intends to continuously improve the physical conditions of primary care facilities to enable the delivery of public health and curative services for common diseases.

##### **6.1.1 Network Completeness**

In the early 2000s, the primary care network in rural areas was relatively complete, with townships covered by township health stations and villages covered by village health stations.<sup>74</sup> In urban areas, the situation was different. As discussed in Chapter 3, the government became committed to reforming the state sector in the late 1990s. One important part of the reform was the separation of social functions from SOEs. The reforms created a need for a new model of primary care delivery in cities. In response, the government proposed establishing community health services (CCCPC & State

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<sup>74</sup> The 2002 SARS outbreak resulted in a sudden decrease in the number of village health stations. While 89.2% of villages had a village health station in 2001, the rate dropped to 77.6% in 2003 (Ministry of Health, 2004).

Council, 1997; Ministry of Health et al., 1999). Similar to the arrangement in the countryside, community health services are catchment area based and supposed to provide full coverage for the residents.

To ensure the network is complete and catchment area based, the government implemented local health planning. According to the *Regulation on the Administration of Medical Institutions* and *Detailed Rules for the Regulation on the Administration of Medical Institutions*, both enacted in 1994, a new entrant can only be approved if it is subject to the government's plan for the setting of health facilities. The central government is responsible for laying down the principles for the setting of health facilities. Since the early 2000s, such principles have become more specific. In 2002, the central government proposed that there should be one government-run township health centre in each township (CCCPC & State Council, 2002). In 2006, it was added that there should be one community health centre in each street or area of 30,000–100,000 people (State Council, 2006, 2012a). In 2009, the central government further required that there should be 'at least one village health station in every village' (CCCPC & State Council, 2009; State Council, 2009, 2012a). Following these principles, local governments make plans for their jurisdictions. These plans state the desired number of health facilities for a local area and whether any addition of a specific type of health facility is desired. A plan may conclude that a sufficient number of health facilities already exists in the local area and, thus, no entry would be approved. In practice, this means that the permissibility and type of new entrants are strictly under government control.

Given that the rural network was already considered to be relatively complete in the early 2000s, the government did not intend to further increase the number of township health centres. Instead, the focus was on merging those redundant health centres resulting from the merger of townships. In cities, the strategy was to fully utilise existing resources, with the focus on converting existing public facilities into community health centres and

stations (State Council, 2006). As the urbanisation process accelerated, townships were converted into streets and many township health centres were converted to community health centres. Throughout the process, the dominance of public ownership was maintained. It is repeatedly highlighted that the provision of primary care should be dominated by the government (CCCPC & State Council, 2002, 2009; State Council, 2006). The major justification provided for this is that public ownership can better protect the interests of the general public.<sup>75</sup> In practice, since the majority of primary care facilities were publicly owned in the early 2000s, this requirement actually implied maintaining the status quo.

The government's target of having a complete network has been achieved. As previously discussed, the completeness of the network was not a serious problem in rural areas in the early 2000s—almost all townships had township health centres. Despite the shock brought by 2002 SARS outbreak, 77.6% of villages had village health stations in 2003. Between 2003 and 2015, there were some minor changes (see Table 6.1). First, the number of township health centres decreased as part of the country's urbanisation process. As many townships were either merged or turned into streets, township health centres were also merged or reclassified as community health centres. In 2015, township health centres still covered townships. Second, the coverage of village health stations was improved. The percentage of villages with village health stations was increased to 93.3% in 2015 (NHFPC, 2016). Almost full coverage has been achieved.<sup>76</sup>

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<sup>75</sup> One interviewee (Interview No. 1) suggested that government officials are unclear about why public provision has been chosen—this is the decision of top leaders. In their daily work, government officials are more concerned with how to implement decisions by top leaders.

<sup>76</sup> According to the *Administrative Measures for Village Health Stations*, issued in 2014, villages where township health centres are located are exempted from setting up any village health station and some very small villages are allowed to share one village health station with their neighbouring villages.

Table 6.1

*Grassroots administrative units and primary care facilities (2003 and 2015)*

| Area        | 2003                |                                       | 2015                |                                       |
|-------------|---------------------|---------------------------------------|---------------------|---------------------------------------|
|             | <i>No. of units</i> | <i>No. of primary care facilities</i> | <i>No. of units</i> | <i>No. of primary care facilities</i> |
| Townships   | 38,028              | 44,279 township health centres        | 31,830              | 36,817 township health centres        |
| Villages    | 678,589             | 514,920 village health stations       | 580,575             | 640,536 village health stations       |
| Streets     | 5,751               | 753 community health centres          | 7,957               | 8,806 community health centres        |
| Communities | 77,431              | 9,348 community health stations       | 99,679              | 25,515 community health stations      |

Source: Ministry of Health (2004, 2007), NBS (2004, 2016) and NHFPC (2016).

From 2003–2015, urban areas witnessed rapid expansion of the network of community health services. While only 753 community health centres for 5,751 streets existed in 2003, there were 8,806 community health centres for 7,957 streets in 2015 (see Table 6.1). By the end of 2008, 83% of all streets had their own community health centres (CHYEC, 2010, p. 86). By 2012, the goal of having one community health centre for each street in all of China's cities had been achieved (Cheng, 2012).

This network is largely publicly owned. In the countryside, the government has continued to act as the dominant provider of township health centres and increased its involvement in providing village health stations. As shown in Figure 6.1, almost all township health centres are publicly owned and the percentage of publicly owned village health stations increased from 53% in 2009 to 63% in 2015. In cities, the government has also been the major health provider. More than 90% of community health centres and approximately 70% of community health stations are publicly owned.

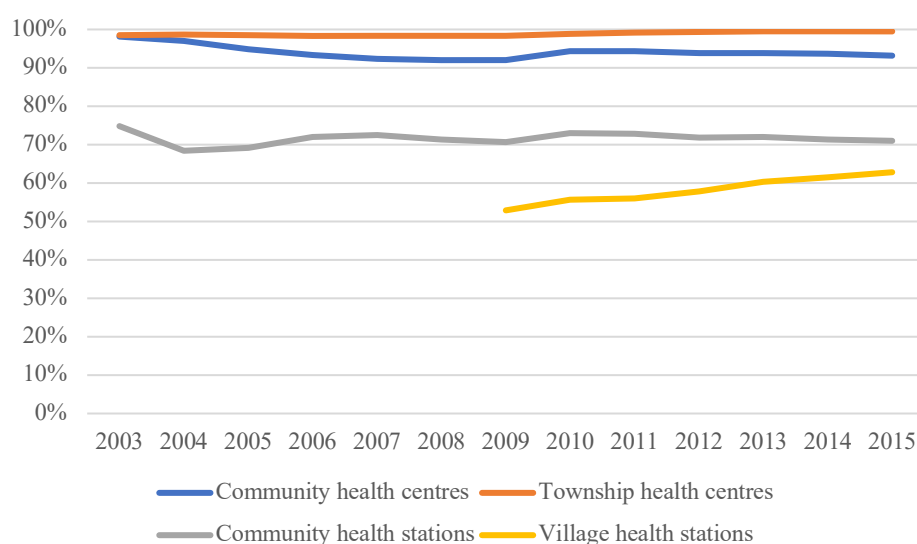


*Figure 6.1. Publicly owned health centres and stations (% of total) (2003–2015) (Ministry of Health, 2004, 2005, 2006, 2007, 2008, 2009a, 2010, 2011a, 2012; NHFPC, 2013, 2014a, 2015, 2016). Pre-2009 ownership data for village health stations are unavailable.*

### 6.1.2 Individual Facilities

While the rural primary care network remained relatively complete in the early 2000s, the financial difficulties experienced by rural primary care facilities during the 1980s and 1990s resulted in serious deterioration. Many were in a dilapidated condition and lacked basic equipment for delivering medical services (CHYEC, 2003, p. 85). In cities, community health facilities also tended to be in poor physical conditions, and this was believed to be a key reason why service quality tended to be low and patients went straight to hospitals (CHYEC, 2007, p. 3). Thus, the government intended to improve the physical conditions of primary care facilities.

According to the *Regulation on the Administration of Medical Institutions* and *Detailed Rules for the Regulation on the Administration of Medical Institutions*, a new entrant should meet the entry requirements set by the government. These entry requirements include specific items concerning the physical resources a facility should possess. The space requirements are shown in Table 6.2. For example, a village health station is required to have an area of at least 40 m<sup>2</sup>. There are also requirements for which



rooms a facility should have, and what kinds of equipment a facility should possess. Local governments are expected to adjust the national requirements according to their local conditions. This means that local governments with extra resources, either because they are in a more economically developed area or have received more central subsidies, should increase the requirements for local facilities. In many localities, the entry requirements are much higher than those at the national level.<sup>77</sup>

Table 6.2

*National entry requirements for the space of primary care facilities*

| Primary care facility    | Space requirement                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Township health centre   | <p>&lt;19 beds:</p> <ul style="list-style-type: none"> <li>• at least 30 m<sup>2</sup> for township health centres without beds</li> <li>• at least 20 m<sup>2</sup> for each bed</li> <li>• at least 200 m<sup>2</sup> for a township of &lt;10,000 people</li> </ul> <p>20–99 beds:</p> <ul style="list-style-type: none"> <li>• at least 45 m<sup>2</sup> for each bed</li> </ul> |
| Village health station   | At least 40 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                           |
| Community health centre  | At least 1,000 m <sup>2</sup> , with at least an additional 30 m <sup>2</sup> for each bed                                                                                                                                                                                                                                                                                           |
| Community health station | At least 150 m <sup>2</sup> , including at least one day bed                                                                                                                                                                                                                                                                                                                         |

Source: Ministry of Health (1994), Ministry of Health and State Administration of Traditional Chinese Medicines (2006).

There are also specific construction requirements for township and community health centres (Ministry of Housing and Urban-rural Development & National

<sup>77</sup> In Henan province, for example, one of the requirements for village health stations is that each facility should have at least 80 m<sup>2</sup>—doubling the national minimal standard of 40 m<sup>2</sup> (Health Department of the Henan Provincial Government, 2009). In Zhuhai city, community health centres are required to have at least 1,500 m<sup>2</sup> (Health Bureau of the Zhuhai Prefectural Government, 2011). In Shanghai, the requirement for a new community health centre is 60 m<sup>2</sup> for every 1,000 residents served (Shanghai Municipal Commission of Health and Family Planning, 2016). As a community health centre covers 30,000–100,000 people, each community health centre is expected to have 1,800–6,000 m<sup>2</sup>—considerably higher than the national standard of 1,000 m<sup>2</sup>.

Development and Reform Commission, 2008, 2013). These requirements are higher than the entry requirements and are supposed to guide the ‘standard’ construction of these facilities. The current national requirement is that all township health centres should meet the construction requirements by 2020. There is no specific timeline for community health centres to meet these construction standards at the national level (General Office of the State Council, 2015b). However, some localities have required that these requirements should also be met by 2020.<sup>78</sup>

Table 6.3

*National construction requirements for the space of primary care facilities*

| Primary care facility    | Construction requirement                                                                                                                                              |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Township health centre   | 0.6 to 1.2 beds for every 1,000 people<br>No beds: 200–300 m <sup>2</sup><br>1–20 beds: 300–1,100 m <sup>2</sup><br>21–99 beds: 50–55 m <sup>2</sup> per bed          |
| Community health centre  | Servicing 30,000–50,000 people: 1,400 m <sup>2</sup><br>Servicing 50,001–70,000 people: 1,700 m <sup>2</sup><br>Servicing 70,001–100,000 people: 2,000 m <sup>2</sup> |
| Community health station | 150–220 m <sup>2</sup>                                                                                                                                                |

Source: Ministry of Housing and Urban-rural Development and National Development and Reform Commission (2008, 2013).

For public facilities, the government has assumed the responsibility for capital investments, including the construction or expansion of buildings and purchase of equipment (Ministry of Finance, State Planning Commission & Ministry of Health, 2000; Ministry of Finance, National Development and Reform Commission, Ministry of Human Resources and Social Security & Ministry of Health, 2009). This is justified on the basis that public facilities implement the price policies of the government and, thus, are unable to earn profits to invest in their buildings and equipment. One important post-

<sup>78</sup> See, for example, Health Department of Sichuan Provincial Government (2015), Health Department of Shandong Provincial Government (2017) and Jianyang County Government (2017).

2003 development is that the government has given much more in subsidies. As discussed in Chapter 5, this was fuelled by increased fiscal revenues and the government's new agenda to improve public services for the population. These investments in infrastructure were made mainly in three rounds to revamp the rural health care system (2004–2008), strengthen the primary care network for the first phase of health care reforms (2009–2011) and further enhance the primary care network for the second phase of health care reforms (2012–2015) (see Table 6.4).

These investments are supposed to be used to expand space, improve accessory facilities and purchase equipment. For example, for the 2009–2011 period, of the 20.8 billion yuan for township health centres, 11.8 billion yuan was to be used to expand space, 6.5 billion yuan was to be used to increase accessory facilities and 2.5 billion yuan was to be used to purchase equipment. Of the 1.25 billion yuan for village health stations, 1 billion yuan was for infrastructure construction, while 0.25 billion yuan was for the purchase of equipment (National Development and Reform Commission, Ministry of Health & State Administration of Traditional Chinese Medicines, 2010).

For each project, there are specific requirements including standard space, how the space should be allocated and lists of essential equipment for different types of health care facilities. For the sake of simplicity, Table 6.4 lists only the requirements for space to illustrate the trend. Details of other requirements can be found in the sources provided in the table notes. Overall, these requirements are significantly higher than the entry requirements given in Table 6.2. For example, while the entry level space requirement for a village health station is 40 m<sup>2</sup>, the space requirement under the subsidised projects is 60 m<sup>2</sup> for each facility. There are also higher requirements for equipment. For example, health centres are required to purchase equipment such as X-ray machines, B-scan ultrasonography and biomedical analysers.

Table 6.4

*The three major rounds of capital investment in primary care (2004–2015)*

| Period    | Target beneficiaries (no. of beneficiary facilities) | Total government subsidies (central government subsidies) | Space requirement                                                                                                                                                           |
|-----------|------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2004–2008 | Township health centres (~22,000)                    | 14.1 billion yuan (10.1 billion yuan)                     | Servicing 10,000–15,000 people: 700 m <sup>2</sup><br>Servicing 15,001–20,000 people: 800 m <sup>2</sup><br>Additional 100 m <sup>2</sup> for every additional 5,000 people |
|           | Village health stations (unspecified)                | Unspecified (unspecified)                                 | 60 m <sup>2</sup>                                                                                                                                                           |
| 2009–2011 | Community health centres (~3,700)                    | 7.1 billion yuan (4.1 billion yuan)                       | Servicing 30,000–50,000 people: 1,400 m <sup>2</sup><br>50,001–70,000 people: 1,700 m <sup>2</sup><br>70,001–100,000 people: 2,000 m <sup>2</sup>                           |
|           | Central township health centres (~5,000)             | 20.8 billion yuan (5 billion yuan)                        | 1.2 beds for every 1,000 people<br>>20 beds: 50–55 m <sup>2</sup> for each bed                                                                                              |
|           | Village health stations (unspecified)                | 1.25 billion yuan (1 billion yuan)                        | 60 m <sup>2</sup>                                                                                                                                                           |
|           | Township health centres (~20,000)                    | 29.4 billion yuan (unspecified)                           | Relevant national requirements, subject to local conditions                                                                                                                 |
| 2012–2016 | Village health stations (~100,000)                   | 6.7 billion yuan (unspecified)                            | Relevant national requirements, subject to local conditions                                                                                                                 |
|           | Community health centres (~200)                      | 0.8 billion yuan (unspecified)                            | Relevant national requirements, subject to local conditions                                                                                                                 |

Source: Ministry of Health, State Administration of Traditional Chinese Medicines, National Development and Reform Commission and Ministry of Finance (2006); General Office of the Ministry of Health and General Office of the National Development and Reform Commission (2007); State Council (2009); Ministry of Health, State Administration of Traditional Chinese Medicines and National Development and Reform Commission (2009); National Development and Reform Commission and Ministry of Health (2009); National Development and Reform Commission, Ministry of Health and State Administration of Traditional Chinese Medicines (2010); National Development and Reform Commission and Ministry of Health (2013a).

As can be seen from Table 6.4, the central government played a significant role in funding the three rounds of construction. For example, for the first round, while the planned total government contribution was 14.1 billion yuan for township health centres, the central government was supposed to contribute 10.1 billion yuan. As discussed in Chapter 5, this has been greatly facilitated by the increased availability of funds at the central level. These funds have been mainly channelled to the central and western provinces, with the intention to better balance regional developments. However, the central and western provinces' broad geography and population means that any funds directed to these areas are spread quite broadly. A summary of the number of beneficiary facilities and the amount of central funds received by these facilities in the three rounds of investments is provided in Table 6.5.

Table 6.5

*Central subsidies for the construction or expansion of primary care facilities (2004–2015)*

| Period    | No. of township health centres<br>(central government subsidies) | No. of village health stations<br>(central government subsidies) | No. of community health centres (central government subsidies) |
|-----------|------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|
| 2004–2008 | >31,000<br>(12.5 billion yuan)                                   | >8,800<br>(0.3 billion yuan)                                     | -                                                              |
| 2009–2011 | 6,213<br>(5.8 billion yuan*)                                     | 25,000<br>(1.0 billion yuan)                                     | 2,382<br>(4.2 billion yuan)                                    |
| 2012–2015 | 16,956<br>(16.8 billion yuan)                                    | 94,250<br>(4.7 billion yuan)                                     | 163<br>(0.3 billion yuan)                                      |

*Note.* \*Author's estimation.

Source: CHYEC (2009, pp. 268, 276; 2011, pp. 239, 249; 2012, p. 342); CHFPYEC (2016, p. 132).

Between 2004 and 2008, the central government allocated 12.8 billion yuan to fund the basic infrastructure of 31,000 township health centres and more than 8,800 village health stations (CHYEC, 2009, p. 276). This was higher than the total government

subsidy planned for the period because, in the latter half of 2008, more funds became available as part of the central government's stimulus project in response to the global financial crisis. As a result, the first round of investments was increased.

The stimulus project provided more funds for the construction of buildings and the purchase of equipment for primary care facilities (CHYEC, 2009, p. 268). This coincided with the launch of health care reforms in 2009. Against this background, the central government allocated 11 billion yuan to 6,213 central township health centres, 25,000 village health stations and 2,382 community health centres between 2009 and 2011 (CHYEC, 2011, p. 249; 2012, p. 342).<sup>79</sup>

During the second phase of implementation (2012–2015), the central government further increased its investments for the construction or expansion of primary care facilities (National Development and Reform Commission & Ministry of Health, 2013a). The central government offered 21.8 billion yuan for 17,000 township health centres, 94,250 village health stations and 163 community health centres.<sup>80</sup>

In addition to these funds, the central government allocated several earmarked subsidies for the purchase of equipment. In 2010, for example, the central government provided 1.9 billion yuan to procure computers and improve the information technology system for 423,000 village health stations in the central and western provinces (CHYEC, 2011, p. 241). Between 2013 and 2014, the central government allocated another 2.2 billion yuan to purchase 108,200 pieces of 'all-in-one' health monitors for village health stations (CHFPYEC, 2014, p. 145; 2015, p. 152).

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<sup>79</sup> Central township health centres are supposed to have stronger capacity compared to township health centres. Their catchment areas are also broader. There are around 10,000 central township health centres, accounting for fewer than one-third of all township health centres.

<sup>80</sup> This was calculated based on the following information. From 2011–2015, the central government made subsidies available for the construction of 18,000 township health centres, 108,000 village health stations and 163 community health centres (CHFPYEC, 2016, p. 132). In 2011, central subsidies covered the construction of 1,044 township health centres and 13,750 village health stations (CHYEC, 2012, p. 342). The number of facilities covered between 2012 and 2015 can be derived by subtracting the number of facilities covered in 2011 from the number of facilities covered between 2011 and 2015.

Despite the impressive overall scale, central government subsidies are modest when it comes to individual facilities. As can be calculated from the data presented in Table 6.4, for the 2012–2015 period, the average central subsidy was around one million yuan for one township health centre, 50,000 yuan for one village health station and two million yuan for one community health centre. This is a significant improvement on the 2004–2008 situation, when the average central government subsidy was around 400,000 yuan for one township health centre and 30,000 yuan for one village health station. However, even with this significant increase, the central subsidy is still far from being able to cover the costs of building facilities to meet the national requirements (Interview No. 17; Interview No. 23).

Part of the gap has been filled by the financial contributions of local governments (CHYEC, 2010, pp. 10–27). However, as can be derived from Tables 6.3 and 6.4, the central government was supposed to be the major financial contributor for these projects, except for the central township health centres constructed between 2009 and 2011. This means that, even with the planned local matching of funds, the government's investment in primary care facilities was not significant. In practice, this has been resolved in several ways. First, the national policy emphasises that local governments should provide land free of charge and waive other relevant charges to bring down construction costs. These provide hidden or indirect investments to primary care facilities (Interview No. 4; Interview No. 27). Second, many local governments used extrabudgetary funds, mainly revenues from land transactions or debts, to finance these capital investments (Interview No. 26; Interview No. 23). However, as extrabudgetary funds tend to be ignored in formal fiscal reports and local governments are not legally permitted to borrow, complete and accurate data on infrastructural investments are virtually non-existent (Fock & Wong, 2008). In one of the township health centres I visited, for example, their new building costed 23 million yuan. Given that this township health centre was classified as a central

township health centre, the corresponding government subsidy was supposed to be around four million yuan (calculated by dividing 20.8 billion yuan by 5,000, based on the data in Table 6.4). The director also told me that they still had a three million yuan debt to be paid (Interview No. 27). This means that the total capital investments are likely to exceed the government's official plan (see Table 6.4).

Having recognised the existence of debt problems, the central government set up an earmarked fund in 2011 for primary care facilities to pay for their debts. The central government required that local governments should clear all the debts of primary care facilities within two years and do not incur any new debts (National Development and Reform Commission, Ministry of Finance & Ministry of Health, 2011). Central subsidies allocated for this totalled 2.5 billion yuan (CHFPYEC, 2015, p. 109). Compared to the central investments summarised in Table 6.6, this is relatively small. To what extent this subsidy helped local governments to clear debts is unknown. However, given that health centres still had debts at the time of my fieldwork in 2016, the problem has not been resolved as the central government intended.

The government's increased investments and requirements for physical conditions have significantly pushed up the physical capacity of primary care facilities. As Table 6.6 shows, the space of primary care facilities increased significantly between 2003 and 2015.

Table 6.6

*Average space and number of beds of primary care facilities (2003, 2009 and 2015)*

| Primary care facility   | Average space and no. of beds |                           |                           |
|-------------------------|-------------------------------|---------------------------|---------------------------|
|                         | 2003                          | 2009                      | 2015                      |
| Township health centre  | 1,853 m <sup>2</sup> , 15     | 2,210 m <sup>2</sup> , 24 | 2,710 m <sup>2</sup> , 32 |
| Village health station  | -                             | 74 m <sup>2</sup>         | 81 m <sup>2</sup>         |
| Community health centre | 1,312 m <sup>2</sup> , 16     | 1,928 m <sup>2</sup> , 19 | 2,220 m <sup>2</sup> , 20 |

Source: Author's calculation based on data in Ministry of Health (2004, 2010) and NHFPC (2016).



By 2015, the average levels had well surpassed the national requirements (see Table 6.3). Primary care facilities have become more spacious and their physical conditions have also significantly improved. During my fieldwork, most of the primary care facilities I visited had relatively good physical conditions (see Figures 6.2–6.7).

One particularly eye-catching feature of these facilities is their separate areas for the delivery of different types of public health services. The community and township health centres I visited usually have designated areas for child health care (see Figure 6.2); maternity health care (see Figure 6.3); a ‘health hut’, which is a room for health check-ups (see Figure 6.4); and an area for traditional Chinese medicines (see Figure 6.5). As discussed in detail in Chapter 7, these service items are all included in the national package of essential public health services. Clearly, the importance of delivering these services was fully embraced when the construction work was undertaken. As shown in Figures 6.2–6.7, these health centres are decently decorated. This forms a sharp contrast with the situation in the 2000s, when primary care facilities tended to be described as dilapidated.

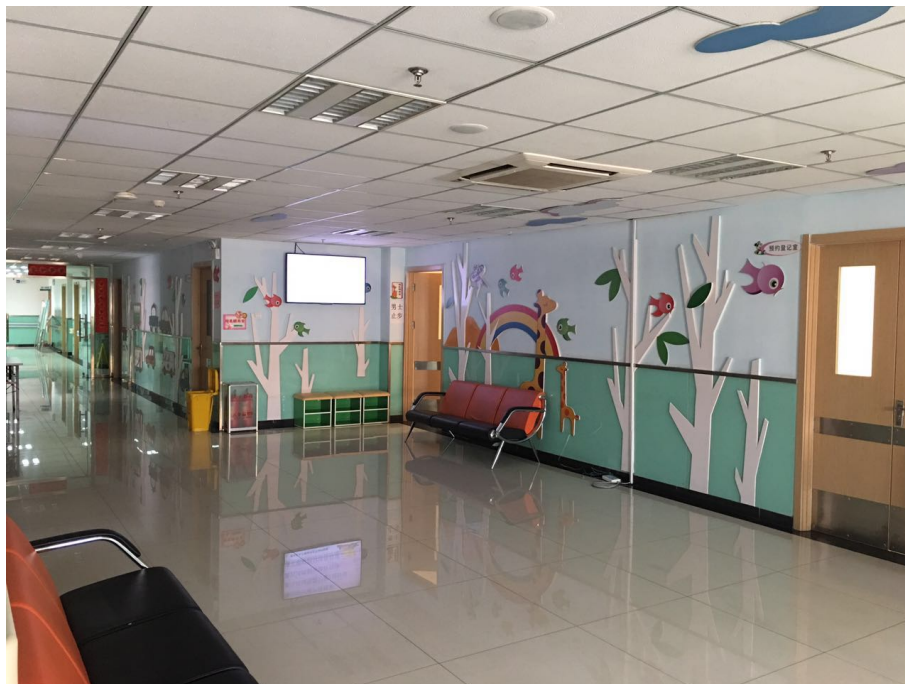


*Figure 6.2.* The child health care unit of a community health centre in Beijing (taken by author around 1pm on Saturday, 4 February 2017).



*Figure 6.3.* The maternity care unit of a community health centre in Beijing (taken by author around 4pm on Saturday, 4 February 2017).



*Figure 6.4.* The 'health hut' of a community health centre in Fujian (taken by author around 3pm on Wednesday, 14 December 2016).



*Figure 6.5.* The traditional Chinese medicine unit of a community health centre in Beijing (taken by author around 2pm on Wednesday, 1 February 2017).

In addition to the improvements in physical appearance, several interviewees indicated that one of the most significant post-2003 changes is that while primary care facilities used to purchase equipment using their own revenues, these purchases are now mainly funded by the government. This change has introduced many new items such as digital X-ray machines and colour doppler ultrasound machines to health centres (Interview No. 7; Interview No. 8; Interview No. 25; Interview No. 26). By 2011, the great majority of township health centres could perform B-scan ultrasonography, electrocardiogram, routine blood tests, X-ray examinations, urinalysis and blood glucose tests. The great majority of community health centres could perform B-scan ultrasonography, electrocardiogram, blood glucose tests, lipid tests, routine blood tests, urinalysis, liver function tests and kidney function tests (NHDRC, 2013). A more recent survey shows that 93.4%, 85.8% and 79.6% of community health centres have been

equipped with ECG machines, B-scan ultrasonography and biomedical analysers respectively (Zhang, Ding & Gao, 2016).

It is unclear to what extent the current level of physical resources can be justified. The public discourse suggests that primary care facilities are being underused, mainly based on the observation of facilities being empty and newly purchased equipment remaining idle (e.g., CHFPYEC, 2016, p. 113; Wu & Lam, 2016). Almost all of the primary care facilities I visited seemed too spacious for the number of staff and patients (e.g., see Figures 6.2–6.5). This is further explored in Chapter 8. Figures 6.6 and 6.7 are photos taken of one community health centre in Fujian and one township health centre in Beijing respectively. Both figures show the (empty) entrance areas during normal business hours. This was a common observation during my visits to health centres. While some had more patients, this is incomparable to the overcrowding in hospitals.



*Figure 6.6.* A community health centre in Fujian (taken by author around 11am on Saturday, 17 December 2016).





*Figure 6.7. A township health centre in Beijing (taken by author around 11 am on Friday, 5 January 2017).*

The ‘overcapacity’ problem was defended by the director of a community health centre (Interview No. 28). His health centre has seven floors, with two remaining undecorated. When I visited his health centre on a Friday afternoon, I did not see a single patient, as in the photos above. The director argued that having some overcapacity is necessary to preclude the need to build new buildings if demand increases. Making investments in this way will eventually save money for the government, their health centre and patients. This is perhaps the mindset that has driven the infrastructure investments in many areas. Problematically, however, there is an absence of proper monitoring on such investments. As previously discussed, even how much has been spent is unclear. The financial contribution from the central government is clear, but the remainder is unknown. This is not only because there are many hidden and indirect investments made in the form of free allocation of land, but also because the extrabudgetary financing at local levels was not systematically recorded. Consequently, not much can be said about whether these investments are cost effective. Any evaluation based on the official data alone risks biasing the results.

The government has applied a planned economy approach in regard to the physical resources of primary care facilities. The government sets detailed and specific targets for different aspects of resources and such targets are used to monitor and evaluate the progress in the strengthening of primary care. There seems to be insufficient attention to patients' preferences. The demand is not fixed but instead influenced by many factors (Liu et al., 2018). In particular, the perceived quality of health care and cost factors play important roles. The perceived quality is in turn affected by the capacity of human resources and availability of drugs and diagnostic tests while cost factors include not only the actual cost of services but also how much patients are reimbursed by insurance programs. More subjective factors such as how much patients value health care or their own health are also important. Such a long list of factors can hardly be captured by the government's targets set under the top-down planning approach.

A further complicating factor is the interaction between primary care facilities and hospitals. In the Chinese context, primary care facilities compete with hospitals in the provision of outpatient care (Section 5.2.3). The current logic of the government is that providing good primary care facilities will help relieve demand on hospitals. In reality, however, patients can always make their own choices based on their comparisons of quality and cost factors among different types of health care facilities. Although the physical resources of primary care facilities increased, the improvements in hospitals were even more impressive (see Chapter 8).

The complex decision-making process of patients and also the competitive relationship between primary care facilities and hospitals mean that the increase in physical resources of primary care facilities alone is not enough to change the care-seeking pattern of patients. This helps to explain why there seems to be an underutilisation problem, despite the obvious improvements in physical conditions of primary care facilities.

## 6.2 Human Resources

The government's intention to strengthen the human resources of primary care facilities has two dimensions. First, there should be a sufficient quantity of primary care workers to staff the primary care network. Second, primary care workers should have a certain level of competencies to enable the delivery of public health and curative services for common diseases.

In the early 2000s, when the government proposed to revamp the rural health care system, the major concern raised for human resources was to gradually phase out those who work as health care professionals but have never received any formal medical training. Eventually, rural health facilities should be staffed only by those who have reached the entry requirements set by the government. The educational qualifications of rural health workers should also be gradually increased (Ministry of Health, Ministry of Education, Ministry of Finance, Ministry of Personnel & Ministry of Agriculture, 2003). In cities, the development of community health services was still at an early stage at this time. As previously discussed, the government's main strategy was to convert existing small hospitals and township health centres into community health centres. As a result, some staff of these facilities became employees of community health centres. In 2006, when the government issued the major guidelines for the development of community health services, the priority for human resources was to attract university graduates and existing employees of medium and large urban hospitals (Ministry of Personnel, Ministry of Health, Ministry of Education, Ministry of Finance & State Administration of Traditional Chinese Medicines, 2006). Since the launch of health care reforms, the government has continued its earlier intentions, aiming to further increase the quantity and quality of human resources for primary care (Ministry of Health et al., 2009).

### 6.2.1 Overall Primary Care Workforce

There are three major categories of health care professionals working in primary care facilities in China: (assistant) practising doctors, village doctors and nurses (see Chapter 5). The government has gradually introduced entry controls for all three categories. In 1999, the *Law on Practising Doctors and the Interim Measures for the Registration of Doctors* was made effective. In 2004, the *Regulation on the Administration of the Practice of Village Doctors* was made effective. In 2008, the *Nurses Regulation and the Administrative Measures for the Registration of Nurses* was made effective.

The entry rules are similar for different types of health workers, with three major requirements. First, one should have completed a certain level of medical education. Second, one must pass their corresponding licensure exams prepared and organised by the government. Third, having passed the licensure exam, one should find an employer and register with the government to practise in that facility.<sup>81</sup> Since the government determines the contents of licensure exams and decides the pass scores, the government plays a significant role in shaping which type of candidates can be qualified and in controlling the number of entrants. Currently, only a relatively small percentage of medical graduates become practising professionals. In 2012, for example, 768,376 candidates were approved to attend the licensure exams for (assistant) practising doctors. In the end, 231,986 passed the exams (CHYEC, 2013, p. 238). The pass rate was therefore 30% in that year. Between 2012 and 2013, the number of (assistant) practising doctors was increased by 178,690 (NHFPC, 2016). This means that of those who graduated and participated in licensure exams, only one-fifth became (assistant) practising doctors.

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<sup>81</sup> One contentious part of registration used to be that doctors should only practice in the institution that they registered with the government and any change of employer should be matched with a change in registration. After years of criticism, these interim measures were finally replaced by the *Administrative Measures for the Registration of Practising Doctors* in 2017. Doctors can now practise in multiple medical institutions within the same locality (province for practising doctors and county for assistant practising doctors).



In addition to the entry requirements for individual health care practitioners, the government also maintains the entry requirements for different types of primary care facilities. Table 6.7 shows the minimal staffing levels of township and community health centres. As previously discussed, there are also requirements for the number and distribution of these facilities (i.e., one township health centre for each township, one community health centre for each street and one village health station for each village). In this way, the government has actually set requirements for the minimum number of employees for the primary care sector.

Table 6.7

*Human resource entry requirements for primary care facilities*

| Primary care facility    | Human resource requirement                                                                                                                                                                                                                                    |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Township health centre   | <19 beds: at least five employees<br>20–99 beds: at least three (assistant) practising doctors and five nurses                                                                                                                                                |
| Village health station   | At least one village doctor                                                                                                                                                                                                                                   |
| Community health centre  | At least six practising doctors and nine nurses<br>At least one additional practising doctor for every five beds<br>At least one nurse for every practising doctor<br>Two to three general practitioners and one public health doctor for every 10,000 people |
| Community health station | At least two doctors, in either general practice or traditional Chinese medicine<br>At least one nurse for every doctor                                                                                                                                       |

Source: Ministry of Health (1994), Ministry of Health and State Administration of Traditional Chinese Medicines (2006).

Most of those who entered the primary care workforce have been absorbed by public facilities. As shown in Figure 6.8, the majority of (assistant) practising doctors, nurses and village doctors are employed by public facilities.

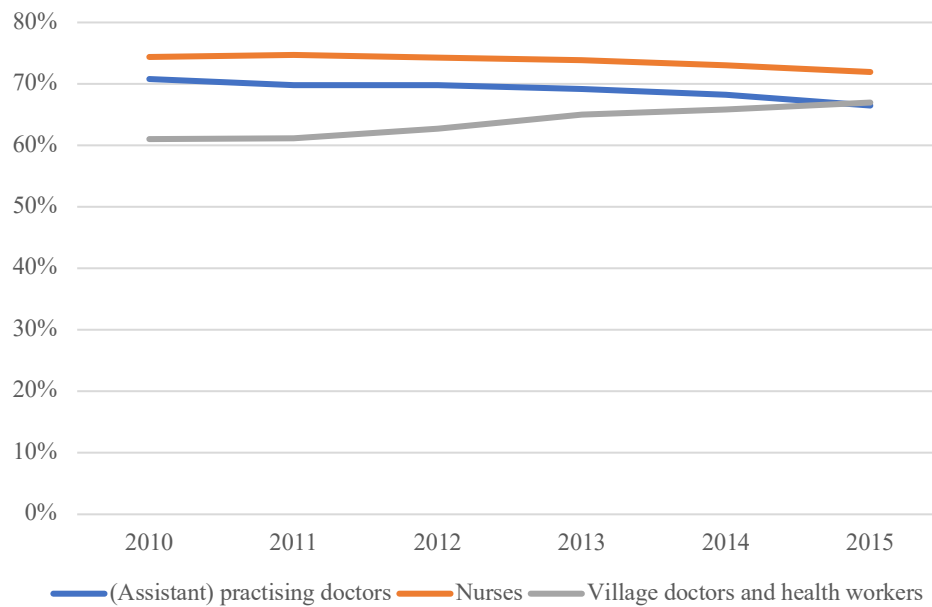


*Figure 6.8. Percentage of primary care workers employed in public facilities (2010–2015)* (Ministry of Health, 2011a, 2012; NHFPC, 2013, 2014a, 2015, 2016).

The vast majority of the primary care employees work for township health centres, community health centres and village health stations (see Table 6.8). While the majority of (assistant) practising doctors and nurses have been employed by township and community health centres, all village doctors have been employed by village health stations. The following discussions in this section focus on these three types of primary care facilities. This is because these facilities have employed the majority of the primary care workforce and have been subject to the heaviest government interventions.

Table 6.8

*Distribution of the primary care workforce in different types of facilities (2015)*

| Facility                | No. of primary care workers (%) |                                           |                        |                |
|-------------------------|---------------------------------|-------------------------------------------|------------------------|----------------|
|                         | <i>All employees</i>            | <i>(Assistant)<br/>practising doctors</i> | <i>Village doctors</i> | <i>Nurses</i>  |
| Total                   | 3,603,162 (100%)                | 1,101,934 (100%)                          | 962,514 (100%)         | 646,607 (100%) |
| Township health centre  | 1,277,697 (35%)                 | 440,889 (40%)                             | -                      | 298,881 (46%)  |
| Community health centre | 397,301 (11%)                   | 138,516 (13%)                             | -                      | 116,688 (18%)  |
| Village health station  | 1,197,160 (33%)                 | 145,567 (13%)                             | 962,514 (100%)         | 20,068 (3%)    |

*Note.* Total includes all primary care facilities in China, including those not shown in this table.  
Source: NHFPC (2016).

### 6.2.2 Township and Community Health Centres

For township and community health centres, entry is further influenced by the *bianzhi* system, a legacy of the planned economy that treats employees in the public sector as government employees and requires public expenditure on their salaries and benefits.<sup>82</sup> The *bianzhi* system still covers most employees of health facilities in the public sector, although some may choose to also employ contract-based personnel. Being on the *bianzhi* list is a privilege, because it implies tenured employment and is associated with a series of entitlements including government-set salaries, pensions, medical insurance and other benefits. More importantly, being in a *bianzhi* post is usually a prerequisite for promotion in the public sector. In comparison, contract-based employment opportunities provided by public or private medical institutions are usually much less attractive.

<sup>82</sup> The government plans to cancel the *bianzhi* system for public hospitals and is currently running pilots (Li, 2019). However, whether the *bianzhi* system for public primary care facilities will also be cancelled is still unclear at the current stage.

The government holds the ultimate right to determine how many bianzhi posts should be in place. Increasing the number of bianzhi posts for township and community health centres has been the most important measure adopted by the government to increase the human resources for primary care (Interview No. 17). In 2006 and 2011 respectively, the central government issued guidelines for the setting of bianzhi posts in community and township health centres. As demonstrated in Table 6.9, for community health centres, the central government suggested that they should have two to three bianzhi posts for GPs, one bianzhi post for a public health doctor and two to three bianzhi posts for nurses for every 10,000 people.<sup>83</sup> For township health centres, the central government suggested that they have 10 bianzhi posts for every 10,000 people.<sup>84</sup> After the issuance of these central guidelines, local governments were asked to reassess their number of bianzhi posts, which resulted in a moderate increase.<sup>85</sup> Between 2010 and 2011, the period in which most localities reassessed their bianzhi posts for township health centres, the number of such posts increased by 16% (CHYEC, 2012, p. 295).

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<sup>83</sup> Many localities introduced higher requirements. In Zhejiang province, the standard is to have five to six bianzhi posts for doctors (including at least three bianzhi posts for GPs) for every 10,000 residents served (Zhejiang Provincial Office for Public Sector Reform, 2007). In Hubei province, the standard is 8–12 bianzhi posts for every 10,000 people served (Hubei Provincial Office for Public Sector Reform, 2007). In Jilin province, community health centres can have 10 bianzhi posts for every 10,000 residents (CHYEC, 2012, p. 424). In Heilongjiang province, community health facilities can have eight bianzhi posts for every 10,000 people covered (CHYEC, 2012, p. 426).

<sup>84</sup> There is a tendency for local governments to introduce higher requirements. For example, in Jiangsu province, the standard is between 11–13 for every 10,000 people served (Jiangsu Provincial Office for Public Sector Reform, 2009). In Hunan province, the standard is between 12–14 for every 10,000 rural residents (CHYEC, 2010, p. 532). In Jiangxi and Guangxi provinces, each township health centre is allowed to set 12 bianzhi posts for every 10,000 people served (CHYEC, 2011, pp. 237–238). In Guangdong province, township health centres can have 13 bianzhi posts for every 10,000 people served (Health Department of the Guangdong Provincial Government, 2011). In Jilin and Shandong provinces, the standard has been pushed even higher. Township health centres can have 15 bianzhi posts per 10,000 residents (CHYEC, 2012, p. 424; Health Department of the Shandong Provincial Government, 2014).

<sup>85</sup> For example, in Jiangxi province, the reassessment confirmed 40,765 bianzhi posts for township health centres, adding 5,800 new posts (CHYEC, 2011, p. 510). In Xinjiang, the reassessment brought 2,496 new posts, driving the number of bianzhi posts for township health centres up to 26,600 (CHYEC, 2012, p. 491). In Fujian and Guangxi provinces, the reassessment of bianzhi posts for township health centres created 6,494 and over 20,000 new posts respectively (CHYEC, 2010, p. 18; 2011, p. 526).

Table 6.9

*National requirements for the number of bianzhi posts for township and community health centres*

| Facility                | Bianzhi post requirement                                                                                                                                                                     |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Township health centre  | 10 for every 10,000 people covered                                                                                                                                                           |
| Community health centre | Two to three GPs for every 10,000 people covered<br><br>The number of nurses should be equivalent to that of general practitioners<br><br>One public health doctor for 10,000 people covered |

Source: State Commission Office for Public Sector Reform, Ministry of Health & Ministry of Finance (2011); State Commission Office for Public Sector Reform, Ministry of Health, Ministry of Finance & Ministry of Civil Affairs (2006).

The government sets and also partially pays the salaries of employees in bianzhi posts. At the national level, it is required that their salary should be financed by their employer's revenues (patients' payments and/or insurance payments) and government subsidies (General Office of the State Council, 2010, 2013). Nonetheless, the central government has never issued specific rules for exactly how much the government needs to contribute. Since the launch of health care reforms in 2009, many local governments have increased their financial contributions to bianzhi posts.<sup>86</sup> Some now completely cover the salaries of those in bianzhi posts.<sup>87</sup>

In addition to subsidies to bianzhi posts, the government also finances the human resources in primary care through earmarked subsidies. At the central level, the government established three earmarked subsidies between 2003 and 2015:

<sup>86</sup> In Fujian province, for example, township health centre employees and retirees in bianzhi posts are provided with extra government subsidies of 3,600 yuan per person per year (CHYEC, 2009, p. 374). In Guangdong province, township and community health centre employees in bianzhi posts are entitled to extra government subsidies of 12,000 and 10,000 yuan per person per year respectively (CHYEC, 2013, p. 394).

<sup>87</sup> In Shaanxi, Qinghai, Jiangxi and Xinjiang provinces, for example, the provincial governments require that the income of township health centre employees in bianzhi posts should be fully subsidised (Shaanxi Provincial Government, 2006; CHYEC, 2011, pp. 510, 570; 2013, p. 431).

- Subsidies for hospital doctors to work in township health centres in central and western provinces. The project was piloted in 2005 and the target was to support 10,000 hospital doctors to work in township health centres in poor areas. For each township health centre, selected hospitals are required to send out three doctors. Each doctor is required to stay in the township health centre for one year. In return, they receive central subsidies. In 2010, the central government provided 20,000 yuan per hospital doctor (General Office of the Ministry of Health, 2010a). In 2008, the project was expanded to cover 10,932 hospital doctors and 3,644 township health centres on a yearly basis. The scale of the program has since remained largely unchanged (CHYEC, 2009, 2010, 2011, 2012, 2013; CHFPYEC, 2014).
- Subsidies for practising doctors to work in township health centres. This project was initiated in 2007 to support the government's target of having at least one practising doctor in each township health centre by 2011 (Ministry of Health & Ministry of Finance, 2008; Ministry of Health et al., 2009). The great majority of township health centres had employed practising doctors when the project was initiated. The central subsidies were supposed to help those township health centres unable to hire a practising doctor (in poor areas). In 2010, the central government provided 20,000 yuan per doctor per year for five years (CHYEC, 2011, p. 239). Between 2007 and 2010, the project resulted in the hiring of 4,500 practising doctors (CHFPYEC, 2016, p. 109). The target of having one practising doctor for each township health centre was achieved.
- Subsidies for township health centres to recruit GPs. This project was initiated in 2013 to support the government's target of having at least one GP in each township health centre. The central government provides 30,000 yuan per

doctor per year for four years (NHFPC, Ministry of Finance, Ministry of Human Resources and Social Security, State Administration of Traditional Chinese Medicines & Health Reform Office of the State Council, 2013). In 2014, the project recruited more than 1,000 GPs (CHFPYEC, 2016, p. 109).

All three programs targeted facilities in poor areas. Their aims are very specific: to have 10,000 hospital doctors work in township health centres, to have one practising doctor in each township health centre, and to have one GP in each township health centre. The number of beneficiaries is thus limited.

In township and community health centres, not all staff members are in bianzhi posts. Many bianzhi posts remain empty, because the entry requirements for bianzhi posts are relatively high for those willing to work in township and community health centres. For example, some localities require that township health centres should recruit only those with a bachelor's degree or above. There is a lack of candidates who can both meet the entry requirements and are willing to work for these facilities. One of my interviewees suggested that in his prefecture, 35% of the bianzhi posts for health centres remained empty (Interview No.23). To complete the work, health centres frequently hire contract-based employees instead. In one of the township health centres I visited, there were 44 employees in total, with 10 working on contracts (Interview No. 7). Another township health centre employed 53 people. Although the centre had 53 bianzhi posts, only 42 employees worked in bianzhi posts, while 11 worked on contracts (Interview No. 28).

There is an absence of national data on how many primary care workers are in bianzhi posts. The management of bianzhi posts is surprisingly chaotic and confusing. Interviewee no. 27, the head of personnel management in a prefectural health department, recalled that he had wanted to know the number of bianzhi posts in hospitals to draft a new policy. Because the number of bianzhi posts in hospitals should be based on the number of beds, he needed to know the number of beds in hospitals. It took over six

months to figure out how many hospital beds there were (Interview No. 27). This is because there are many types of hospital beds; to list a few: bianzhi beds, meaning they have been approved by local governments; standard beds, meaning they meet the government's requirements, such as how much space should be reserved for a single bed; and extra beds, usually placed in corridors to take more patients, but clearly neither bianzhi beds nor standard beds. The number of beds in a hospital varies depending on the different definitions adopted.

The central government has mainly relied on a sampling approach to obtain data. To understand the effects of primary care reforms, the central government selected 34 prefectures in 17 provinces to collect and trace data. These prefectures were selected based on the recommendations of local governments. The selected areas had performed relatively well, and the central government's purpose was mainly to derive lessons and promote successful experiences (Interview No. 30). In 2015, according to this sample set, 32.3% of bianzhi posts in community health facilities and 21.7% of bianzhi posts in township health centres remained empty. Community health facilities employed 32.6% of staff on contracts, while township health centres employed 24.6% of staff on contracts (NHDRC, 2015, p. 186). However, these data are likely not representative due to the sampling method. The exact number of people in bianzhi posts is unknown to the public and the central government.

There is also a lack of national data on how much from fiscal subsidies has been spent on subsidising salaries and what percentage of salaries are funded by fiscal subsidies. As previously discussed, although the government sets salaries, the central policy only requires that local governments make partial payments. Some local governments have promised to fully cover the salaries of those in bianzhi posts, but this usually means they cover the basic salary. The basic salary is only one part of a staff member's salary, which consists of the basic salary, performance-based salary and



allowances. Table 6.10 demonstrate this in the staff salaries in Jiangxi and Xinjiang provinces. Both provinces promised to fully cover the salaries of those in bianzhi posts (CHYEC, 2011, pp. 510, 570). However, in the Jiangxi example, government spending does not even cover the entire basic salary, probably because of the existence of employees in non-bianzhi posts. Overall, in Jiangxi province, 71% of fiscal subsidies were spent on personnel costs, thereby funding 48% of total personnel costs. In the Xinjiang example, 91% of fiscal subsidies were spent on personnel costs, thereby funding 69% of total personnel costs. The conclusion is that most of the government's fiscal expenditure was for personnel, but this has not covered the full cost.

Table 6.10

*Examples of personnel expenses and fiscal subsidies (2015)*

| Expenses                 | Township health centre in<br>Jiangxi province |                                   | Community health centre<br>in Xinjiang province |                                   |
|--------------------------|-----------------------------------------------|-----------------------------------|-------------------------------------------------|-----------------------------------|
|                          | <i>Expense</i>                                | <i>Fiscal</i>                     | <i>Expense</i>                                  | <i>Fiscal</i>                     |
|                          | <i>(yuan)</i>                                 | <i>subsidies</i><br><i>(yuan)</i> | <i>(yuan)</i>                                   | <i>subsidies</i><br><i>(yuan)</i> |
| Total                    | 11,982,550                                    | 4,292,050                         | 3,433,536                                       | 1,132,587                         |
| Personnel                | 6,431,600                                     | 3,067,940                         | 1,501,378                                       | 1,030,000                         |
| Basic salary             | 1,511,000                                     | 1,098,700                         | 436,100                                         | 436,100                           |
| Performance-based salary | 3,509,100                                     | 1,381,240                         | 115,322                                         | 18,703                            |
| Allowances               | 95,800                                        | 51,900                            | 429,046                                         | 429,046                           |
| Social security          | 474,100                                       | 195,000                           | 146,152                                         | 146,152                           |
| Housing provident fund   | 257,100                                       | 48,100                            | 87,042                                          | 0                                 |
| Payments to retirees     | 446,100                                       | 290,800                           | 142,704                                         | 0                                 |

Source: Luxi County Government (2018) and Wujiaqu County Government (2016).

The majority of the government's substantially increased financial contributions (discussed in detail in Section 6.4) have been spent on personnel costs, and government spending contributes a significant part of staff salaries. Thus, it can be deduced that the government has financed the increase in the annual salary of township and community

health centre employees. The exact contribution is unknown due to the aforementioned constraints; however, it is clear that the annual salary of township and community health centre employees has experienced a significant growth. As demonstrated in Table 6.11, the annual salary increased from 27,874 yuan in 2009 to 52,040 yuan in 2014, an 87% increase in five years. It should be noted that the data is based on the annual financial reports of the Ministry of Health and, thus, only covers facilities under the jurisdiction of the Ministry of Health. By the end of 2014, the Ministry of Health ran 36,245 of 36,902 township health centres and 5,851 of 8,669 community health centres (NHFPC, 2015). Thus, the data should be representative of the salary level of employees in township and community health centres.

Table 6.11

*Annual salary of township and community health centre employees (2009–2014)*

| Year | Salary (yuan)                  |                                    |              |
|------|--------------------------------|------------------------------------|--------------|
|      | <i>Township health centres</i> | <i>Community health facilities</i> | <i>Total</i> |
| 2009 | 25,885                         | 43,235                             | 27,874       |
| 2010 | 28,744                         | 45,631                             | 31,019       |
| 2011 | 35,370                         | 51,785                             | 37,762       |
| 2012 | 40,830                         | 58,717                             | 43,666       |
| 2013 | 44,657                         | 62,330                             | 47,555       |
| 2014 | 48,764                         | 67,686                             | 52,040       |

*Note.* Data only include those facilities under the jurisdiction of the Ministry of Health.  
Source: NHDRC (2015, p. 180).

There are substantial variations in salaries across localities. In Heilongjiang, interviewee no. 19, the director of a community health centre, stated that their salary was 5,000 yuan per month. The total personnel cost of their health centre, which employed 20 people, was one million yuan per annum, or around 50,000 yuan per employee. This is above average, because that centre is run by a tertiary hospital that pays more than the local district government normally pays. In Sichuan, interviewee no. 17, the director of a township health centre, stated that the minimal annual salary for an employee in her centre

was 30,150 yuan. If the centre did not earn enough revenue to pay its employees, the government would subsidise the difference. In Fujian, two local officials stated that the annual salary for doctors in township health centres in that prefecture ranged from 50,000–60,000 yuan. The annual salary for directors of township health centres could reach 100,000 yuan (Interview No. 24; Interview No. 27). In Minhang District, Shanghai, a district repeatedly promoted as a successful model of primary care reforms, the average annual salary of primary care workers was 160,000 yuan and that of GPs was 230,000 yuan.<sup>88</sup> Such a high level of remuneration is clearly exceptional.

The increase in salary has been accompanied by an increase in the number of employees in township and community health centres, from 1,056,432 in 2005 to 1,674,998 in 2015 (see Table 6.12). It should be noted that the rapid expansion of the workforce of community health centres is closely related to the development of community health centres during this period. As previously discussed, the increase in the number of facilities was mainly the result of the conversion of small hospitals or township health centres into community health centres. Most of the increase in the number of employees was also due to this conversion (new recruitment is more limited than the statistics seem to suggest).

Overall, the expansion has mainly been driven by recruiting newly graduated and young people. This is especially true for township health centres. Between 2005 and 2015, the total number of employees increased by 265,691. By the end of 2015, 497,024 township health employees claimed that they had work experience of fewer than 10 years and 500,856 were younger than 35 years old. This means that township health centres lost some senior employees during this period. As will be discussed in Chapter 8, many experienced employees moved to hospitals.

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<sup>88</sup> This information was provided by an official of the Minhang District Health Bureau at Event No. 6, when introducing the Minhang experience of promoting the contract services of GPs.

Table 6.12

*Number of employees in township and community health centres (2005–2015)*

|                         | No. of employees |           | Increase | No. of employees with <10 year's work experience in 2015 | No. of employees <35 years old in 2015 |
|-------------------------|------------------|-----------|----------|----------------------------------------------------------|----------------------------------------|
|                         | 2005             | 2015      |          |                                                          |                                        |
|                         |                  |           |          |                                                          |                                        |
| All employees           |                  |           |          |                                                          |                                        |
| Township health centre  | 1,012,006        | 1,277,697 | 265,691  | 497,024                                                  | 500,857                                |
| Community health centre | 44,426           | 397,301   | 352,875  | 145,015                                                  | 153,755                                |
| Total                   | 1,056,432        | 1,674,998 | 618,566  | 642,039                                                  | 654,612                                |
| Doctors*                |                  |           |          |                                                          |                                        |
| Township health centre  | 398,848          | 440,889   | 42,041   | 67,897                                                   | 84,651                                 |
| Community health centre | 17,220           | 138,516   | 121,296  | 34,213                                                   | 31,305                                 |
| Total                   | 416,068          | 579,405   | 163,337  | 102,110                                                  | 115,956                                |

*Note.* \* 'Doctors' in this table include (assistant) practising doctors.  
Source: Ministry of Health (2006) and NHFPC (2016).

One consequence of recruiting young people is increased educational qualifications. Since 1998, the government has made a substantial effort to expand education (Anand et al., 2008; Hou et al., 2014). This has resulted in a significant increase in the number of people with a bachelor's degree or above. The percentage of people holding a bachelor's degree among the young generation is much higher than that in older generations. By recruiting young people, health centres tend to recruit people with higher educational qualifications, thereby increasing the average educational qualification of their workforce. As shown in Table 6.13, between 2002 and 2015, the number of doctors with a bachelor's degree or above increased by 45,258 in township health centres and 51,478 in community health centres. Comparing this with the data in Table 6.12, it is

likely that many of those with a bachelor's degree were among the newly recruited and young (under 35).

Table 6.13

*Number of (assistant) practising doctors with a bachelor's degree or higher in township and community health centres*

| Facility                | No. of (assistant) practising doctors<br>with bachelor's degree or higher |                | Increase |
|-------------------------|---------------------------------------------------------------------------|----------------|----------|
|                         | 2002                                                                      | 2015           |          |
| Township health centre  | 12,057 (2.8%)                                                             | 57,315 (13.0%) | 45,258   |
| Community health centre | 3,651 (12.9%)                                                             | 55,129 (39.8%) | 51,478   |

Source: Ministry of Health (2004) and NHFPC (2016).

On average, health centres hired more people (see Table 6.14). In 2003, each township health centre employed 10 (assistant) practising doctors and four nurses. In 2015, each township health centre employed 12 (assistant) practising doctors and eight nurses. The national minimal requirements (see Table 6.7) have been well surpassed. Similarly, the average staffing level increased in community health centres, also well surpassing the minimal requirements.

Table 6.14

*Average number of employees in township and community health centres*

| Facility                | Average no. of employees                                                     |                                                                                |
|-------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|                         | 2003                                                                         | 2015                                                                           |
| Township health centre  | Six practising doctors, four (assistant) practising doctors and four nurses  | Seven practising doctors, five (assistant) practising doctors and eight nurses |
| Community health centre | 11 practising doctors, three (assistant) practising doctors and eight nurses | 13 practising doctors, three (assistant) practising doctors and 13 nurses      |

Source: Ministry of Health (2004) and NHFPC (2016).

In terms of density, the ratio between health centre employees and population increased significantly. In rural areas, the number of township health centre employees increased from 14 per 10,000 people in 2003 to 21 per 10,000 people in 2015. In cities, the number of community health centre employees increased from 0.5 per 10,000 people in 2003 to five per 10,000 people in 2015 (see Table 6.15).

Table 6.15

*Density of township and community health centre employees*

|                                       | 2003      | 2009      | 2015      |
|---------------------------------------|-----------|-----------|-----------|
| <b>Township health centres</b>        |           |           |           |
| No. of employees                      | 1,058,463 | 1,131,052 | 1,277,697 |
| Rural population (million)            | 768.51    | 712.88    | 603.46    |
| No. of employees per 10,000 people    | 14        | 16        | 21        |
| <b>Community health centres</b>       |           |           |           |
| No. of employee                       | 25,462    | 205,996   | 397,301   |
| Urban population (million)            | 523.76    | 645.12    | 771.16    |
| Number of employees per 10,000 people | 0.5       | 3         | 5         |

Source: Ministry of Health (2004, 2010) and NHFPC (2016).

### 6.2.3 Village Health Stations

As previously discussed, under Mao, the model of barefoot doctors was promoted and developed to its peak during the Cultural Revolution in the 1960s and 1970s. Since the economic reforms, the government has gradually introduced more regulations. In the early 1980s, barefoot doctors were required to attend exams and become village doctors. In the early 2000s, when the central government launched its plan to revamp the rural health care system, it proposed that the majority of doctors working in village health stations should become (assistant) practising doctors by 2010 (CCCPC & State Council, 2002). This goal was later abandoned, probably because the government found it to be too ambitious. Since the launch of health care reforms in 2009, the focus has been more on maintaining the number, and improving the accessibility, of doctors (including village

doctors, assistant practising doctors and practising doctors) in village health stations. More specifically, the central government's target is to have at least one doctor in a village health station and one village health station doctor for every 1,000 rural residents (General Office of the State Council, 2011).<sup>89</sup>

Unlike township and community health centres, which are predominantly owned by the government, the ownership of village health stations is more ambiguous. In the 1980s and 1990s, some remained loosely under public ownership, but the government provided little financial support for these 'public' facilities. The government mainly provided only a small subsidy for the provision of public health services such as vaccination. Before the health care reforms, the sale of drugs contributed 90% of the total revenues for village health stations (NHDRC, 2013). While the majority of township and community health centre employees work in bianzhi posts, village doctors generally do not enjoy such privileges. This means that, although many facilities are public, doctors are mainly self-employed, drawing income from drug sales.

One measure promoted by the central government has been township health centres directly running village health stations.<sup>90</sup> In this way, some village health stations employees can be included on the bianzhi list through employment at township health centres. Since 2003, the scale of this practice has been expanded (see Table 6.16).

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<sup>89</sup> Sparsely populated villages can have more than one village doctor. Each village health station should be staffed by at least one village doctor.

<sup>90</sup> This practice has been encouraged by the government as part of integrating township health centres and village health stations (see *Administrative Measures for Village Health Stations*, issued in 2014).

Table 6.16

*Statistics for village health stations (2003, 2009 and 2015)*

|                                                                    | 2003    | 2009    | 2015    |
|--------------------------------------------------------------------|---------|---------|---------|
| Total village health stations                                      | 514,920 | 632,770 | 640,536 |
| Village health stations run by township health centres             | 26,343  | 45,434  | 60,231  |
| Total village doctors                                              | 791,956 | 995,449 | 962,514 |
| Village doctors employed by township health centres                | 7,549   | 94,388  | 106,761 |
| Total (assistant) practising doctors                               | 74,407  | 178,555 | 309,923 |
| (Assistant) practising doctors employed by township health centres | -       | 54,096  | 164,356 |

Source: Ministry of Health (2004, 2010) and NHFPC (2016).

This arrangement has direct financial implications for the government, because the government is responsible for paying the salaries of township health centre employees. Given that the number of village health station employees is almost the same as the number of township health centre employees (see Table 6.8), putting all village health station employees on the bianzhi list would mean doubling the financial burden for local governments. As previously discussed, the government has not yet fully covered the personnel costs of employees in bianzhi posts. This is likely a major reason why the scale of this practice is still very limited. As shown in Table 6.16, in 2015, township health centres ran fewer than 10% of village health stations and employed 20% of the doctors (including practising doctors, assistant practising doctors and village doctors) working in village health stations.

The launch of health care reforms in 2009 introduced major financial changes to village health stations. In 2011, it was determined that village health stations should also implement the NEMP (General Office of the State Council, 2011). The implication of



this was particularly profound for village health stations, because this was almost their sole source of revenue before the reforms. By the end of 2013, the implementation of the NEMP was extended to 82.2% of village health stations (CHFPYEC, 2014, p. 168). To compensate village health stations for the loss of income, the central government introduced four mechanisms for them to earn salaries. First, the government requires that village health stations should help township health centres in providing essential public health services. In return, they can obtain part of the subsidy. Initially, the split of workload and funding was unclear. Since 2012, the central government has specified that 40% of the subsidies for the provision of essential public health services should be allocated to village health stations (CHYEC, 2013, p. 26; General Office of the State Council, 2013). In 2014 and 2015, the added government subsidies for essential public health services were all supposed to be allocated to village health stations (CHFPYEC, 2015, p. 150; 2016, p. 181). The exact subsidy amount for 2012–2015 is shown in Table 6.17. To ensure that village doctors make contributions to service delivery, the exact amount obtained by village health stations is subject to performance evaluations.

Table 6.17

*Government subsidy for village doctors (2012–2015)*

| Year | Subsidy for provision of essential<br>public health services<br>(yuan/resident covered by the doctor) | Subsidy for implementation of the<br>National Essential Medicines Policy<br>(yuan/resident covered by the doctor) |
|------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 2012 | 10                                                                                                    | 5                                                                                                                 |
| 2013 | 12                                                                                                    | 5                                                                                                                 |
| 2014 | 17                                                                                                    | 5                                                                                                                 |
| 2015 | 22                                                                                                    | 5                                                                                                                 |

Source: CHYEC (2013, p. 26), General Office of the State Council (2013), CHFPYEC (2014, p. 143; 2015, pp. 71, 150; 2016, p. 181), Ministry of Finance (2014), Ministry of Finance and NHFPC (2016).

Second, since 2012, the government has earmarked a specific subsidy to compensate village health stations for the loss of drug sale profits. The subsidy is five yuan per rural resident per year, with the central government contributing two billion yuan and the remaining matched by local governments (CHYEC, 2013, pp. 211, 285). Since then, the scale of this fund has remained unchanged (see Table 6.17).

Third, the government introduced the general treatment fee. For each outpatient visit, village doctors can charge a small fixed amount for the services provided. This fee is usually four to nine yuan for each visit (NHDRC, 2013, p. 85). In 2015, each doctor working in village health stations provided 1,488 outpatient visits for the entire year.<sup>91</sup> This means that, in theory, each doctor earned between 5,952–13,392 yuan for providing general outpatient care. In practice, however, many rural people refuse to pay this charge (Zhou, 2015). Also, what proportion of the fee is used to cover personnel costs is unknown, because the fee covers other costs such as medical consumables for injections.

Fourth, the central government requires that local governments should set up other earmarked funds to make the salary of village doctors comparable to that of village cadres (General Office of the State Council, 2013). The amount of this subsidy is determined at local levels.

The new financing structure is fragmented. The subsidy for the provision of essential public health services is supposed to provide a new major source of income for village doctors. Yet, there are conflicting targets embedded in the policy. The central government intended to use the money to guarantee the income level of village doctors, but the subsidy for essential public health services is supposed to be linked to the quantity and quality of work provided. Village doctors are not always able to contribute much in the delivery of services (Interview No. 15). One director of a township health centre stated

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<sup>91</sup> This is based on the following information. In 2015, the total outpatient visits provided by village health stations were 1,894 million, while there were 1,272,437 doctors working in village health stations (NHFPC, 2016).

that while the subsidy split between township health centres and village health stations was supposed to be 45:55, the real workload split was around 80:20 (Interview No. 28).

Further complicating the matter, the government's subsidy for essential public health services is allocated to village health stations through township health centres. This is out of a practical need, because within each county there are usually dozens of health centres but hundreds of village health stations. Evaluating the performance of individual health stations is beyond the administrative capacity of county health bureaus, and thus, the supervisory work is delegated to township health centres. However, these centres are also responsible for evaluating and then allocating money to village health stations. Clearly, this creates a conflict of interest. Township health centres are also recipients of the funds of essential public health services. They are incentivised to retain as much money as possible while also being responsible for evaluating the performance of village health stations and determining how much they can obtain. As previously discussed, the purpose of the funds themselves are ambiguous. As expected, village health stations are frequently unable to obtain sufficient funds. China Central Television once found that the majority of the funds supposed to be paid to village health stations was kept by township health centres (Zhang, 2013). Such news stories are not uncommon.

For these reasons, it is unknown how much fiscal spending eventually reached village health stations. In the *China Health Statistical Yearbook* series, the fiscal subsidies for village health stations are directly counted in the category of township health centres, because the supervisory authority has been delegated. There is no national data.

The estimated average salary for employees in village health stations is provided in Table 6.18. This was calculated by dividing the total personnel costs of village health stations by the number of village health stations employees. This calculation excludes people who work for village health stations but are employed by township health centres, because the payments to that group of people are made by township health centres

(discussed in Section 6.2.2). Unlike the situation in township health centres (see Table 6.10), village doctors mainly work on a self-employed basis and there are few contributions made for social security or a housing provident fund. Therefore, the average personnel cost per employee should be close to their salary.

Table 6.18

*Estimated salary of employees in village health stations*

| Year | No. of employees* | Total personnel costs<br>(million yuan) | Personnel costs per<br>employee (yuan) |
|------|-------------------|-----------------------------------------|----------------------------------------|
| 2009 | 1,189,174         | 8,474                                   | 7,126                                  |
| 2010 | 1,213,230         | 10,192                                  | 8,401                                  |
| 2011 | 1,260,808         | 11,928                                  | 9,461                                  |
| 2012 | 1,242,860         | 12,984                                  | 10,447                                 |
| 2013 | 1,238,002         | 13,914                                  | 11,239                                 |
| 2014 | 1,216,513         | 14,836                                  | 12,196                                 |
| 2015 | 1,197,160         | 16,099                                  | 13,448                                 |

*Note.* \* Excludes those who work in village health stations but are employed by township health centres.

Source: Ministry of Health (2010, 2011a, 2012) and NHFPC (2013, 2014, 2015, 2016).

As shown in Table 6.18, average annual salary increased from 7,126 yuan in 2009 to 13,448 yuan in 2015, an 89% increase in six years. As previously discussed, the profit from drug sales has been gradually eliminated. This salary should therefore come from the government subsidy for essential public health services, provision of medical services and other government funds. The increase in salary level has been accompanied by an increase in the number of doctors working in village health stations, from 866,363 in 2003 to 1,272,437 in 2015, a 50% increase in 12 years (see Table 6.19). This has coincided with the rapid urbanisation process in China. The rural population has shrunk. As a result, the average number of rural residents for each doctor has dropped significantly. By the end of 2015, there were, on average, two doctors working in each village health station, with each responsible for around 474 rural residents. In this respect, the government's

target of having one doctor staffing each village health station and one village health station doctor for every 1,000 rural people was well surpassed.

Table 6.19

*Density of doctors working in village health stations (2003, 2009 and 2015)*

|                                                       | 2003    | 2009      | 2015      |
|-------------------------------------------------------|---------|-----------|-----------|
| Number of doctors*                                    | 866,363 | 1,174,004 | 1,272,437 |
| Number of village health stations                     | 514,920 | 632,770   | 640,536   |
| Average number of doctors per village health station* | 1.7     | 1.9       | 2.0       |
| Rural population (million)                            | 768.51  | 712.88    | 603.46    |
| Average number of people per doctor*                  | 887     | 607       | 474       |

*Note.* \* Includes village doctors, assistant practising doctors and practising doctors working in village health stations. Some are employed by township health centres.

Source: Ministry of Health (2004, 2010) and NHFPC (2016).

Similar to the case of physical resources, the government has applied a target-driven approach to increase the human resources of primary care facilities. Specific targets have been set and more subsidies have been provided by the government to hire the targeted number of workers. Overall, these targets have been met successfully. While whether the physical resources are underused can be observed relatively easily, whether there are too many or too few doctors working in primary care facilities is a more complex question and the answer would depend on the workload of primary care workers and more importantly the value of their work. In other words, the evaluation should be based on to what extent the increased resources have contributed to better primary care and ultimately people's health outcomes. These issues will be discussed in Chapters 7 and 8.

### 6.3 Staff Training

The Chinese government has always intended to enhance the capabilities of primary care workers through training, thereby providing better care. Since the early 2000s, the government has set up various on-the-job training programs for primary care workers.

In 2006, when the government issued the major guidelines for the development of community health services, it also proposed that the workforce of community health facilities should be centred around general practice (Ministry of Personnel et al., 2006). Since the launch of health care reforms in 2009, the role of general practice has been promoted among community health facilities and other primary care facilities (National Development and Reform Commission et al., 2010). It is envisioned that the delivery of primary care will be eventually centred around GPs. Various training programs have been set up to increase the number of GPs in China.

### **6.3.1 On-the-job Training for Primary Care Workers**

Before the early 2000s, the government's involvement in the training of primary care workers focused mainly on academic qualifications for village doctors with the major purpose of standardising and equipping village doctors with a minimal level of academic training. Little training effort was made for township health centres (Huang, 2003).

When the government decided to revamp the rural health care system in 2003, it was determined that an on-the-job training system should be established to enhance and update the knowledge of rural health workers (Ministry of Health et al., 2003). Following this decision, the government issued the *Provisional Regulation for the Training of Health Professionals in Township Health Centres* in 2004. It is required that health professionals in township health centres should undertake on-the-job training in hospitals for more than three months every five years. Also, they should accumulate sufficient study points each year. Health professionals working in village health stations should receive on-the-job training for more than 100 hours every two years (General Office of the Ministry of Health, 2004). Each year, the government issues the training curriculums for rural health workers, listing the contents to be covered.

In urban areas, following the decision to develop community health services, the government similarly required that on-the-job training should be arranged for community

health workers (Ministry of Personnel et al., 2006). Slightly different from the arrangement in rural areas, the focus in cities has been to prepare health professionals with the basic theories and skills of general practice. More specifically, the project consists of 10 months of intensive training for senior doctors, 500–600 hours of training for doctors and 240 hours of training for nurses (General Office of the Ministry of Health, 2007, 2010e).

The costs of the on-the-job training are supposed to be covered by government subsidies (Ministry of Finance, State Planning Commission & Ministry of Health, 2003; Ministry of Finance, National Development and Reform Commission & Ministry of Health, 2006). The central government finances training in the central and western provinces, while local governments in the eastern provinces finance training themselves. For rural health workers, the central government allocated 364 million yuan for the central and western provinces in 2004 and the scale of funding has since remained largely unchanged (CHYEC, 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013; CHFPYEC, 2014). For community health workers, the central government allocated 35 million yuan in 2007 (CHYEC, 2008, p. 246). As the community workforce expanded, the government subsidy increased. In 2010, central spending increased to 81 million (CHYEC, 2011, p. 287). Table 6.20 gives a breakdown of how central subsidies were spent in 2010.

As shown in Table 6.20, the central subsidy level is between 22–40 yuan/person/day—relatively low. As previously discussed, the government is supposed to cover almost all costs directly related to training including that for trainers, preparation of textbooks, purchase of equipment and trainee living allowances and accommodation costs (General Office of the Ministry of Health, 2009).

Table 6.20

*Breakdown of central government subsidies for the training of rural and community health workers in the central and western provinces (2010)*

| Rural health workers                                                  |                               |                               |                                       | Community health workers                                  |                               |                               |                                       |
|-----------------------------------------------------------------------|-------------------------------|-------------------------------|---------------------------------------|-----------------------------------------------------------|-------------------------------|-------------------------------|---------------------------------------|
| <i>Training</i>                                                       | <i>No. of persons trained</i> | <i>Cost per person (yuan)</i> | <i>Cost per person per day (yuan)</i> | <i>Training</i>                                           | <i>No. of persons trained</i> | <i>Cost per person (yuan)</i> | <i>Cost per person per day (yuan)</i> |
| 130-day training for health professionals of township health centres  | 30,976                        | 5,200                         | 40                                    | 10-month training for senior doctors                      | 2,676                         | 5,000                         | 22                                    |
| 5.5-day training for health professionals of township health centres  | 61,952                        | 220                           | 40                                    | 60-day training for doctors                               | 24,078                        | 1,800                         | 30                                    |
| Five-day training for health professionals of village health stations | 459,966                       | 150                           | 30                                    | 30-day training for nurses and other health professionals | 26,770                        | 900                           | 30                                    |

Source: General Office of the Ministry of Health (2010d, 2010f).



This has partly been matched by local governments, but such funds are far smaller in scale compared to the central subsidy (CHYEC, 2008, p. 246). Thus, even with matching funds from local governments, the total government spending is not significantly higher than the level shown in Table 6.20. In reality, most government funds were spent on the purchase of equipment and accommodation of trainees, with little left for trainers (Zhao et al., 2014).

The shortage of central spending for on-the-job training has been resolved mainly by administrative measures. Local governments usually choose to provide training by themselves or in publicly owned facilities (Yang et al., 2014). In this way, even without sufficient funds, the government is still able to ask trainers to deliver training.

**6.3.2 The government's quantity targets have been met, and the government trains more than 500,000 rural health workers each year (CHYEC, 2012, p. 240; CHFPEEC, 2016, p. 109). However, the effects of the training programs remain unknown. The literature is sparse, but those few studies suggest there is a mismatch between the training and the trainees' needs. Trainers tend to be unfamiliar with the work in primary care facilities and there is a lack of targeted training for primary care workers (Yang et al., 2014; Zhao et al., 2014; Gong, Yang, Xu, Ma & Chen, 2011). Trainees indicate that they have benefited from the training, but are unable to apply what they learned to their daily work (Huang, Chen, Li & Sun, 2013).**General Practitioners

As discussed in Section 5.3.1.3, general practice was introduced to China in the late 1980s but its initial development was sluggish. Only since the launch of the health care reforms in 2009 has the government committed to promoting the role of general practice in primary care. In the blueprint, GPs should be capable of providing preventive care, treatment of common diseases, referral to specialists, rehabilitation services,

management of chronic conditions and general health management. Eventually they will become gatekeepers (State Council, 2011).

In 2010, the government proposed specific targets and measures for the development of general practice. At the time, there were only around 60,000 GPs in the country (National Development and Reform Commission et al., 2010). The target was to increase this number to 180,000 by 2015 (Ministry of Health, 2011b). This meant that the government needed to triple the number of GPs within five years.

To achieve this, the government decided to rely mainly on short-term programs to retrain existing doctors working in primary care facilities to become GPs. The programs last for around a year and include one month of theory training, 10 months of on-the-job training in hospitals and one month of on-the-job training in primary care facilities. The government provides subsidies for the costs of these training programs (General Office of the Ministry of Health, 2010b).

The government has assumed responsibility for all the training-related costs, including subsidies for trainers and living allowances for trainees. To ensure the availability of funds, the central government provided subsidies for the central and western provinces. In 2010, the central government subsidised 8,000 yuan and 5,000 yuan for each township health centre doctor and community health centre doctor respectively to receive retraining. Local governments in the central and western provinces have been required to provide extra subsidies if the central transfers were insufficient. Local governments in the eastern provinces have been required to provide subsidies by themselves (General Office of the Ministry of Health, 2010c; General Office of the Ministry of Health, 2010d).

However, government subsidies were insufficient to cover training costs. Most significantly, doctors needed to suspend temporarily their job to attend retraining. To a large extent, this has been resolved by administrative measures. The training programs

mainly targeted doctors in township and community health centres. Since the majority of these health centres are public, it was straightforward for the government to ask health centres to provide financial support. Health centres were required to nominate staff members to attend training and continue to pay salaries during their training period (General Office of the Ministry of Health, 2010b). As the government is responsible for paying the salaries of township and community health centre staff, this arrangement did not receive much resistance.

The retraining programs were very effective in increasing the number of GPs. Between 2010 and 2015, more than 100,000 (assistant) practising doctors went through the retraining programs and became GPs, accounting for the majority of new GPs in this period (CHYEC, 2013, p. 237; Chinese Medical Doctor Association, 2016).<sup>92</sup> In 2015, the number of GPs reached 188,649, thus surpassing the government's target (NHFPC, 2016). As the training programs mainly targeted doctors working in township health centres and community health facilities, the vast majority of GPs are concentrated in these facilities (see Table 6.21).

Table 6.21

*Number of general practitioners in China by location (2012–2015)*

| Facility                        | 2012    | 2013    | 2014    | 2015    |
|---------------------------------|---------|---------|---------|---------|
| Total                           | 109,794 | 145,511 | 172,597 | 188,649 |
| Township health centre          | 38,557  | 56,825  | 70,296  | 80,975  |
| Community health centre/station | 47,863  | 60,181  | 68,914  | 73,288  |

*Note.* Total includes all health care facilities in China, including those not shown in this table.  
Source: NHFPC (2013, 2016).

Overall, the retraining programs are not standardised and there is no quality assurance. They are often theoretical or simply a combination of rotations in various

<sup>92</sup> There were around 60,000 GPs in 2010 (National Development and Reform Commission et al., 2010). This increased to 188,649 in 2015 (NHFPC, 2016). The increase was thus 128,649.

specialties (Dai et al., 2013). The effects remain poorly characterised. Surveys with participants of such programs show that there tended to be too much content covered in a short period of time and a lack of focus. Most trainers are specialists themselves and unfamiliar with the concept of general practice (Zhang, Wang, Wu & Huang, 2014). Trainees indicated that they improved their medical knowledge and clinical skills in treating common diseases (Cao et al., 2014; Zhang et al., 2014), but the skills learned were not highly relevant to their work. Also, trainees were relatively weak in preventive knowledge and interpreting auxiliary examination results, but the retraining did not address this (Li, Yan, Tan, He & Fang, 2012). The mismatch between the training content and trainees' needs is a major concern.

While the short-term retraining programs have been the major measure to increase the number of GPs quickly, the government also proposed a measure to guarantee one bachelor-degree-qualified GP for every township health centre in the central and western provinces. In 2010, the central government set up an earmarked subsidy for rural medical students who promise to work in township health centres. Students enrolled in the project do not pay tuition or boarding fees. The central government provides financial support of 6,000 yuan per student per year as living allowances. This subsidy lasts for five years to cover the entire undergraduate study. In return, these students promise to work in designated township health centres for six years after graduation (National Development and Reform Commission, Ministry of Health, Ministry of Education, Ministry of Finance & Ministry of Human Resources and Social Security, 2010). Since its inception, the program has recruited around 5,000 students a year, for a total of 30,000 students by 2015 (CHFPYEC, 2016, p. 109). This is roughly the number of township health centres in the central and western provinces. The target of the project was thus met.<sup>93</sup>

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<sup>93</sup> According to the department head of General Practice in Guangxi Medical University (Event No. 1), the first two batches of these students had graduated by 2016. However, due to the introduction of the postgraduate residency training, all of these graduates immediately started the residency training for three further years before working in their designated health centres. For most of their undergraduate internship

The government also introduced the postgraduate residency training program in 2011. Eventually, to become a GP, one should have completed a five-year undergraduate program and three-year postgraduate residency training (State Council, 2011). To support the new training program, the government made investments and issued standards. Since 2011, the central government has invested in the construction of training bases, including buildings for training purposes and dormitories for students (National Development and Reform Commission & Ministry of Health, 2013b; CHFPYEC, 2014, p. 99). Between 2011 and 2015, the central government allocated 9.5 billion yuan in capital investment for 599 training bases (CHFPYEC, 2016, p. 132).

The government's plan to have well-trained GPs in primary care facilities is not supposed to be achieved in the short term, and it is too early to assess its degree of success. Nonetheless, there exist serious challenges. Currently, the majority of the doctors working in primary care facilities do not have a bachelor's degree (see Table 6.13). As discussed in Chapter 8, one important reason for this is the strong competition from hospitals. It will be hard for primary care facilities to attract or retain those who have received both a bachelor's degree and three years of postgraduate residency training.

Again, the government's approach in training staff has followed the same logic in increasing the physical and human resources of primary care facilities (Sections 6.1 & 6.2). Quantitative targets have been set and more subsidies have been provided. The government was able to meet the quantitative targets, but limited attention was paid to the quality of staff training. This is understandable given the low level of subsidy, which makes it hard to go beyond meeting the quantitative targets. However, the mismatch between the training content and trainees' needs (under the assumption that the current limited evidence is representative of the national situation) means missed opportunities to equip primary care workers with needed knowledge and skills to treat patients. This

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and residency training, these students work in tertiary hospitals. Their transition to township health centres is expected to be difficult.

influences the quality of care provided by primary care workers and penetrates into the day-to-day interactions between primary care doctors and patients.

## **6.4 Financing**

In terms of financing, the government's expression is that primary care facilities should be financed by both user charges and government subsidies. The salaries of health care professionals should be comparable to the salaries of other people working in public service units (see Chapter 3). With the support of government subsidies, primary care facilities should be able to implement various government pricing policies (State Council, 2009).

Township and community health centres receive revenues mainly from the sale of drugs and medical services and fiscal subsidies. As discussed in Chapter 3, since the 1950s, a mark-up was allowed for drugs. The prices of traditional medical services were kept at below-cost levels while high prices can be charged for high-tech medical services such as advanced imaging. Government subsidies are provided for public facilities to cover some personnel costs for the provision of medical services.

The mark-up policy for drugs remained largely unchanged until the launch of health care reforms in 2009. Before the reforms, the general rule was that health care facilities were allowed to charge a mark-up of 15% when selling drugs. Since 2006, the government has started to reduce this mark-up among urban community health facilities (National Development and Reform Commission & Ministry of Health, 2006).

Since the early 2000s, the government has introduced some minor changes to the pricing of medical services. In 2000, the government replaced the government-set prices with guidance prices. For-profit health care facilities were allowed to set their own prices and the right of pricing was decentralised for not-for-profit health care facilities. The central government specified a unified list of medical services and local governments set guidance prices for these services within their jurisdictions (Ministry of Health & State

Planning Commission, 2000). In 2014, the government allowed private not-for-profit facilities to set their own prices (National Development and Reform Commission, NHFPC & Ministry of Human Resources and Social Security, 2014). These changes did not have significant implications for health centres. As previously discussed, almost all township health centres and more than 90% of community health centres are public (see Figure 6.1). Thus, the relaxation of pricing for private facilities is almost irrelevant. The replacement of government-set prices by guidance prices also had little implication. In practice, health centres are required to charge prices according to requirements set by their corresponding local governments. Further, the overall pattern is that services involving human costs such as consultation and treatment are priced below costs. While high-tech tests are priced relatively high in public health centres, primary care facilities tend to have little high-tech equipment. Their sales of medical services thus tend to result in an overall deficit.

The government also continued its financial responsibility for subsidising the deficit for township health centres and community health facilities and providing earmarked funds for the provision of public health services (Ministry of Finance et al., 2000, 2003; Ministry of Finance et al., 2006). As previously discussed, since the early 2000s, some local governments gradually increased their spending to cover more of the salaries for those in *bianzhi* posts.

Table 6.22 shows the breakdown of revenues and expenses of government-run township and community health centres before the launch of health care reforms. In 2008, the drug sales generated a profit of 5,844 million yuan for government-run township and community health centres. The sale of medical services generated a deficit of 19,732 million yuan. The majority of the deficit from the sale of medical services was covered by fiscal subsidies (around 18,245 million yuan).

Table 6.22

*Revenues and expenses of township and community health centres (million yuan) (2008)*

|                       | Township health<br>centres | Community<br>health centres | Total   |
|-----------------------|----------------------------|-----------------------------|---------|
| Total revenues        | 78,243                     | 21,160                      | 99,403  |
| Drug sales            | 33,795                     | 10,875                      | 44,670  |
| Medical service sales | 25,980                     | 4,806                       | 30,786  |
| Fiscal subsidies      | 13,757                     | 4,488                       | 18,245  |
| Other revenues        | 4,712                      | 991                         | 5,703   |
| Total expenses        | 74,976                     | 20,422                      | 95,398  |
| Drugs                 | 29,006                     | 9,820                       | 38,826  |
| Medical services      | 41,439                     | 9,079                       | 50,518  |
| Other expenses        | 4,531                      | 1,522                       | 6,053   |
| Net income            | 3,267                      | 738                         | 4,005   |
| Drugs                 | 4,789                      | 1,055                       | 5,844   |
| Medical services      | -15,459                    | -4,273                      | -19,732 |

*Note.* Data cover 37,370 township health centres and 2,004 community health centres, of a total of 39,080 township health centres and 4,036 community health centres in 2008.

Source: Ministry of Health (2009).

The health care reforms in 2009 introduced three key changes to the financing of township and community health centres. First, the government substantially increased its funding support for the provision of essential public health services. The government had always assumed the responsibility of financing the provision of public health services, but there was no specific requirement concerning which items should be provided and how much the government should pay (Interview No. 21). Both the content of public services and the government subsidy level were clarified with the health care reforms. The initial policy was that the government should provide a subsidy of 15 yuan per capita (Ministry of Health, Ministry of Finance & National Population and Family Planning Commission, 2009). The required subsidy level was increased to 25 yuan per capita in 2011, then increased by five yuan per capita per year since 2013 (see Table 6.23). The central government provides transfers to the central and western provinces. Again, there



is no regular reporting on how much the government allocates for the provision of essential public health services. The total government subsidy can be derived by multiplying the per capita subsidy by the number of people. According to the *China Health Yearbook* series, which occasionally report the government subsidy amount, the government has spent the amount it promised. In 2015, for example, it was reported that the government spent a total of 54.3 billion yuan (CHFPYEC, 2016, p. 185). This is very close to that derived in Table 6.23. To hold primary care facilities accountable, the government conducts performance evaluation of township and community health centres to see whether required essential public health services have been provided. Results from these evaluations are used to determine how much funding primary care facilities receive (Ministry of Health & Ministry of Finance, 2010; General Office of the National Health and Family Planning Commission, General Office of the Ministry of Finance & General Office of the State Administration of Traditional Chinese Medicines, 2015).

Table 6.23

*Government subsidy for the provision of essential public health services (2009–2015)*

| Year | Per capita subsidy<br>(yuan) | Population<br>(million) | Total government subsidy<br>(billion yuan) |
|------|------------------------------|-------------------------|--------------------------------------------|
| 2009 | 15                           | 1,334                   | 20.0                                       |
| 2010 | 15                           | 1,341                   | 20.1                                       |
| 2011 | 25                           | 1,347                   | 33.7                                       |
| 2012 | 25                           | 1,354                   | 33.9                                       |
| 2013 | 30                           | 1,361                   | 40.8                                       |
| 2014 | 35                           | 1,368                   | 47.9                                       |
| 2015 | 40                           | 1,375                   | 55.0                                       |

Source: Data for per capita subsidy compiled from CHYEC, 2010, 2011, 2012, 2013; CHFPYEC, 2014, 2015, 2016). Population data collected from NHFPC (2016). Total government subsidies calculated by multiplying per capita subsidy by population.

Second, the introduction of the NEMP changed financing. The policy requires primary care facilities sell essential medicines without profit, meaning the retail prices of these medicines should equal the wholesale prices (Ministry of Health et al., 2009).

Between 2009 and 2011, the policy was implemented in government-run township and community health centres (which accounted for about 99% of all township health centres and 84% of all community health centres in of 2011) (Ministry of Health, 2012). By July 2011, the NEMP covered all government-run primary care facilities (CHYEC, 2012, p. 295). Non-government-run primary care facilities are also encouraged to implement the policy, but there is no national requirement for this. Therefore, local governments can make their own decisions about whether the policy should be implemented and how it should be financed (General Office of the State Council, 2013). By the end of 2013, the NEMP was implemented in 27% of non-government-run township health centres and community health facilities (CHFPYEC, 2014, p. 168).

The loss of drug sales profits is supposed to be compensated for in two ways. First, the government promised to increase its funding support. Initially, there was a lack of clarity on how much the government should pay. In 2012, the central government set up a specific earmarked fund to compensate for losses resulting from the NEMP. Each year, the central government allocates around seven billion yuan for township health centres and community health facilities (CHYEC, 2013, p. 285; Ministry of Finance, 2014; CHFPYEC, 2015, p. 71; Ministry of Finance & NHFPC, 2016). It is unclear how the level of the government subsidy was determined, but it is not low considering that the net income from drug sales among government-run township and community health centres was 5.8 billion yuan in 2008 (see Table 6.19).

Second, the government suggested that the price of medical services should be increased. The purpose is to better reflect the costs of such services, thereby reducing the deficits from the sale of medical services. However, even after a significant rise, the average price of an outpatient consultation in primary care facilities remains low, with the standard fee being 10 yuan for all services during each consultation (CHYEC, 2012, p. 295; General Office of the State Council, 2010, 2013). This is based on the rationale

that the majority of the loss has already been compensated through the earmarked subsidy. Therefore, the prices of medical services should remain low, because they are determined by subtracting all government subsidies and other profits from the costs of service provision (National Development and Reform Commission, Ministry of Health & Ministry of Human Resources and Social Security, 2009). Another concern for the government is public pressure. The increase of the outpatient fee triggered strong discontent in many areas. Some localities had to arrange for officials to explain the policy (NHDRC, 2013).

Third, the government reclarified its financing responsibilities for government-run primary care facilities. Government subsidies should be used to cover some staff salaries (including retirees' pensions), personnel training and recruitment costs so that these costs are not be fully reflected in the prices of medical services, making the prices of services affordable for the general public. In addition, the government claimed the responsibility of paying for the gap between revenues and expenses (Ministry of Finance et al., 2009; General Office of the State Council, 2010, 2013). This means that, when primary care facilities run on deficits, they can obtain financial support from the government.

To introduce some incentives, the government required that part of the budget payment should be subject to performance evaluations. Local governments are required to conduct inspections in township and community health centres to determine whether they have provided medical services and essential public health services properly (General Office of the Ministry of Health, 2011a, 2011b). Results from these inspections are used to determine the exact funding received by primary care facilities.

All three changes require more government spending. As shown in Figure 6.9, fiscal subsidies as a percentage of the total revenues of health centres have increased

rapidly. For township health centres, fiscal subsidies accounted for 17% of revenues in 2008 and 44% in 2015. For community health centres, this rose from 20% to 36%.

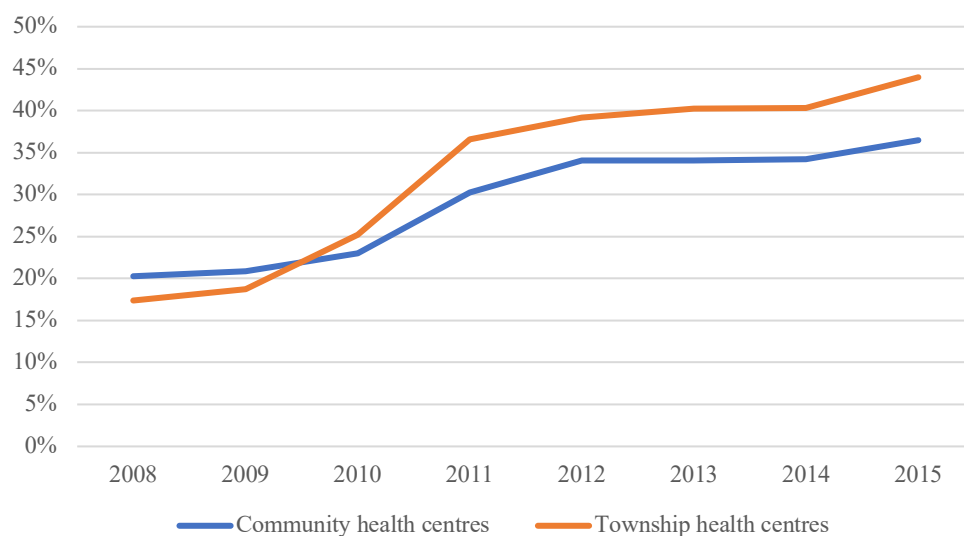


*Figure 6.9.* Fiscal subsidies as a percentage of the total revenues of township and community health centres (2008–2015) (Ministry of Health (2009, 2010, 2011a, 2012; NHFPC, 2013, 2014a, 2015, 2016).

In 2015, the total revenue of all township and community health centres was 330 billion yuan—fiscal subsidies accounted for 137 billion yuan, and sales of drugs and medical services accounted for 181 billion yuan (NHFPC, 2016). The government provided 54.3 billion yuan for the provision of essential public health services (CHFPYEC, 2016, p. 185). As previously discussed, the subsidy is supposed to be shared between health centres and health stations, but the entirety is allocated to health centres, who then determine how much to share with village stations. The entire subsidy is counted as revenue for health centres in the *China Health Statistical Yearbook* series. As previously discussed, in addition to the subsidy for essential public health services, the central government provided 7.1 billion yuan to township and community health centres to compensate for the loss caused by the NEMP.

The composition of revenue for township and community health centres can be drawn based on the above information (see Figure 6.10). The majority of revenue came

from drug and medical service sales, around one-fifth came from the government subsidy for the provision of essential public health services and around one-fifth came from other types of government funds used to pay for staff salaries and other operating costs. Drug and medical service sales are financed by payments from patients and insurers, based on FFS. Subsidies for the provision of essential public health services are based on capitation, but are subject to performance evaluations. Funds for salaries and other operating costs are partly based on line item budget and also involve some performance-related elements.

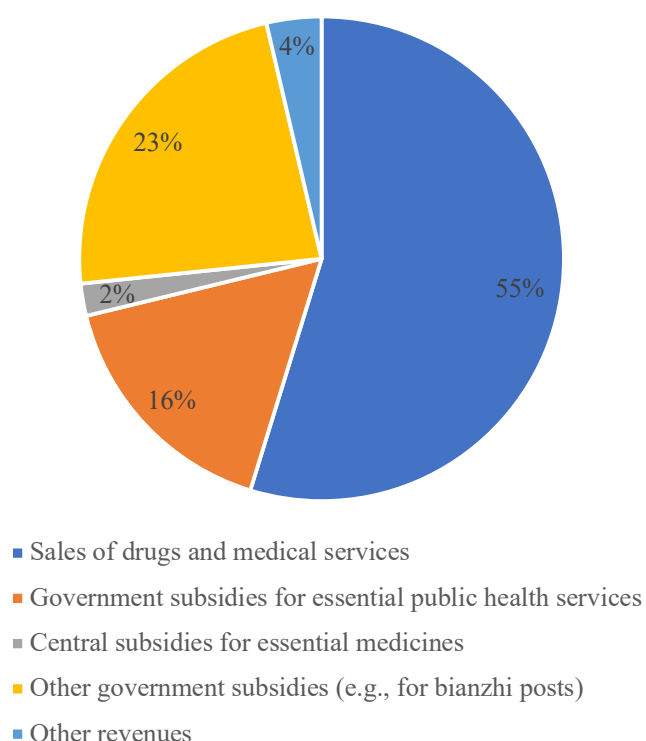


*Figure 6.10.* Composition of revenue for township and community health centres (2015) (NHFPC, 2016; CHFPYEC, 2015, p. 71; 2016, p. 185; Ministry of Finance & NHFPC, 2016).

In practice, the differentiation of government funds is not always clear. For example, whether the funds for the provision of essential public health services cover personnel costs is unknown. During my fieldwork, different interviewees tended to have different interpretations (Interview No. 7; Interview No. 9). This divergence of views is

surprising, because under the policy of the national essential public health services the government is supposed to use the same amount of funds to procure services from public and private facilities (Ministry of Health, Ministry of Finance & National Population and Family Planning Commission, 2009)—if the subsidy does not cover personnel costs, how can it be used to procure services from private facilities? However, this question is not relevant because, in practice, almost all fiscal subsidies were allocated to township and community health centres (NHFPC, 2016), which are predominantly public.

Overall, the allocation of government funds appears to be arbitrary, with the amount of money obtained by facilities largely determined according to the fiscal capacity of local governments instead of clear rules (Interview No. 12; Interview No. 17; Interview No. 23). As previous studies have pointed out, the current financing policy is still following the approach of ‘crossing the river by groping for the stones’ (NHDRC, 2013, p. 94).

To understand the incentives provided by the new financing structure, it is necessary to refer to the balance sheets. As illustrated in Table 6.24, in 2015, drug sales generated a profit of 8.096 billion yuan. This was possible because raw herbs and unprocessed traditional medicines are exempted from the no-profit policy and up to a 25% mark-up could be charged (National Development and Reform Commission et al., 2006). The medical service sales resulted in a significant deficit of 81.740 billion yuan. This deficit and the costs associated with the provision of essential public health services were covered by fiscal subsidies of 137.205 billion yuan.

By comparing Tables 6.24 and 6.22, it can be seen that the basic financing structure has not changed much for township and community health centres. The major changes are that, in regard to income, the provision of drugs plays a less significant role while government subsidies have become more dominant. Such a financing structure

means that township and community health centres have become more dependent on government subsidies and are strongly incentivised to meet government targets.

Table 6.24

*Revenues and expenses of township and community health centres (million yuan) (2015)*

|                       | Township<br>health centres | Community<br>health centres | Total   |
|-----------------------|----------------------------|-----------------------------|---------|
| Total revenues        | 224,050                    | 106,059                     | 330,109 |
| Drug sales            | 59,042                     | 41,231                      | 100,273 |
| Medical service sales | 58,717                     | 21,750                      | 80,467  |
| Fiscal subsidies      | 98,513                     | 38,692                      | 137,205 |
| Other revenues        | 7,778                      | 4,386                       | 12,164  |
| Total expenses        | 214,933                    | 101,244                     | 316,177 |
| Drugs                 | 54,556                     | 37,621                      | 92,177  |
| Medical services      | 119,279                    | 42,928                      | 162,207 |
| Other expenses        | 41,098                     | 20,695                      | 61,793  |
| Net income            | 9,117                      | 4,815                       | 13,932  |
| Drugs                 | 4,486                      | 3,610                       | 8,096   |
| Medical services      | -60,562                    | -21,178                     | -81,740 |

*Note.* Data cover 36,178 township health centres and 7,932 community health centres out of a total of 36,817 township health centres and 8,806 community health centres in 2015.

Source: NHFPC (2016).

## 6.5 Summary

This chapter discussed the Chinese government's role in strengthening the inputs of primary care. For physical resources, the government has employed entry controls (including government planning and entry requirements for different types of primary care facilities), direct investments in facilities and equipment, and construction requirements. Since the early 2000s, the government has increased the requirements for the network, buildings and equipment of primary care facilities, matched by larger investments. These measures have made the primary care network more complete and significantly increased the physical resources of individual facilities. Yet, there seems to be an overcapacity, with facilities being empty and equipment lying idle.

In terms of human resources, the government has employed entry controls (including government-organised licensure exams and government planning of bianzhi posts), direct subsidies for bianzhi posts, specific programs for township health centres to recruit doctors and earmarked funds for village doctors. Through increasing the entry requirements and offering more government subsidies for bianzhi posts, the government has helped township and community health centres recruit more workers and increase the average education qualification of the workforce. In villages, the employment of village doctors through township health centres and higher levels of earmarked subsidies for village doctors have increased both the number of village doctors and percentage of (assistant) practising doctors in village health stations. The average educational qualifications have improved as more young graduates entered the workforce. However, township health centres have lost experienced and senior employees.

In addition to increasing resources for primary care facilities, the government has made efforts to establish the on-the-job training system and introduce programs to retrain existing (assistant) practising doctors to become GPs. The government is training a vast number of rural and community health workers each year, but the effects of the on-the-job training programs have not been tracked. Through short-term retraining programs, the government has increased the number of GPs, but the usefulness of these retraining programs has been questioned.

As for financing and payment mechanisms, the government has maintained price controls and introduced the elimination of profits from drug sales. More subsidies have been made to support the implementation of various government pricing policies. As a result of these changes, primary care facilities have become more financially dependent on the government. This means that their incentive to meet government requirements has increased.



Overall, the government has promised and paid more to enhance the inputs of primary care. The government interventions have worked well in meeting quantitative targets. Primary care facilities have become more spacious, better equipped and better staffed. However, little is known about the extent to which the quantitative targets can be justified and, more importantly, whether these quantitative improvements can lead to better health care.

Essentially, the government is still following a planned economy approach in strengthening the inputs of primary care. The targets have been set by the government under the assumption that more inputs in primary care facilities would attract more patients. Clearly, this can only be part of the story because patients' care-seeking behaviours are influenced by not only inputs but also many other factors (Liu et al., 2018). Chapter 7 continues to discuss the government's efforts in improving the service delivery attributes of primary care facilities.

## **Chapter 7. Strengthening Primary Care as a Goal in Itself:**

### **Service Delivery Attributes**

The previous chapter discussed the Chinese government's role in strengthening the inputs of primary care. This chapter examines the government's role in enhancing the service delivery attributes of primary care. As previously discussed, the four defining attributes of primary care are first contact, comprehensiveness, longitudinal care and coordination. The government's intentions and means of interventions and these interventions' outcomes are discussed for all dimensions.

#### **7.1 First Contact**

Ideally, primary care is the first level of health care and hospitals should step in only when medical issues cannot be solved at the primary care level. That primary care serves as the first point of contact for patients is desirable, because health care is complicated and most people do not have sufficient knowledge to make informed judgements about the appropriate source and timing of care for many of their problems. With the help of primary care, individuals can understand whether the problem is serious enough to require additional care and then select the best solution to their problems.

During the planned economy period, this principle was followed in China. Since the economic reforms, this rule still applies in the rural areas to a large extent. The great majority of patients choose primary care facilities, mainly village health stations and township health centres, as their first point of contact.<sup>94</sup> It was mainly in cities that the gatekeeping mechanism of primary care collapsed during the first two decades of economic reforms. It was only in 1997 that the government proposed to establish a new

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<sup>94</sup> However, county hospitals' outpatient department played an increasingly important role as first point of contact for some rural residents. As will be elaborated in Chapter 8, many factors (such as improved transportation infrastructure perceived higher quality of services in hospitals) contributed to rapid expansion of hospitals.

primary care system not based on employment (CCCPC & State Council, 1997). Throughout the 2000s, the government was busy with establishing the urban primary care system, transforming existing facilities where appropriate and constructing new ones when necessary. Given this historical context, it was not until 2006 that the central government proposed to explore the piloting of the gatekeeping mechanisms of community health services in cities (State Council, 2006). During the first two phases of health care reforms (2009–2015), the central government's requirement remained a 'pilot' (CCCPC & State Council, 2009; State Council, 2009, 2012a). It was not until 2015, with the central government's decision to promote the hierarchical diagnosis and treatment model, that strengthening the first contact of primary care facilities became an important task (Interview No. 21).

Between 2003 and 2015, the government relied very much on the expansion of the network to increase the use of primary care facilities. As discussed in Chapter 6, the government's target is to have one community health centre in each street (State Council, 2006). Through increasing the supply and improving physical accessibility, the government intended to attract more patients to community health services and promote the use of these as the first point of contact for patients.

The government also required that financial incentives should be introduced through price differentials and reimbursement policies of public health insurance programs (Ministry of Health et al., 1999; Economic Restructuring Office of the State Council et al., 2000; Ministry of Health et al., 2002; Ministry of Labour and Social Security, 2006; CCCPC & State Council, 2009; State Council, 2009, 2012a). Presumably, primary care facilities would offer lower prices with higher reimbursement rates, and patients would respond to this economic incentive by increasing their use of primary care facilities. Nonetheless, the effectiveness of this measure was limited by at least two factors.

First, the price differentials between primary care facilities and hospitals were not very evident. Since the late 1980s, the government has priced services according to the level of facilities, with higher-level facilities charging higher prices for the same services (Interview No. 4). However, these differences have not been evident, because the expenditure of a single outpatient visit consists of several parts: registration fee, treatment fee and cost of associated diagnostic tests and drugs. As previously discussed, the prices of medical services have been artificially lowered to reflect the public interests of health facilities. Even in a central-level hospital, which is among the best hospitals one can find, the average registration fee per visit was 4.7 yuan in 2015 (NHFPC, 2016, p. 106). Before a visit, a patient usually would not know the types of treatment, diagnostic tests and drugs they might need. Therefore, the message is that one only needs to pay very little to see a top doctor in the best hospitals. Such a message provides little incentive for patients to choose primary care facilities over hospitals.

Second, the public health insurance schemes were still in an early development stage in the 2000s. The NRCMS was established in 2003 and the URBMI in 2007. In most localities, these programs provided little reimbursement for general outpatient care until 2010 (Yu, 2015; Yip et al., 2012). Even when outpatient services were covered, primary care facilities were not always designated facilities for health insurance schemes (Bhattacharyya, Delu, Wong & Bowen, 2011). In 2010, among the township health centres and community health facilities monitored by the Ministry of Health, only 7.6% of the total revenue of these facilities came from insurance payments (He et al., 2013). These two issues have been gradually addressed. Nonetheless, even more recently, some primary care facilities are still excluded from the reimbursement of health insurance because they do not meet certain requirements, for example, that the designated facility should employ pharmacists and nurses (Interview No. 4). Deductibles for outpatient

services still exist in many localities.<sup>95</sup> This means that patients usually need to pay a certain amount of money out of pocket before their health insurance program starts to pay for their use of outpatient care. Therefore, the higher reimbursement rate at primary care facilities is not always relevant.

There is a lack of evidence to verify whether the situation has been improved. The best available evidence is provided by the NHSS. As shown in Table 7.1, the percentage of the urban population who choose primary care facilities as their first contact has increased significantly, from 48.3% to 65.2%. However, this does not necessarily indicate a real improvement. One major contributor to this increase is the improvement in the coverage of community health centres. By the end of 2008, there were 4,036 community health centres for 6,524 streets (Ministry of Health, 2009a). By the end of 2013, there were 8,488 community health centres for 7,566 streets (NHFPC, 2014a). During this process, the government encouraged the use of existing facilities. Many hospitals were converted into community health centres. As a result, people who used to visit a hospital in 2008 might belong to the category of people choosing to visit primary care facilities in 2013. This mainly indicates a change in classification instead of patients' care-seeking behaviours.

The other factor, which has probably played a more significant role, is the urbanisation process. Many previously rural areas have become urban areas in the past decade. Given that the gatekeeping mechanism of primary care facilities remained relatively intact in rural areas, when these areas transformed into urban areas they naturally drove up the percentage of people choosing primary care facilities in urban areas. For these two reasons, the significant improvement shown in Table 7.1 does little

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<sup>95</sup> For example, in Shanghai, the URBMI provides coverage for those enrollees who spend over 300 yuan per year on outpatient services (see [http://www.shyb.gov.cn/bmwd/jb/02/201811/t20181123\\_1292123.shtml](http://www.shyb.gov.cn/bmwd/jb/02/201811/t20181123_1292123.shtml)). In Tianjin, the URBMI provides coverage for those enrollees who spend over 500 yuan per year on outpatient services (see <http://tj.bendibao.com/live/20171026/80924.shtml>).

to tell us whether people became more likely to use primary care facilities as their first point of contact in cities.

Table 7.1

*Distribution of first doctor–patient encounters (% of total) (2008 and 2013)*

| Facility              | 2008         |              |              | 2013         |              |              |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                       | <i>Total</i> | <i>Urban</i> | <i>Rural</i> | <i>Total</i> | <i>Urban</i> | <i>Rural</i> |
| Primary care facility | 73.7         | 48.3         | 82.7         | 72.8         | 65.2         | 80.4         |
| Hospital              | 25.2         | 50.3         | 17.3         | 25.1         | 31.6         | 18.6         |
| Other                 | 1.0          | 1.4          | 0.9          | 2.2          | 3.1          | 1.4          |

Source: Centre for Health Statistics and Information of the Ministry of Health (2009, 2015).

At the aggregate level, not much changed. From 2008–2013, the percentage of people choosing primary care facilities as their first point of contact dropped slightly from 73.7% to 72.8% (see Table 7.1). People in large cities still predominately skip primary care facilities and go straight to hospitals. This is corroborated by the body of literature investigating residents’ care-seeking patterns. Results of these studies consistently show that the provision of first-contact care is still dominated by hospitals. In Chengdu, the capital city of Sichuan province, 43% of residents go to primary care facilities when a new health need arises, while 56% go straight to hospitals (Liu & Li, 2018). In Hangzhou, the capital of Zhejiang province, 70% of respondents preferred hospital-based services for first-contact care (Wu, Lam, Lam, Zhou & Sun, 2017b). In Shijiazhuang, the capital of Hebei province, only 35% of residents choose primary care facilities as their first point of contact, with 65% going straight to hospitals (Zhi et al., 2017). In Guangzhou, the capital of Guangdong province, 61% of the patients who sought care at health facilities chose large hospitals as their first point of contact (Li et al., 2015).

As discussed in Section 6.3.2, the development of general practice in China is still at an early stage and there is a relatively small number of GPs, the great majority of whom work in township and community health centres. That individuals skip primary care

facilities and go straight to hospitals in large cities means that they go straight to specialists. For patients, the lack of knowledge can result in extra efforts spent on doctor shopping, a waste of time and money, delay to appropriate treatment, frustration and exhaustion.

## **7.2 Comprehensiveness**

Comprehensiveness requires that primary care adequately recognise the full range of patients' health-related needs and arrange for the resources to deal with them. Its role is to directly provide all services for common needs and act as an agent for the provision of services for needs that must be met elsewhere.

Under Mao, the focus of primary care was very much on preventive care. Preventive services were mainly financed by central government and local welfare funds and were essentially free to the consumer. As part of the economic reforms, SOEs withdrew from providing public health and primary care because of insufficient revenue, while local governments also cut their spending on public health. As a result, health care facilities were under increasing pressure to generate profits. Focus shifted to the provision of profit-generating services, mainly sales of drugs and diagnostic tests. Even for preventive services, user fees financed a larger proportion of costs.

### **7.2.1 Essential Public Health Services**

The 2002 SARS outbreak was a major shock and communicated that public health services could not be ignored. Since then, the government has significantly increased its efforts in enhancing the public health function of primary care facilities. In 2007, the central government introduced an earmarked subsidy to cover the cost of community health facilities' provision of essential public health services in the central and western provinces (Interview No. 30). The subsidy was 3 yuan per capita for central provinces and 4 yuan per capita for western provinces (CHYEC, 2008).

In 2009, the central government introduced a national list of essential public health services (Ministry of Health, Ministry of Finance & National Population and Family Planning Commission, 2009). To guide the provision of services, the government issued an 81-page manual of detailed instructions for each item on the list (Ministry of Health, 2009b). The program was rapidly expanded. As indicated in Table 7.2, the national list included nine items at the beginning of the project. In 2015, the list was expanded to 12 items. With the expansion of the program, the manual was updated in 2011 and 2017 (Ministry of Health, 2011c; NHFPC, 2017).

The government has taken an incremental approach to increasing its target for the delivery of services. For example, in 2011, the target for personal health records was to establish or maintain electronic health records for 50% of the population. This target was increased to 75% of the population in 2015. In 2011, the target for management of chronic conditions was to cover 45 million patients with hypertension and 15 million patients with diabetes. In 2015, the target was increased to cover 80 million patients with hypertension and 30 million patients with diabetes (Ministry of Health & Ministry of Finance, 2011; NHFPC, Ministry of Finance & State Administration of Traditional Chinese Medicines, 2015). The government also raised the standard for the delivery of services. In 2015, for example, the government required that the number of follow-up visits should be increased for those hypertensive and diabetic patients whose blood pressure and glucose were not under control. Abdominal ultrasound exams should be included in physical examinations for the population aged 65 or over (NHFPC, Ministry of Finance & State Administration of Traditional Chinese Medicines, 2015).



Table 7.2

*Essential public health services to be delivered by primary care facilities*

|         | 2009                                                         | 2015                                                         |
|---------|--------------------------------------------------------------|--------------------------------------------------------------|
| Items   | Personal health records                                      | Personal health records                                      |
|         | Health education                                             | Health education                                             |
|         | Vaccination                                                  | Vaccination                                                  |
|         | Prevention and management of infectious diseases             | Child health care and management                             |
|         | Child health care and management                             | Maternity care and management                                |
|         | Maternity care and management                                | Aged care and management                                     |
|         | Aged care and management                                     | Management of chronic conditions (hypertension and diabetes) |
|         | Management of chronic conditions (hypertension and diabetes) | Management of severe mental disorders                        |
|         | Management of severe mental disorders                        | Management of tuberculosis                                   |
|         |                                                              | Use of traditional Chinese medicines for health maintenance  |
|         |                                                              | Reporting of and emergency response to infectious diseases   |
|         |                                                              | Supporting health inspection activities                      |
| Subsidy | 15 yuan per capita                                           | 40 yuan per capita                                           |

Source: Ministry of Health, Ministry of Finance and National Population and Family Planning Commission (2009) and NHFPC, Ministry of Finance and State Administration of Traditional Chinese Medicines (2015).

All services within the national list should be delivered to the public free of charge. As discussed in Chapter 6, the costs are fully covered by government funds. To support the targets, the government increased the subsidy from 15 yuan per capita in 2009 to 40 yuan per capita in 2015. Primary care facilities receive government subsidies on a capitation basis,<sup>96</sup> but this is also subject to performance evaluation. Local governments

<sup>96</sup> Nonetheless, the government does not know the exact number of people covered by each primary care facility. Primary care facilities report the number of people within their catchment area, but they are

are responsible for organising annual assessments, the results of which are used to decide how much subsidies can be allocated to service providers (Ministry of Health & Ministry of Finance, 2010). Unsatisfactory results lead to cuts in subsidies. In practice, local governments have limited time and human resources for such assessments and the time spent on each facility tends to be brief (Interview No. 19). Assessment may only involve phone calls to 10 people (Interview No. 5; Interview No. 10). Questions are usually simple. For example, a patient may be asked whether the health centre conducted any home visits and whether they measured the patient's blood pressure. However, responses to these questions can only provide a very general picture and hardly reflect the quality of services (Interview No. 7).

The fund appears to be modest when the required volume of services is considered. To illustrate this, the program in 2015 is used as an example here. In 2015, the government required primary care facilities to provide 12 categories of services (see Table 7.2). There were specific coverage targets and provision standards for each type of service (NHFPC, Ministry of Finance & State Administration of Traditional Chinese Medicines, 2015; Ministry of Health, 2011c). An estimate of the expected workload of primary care facilities is given below based on government data. For simplicity, only six categories are used here, because the workload of these services can be straightforwardly expressed in the number of consultations or physical exams (see Table 7.3):

- For each child between zero and six years old, primary care facilities are supposed provide 13 key age and stage consultations (within the first week, at one month, three months, six months, eight months, 12 months, 18 months, 24 months, 30 months, three years, four years, five years and six years). In other words, in a given year, for each child between zero and 12 months old,

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incentivised to overstate the number of people. When the number of people reported by each primary care facility are compiled, the sum usually exceeds the total number of residents within a given area. Local governments usually need to discount the number of people reported by primary care facilities (Interview No. 19).

five consultations need to be provided; for each child between 13 months and three years old, two consultations need to be provided; and for each child between four and six years old, one consultation needs to be provided. In 2015, the number of children between zero and 12 months old can be estimated by the number of births in 2015; the number of children between 13 months and three years old can be estimated by the number of births in 2014 and 2013; and the number of children between four and six years old can be estimated by the number of births in 2012, 2011 and 2010. As the coverage rate should have reached 85% in 2015, primary care facilities were required to provide 167 million consultations.

- For each pregnant woman, primary care facilities are supposed to provide five prenatal and two postnatal consultations. The number of pregnant women in 2015 can be estimated by the number of births in 2015. As the coverage rate should have reached 85% in 2015, primary care facilities were required to provide approximately 98 million consultations.
- For each person aged 65 or over, primary care facilities are supposed to provide one health check-up per year. As the coverage rate of the elderly population should have reached 65% in 2015, primary care facilities were required to provide 96 million health check-ups.
- For each patient with severe mental illness, primary care facilities are supposed to provide one health check-up and at least four follow-up consultations per year. The target of providing care to four million patients in 2015 means that primary care facilities were required to provide four million health check-ups and 16 million consultations.
- For each patient with hypertension and/or diabetes, primary care facilities are supposed to provide one health check-up and four follow-up consultations

each year. The target of providing care to 80 million patients with hypertension and 30 million patients with diabetes means that primary care facilities were required to provide 110 million health check-ups and 440 million follow-up consultations.

- For each child between zero and six years old and each person aged 65 or over, primary care facilities are supposed to provide one traditional Chinese medicine consultation each year. As the coverage rate should have reached 40% in 2015, primary care facilities were required to provide 97 million consultations.

To deliver these six types of essential public health services, primary care facilities needed to provide 1.028 billion health check-ups and consultations. Given that the Chinese population was 1.374 billion in 2015 (NBS, 2016), this workload means 0.75 health check-ups and consultations for each person. This is an underestimation of the required workload, because in 2015 the government required that for those chronic patients whose blood pressure and blood sugar were not under control, primary care facilities should provide two more follow-up consultations, and for those severe mental patients whose issues were not entirely under control, primary care facilities should provide four more follow-up consultations each year (NHFPC, Ministry of Finance & State Administration of Traditional Chinese Medicines, 2015). These extra services were not included in the above calculations. For primary care facilities, the impact of this sudden increase in workload has been profound. According to one interviewee, before the health care reforms there tended to be only two to three employees in health centres responsible for public health. After the reforms, two-thirds of employees needed to be involved in the delivery of essential public health services (Interview No. 5). Such a change has been observed nationwide (NHDRC, 2013).

Table 7.3

*Estimated workload of select essential public health services (2015)*

| Category                                                     | Eligible people                              | Total eligible people (million) | Services required to be provided                             | Target coverage (million) | Target check-ups (million) | Target consultations (million) |
|--------------------------------------------------------------|----------------------------------------------|---------------------------------|--------------------------------------------------------------|---------------------------|----------------------------|--------------------------------|
| Child health care and management                             | Children aged 0–12 months                    | 16.55 <sup>a</sup>              | Five consultations/child                                     | 14<br>(16.55*85%)         | -                          | 70<br>(14*5)                   |
|                                                              | Children aged 13 months–3 years              | 33.27 <sup>b</sup>              | Two consultations/child                                      | 28<br>(33.27*85%)         | -                          | 56<br>(28*2)                   |
|                                                              | Children aged 4–6 years                      | 48.31 <sup>c</sup>              | One consultation/child                                       | 41<br>(48.31*85%)         | -                          | 41<br>(41*1)                   |
| Maternity care and management                                | Pregnant women                               | 16.55 <sup>a</sup>              | Five prenatal and two postnatal consultations/woman          | 14<br>(16.55*85%)         | -                          | 98<br>(14*7)                   |
| Aged care and management                                     | People aged 65 or over                       | 144                             | One check-up/person                                          | 96<br>(144*65%)           | 96<br>(96*1)               | -                              |
| Management of chronic conditions (hypertension and diabetes) | Patients with hypertension                   | -                               | One check-up/patient and at least four consultations/patient | 80                        | 80<br>(80*1)               | ≥320<br>(80*4)                 |
|                                                              | Patients with diabetes                       | -                               | One check-up/patient and at least four consultations/patient | 30                        | 30<br>(30*1)               | ≥120<br>(30*4)                 |
| Management of severe mental disorders                        | Patients with severe mental illness          | -                               | One check-up/patient and at least four consultations/patient | 4                         | 4<br>(4*1)                 | ≥16<br>(4*4)                   |
| Use of traditional Chinese medicines for health maintenance  | Children aged 0–6 and people aged 65 or over | 242.13 <sup>d</sup>             | One consultation/person                                      | 97<br>(242.13*40%)        | -                          | 97<br>(97*1)                   |

*Note.* <sup>a</sup> Estimated by the number of new births in 2015. <sup>b</sup> Estimated by the number of new births in 2014 and 2013 (i.e., 16.87 million + 16.40 million).

<sup>c</sup> Estimated by the number of new births in 2012, 2011 and 2010 (i.e., 16.35 million + 16.04 million + 15.92 million). <sup>d</sup> Traditional Chinese medicine consultations are provided to children aged 0–6 and people aged 65 or over (i.e., 144 million + 16.55 million + 33.27 million + 48.31 million).

Source: Number of new births from Zhang (2017). Number of people aged 65 or over from NHFPC (2016). Target coverage either from or calculated based on NHFPC, Ministry of Finance and State Administration of Traditional Chinese Medicines (2015) and Ministry of Health (2011c).

In 2015, the government subsidy was 40 yuan per capita, or 54.3 billion yuan in total for the provision of 12 types of essential public health services. Not all of the government subsidy was spent on these six items, because primary care facilities had to offer all 12 services listed in Table 7.2. One study that analysed the cost structure for the provision of essential public health services in Shenzhen indicates that providing the six types of essential public services costed about half of the total government subsidy for all essential public services (Lin et al., 2017). Working on the assumption that the same rate can be applied at the national level, the estimated workload in Table 7.3 should be covered by half of the budget—20 yuan per capita, or 27.15 billion yuan in total (40 yuan per capita\*50%; 54.3 billion yuan\*50%). Assume that the cost of one health check-up is equal to the cost of one consultation.<sup>97</sup> This means that primary care facilities should deliver one health check-up or consultation under 26 yuan (dividing 27.15 billion yuan by a total of 1.028 billion health check-ups or consultations).

This estimation is crude and needs to be triangulated to ascertain its resemblance to reality. In certain localities, the local governments broke down the subsidy for each service item.<sup>98</sup> Similar numbers were specified in their policy documents. In Hubei, for example, the subsidy for each follow-up consultation with a diabetic patient was 30 yuan and for each hypertensive patient the figure was 25 yuan (Dangyang County Centre for Disease Control, 2017). In Guangxi, the government provided 100 yuan per diabetic patient per year, which covered the costs of four follow-up consultations and one health check-up (Guangxi Health Department & Guangxi Finance Department, 2013). In one district of Shandong province, the provision of each health check-up was funded by 30.39

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<sup>97</sup> This assumption is crude. Obviously, the cost for the provision of health check-ups is different to that of consultations, and the cost for the provision of health check-ups should vary depending on the items included and target population. One interviewee suggested that in Fujian, each physical exam for an elderly person cost more than 300 yuan, while an exam for a pregnant woman cost hundreds of yuan (Interview No. 23). Nonetheless, the purpose of the calculation here is not to provide accurate numbers, but to illustrate a broad picture of the gap between the government's high requirements and limited funds.

<sup>98</sup> The central policy does not break down the subsidy for different items. Some localities have specified the exact subsidy for different service items as a way to incentivise primary care workers to provide services (Interview No. 9).

yuan for materials. Personnel costs were financed separately at 3.2 yuan per 10 minutes (Rencheng Health Bureau, 2014).

A great deal needs to be achieved within the budget of around 20–30 yuan for each follow-up consultation or health check-up. In Hubei, for example, the 30 yuan for each follow-up consultation for a diabetic patient covered all of the material and personnel costs associated with the following services (Dangyang County Centre for Disease Control, 2017): 1) tests for blood pressure, blood glucose, body weight (to measure BMI) and heart rate; 2) discussing and assessing the patient's conditions based on their health problems, lifestyle, medication compliance and reactions to drugs; 3) providing proper interventions based on the assessment and proper health education; and 4) recording all the patient information.

It was expressed by several interviewees that the government subsidy was too low to cover the costs of essential public health services (Interview No. 7; Interview No. 19; Interview No. 26; Interview No. 28). Some suggested that the government subsidy should be doubled to cover the costs (Interview No. 26; Interview No. 28). These views are supported by cost analyses of sampled community health centres in Beijing and Shenzhen, both of which found that the government subsidy was significantly lower than the running costs of essential public health services (Yin et al., 2015; Lin et al., 2017). In practice, the program provides little to cover personnel costs and the incentive for those involved in the delivery of public health services is low.

In response to the inadequate funds, one common strategy adopted by primary care facilities was to focus on the provision of a few items, usually including child and maternity care (Interview No. 19; Interview No. 26; Interview No. 28). The focus on these two categories is probably due to the fact that both child and maternal care were provided well before the health care reforms, and primary care facilities have therefore accumulated more experience in how to provide these services.

Another factor is the knowledge and skills of primary care staff. A survey of 228 community health workers in Jilin province shows that only 58.3% of respondents could correctly state the range of normal blood pressure and only 20.2% knew the recommended salt intake for hypertensive patients (Yuan, 2016). The situation is worse in villages. A study of 198 village doctors in Shaanxi province indicates that only 25% of village doctors fully grasp the diagnosis criteria for hypertension (Zhao et al., 2016). Clearly, with such a limited clinical knowledge of diabetes and hypertension, primary care facilities are incapable of providing proper management of these chronic diseases.

On the surface, the government is achieving its targets (see Table 7.4). In 2015, primary care facilities established/maintained health records for 76.4% of the population and provided health care to 91.5% of pregnant women and 90.7% of children under three. Thus, the targets of 75%, 85% and 85% respectively were all reached. Primary care facilities also provided public health services to 118 million people aged 65 or over—82% of the 144 million people in China aged 65 or over in 2015 (NBS, 2016)—far exceeding the target of 65%. Primary care facilities also provided care to 88 million patients with hypertension, 26 million patients with diabetes and four million patients with severe mental illness (CHFPYEC, 2016, p. 185). These exceeded the targets of managing 80 million patients with hypertension and four million patients with severe mental illness. The only target primary care facilities failed to meet was to manage 30 million diabetic patients. Nonetheless, the gap was only four million, relatively modest compared to the 26 million patients under management.



Table 7.4

*Targets and results for the delivery of essential public health services (2015)*

| Service or patient group            | Target coverage | Result      |
|-------------------------------------|-----------------|-------------|
| Personal health records             | 75%*            | 76.4%*      |
| Children under three                | 85%*            | 91.5%*      |
| Pregnant women                      | 85%*            | 90.7%*      |
| People aged 65 or over              | 65%*            | 118 million |
| Patients with hypertension          | 80 million      | 88 million  |
| Patients with diabetes              | 30 million      | 26 million  |
| Patients with severe mental illness | 4 million       | 4 million   |

*Note.* \* Percentage of population.

Source: NHFPC, Ministry of Finance and State Administration of Traditional Chinese Medicines (2015) and CHFPYEC (2016, p. 185).

There have been some encouraging improvements in child and maternal health (Yang et al., 2016). This can be explained by primary care facilities tending to focus on these two categories of services.

The quality of the other categories of services, however, has been less satisfactory. Take personal health records as an example. In theory, information for personal health records should be collected through service delivery or household surveys. In practice, however, under the pressure to complete tasks, primary care facilities may collect information from other public departments such as local health bureaus and police stations (Interview No. 19). Thus, the reliability of health records is problematic. In 2011, China Central Television found that the health records in a village of Anhui province were fake (Jing, 2011). Similar stories have been reported in other localities (Pan, 2014; Chen, 2015). Even the government itself also admitted that fake health records and activities existed (CHYEC, 2011, pp. 40–46).

It is unclear how serious the problem is at the national level, but some recent studies have explored the scale of the gap between claimed and actual provision in specific localities or among certain populations. A survey conducted in Chengdu showed

that, out of 1,868,048 health records reviewed, only 26.5% of these included telephone numbers. Only 54.5% of these numbers existed, and among those who answered the call, 67.1% confirmed that they had received services from their primary care facilities (Peng et al., 2016). In a survey of one community health centre in Wenzhou, 500 health records were randomly chosen from all the health records of patients with hypertension and/or diabetes. Out of the sample, only 45.2% (226/500) verified that the information in their health records was correct (Pan, Liu, Ye, Wang & Chen, 2016). In another survey that used health records in primary care facilities to contact those patients with either hypertension or diabetes, only 53.34% of respondents received regular follow-up services (Tian et al., 2015).

Perhaps most problematically, primary care facilities are not taking a comprehensive approach when receiving patients. An emerging body of literature looks at the quality of services at primary care facilities through patient surveys on their care-seeking experiences. These studies consistently show that primary care facilities only occasionally, or at best sometimes, incorporate health education (e.g., healthy diet, adequate sleep and appropriate exercise) or recommend regular check-ups for patients.<sup>99</sup> In other words, doctors are not taking a proactive approach to managing risk factors.

This partly explains why the outcomes of chronic disease management provided by primary care facilities are suboptimal. In one recent nationally representative project that enrolled adults aged 35–75 years, it was found that only 44.7% of hypertensive patients were aware of their condition (Lu et al., 2017). Another nationally representative

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<sup>99</sup> These studies apply the Primary Care Assessment Tool to evaluate the services quality of primary care facilities. One dimension covered is ‘comprehensiveness’. Participants from community health services were asked a range of questions to assess ‘comprehensiveness’. Examples of such questions (Mei et al., 2016) include: ‘Does your primary care provider talk about healthy diet, adequate sleep, appropriate exercise and so forth with you? Does your primary care provider recommend you have a regular check-up? Generally, how much time will your primary care provider spend talking to you?’ Each question is scored on a four-point Likert-type scale (1 = never, 2 = occasionally, 3 = sometimes, and 4 = always). These studies cover different localities, but their results consistently show a score of two or three for comprehensiveness measured by services provided (Wang et al., 2013; Yang et al., 2013; McCollum et al., 2014; Zeng, Shi, Zou, Chen & Ling, 2015; Wei et al., 2015; Kuang et al., 2015; Du et al., 2015; Mei et al., 2016; Hu et al., 2016).

survey revealed that only 36.5% of diabetic patients were aware of their diagnosis (Wang et al., 2017). Although primary care facilities are supposed to play a dominant role in managing the health of chronic patients, results are still suboptimal. One recent national survey found that only 70% of hypertensive patients who sought care from primary care facilities were diagnosed and only 6% had their blood pressure under control. Similarly, only 46% of diabetic patients knew about their condition and only 3% had their blood glucose under control (Li et al., 2017). The above data suggest that primary care facilities have not yet been able to help patients become aware of their chronic conditions and manage them properly. This means many potential complications and expensive treatments.

Such a situation is particularly worrisome given that the prevalence of chronic diseases has been increasing rapidly (see Chapter 5). From an international perspective, the proportions of people who are aware, treated and controlling their high blood pressure in China were all lower than that of the average middle-income countries, as well as the high-income countries (World Bank, 2017). The Chinese patients still have very limited understanding of chronic diseases. According to the national surveys to monitor the health knowledge of the general population, the literacy for the prevention and treatment of chronic diseases remains low (Chinese Centre for Health Education, 2013). This means that patients are at high risk of developing avoidable chronic conditions. Given the growing prevalence of hypertension and diabetes, the current approach adopted by primary care facilities is likely to further contribute to delayed treatment, resulting in more complications, higher costs and poorer health outcomes.

Similar to its approach in increasing the physical and human resources of primary care facilities (see Chapter 6), the government has followed a target-driven approach in the delivery of essential public health services. The government has given specific targets and more subsidies to primary care facilities. However, the government's long list of

requirements is not necessarily matched with sufficient financial support and many health care professionals in primary care facilities do not have the knowledge and skills to complete the tasks. Although the government claims that its quantitative targets have been met, there exist fake records: not all claimed services were actually delivered and some were delivered with compromised quality.

An important question arising from the above discussion is whether primary care facilities have the capacity to address the challenge. As discussed in Chapter 6, the government has recruited more doctors to primary care facilities and the average qualification of the primary care workforce has increased. However, the increase has mainly come from the recruitment of young and relatively inexperienced graduates and health care professionals in primary care facilities are not necessarily given the training they need the most. These suggest that health care professionals in primary care facilities are in need of more targeted support for them to deliver better care to chronic patients.

In fact, even if all government-claimed services were fully delivered, the gap between supply and population needs would still be significant. Based on the most recent national epidemiological survey,<sup>100</sup> in 2015 the number of patients with hypertension was approximately 289 million and that with diabetes was 111 million. The government's target for 2015 was provide care to 80 million hypertensive patients and 30 million diabetic patients—fewer than 30% of total patients. The significant gap between the government's targets and population needs, combined with the existence of many fake

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<sup>100</sup> The estimation was calculated by multiplying the prevalence rates by the number of people. Data for the prevalence rates come from the national survey on the prevalence of chronic diseases among Chinese residents. According to this survey, 25.2% of Chinese adults had hypertension, and 9.7% of adults had diabetes (Bureau of Disease Prevention and Control, 2015). The survey was conducted in 2012, and the estimation assumes that the prevalence of the two conditions did not change significantly between 2012 and 2015. Data for the number of people were collected from the *National Statistical Yearbook*. Unfortunately, the yearbook does not report the number of adults. Instead, the yearbook gives data for people aged 15 or over. The percentage of people aged below 15 was 16.5%. The total number of people was 1.375 billion (NBS, 2016). Thus, the number of people aged 15 or over was 1.148 billion. Ideally, the prevalence of chronic diseases among adults should be multiplied by the number of adults. Using the number of people aged 15 or over instead of the number of people aged 18 or over results in some overestimation.

records, has resulted in the vast majority of patients not receiving health services. In one recent study of a nationally representative sample of adults 45 years and older, only 8.1% of hypertensive patients had received physical examinations through the program of national essential public health services (Zhang et al., 2015). As will be discussed in Section 7.2.2 and Chapter 8, the introduction of essential public health services has brought significant workload to health care workers in primary care facilities. This then raises another question as to whether such services should only be provided in primary care facilities.

### **7.2.2 Essential Medicines**

With the launch of health care reforms in 2009, the government implemented the NEMP (Ministry of Health et al., 2009). The policy introduced a national essential medicines list.<sup>101</sup> Published in 2009, the first version of the list includes 205 allopathic medicines and 102 traditional Chinese medicines. Initially, the central government allowed provincial governments to produce their own lists of supplementary medicines (Ministry of Health et al., 2009). The average number of supplemented medicines was 207 (Tian, Song & Zhang, 2012). The national list was then expanded and the second version, issued in 2013, included 317 allopathic medicines and 203 traditional Chinese medicines.<sup>102</sup> After issuing the second version, the central government started to discourage provincial governments from making supplementary lists (NHFPC, 2014b; General Office of the State Council, 2018).

Initially, the government required that primary care facilities should only stock and dispense drugs on the government's list of essential medicines. Nonetheless, since the implementation of the policy, there have been widespread concerns about the

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<sup>101</sup> This list is the seventh essential medicines list in China. The first list was released 1982. The first list covered 278 items of allopathic medicines. New lists were released in 1994, 1997, 2000, 2002 and 2004. Each covers more than 2,000 items, of which approximately 60–70% are Chinese medicines. However, these lists largely failed to serve any purpose in practice (Hu, 2013; World Bank, 2010).

<sup>102</sup> In 2018, the list was further expanded to include 417 allopathic medicines and 268 traditional Chinese medicines.

coverage of the list, which has been criticised as being unable to meet the needs of clinical utilisation (Hu, 2013; Zhou, Li & Hesketh, 2014; Song, Bian & Li, 2016). In response, the government has gradually relaxed the policy. Since 2014, primary care facilities have been allowed to stock certain drugs outside the list of essential medicines, but these should still be on the reimbursement lists of social health insurance programs (NHFPC, 2014b). In 2017, the Guangdong province allowed primary care facilities to stock any drugs on the reimbursement lists of social health insurance programs (Guangdong Health Commission, 2017). Guangdong is the first province within the country to fully relax its control over the choice of drugs stocked at primary care facilities.

As discussed in Chapter 6, the NEMP involved a change in the financing of primary care facilities. While primary care facilities used to charge drug mark-ups to subsidise their losses from providing medical services at below-cost prices, post-2009 the government forbid any profit from drug sales (except for unprocessed traditional Chinese herbs). The government offered an earmarked subsidy to compensate for losses and increased its funding support to cover the operating costs of primary care facilities. This significantly changed the incentive for primary care employees. Before the reforms, the salary of primary care employees was closely linked to drug sales, incentivising them to provide medical services and overprescribe drugs. After the reforms, although primary care doctors are no longer incentivised to overprescribe, they have also lost the incentive to provide medical services (Interview No. 10; Interview No. 12; Interview No. 13; Interview No. 17; Interview No. 20). In some cases, in response to the loss of profit from drug sales, primary care facilities have resorted to selling other services such as parenteral administration of drugs, unprocessed traditional Chinese herbs or inpatient care in township health centres, because profits from these items are still allowed (Yang et al., 2015; Yi, Miller, Zhang, Li & Rozelle, 2014).

The low profit margins have also discouraged suppliers of essential medicines from guaranteeing their supply,<sup>103</sup> and essential medicines and commonly used drugs are frequently out of stock at primary care facilities (Zhou et al., 2014; Zhang, Yang & Li, 2017). One nationwide survey found that only 33.8% of primary care facilities stocked all four classes of routinely used antihypertensive drugs (Su et al., 2017). Another study investigating the stock of insulin in Hubei province showed that availability is very low (Liu et al., 2017). This means that, even when primary care doctors are able to treat a disease, patients may need to obtain their prescribed drugs elsewhere. While this practice is common in many countries, providing prescription drugs has been a key function of primary care facilities in China. According to a survey conducted in Beijing, the top reason (of 75% of respondents) for visiting a community health centre was to obtain prescription drugs (Wang, 2015). Other studies similarly report that community health facilities are frequently used for drug refills (Zhang et al., 2011; Wu et al., 2017a). That common drugs are not available in primary care facilities usually results in patients going to hospitals instead (Hu, 2013). This is contrary to the government's intention of diverting patients from hospitals to primary care facilities.

One assumption adopted by the government is that the elimination of profits from drug sales would lead to more rational use of drugs. In practice, however, many other factors, such as the lack of medical knowledge of rational medication use among doctors and continued demand from patients, influence this (Jiang et al., 2012; Yang, Liu, Wang, Yin & Zhang, 2014). The irrational use of medicines has persisted in being prevalent. The literature consistently shows that antibiotics and injections are overused (Yang, Liu, Ferrier, Zhou & Zhang, 2013; Song, Bian, Petzold, Li & Yin, 2014; Yang, Liu, Ferrier, Zhou & Zhang, 2015; Yao, Liu, Ferrier, Liu & Sun, 2015; Gong et al., 2016). Their use

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<sup>103</sup> The process of government tendering is criticised as problematic. Since this is more related to the pharmaceutical sector, it is beyond the scope of this thesis. Some discussions on the problems of the government's tendering process can be found in Hu (2013).

is not only significantly higher than the level suggested by the WHO, but also poses problems for the health of patients. According to a recent national survey, only 39.4% of antibiotic prescriptions from primary care facilities were proper (Wang, Wang, Wang, Zheng & Xiao, 2014).

### **7.2.3 Essential Medical Services**

Since 2009, the government has specified a national package of essential public health services, but the range of medical services to be delivered by primary care facilities remained ambiguous. The policy document vaguely states that the range of services should match the country's social and economic development stage. The government attempted to specify the types of medical services to be provided in the key sets of regulatory documents for primary care facilities. However, the statements remain general (see Table 7.5).<sup>104</sup>

As discussed in Chapter 6, the health care reforms significantly changed the financial structure of primary care facilities. They became financially dependent on the government, with funding adjusted according to performance evaluation results. Thus, the main incentive for primary care facilities is to deliver medical services assessed in performance evaluations. The items within the performance evaluation that are under the category of essential medical services are summarised in Table 7.6. For community health facilities (township health centres), only 230 (350) of 1,000 points are relevant to the delivery of essential medical services. As shown in Table 7.6, not much relates to the type of medical services provided.

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<sup>104</sup> Only in 2018 did the government issue detailed lists of diseases expected to be treated in township and community health centres (National Health Commission & State Administration of Traditional Chinese Medicines, 2018).



Table 7.5

*Range of medical services to be delivered by primary care facilities*

| Facility                              | Services to be delivered                                                                                                                                                                                                                                                    |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community health centres and stations | Treatment and nursing of common and prevalent diseases, treatment of diagnosed chronic diseases, emergency care, home care, referral services, rehabilitation services, other appropriate medical services approved by the government                                       |
| Township health centres               | Using appropriate health technologies, appropriate equipment and essential medicines; promoting traditional Chinese medicine; providing both outpatient and inpatient care of common and prevalent diseases; rehabilitation and family planning services; referral services |
| Village health stations               | Initial diagnosis of common and prevalent diseases, rehabilitation guidance and nursing services; emergency care of severe cases and referral services; referral services of patients with infectious diseases; other essential medical services required by the government |

Source: *Administrative Measures for Urban Community Health Facilities*, *Administrative Measures for Township Health Centres* and *Administrative Measures for Village Health Stations*.

Table 7.6

*Performance evaluation criteria for essential medical services*

| Facility                                 | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community health facilities (230 points) | <p>Work efficiency (50 points)</p> <p>Number of per employee outpatient visits and discharges</p> <p>Service quality (60 points)</p> <p>Pass rate of medical documents</p> <p>Nursing quality</p> <p>Diagnostic quality</p> <p>Control of hospital-acquired infection</p> <p>Standard use of drugs (40 points)</p> <p>Percentage of antibiotics in prescriptions</p> <p>Percentage of intravenous administration in prescriptions</p> |

| Facility                             | Criteria                                                                     |
|--------------------------------------|------------------------------------------------------------------------------|
| Township health centres (350 points) | Health care expenditure (40 points)                                          |
|                                      | Per visit outpatient expenditure                                             |
|                                      | Growth rate of outpatient expenditure in the past three years                |
|                                      | Rehabilitation services (40 points)                                          |
|                                      | Availability of facilities and equipment                                     |
|                                      | Availability of rehabilitation services                                      |
|                                      | Others                                                                       |
|                                      | Service quantity (100 points)                                                |
|                                      | Number of outpatient visits                                                  |
|                                      | Number of discharges                                                         |
|                                      | Percentage of traditional Chinese medicine visits in total outpatient visits |
|                                      | Service quality (100 points)                                                 |
|                                      | Pass rate of medical documents                                               |
|                                      | Pass rate of diagnosis during the admission and discharge of patients        |
|                                      | Pass rate of relevant clinical knowledge and skills                          |
|                                      | Number of medical malpractices                                               |
|                                      | Health care expenditure (50 points)                                          |
|                                      | Growth rate of per visit (admission) outpatient (inpatient) expenditure      |
|                                      | Standard use of drugs (100 points)                                           |
|                                      | Percentage of rational prescriptions                                         |
|                                      | Percentage of essential medicines in outpatient and inpatient prescriptions  |
|                                      | Implementation of the National Essential Medicines Policy                    |

Source: General Office of the Ministry of Health (2011a, 2011b).

The comprehensiveness of services has been negatively affected by the government's other policies. First, since the launch of health care reforms, primary care workers have been overwhelmed by the work of essential public health services. Public

health work requires very long working hours. One interviewee stated that in their health centre there were at least three or four people conducting home visits from 6–9pm on a daily basis. This was inefficient, as many people were not at home and they needed to reschedule visits (Interview No. 7). In another health centre, each doctor worked at least six full days a week (Interview No. 6). This is collaborated by other studies (Song et al., 2012; Ding et al., 2013; Zhang, Wang, Millar, Li & Yan, 2017). As discussed in Chapter 6, the increase in the number of health centre employees was relatively modest (see Table 6.14). The sudden increase in the volume of public health work left less time and energy for staff to provide medical services (NHDRC, 2013). In extreme cases, some primary care facilities did not provide any medical services at all (Interview No. 13; Interview No. 19; Interview No. 21).

Second, the implementation of the NEMP reduced the availability of medicines in primary care facilities (see Chapter 7). This has narrowed the range of medical services, because the stock of drugs is unable to meet certain clinical needs (Interview No. 13; Interview No. 17). In these cases, patients usually leave disappointed and go to hospitals.

Third, the central government encouraged the separate management of revenues and expenses.<sup>105</sup> The policy requires all income be handed over to the government, while the government covers operating costs. Unlike the national package of essential public health services and the NEMP, the separate management of revenues and expenses has never been a national policy. Nonetheless, with the central government's encouragement, many localities implemented it. This disincentivised primary care facilities to provide medical services. In response, many health workers refused to provide services, even when they were able to (Interview No. 13; Interview No. 17; Interview No. 23).<sup>106</sup>

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<sup>105</sup> This was promoted in State Council (2006, 2009). Both documents encouraged local governments to pilot the policy. This policy was heavily criticised due to many unintended consequences. In more recent national documents, the separate management of revenues and expenses is no longer promoted.

<sup>106</sup> Many township health centres have ceased to provide surgical services (e.g., caesarean delivery and appendectomy) that they used to provide (Interview No. 12; Interview No. 17; Interview No. 24; Interview No. 26). In these rural areas, patients need to travel to county hospitals for these services.

The range of medical services offered by primary care facilities is narrower than the government intends. According to a government-commissioned survey in 2010, 17.1% of community health centres and 24% of township health centres were able to deliver 90% of essential medical services, while 20.7% of community health centres and 20.5% of township health centres could deliver fewer than 60% of essential medical services (Song et al., 2012; Li et al., 2012). Village health stations provided a much narrower range of services (Li et al., 2012).

There is still very limited evidence on the quality of medical services. Some empirical evidence suggests significant gaps. For example, Sylvia et al. (2015) recruited individuals from the local community to serve as undercover patients and trained them to present consistent symptoms of two common illnesses (dysentery and angina). Based on covert interactions between the standardised patients and clinicians in rural primary care facilities, it was found that clinicians completed only 18% of items on a checklist of recommended questions and exams and only 26% of clinician diagnoses were correct. Clinicians provided medicine that was unnecessary or harmful in 64% of interactions.

### **7.3 Longitudinal Care**

Longitudinal care is also a desirable attribute of primary care. This refers to the long-term personal relationship between primary care providers and patients. Primary care providers get to know their patients over an extended period of time, understanding their medical history, values and preferences.<sup>107</sup> Individuals identify the primary care

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<sup>107</sup> Longitudinal care is frequently confused with continuous care. According to Starfield (1980, 1998), longitudinal care highlights the long-term personal relationship between practitioners and the patients; in contrast, continuity is not necessary for this relationship to be present. Continuity is the means by which the separate parts of an illness episode (e.g., follow-up of an acute illness) are joined. Starfield (1998) argues that longitudinal care is a more essential attribute of primary care because it is more person-focused (instead of disease-focused) and the personal knowledge can better contribute to fewer visits and hospitalisations. This view is supported some studies on the benefits of primary care physicians serving as patients' usual source of care (Section 2.3.2.2). However, others criticise that longitudinal care negates choice and 'begs a level of competence which is too diverse and a level of commitment on the part of the doctor which is unrealistic' (Fleming, 2000, p. 145). To these critics, continuity is a more realistic option. This thesis does not intend to get involved in this debate. Only longitudinal care is discussed here. However, it is recognised that continuity of care may also be an important dimension.

providers as their usual source of care. The benefits of association with a regular source of care include better recognition of problems, more accurate diagnosis, better prevention, fewer hospitalisations and increased satisfaction.

Under Mao, ongoing care was ‘achieved’ through two arrangements. First, people were assigned to a primary care facility. They were required to visit their assigned facility when a health problem arose. Second, migration was limited. It was common for people to work in the same employment and live in the same place for their entire life. Ongoing care was not an explicit target, but was achieved in many cases. Relationships between physicians and patients were close, facilitating information exchange, health monitoring and patient education (Wang, Gusmano & Cao, 2011). Since the economic reforms, these conditions have changed. Individuals were given the freedom to decide where to seek health care and to migrate for work. A significant percentage of people moved from rural areas to urban areas, or from one city to another. As a result, visiting the same doctor or facility for health care has become much less common. Instead, many patients frequently shop around (Wu & Lam, 2016).

Longitudinal care has been a relatively ignored attribute.<sup>108</sup> Prior to 2016, perhaps the most significant measure adopted by the government that has the potential to enhance ongoing care was to standardise the use of health records at primary care facilities (Ministry of Health, 2009c). Primary care facilities are required to establish and maintain the health records of patients within their catchment area as an essential public health service. In theory, this can help primary care facilities to better provide ongoing care, because patients’ medical history and health situation are better tracked. However, as

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<sup>108</sup> In some policy documents (e.g., Ministry of Health et al., 1999), primary care facilities are described as providing continuous care to their patients. However, this is mainly used to define primary care, rather than treating it as an important dimension for the government to enhance. It was only in 2016 that the government started to pilot the family practice contract program, which encourages individuals to sign a service contract with a primary care doctor (Health Reform Office of the State Council et al., 2016). An important goal of the contract program is to enhance ‘ongoing care’ of primary care facilities.

previously discussed, some health records are actually fake. The problems with this system have prevented it from serving as a tool for the delivery of ongoing care.

There is minimal evidence concerning to what extent primary care facilities are providing ongoing care to their patients. Nonetheless, as previously discussed, in large cities a significant proportion of people do not attend primary care facilities at all. Automatically, primary care facilities do not provide any ongoing care for them. For those who do seek care at primary care facilities, some evidence suggests that care is only occasionally, or at best sometimes continuous, which is still far from the ideal of a long-term personal relationship between primary care providers and patients.<sup>109</sup>

## 7.4 Coordination

Another defining component of primary care is coordination. This attribute means that the primary care doctors, through communicating with their patients and other health practitioners patients see, help to integrate health practitioners' recommendations in a way that is clinically appropriate and consistent with patients' needs. Through coordination, information from various sources can be recognised and incorporated into patients' care. This is particularly relevant when a patient has multiple conditions to be taken care of.

During the planned economy period, there was a functioning referral system within the three-tier service delivery structure. The relationship between different levels of health care facilities was close, with higher-level facilities providing regular training

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<sup>109</sup> These studies apply the Primary Care Assessment Tool to examine the service quality of primary care facilities. One dimension covered 'ongoing care'. Participants from community health services were asked a range of questions to assess 'ongoing care'. Examples of such questions (Mei et al., 2016) include 'Are you taken care of the same doctor/nurse? If you have a question, can you call and talk to the doctor or nurse who knows you the best? Does your primary care provider know what problems are most important to you?' Each question was scored on a four-point Likert-type scale (1 = never, 2 = occasionally, 3 = sometimes, and 4 = always). These studies cover different localities, but their results consistently show a score of two or three for ongoing care in primary care facilities (Yang et al., 2013; Wang et al., 2013; McCollum et al., 2014; Kuang et al., 2015; Zeng et al., 2015; Wang et al., 2015; Du et al., 2015; Mei et al., 2016; Hu et al., 2016; Feng, Shi, Zeng, Chen & Ling, 2017). This means that Chinese primary care facilities only occasionally or sometimes serve as providers of ongoing care to patients. However, these results are already an amelioration, because these studies recruited participants to primary care facilities. This means that participants of these studies at least used primary care facilities.

and supervision for lower-level facilities. Individuals were required to visit their primary care doctors before seeking care at a hospital, else their costs would not be covered. Since the economic reforms, patients have the freedom to self-refer to any providers. Health care facilities were under greater pressure to survive financially. Attracting as many patients as possible became essential. Both primary care facilities and hospitals were disincentivised to refer their patients to other health care facilities (Yip, Hsiao, Meng, Chen & Sun, 2010). Thus, the referral system broke down.

The government has gradually increased its emphasis on the coordinating role of primary care facilities. In 1997, the government started to establish the mutual referral mechanisms between community health services and hospitals (CCCPC & State Council, 1997; Ministry of Health et al., 1999; Economic Restructuring Office of the State Council et al., 2000; Ministry of Health et al., 2002). It should be noted that the Chinese government's intention to strengthen the coordinating role of primary care facilities mainly aims to divert patients from overcrowded hospitals to primary care facilities (Liu, Wang, Kong & Cheng, 2011). Little emphasis has been put on the role of primary care facilities in helping patients manage their health care and integrating information from different care providers.

Progress of promoting mutual referral mechanisms has been slow. In 2006, the government proposed that community health facilities should undertake various types of integration and cooperation with hospitals, thereby establishing mutual referral mechanisms (State Council, 2006). The role of coordination is also recognised in various clinical protocols related to management of mental health, non-chronic disease, and aging, all of which are part of the essential public health services package. However, the government's policies do not include much information on unified and specific standards, processes, incentives, referral supervision and how medical insurance programs

reimburse referrals (Yu et al., 2017). In practice, this is an important barrier for care providers, because it is unclear whether a patient needs a referral or how to go about this.

More importantly, there is still little incentive for service providers to refer their patients to other facilities. Since 2009, primary care facilities have been financially dependent on the government, with funding allocated on the basis of performance evaluations. In the performance evaluation of township health centres and village health stations, there is no item reflecting their coordinating role (General Office of the Ministry of Health, 2011a). As for community health facilities, the requirement for coordination includes three items. First, hospitals and community health facilities have their own division of responsibilities and cooperate with each other. Mutual referral mechanisms have been established. Second, public health facilities and community health facilities have their own division of responsibilities. Public health facilities undertake proper supervision for community health facilities. Third, community health centres manage all community health stations within their jurisdiction, supervising all stations and compiling up-to-date community health information (General Office of the Ministry of Health, 2011b). However, all three items are relatively vague and together contribute only 15 points of the 1,000 points of the overall evaluation.

Referrals remain rare. A body of literature has been devoted to reporting and updating the situation of mutual referrals.<sup>110</sup> In Zhejiang in 2015, only 0.12% of outpatient consultations in primary care facilities resulted in up-referrals, and only 0.03% of outpatient consultations in hospitals were referred to primary care facilities (Zhu, Ren & Ren, 2017). Zhu, Xia, Kuang and Yin (2015) conducted a questionnaire survey with community GPs in Guangzhou and asked about the frequency of referral services. It was found that respondents provided up-referrals in 0.78% of outpatient visits and received down-referrals in 0.45% of consultations. Zhang et al. (2016) studied the current situation

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<sup>110</sup> Shen, Huang, Ji, Yu and Li (2018) did a literature review of studies examining mutual referrals in China between 1997 and 2017.



of 30 community health centres in 14 provinces. Results showed that, on average, each community health centre provided 54,119 outpatient consultations in 2014. Only 255 consultations (0.47%) were provided with referrals to hospitals and each community health centre received 49 visits (0.09%) through down-referrals from hospitals. These results indicate that the provision of care is still fragmented. Patients visit health care facilities based on their own willingness to do so. Rarely do they obtain any help from primary care facilities to navigate through the health care system.

## **7.5 Summary**

This chapter discussed the government's role in strengthening the processes of primary care. In contrast to inputs, the government's efforts to enhance the service delivery attributes of primary care (i.e., first contact, comprehensiveness, longitudinal care and coordination) are more recent. The only area that drew serious attention from the government was the comprehensiveness of essential public health services. After the 2002 SARS outbreak, the government gradually stepped up its efforts to enhance the public health function of primary care facilities. Since the launch of health care reforms in 2009, the government has clarified the national package of essential public health services and become the only financier of the program. Nonetheless, there has been a significant mismatch between the tasks required by the government, which appear too ambitious given the human resources of primary care facilities, and the modest funds offered for the program. This has resulted in selective delivery of services and fake records. Some positive effects have been identified in child and maternal care, but in the management of chronic diseases, urgently needed in China, results are still far from satisfactory.

In other aspects, the government has only recently become more committed. Only in 2015, with the decision to promote the hierarchical diagnosis and treatment model, did the government make it a priority to promote primary care facilities as the first point of

contact and to improve the mutual referrals between primary care facilities and hospitals (General Office of the State Council, 2015a). In 2016, the government started to pilot the family practice contract program, which encourages individuals to sign a service contract with a primary care doctor. This program intends to introduce a gatekeeping role for primary care facilities and facilitate the provision of comprehensive, ongoing and coordinated care (Health Reform Office of the State Council et al., 2016). Since 2017, the government began to pilot the integrated medical delivery model (General Office of the State Council, 2017a), in which hospitals are encouraged to team up with primary care facilities. Within a team, different facilities share resources and support each other. This model is supposed to facilitate better coordination between and integration of primary care facilities and hospitals, thereby enhancing the overall capacity of primary care facilities. In 2018, the government introduced detailed lists of diseases expected to be treated in township and community health centres (National Health Commission & State Administration of Traditional Chinese Medicines, 2018). This is supposed to make sure that health centres offer a relatively comprehensive range of medical services to residents.

These new initiatives are well-intentioned and suggests that policy learning has taken place, but the tasks are daunting. There are significant gaps between the reality and ideal. In large cities, a significant percentage of patients skip primary care facilities and go straight to hospitals. The comprehensiveness of care provided by primary care facilities is not meeting the common clinical needs of the population. The relationship between primary care providers and patients tends to be discontinuous. Referrals are rare and primary care facilities are not helping their patients to manage their care.

Addressing these problems is complex due to the interconnectedness and interdependency of different elements. The delivery of public health and medical services is dependent on the capacity of primary care workers and the availability of equipment

and drugs. The behaviours and performance of primary care workers are shaped by the incentives embedded in the financing and payment mechanisms. More importantly, as discussed in this chapter, the realisation of one ideal service delivery attribute is also linked to the primary care facilities' performance in other attributes. The issue of many patients bypassing primary care facilities is not only a first contact problem but also a problem for primary care facilities to provide longitudinal and coordinative care.

In this sense, first contact can be interpreted as a prerequisite for primary care facilities to play other roles. However, whether primary care facilities can become the gatekeeper of the health care system is influenced by not only primary care facilities themselves, but also other actors. Within the current system, it is ultimately the patients who decide which facility to attend and hospitals are constantly competing with primary care facilities. The dynamics between hospitals and primary care facilities need to be discussed for a deeper understanding of the challenges for the Chinese government to realise its intended goals. This will be discussed in Chapter 8.

## **Chapter 8. Strengthening Primary Care as a Means to Improve the Health Care System**

Chapters 6 and 7 discussed the government's efforts to strengthen the inputs and service delivery attributes of primary care. The focus was on primary care itself. However, as previously discussed, strengthening primary care is also a means to improve the health care system. To discuss this, we need to observe primary care in the context of the system. This chapter briefly reviews the development of hospitals and re-examines the achievements of the government's efforts to strengthen primary care. The chapter then looks at the major achievements of the health care system since the early 2000s and to what extent the government's strengthening of primary care has contributed to improving the overall health care system.

### **8.1 Primary Care in the Health Care System**

On paper, the government intends to restore the cooperative relationship between hospitals and primary care facilities, with hospitals receiving referrals from primary care facilities and providing a supervisory role. In different policy documents, the government has reiterated the different roles of hospitals and primary care facilities. In urban areas, large hospitals are supposed to concentrate on the treatment of urgent, severe and complex medical procedures. They should combine their clinical work to undertake medical education and training and continuously improve the level of medical technologies. They should also explore appropriate technologies and supervise and train health workers at the grassroots level (CCCPC & State Council, 1997; Economic Restructuring Office of the State Council et al., 2000). Similarly, in rural areas, county hospitals should be responsible for referrals from grassroots medical facilities and treating of urgent, severe and complex medical procedures for the rural residents. They should also provide technical supervision and training for rural health workers (Economic Restructuring

Office of the State Council, State Planning Commission, Ministry of Finance, Ministry of Agriculture & Ministry of Health, 2001).

### **8.1.1 Rapid Expansion of Hospitals**

Mirroring the reforms in other sectors, the central government has loosened the restrictions for the entry of private hospitals since the late 1990s (Liu, Qi, Zhu & Zhu, 2014). Since then, many private hospitals have entered the market. The number of private hospitals has grown fast since the early 2000s. In 2015, around half of hospitals were private (NHFPC, 2016). However, private investment is not supposed to compete with public hospitals for the same market. Given that public hospitals' range of services is defined as 'essential medical services', which has been expanding, little space has been left for private investment.<sup>111</sup> Despite their large numbers, the great majority of the private hospitals are either high-end specialist hospitals that cater to expatriates and rich Chinese or specialty hospitals (Yip & Hsiao, 2014; Tang, Zhang, Chen & Lin, 2014; China Joint Study Partnership, 2016). The dominant role of public hospitals has been maintained.

Between 2009 and 2015, the central government allocated 60.7 billion yuan for the construction of hospitals, compared to 32.8 billion yuan for primary care facilities (CHYEC, 2009, 2011, 2012; CHFPYEC, 2016). In addition to infrastructure investments, direct fiscal subsidies to cover recurrent costs for hospitals have also increased substantially. As shown in Figure 8.1, hospitals have received more direct government subsidies compared to township and community health centres. In 2015, for example, while township health centres received 98.5 billion yuan and community health centres received 38.7 billion yuan, public hospitals received 187.8 billion yuan. These subsidies have not been a significant source of income for hospitals, accounting for less than 10%

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<sup>111</sup> This information comes from a meeting I attended during fieldwork (Event No. 4). At this meeting, the president of the Peking University International Hospital, Chen Zhongqiang, shared his insights into the government's policies for the development of private hospitals in China.

of total revenues (NHFPC, 2016). Nonetheless, they are still larger than the funds for primary care facilities and have helped hospitals to cover some of personnel costs.

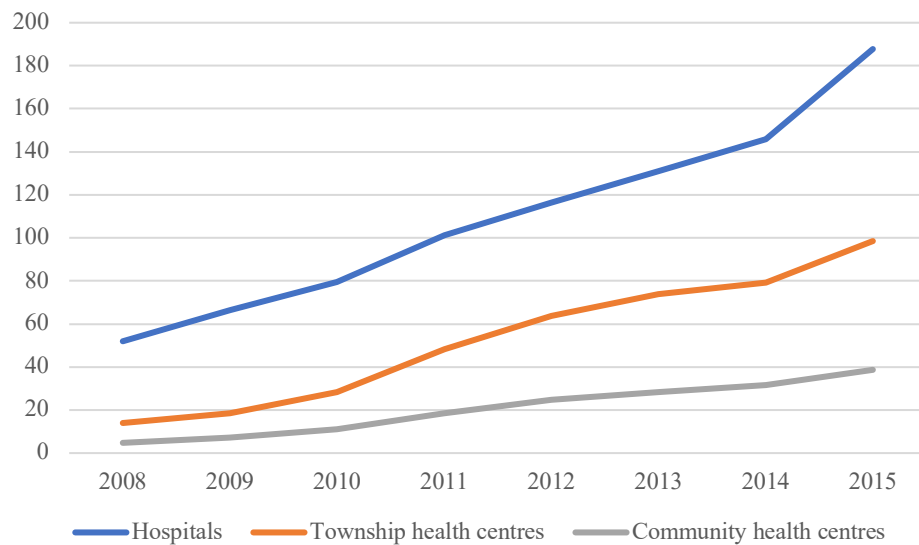


*Figure 8.1.* Fiscal subsidies for hospitals, township health centres and community health centres (billion yuan) (2008–2015) (Ministry of Health, 2009a, 2010, 2011a, 2012; NHFPC, 2013, 2014a, 2015, 2016).

Although the health care reforms were launched in 2009, there was still a lack of consensus at that time, and the government left many areas ambiguous. In particular, there was little consensus on how public hospitals reforms should be carried out. Thus, the government adopted a pilot approach to explore suitable models (Li & Fu, 2017). The pilots started among county-level hospitals in 2012 and were expanded to urban public hospitals in 2015 (General Office of the State Council, 2012, 2015b). However, progress in public hospital reforms has been slow, with few lessons drawn from the first two phases of health care reforms (He & Meng, 2015; Yip & Hsiao, 2015; Blumenthal & Hsiao, 2015).

As discussed in Chapter 3, the government maintained its strict price controls by setting prices for basic health care below cost, setting prices for new and high-tech diagnostic services above cost and allowing a 15% profit margin for prescription drugs. Such an incentive structure turned hospitals into profit-seeking entities. Doctors in

hospitals were rewarded with bonuses and promotions on the basis of the profits they produced. In this way, the profit-driven incentives of hospitals and doctors became closely aligned. Overprescribing unnecessary drugs and diagnostic tests was common (Blumenthal & Hsiao, 2005; Yip & Hsiao, 2009; Yip et al., 2010). In particular, hospitals preferred to prescribe relatively high-priced drugs, because such sales provided higher profits (Chen et al., 2014). These behaviours kept driving up the cost and making health care less affordable for the population.

The government has focused very much on eliminating profits from drug sales (Barber, Borowitz, Bekedam & Ma, 2014). For hospitals, the associated losses are supposed to be compensated through the increased prices of medical services such as standard outpatient consultations, increase in government subsidies and improved efficiency of public hospitals.

Nonetheless, the government has faced great pressure in raising prices of medical services, because such a move can easily trigger dissatisfaction among the public who are already been burdened by high health care spending.<sup>112</sup> The main strategy adopted by the government has been to make only moderate increases. This means that the increased income from prices raises is usually not enough to cover losses. In 2013, among the pilot county-level hospitals, only 53.7% of the losses from drug income were compensated through increases in the prices of medical services. The government compensated another 26.5% of the loss (NHDRC, 2015). By 2015, most major cities had not yet increased their prices for diagnosis and treatment. Typically, the registration fee was around one yuan, while the diagnosis fee was lower than five yuan (Sun, Wang & Barnes, 2016). This means that hospitals were still able to attract a great volume of patients, because it was

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<sup>112</sup> In Chongqing, for example, the local government disclosed a new price list in March 2015. Prices for diagnostic tests were lowered, while prices for diagnosis, nursing, treatment and surgery were raised. The reform soon provoked a strong response from uremic patients, who protested on the street to resist the price increase of dialysis. The government then withdrew the reform only a week after implementing the new price list (Luo, 2015).

extremely cheap to see a hospital doctor. Ironically, the patients lured by low access fees could end up with a steep bill, because doctors are incentivised to prescribe expensive drugs, tests and other services.

The reforms have not yet been able to change the profit-driven motive and behaviours of public hospitals.<sup>113</sup> Public hospitals still draw 90% of their revenue from user fees (NHFPC, 2016). The bonuses of hospital doctors, which form most of their salary, are still mainly tied to the profits of their hospitals (Zhang & Liu, 2018). Public hospitals have engaged in various opportunistic behaviours to defend their economic interests, thereby nullifying reform efforts. One main mechanism is through illegal drug kickbacks (Yu, Li, Shi & Yu, 2010; He et al., 2018). There is wide news coverage on how pharmaceutical companies provide under-the-table payments to government officials and hospital doctors to boost product sales, resulting in high retail prices.<sup>114</sup> Although the health care reforms have gradually eliminated any drug mark-up, some pharmaceutical companies have figured out ways to raise the wholesale price, thereby keeping the kickbacks and consequently also the incentive to overprescribe. Another common tactic adopted by hospitals has been cost shifting. While the government forbids profits from drug sales, hospital doctors instead overprescribe other services such as medical consumables or advanced imaging to make up for the loss (He & Qian, 2013; He & Meng, 2015; Liu et al., 2017).

The expansion of hospitals has also been greatly facilitated by the contextual factors discussed in Chapter 5. The continuous increase in the prevalence of diseases combined with the population's increasing income and improved coverage of health insurance has helped boost the demand for health care. Hospitals have also become more accessible through continuous urbanisation and improved transportation. Since the early

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<sup>113</sup> This was raised by Gao Qiang, the former health minister, at Event No. 5. During his presentation, Qiang shared his views on how the supply side of the health care system should be reformed.

<sup>114</sup> The GlaxoSmithKline scandal in 2013 received wide news coverage and reflected how rampant bribery activities were in China's pharmaceutical supply sector.



2000s, hundreds of millions of people have moved from rural areas to urban areas. This has changed the population distribution to a denser concentration located closer to hospitals. In addition, China has also experienced staggering expansion of the highway and road system, together with rapid increase in motor vehicle use. This means that, while it tended to take much longer to visit a hospital doctor in remote areas, such a difficulty has become increasingly unimportant or irrelevant to many.

All the favourable conditions discussed above contributed to the rapid expansion of hospitals. In particular, those hospitals directly run by the government have expanded the most rapidly. As illustrated in Table 8.1, an average government-run hospital was 17,893 m<sup>2</sup> with 177 beds in 2003. By 2015, the space had increased by 74% to 31,102 m<sup>2</sup> and the number of beds had more than doubled to 405. On average, hospitals have employed more people. In 2003, an average government-run hospital employed 77 (assistant) practising doctors and 76 nurses. By 2015, the number of (assistant) practising doctors had increased by 75% to 135, while the number of nurses had more than doubled to 196. Between 2013 and 2017, the number of CTs per million people increased from 7.8 to 14.3. Similarly, the number of MRIs per million people almost doubled from 3.3 to 6.2 (China Medical Equipment Association, 2018). Public hospitals have become more capable than ever.

Table 8.1

*Expansion of hospitals (2003–2015)*

|                             | 2003                                |                                                                                    | 2015                                |                                                                                      |
|-----------------------------|-------------------------------------|------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------|
|                             | <i>Physical resources</i>           | <i>Human resources</i>                                                             | <i>Physical resources</i>           | <i>Human resources</i>                                                               |
| Hospital                    | 12,784 m <sup>2</sup> ,<br>128 beds | 54 practising<br>doctors, six<br>(assistant)<br>practising doctors,<br>52 nurses   | 14,251 m <sup>2</sup> ,<br>193 beds | 57 practising<br>doctors, four<br>(assistant)<br>practising doctors,<br>87 nurses    |
| Government-<br>run hospital | 17,893 m <sup>2</sup> ,<br>177 beds | 69 practising<br>doctors, eight<br>(assistant)<br>practising doctors,<br>76 nurses | 31,102 m <sup>2</sup> ,<br>405 beds | 128 practising<br>doctors, seven<br>(assistant)<br>practising doctors,<br>196 nurses |

Source: Ministry of Health (2004) and NHFPC (2016).

The high availability of qualified staff members, drugs and advanced equipment has helped hospitals to attract a large volume of patients. On average, the number of outpatient visits received by each public hospital was 135,000 in 2010. This increased by more than 50% to 207,500 in 2015. Such a high level of health care activities helped hospitals generate significant revenues. Between 2010 and 2015, the average revenue of each public hospital more than doubled from 72 million yuan to 165 million yuan (NHFPC, 2016). The profits derived can be used to build better facilities, purchase advanced equipment and hire the most talented doctors, thereby attracting more patients and generating more revenue. Such a positive cycle enabled public hospitals to keep growing rapidly.

### 8.1.2 Re-examining the Achievements in Strengthening of Primary Care

The government's huge subsidies for hospitals and slow progress in public hospital reforms placed primary care facilities and hospitals in unfair competition. The

health care reforms have turned health centres and health stations into mainly government-financed facilities. The increase in the subsidies for infrastructure, equipment and personnel salaries has been subject to the government's fiscal capacity (Interview No. 17; Interview No. 23). Yet, hospitals have not only received government funds, already more than that for primary care facilities, but also derived substantial profits from the sales of drugs and tests during the first two phases of health care reforms.

As discussed in Chapter 6, the government significantly expanded primary care facilities through unprecedented capital investments. However, by comparing the data in Tables 8.1 and 6.6, one can see that although primary care facilities have become more spacious since the early 2000s, the increases in government-run hospitals are much more impressive. While health centres have purchased more equipment, government-run hospitals have acquired more advanced items.

The government has also succeeded in raising the salaries of primary care employees through more fiscal subsidies. However, the increase has not been able to match the increase in the salaries of employees in public hospitals. While the annual salary of primary facility employees increased from 27,874 yuan in 2009 to 52,040 yuan in 2014, the annual salary for public hospital employees rose from 49,690 yuan to 88,955 yuan (see Table 8.2).<sup>115</sup> The absolute gap has widened. The gap shown in Table 8.2 is conservative because, in addition to the legal income, hospital doctors were able to earn under-the-table payments from the suppliers of drugs and medical consumables.<sup>116</sup> This part of grey income tended to be much less common in primary care facilities.

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<sup>115</sup> The Chinese economy expanded rapidly during this period and the average salary for all employees increased. As a reference, between 2009 and 2014, the average urban income increased from 32,244 yuan to 56,360 yuan (NBS, 2016).

<sup>116</sup> The scale of the grey income is likely to be impressive, based on news reports. In January 2013, China Central Television uncovered how pharmaceutical sales representatives provided kickbacks to a county-level hospital in Gaozhou, Guangdong. The investigation showed that 35%-40% of drug retail prices were used for kickbacks. About half was for doctors (Hou, 2013). In July 2013, China Central Television reported that all secondary and tertiary hospitals in Zhangzhou of Fujian were involved in medical bribery. It was shown that 50% of drug retail prices were used for bribing local government officials, hospital presidents, and doctors (Wang, 2013). In 2016, journalists for China Central Television conducted an eight-month investigation of six hospitals in Shanghai and Hunan. This undercover

Table 8.2

*Annual salary of employees in public hospitals and primary care facilities (2009–2014)*

| Facility                 | Annual salary (yuan) |        |        |        |        |        |
|--------------------------|----------------------|--------|--------|--------|--------|--------|
|                          | 2009                 | 2010   | 2011   | 2012   | 2013   | 2014   |
| Public hospitals         | 49,690               | 55,590 | 65,117 | 74,282 | 80,555 | 88,955 |
| Primary care facilities* | 27,874               | 31,019 | 37,762 | 43,666 | 47,555 | 52,040 |

*Note.* \* Includes only those township health centres and community health facilities run by the Ministry of Health.

Source: Annual salary for employees of public hospitals and primary care facilities from National Health Development Centre (2015, p. 180).

Under such a salary structure, newly graduated students and existing health workers can be expected to prefer working in hospitals over primary care facilities. In addition to salary, public hospitals usually provide better career prospects, research environment and training opportunities (Interview No. 11). Overall, it has been extremely difficult for primary care facilities to compete with hospitals for talented staff (Interview No. 17; Interview No. 23; Interview No. 26; Interview No. 29).

In practice, the main strategy adopted by the government has been to lower the entry standard when it comes to primary care facilities (Interview No. 23; Interview No. 29). One interviewee expressed that their county government was unable to recruit any graduates from the local medical university, because these graduates would choose hospitals over primary care facilities. As a result, the government targeted graduates from three-year college programs instead of five-year undergraduate programs. In this way, the county government could gradually fill the bianzhi posts that had remained empty for years (Interview No. 23). Such a difficult recruiting situation is not uncommon for primary care facilities.

At the aggregate level, hospitals have recruited the majority of doctors, especially those with higher education qualifications. Table 8.3 shows the increases in the number

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investigation showed that doctors were still receiving kickbacks at a rate as high as 30–40% of the retail prices of drugs (He & Cui, 2016).

of (assistant) practising doctors in hospitals and health centres between 2002 and 2015. During this period, while the number of (assistant) practising doctors increased by 743,379 in hospitals, the increase was only 135,573 in health centres. Hospitals have also recruited the most qualified. Between 2002 and 2015, the number of (assistant) practising doctors with a bachelor's degree increased by 731,407 in hospitals. In comparison, the increase was 96,736 in township and community health centres. Doctors have become increasingly concentrated in hospitals. The gap in human resources between hospitals and primary care facilities has widened, despite the absolute increases in primary care facilities.

Table 8.3

*Change in the number of doctors and doctors with a bachelor's degree or above (2002–2015)*

| Facility                                                                          | 2002      | 2015      | Increase  |
|-----------------------------------------------------------------------------------|-----------|-----------|-----------|
| <i>Number of (assistant) practising doctors</i>                                   |           |           |           |
| Hospitals                                                                         | 949,387   | 1,692,766 | 743,379   |
| Township health centres                                                           | 415,750   | 440,889   | 135,573   |
| Community health centres                                                          | 28,082    | 138,516   |           |
| Total                                                                             | 1,843,995 | 3,039,135 | 1,195,140 |
| <i>Number of (assistant) practising doctors with a bachelor's degree or above</i> |           |           |           |
| Hospitals                                                                         | 404,439   | 1,135,846 | 731,407   |
| Township health centres                                                           | 12,057    | 57,315    | 96,736    |
| Community health centres                                                          | 3,651     | 55,129    |           |
| Total                                                                             | 516,319   | 1,492,215 | 975,896   |

*Note.* Total includes all health care facilities in China, including those not shown in this table.  
Source: Ministry of Health (2003, 2004) and NHFPC (2016).

Primary care facilities have lost some of their best talent. Many of the most experienced doctors in primary care facilities have been recruited to hospitals (Interview No. 17; Interview No. 29). This is consistent with the findings of other studies (Zhou et al., 2014; Zhang et al., 2016). In a survey of GPs in Jiangsu province, 84% of respondents

indicated that they were considering quitting their job (Zhu, Zhang, Wen & Shen, 2018). According to surveys of people working in health centres, those with a bachelor's degree or above are most likely to have a high level of turnover intention (Song, 2014; Gan et al., 2018).

Evidence can also be derived from aggregate data. As shown in Table 8.4, in township health centres, the number of (assistant) practising doctors increased by 42,041 between 2005 and 2015. However, the number of doctors with work experience of less than 10 years was 67,897 in 2015, while the number of doctors under 35 years old was 84,651. This implies that the increase mainly came from the entry of new graduates who had limited clinical experience and township health centres lost senior and experienced staff. In contrast, the increased numbers in hospitals consisted of not only new graduates, but also experienced doctors from primary care facilities.

Table 8.4

*Number of doctors in hospitals and township health centres (2005–2015)*

| Facility                  | No. of doctors* |           | Increase | No. of doctors*<br>with <10 year's<br>work<br>experience in<br>2015 | No. of<br>doctors*<br><35 years<br>old in 2015 |
|---------------------------|-----------------|-----------|----------|---------------------------------------------------------------------|------------------------------------------------|
|                           | 2005            | 2015      |          |                                                                     |                                                |
| Hospital                  | 1,003,952       | 1,692,766 | 688,814  | 519,679                                                             | 477,360                                        |
| Township<br>health centre | 398,848         | 440,889   | 42,041   | 67,897                                                              | 84,651                                         |

*Note.* Includes (assistant) practising doctors.

Source: Ministry of Health (2006) and NHFPC (2016).

The government's effort to promote the development of general practice seems grounded. International experience suggests that general practice can help primary care facilities to differentiate their services from those provided by hospitals. In the most successful primary care systems, one important commonality is that provision of primary care is centred around GPs (see Chapter 2). GPs have the potential to become ideal

providers of primary care due to their comprehensive approach and emphasis on playing an ongoing and coordinating role in managing patients' health. These features overlap with the desired attributes of primary care.

However, the scale of the government's efforts in developing the general practice workforce appears inadequate. The chief strategy adopted has been to retrain employees of township and community health centres to become GPs. Admittedly, this is probably the most effective way to increase the number of GPs in a short period of time. But given the existing distribution of human resources, what the government has done is to retrain those with relatively low qualifications and skills to become GPs. This feeds into the image of GPs being second-class doctors. More problematically, existing evidence suggests that the training programs have not necessarily prepared doctors to provide proper primary care. The short training period, limited funds and mismatch between training contents and needs of doctors have weakened the effectiveness of the retraining programs (see Chapter 6).

### **8.1.3 The Relative Decline of Primary Care**

Despite the government's efforts, more patients have chosen hospitals over primary care facilities for outpatient services. Between 2003 and 2009, the number of outpatient consultations in township and community health centres increased by 55%, from 729,383,721 to 1,137,410,603. Over this period, the number of outpatient consultations in hospitals increased by 58%, from 1,212,734,100 to 1,921,938,815 (see Table 8.5). Since the launch of the health care reforms, the gap has widened. Between 2009 and 2015, the number of outpatient consultations in township and community health centres increased by 42%, from 1,137,410,603 to 1,613,669,000. In hospitals, this increased by 60%, from 1,921,938,815 to 3,083,640,862 (see Table 8.5). This means that patients have become even more concentrated in hospitals. While 35% of all outpatient consultations were provided by hospitals in 2009, this increased to 40% in 2015.

Table 8.5

*Number of outpatient consultations by different types of health care facilities (2003, 2009 and 2015)*

| Facility                  | No. of outpatient consultations |                         |                         |
|---------------------------|---------------------------------|-------------------------|-------------------------|
|                           | 2003*                           | 2009 (% of total)       | 2015 (% of total)       |
| Hospitals                 | 1,212,734,100                   | 1,921,938,815<br>(35%)  | 3,083,640,862<br>(40%)  |
| Township health centres   | 691,339,869                     | 876,608,232<br>(16%)    | 1,054,643,480<br>(14%)  |
| Village health stations   | -                               | 1,551,701,441<br>(28%)  | 1,894,069,013<br>(25%)  |
| Community health centres  | 38,043,852                      | 260,802,371<br>(5%)     | 559,025,520<br>(7%)     |
| Community health stations | 36,119,003                      | 116,172,536<br>(2%)     | 147,424,820<br>(2%)     |
| Total                     | -                               | 5,487,671,412<br>(100%) | 7,693,425,129<br>(100%) |

*Note.* \* Since village health stations were not counted in 2003, the distribution of outpatient consultations across different types of medical institutions in 2003 should be incomparable with that in 2009 or 2013. Therefore, it is not shown.

Source: Ministry of Health (2004, 2010) and NHFPC (2016).

The government has intended to divert patients from hospitals to primary care facilities through price differentials and reimbursement policies of public health insurance programs (Section 7.1). However, such incentives have been relatively weak. The price differentials are not always evident because the price of a single visit consists of many parts and cannot be known in advance. The registration fee for a hospital visit is still low, which is still sending a message that one can visit a good doctor and learn his/her advice at a low price. The NRCMS and URBMI provided little reimbursement for general outpatient care until 2010 (Yu, 2015; Yip et al., 2012).



Studies show continuous distrust of primary care facilities. Data collected from selective cities in the mid-2000s indicate that those in Chinese urban cities do not generally trust community health centres (Pan et al., 2006; Yang & Yang, 2009). This distrust has persisted since the 2009 health care reforms. In a study in Wuhan conducted between May 2010 and August 2011, 26.10% of participants reported that community health centres are not useful and 37.74% of participants suggested that they did not want to use their community health centres (Zhang et al., 2015). In a more recent nationally representative survey of the Chinese population (November 2012 to January 2013), respondents expressed a strong distrust of primary care facilities compared to hospitals (Duckett et al., 2016).

The distrust is still not well understood in the literature (Duckett et al., 2016). Some argue that one major cause is the belief that primary care workers are inadequately educated and trained. Historical factors may also be important. Primary care workers are deemed not different from barefoot doctors. Although they were able to meet basic health care needs for the rural population from 1960s and 1980s, they are no longer able to meet patients' current expectations (Wu et al., 2017a).

The public distrust for primary care facilities seems to be reasonable given the limited evidence on the quality of services in primary care facilities (see Chapter 7). The irrational use of medicines has persisted in being prevalent. The literature consistently shows that antibiotics and injections are overused (Yang et al., 2013; Song et al., 2014; Yang et al., 2015; Yao et al., 2015; Gong et al., 2016). Their use is not only significantly higher than the level suggested by the WHO, but also poses problems for the health of patients. According to a recent national survey, only 39.4% of antibiotic prescriptions from primary care facilities were proper (Wang et al., 2014). The performance of primary care facilities in treating diseases is also problematic. In the study of Sylvia et al. (2015), based on covert interactions between the standardised patients and clinicians in rural

primary care facilities, it was found that clinicians completed only 18% of items on a checklist of recommended questions and exams and only 26% of clinician diagnoses were correct. Clinicians provided medicine that was unnecessary or harmful in 64% of interactions.

## **8.2 Key Achievements of the Health Care System**

There have been major developments in the Chinese health care system since the early 2000s. On the demand side, the government universalised health insurance (see Chapter 5). On the supply side, the government made available significant investments and fiscal subsidies for hospitals and primary care facilities. These developments have significantly improved the overall health care system.

### **8.2.1 Significantly Increased Risk Protection and Improved Affordability**

In the early 2000s, the unaffordability problem triggered concerns for health care. The great majority of the population was without any type of health insurance. The percentage of out-of-pocket costs surpassed 60% of total health expenditure (NHFPC, 2016). A significant percentage of people suppressed their demand due to high cost (see Chapter 3). To address this problem, the government increased its subsidies and universalised social health insurance. Both the coverage and benefits of social health insurance programs have since increased rapidly (see Chapter 5). In this way, the composition of total health expenditure has been significantly improved. By the end of 2015, government health expenditure made up 30% of total health expenditure, while social health insurance programs accounted for 40%. The percentage of out-of-pocket costs in total health expenditure was halved, from 60% in the early 2000s to 29% in 2015 (see Figure 8.2). At the aggregate level, health care should have become more affordable.

People have become more likely to seek health care when faced with a health problem. As shown in Table 8.6, in 2003, only 51.1% of patients sought care when sick. In 2013, this increased to 84.1%. The percentage of patients who forgo medical treatment

dropped from 13.1% to 1.4%. As for inpatient services, in 2003, 29.6% of patients declined hospitalisation when recommended by their doctor. The most cited reason (70%) was financial concerns. In 2013, this decreased to 17.1%. Although financial concerns remained to the top reason, the percentage of respondents citing this dropped to 43.3%. This has reversed the trend in the 1990s, during which patients increasingly suppressed their demand (see Table 3.6).

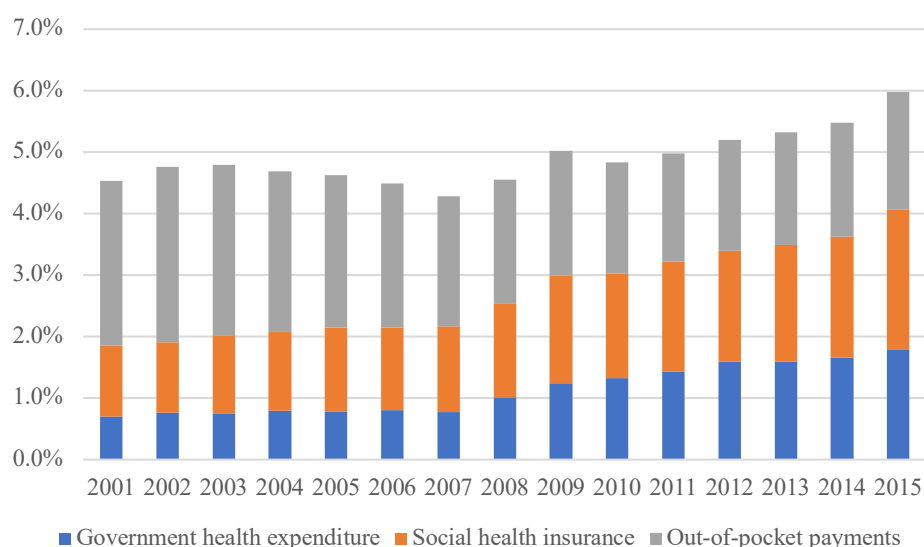


Figure 8.2. The three major components of total health care expenditure (% of gross domestic product) (2001–2015) (NHFPC, 2016).

Table 8.6

*Patients' care-seeking patterns (2003, 2008 and 2013)*

|                                                                         | 2003 | 2008 | 2013 |
|-------------------------------------------------------------------------|------|------|------|
| % of patients who seek care when sick                                   | 51.1 | 62.4 | 84.5 |
| % of patients who choose self-treatment                                 | 35.7 | 27.1 | 14.1 |
| % of patients who forgo treatment                                       | 13.1 | 10.6 | 1.4  |
| % of patients who decline hospitalisation despite doctor advice         | 29.6 | 25.1 | 17.1 |
| % of patients who cited financial reasons for declining hospitalisation | 70.0 | 70.3 | 43.3 |

Source: Centre for Health Statistics and Information of the Ministry of Health (2004, 2009, 2015).

Between 2005 and 2015, the number of outpatient visits almost doubled, from 4.1 billion to 7.7 billion. The number of hospital admissions tripled, from 72 million to 211 million. On average, each resident consulted an outpatient facility 3.1 times in 2005 and 5.6 times in 2015. The annual hospitalisation rate almost tripled from, 5.5% to 15.3% (NHFPC, 2016).

These data show a consistent picture. Health care has become more affordable for the general population and people have considerably increased their utilisation of both outpatient and inpatient services. Nonetheless, the unaffordability problem has not been solved entirely. For the most deprived population, health care remains unaffordable. The percentage of households with catastrophic health expenses increased slightly from 12.2% in 2003 to 12.9% in 2011 (Meng et al., 2012). In 2003, among 4.5% of households identified as poor in the NHSS, 30% was caused by illnesses and injuries (Centre for Health Statistics and Information of the Ministry of Health, 2004). By the end of 2015, illnesses and injuries remained as the top reason for causing poverty, affecting 44.1% of those who below the poverty line, or 20 million people (State Council Information Office, 2017).

More pertinent to the great majority of the population is that total health expenditure has experienced excessively rapid growth in recent years. Between 2010 and 2015, in only five years, total health expenditure rose from 4.8% to 6.0% of GDP (see Figure 8.2). There are many reasons for the rise in total health expenditure. Clearly, an important source is the unleashed demand for health care. A much higher percentage of patients seek and use health care more frequently. However, this is mainly a positive development.

The more problematic source for the rising total health expenditure has been the inefficient pattern of health care utilisation. In particular, there is a consensus in the literature that inpatient care and hospital services have been overused. According to Liang

and Langenbrunner (2013), up to 50% of current inpatient admissions may be amenable to more cost-effective outpatient care. Some studies have called for increased utilisation of outpatient and primary care (China Joint Study Partnership, 2016).

### **8.2.2 A More Complete Network with Renovated Facilities**

In terms of physical accessibility, the post-2000 Chinese health care system has always performed well. In 2003, 88.6% of households could reach the nearest medical facility within 20 minutes (Centre for Health Statistics and Information of the Ministry of Health, 2004). Reaching a medical facility was not difficult for the great majority of the population.

There was a small percentage of the population who lived in remote and poor areas. For them, the physical accessibility of health care facilities was an issue. Such problems still exist. However, this tends to be invisible in the aggregate data. In some remote and sparsely populated areas, one village might cover a large geographical area. That one village doctor is present in such a village does not mean that s/he is conveniently accessible for all villagers. There is little evidence in relation to how this situation has changed over time. On the one hand, the government has paid more attention to the issue. To keep village doctors in employment, the general approach has been to provide more subsidies or to employ village doctors directly through township health centres (Interview No.27; Interview No.29). On the other hand, with further urbanisation and the retirement of existing village doctors, more villages have faced the problem of not having access to health care facilities (Interview No.27).

Between 2003 and 2015, the physical network of health care facilities has slightly expanded. As shown in Table 8.7, the most apparent growth was for hospitals; but as discussed previously, the growth mainly came from the increase in private specialist hospitals with a small market share. The number of health centres changed little. The number of community health centres increased greatly, but many were converted from

small hospitals and township health centres. The number of health stations and clinics increased by 20%.

Table 8.7

*Number of health care facilities (2003 and 2015)*

| Facility                      | Number  |         | Change (%) |
|-------------------------------|---------|---------|------------|
|                               | 2003    | 2015    |            |
| Hospital                      | 17,764  | 27,587  | +55        |
| Public hospital               | 15,727  | 13,069  | -17        |
| Primary care facility (total) | 774,693 | 920,770 | +19        |
| Health centre                 | 45,957  | 46,147  | +<1        |
| Township health centre        | 44,279  | 36,817  |            |
| Community health centre       | 753     | 8,806   |            |
| Health station and clinic     | 728,736 | 874,623 | +20        |
| Village health station        | 514,920 | 640,536 |            |
| Community health station      | 9,348   | 25,515  |            |
| Clinic                        | 204,468 | 208,572 |            |

Source: Number of health care facilities from Ministry of Health (2004) and NHFPC (2016).

Reflecting the slight expansion of the physical network, the percentage of households able to reach the nearest medical facility within 20 minutes increased to 92.9% in 2013 (Centre for Health Statistics and Information of the Ministry of Health, 2015). With the support of government fiscal injections, facilities within this network have been significantly improved (see Chapter 6). The population now has access to a more complete network with renovated facilities.

### 8.3 The Contribution of Primary Care

This section synthesises information previously discussed and analyses to what extent the strengthening of primary care has contributed to improving the health care system since the early 2000s. Cost containment, equality and efficiency have been selected for discussion, because they are the areas to which the strengthening of primary care is intended to make the most contribution (see Chapter 5).

### **8.3.1 Primary Care and Cost Containment**

The contribution of primary care to contain total health care expenditure is usually based on two assumptions. First, primary care providers provide preventive care and identify problems at an early stage. Preventive care can avert some health problems, and thus also make their treatment unnecessary, while early management of certain diseases can slow down their progression and help prevent long-term complications. This reduces the health care costs that would otherwise be incurred. The second key assumption is that primary care is itself a lower cost environment because services delivered by specialists tend to involve more expensive technology and curative care. However, such a conventional assumption has been challenged in some recent studies. According to Kringos et al. (2013), overall health expenditures were higher in countries with stronger primary care structures. That primary care facilities can help with cost containment is not an assumption that we can always take for granted.

#### ***8.3.1.1 Have Primary Care Facilities Contributed to Cost Containment through Preventive Medicine and Early Management of Chronic Diseases?***

In China, primary care facilities have always had an important role in the provision of preventive care. The government has further enhanced this by introducing the national package of essential public health services (see Chapter 7). Items within this package are of a preventive nature. However, for many items, there is little information about their effects. For example, the exact benefits of establishing health records for patients, disseminating health knowledge through posters and booklets, conducting health education seminars, and delivering individual traditional Chinese medicine consultations are unclear. The lack of such information can be partly explained by the inherent difficulty in assessing the outcomes of these services. However, another obvious reason in the Chinese context is that the government is mainly using quantitative indicators to assess primary care facilities. The emphasis has been very much on the number of

services delivered. Further, the key incentive for primary care facilities is complying with government instructions, instead of responding to patients' needs. This means that neither the government nor primary care facilities have been overly concerned about evaluating the effects of these items.

For chronic disease management, the results are far less satisfactory. Despite significant increases in the past years, the awareness rates of hypertension and diabetes remain low (see Table 5.2; discussed in Section 7.2.1). From a comparative perspective, the proportions of people who are aware, treated and controlling their high blood pressure in China were all lower than that of the average middle-income countries, as well as the high-income countries (World Bank, 2017). This suggests that the management of chronic conditions is an area to which that China should pay more attention.

Within the government's blueprint, primary care facilities are supposed to play a dominant role in managing the health of chronic patients. However, the implementation is problematic. Existing studies suggest the existence of fake records and many of the government-claimed follow-up services with chronic patients were not actually delivered (Peng et al., 2016; Pan et al., 2016; Tian et al., 2015). For those who have received services, the effects are still suboptimal. One recent national survey found that only 70% of hypertensive patients who sought care from primary care facilities were diagnosed and only 6% had their blood pressure under control. Similarly, only 46% of diabetic patients knew about their condition and only 3% had their blood glucose under control (Li et al., 2017). These ratios are very low. Clearly, primary care facilities have not been able to fulfil its role of managing hypertension and diabetes. This implies potential complications and expensive treatments.

Several factors discussed in Chapters 6 and 7 should have played their roles. The first is the limited knowledge and skills of primary care staff. Existing studies show that many health care professionals working in primary care settings have a limited clinical



knowledge of diabetes and hypertension (Yuan, 2016; Zhao et al., 2016). Based on the limited evidence available, the existing training programs are not particularly helpful in equipping primary care workers with the knowledge and skills they need the most (Section 6.3). The availability of drugs has been negatively influenced by the implementation of NEMP (Section 7.2.2). Recent surveys found that routinely used antihypertensive drugs and insulin, both essential for patients with hypertension and diabetes, are frequently out of stock in primary care settings (Su et al., 2017; Liu et al., 2017). Incentives for primary care facilities and workers are also problematic. The government's list of requirements is particularly long, but money is spread thin (Section 7.2.1).

The combination of all these factors presents strong obstacles for the delivery of chronic disease management in primary care facilities. In order to address these problems, a coordinated approach is needed: more targeted training should be provided to support primary care workers; the availability of drugs should be improved through better policy design; incentives should also be improved to better reflect priority; and evaluation should also be strengthened to focus more on the quality/effects of service delivery.

#### ***8.3.1.2 Are Services at Primary Care Facilities Cheaper Than Those at Hospitals?***

To make sure that health care is affordable to the public, the government has closely monitored two indicators: per visit outpatient expenditure and per admission inpatient expenditure. The former is calculated by dividing total outpatient revenue by the number of outpatient consultations (NHFPC, 2016, p. 90). Table 8.8 shows the values for this indicator in township health centres, county hospitals, community health centres and municipal hospitals between 2009 and 2014.

Table 8.8

*Average expenditure of outpatient visit (2009–2014)*

| Facility                                          | Average cost of one outpatient visit |      |      |      |      |      |
|---------------------------------------------------|--------------------------------------|------|------|------|------|------|
|                                                   | 2009                                 | 2010 | 2011 | 2012 | 2013 | 2014 |
| Cost for consumer/insurance scheme (yuan)         |                                      |      |      |      |      |      |
| Township health centre                            | 55                                   | 56   | 51   | 53   | 58   | 60   |
| County hospital                                   | 117                                  | 127  | 135  | 146  | 154  | 165  |
| Community health centre                           | 94                                   | 91   | 95   | 94   | 98   | 100  |
| Municipal hospital                                | 192                                  | 209  | 224  | 239  | 257  | 273  |
| Percentage of cost subsidised by fiscal subsidies |                                      |      |      |      |      |      |
| Township health centre                            | 19                                   | 25   | 37   | 39   | 40   | 40   |
| Community health centre                           | 21                                   | 23   | 30   | 34   | 34   | 34   |
| Hospital                                          | 8                                    | 8    | 8    | 8    | 7    | 7    |
| Estimated actual cost of service (yuan)           |                                      |      |      |      |      |      |
| Township health centre                            | 68                                   | 75   | 81   | 87   | 97   | 100  |
| County hospital                                   | 127                                  | 138  | 147  | 159  | 166  | 177  |
| Community health centre                           | 119                                  | 118  | 136  | 142  | 148  | 152  |
| Municipal hospital                                | 209                                  | 227  | 243  | 260  | 276  | 294  |

Source: Data for average expenditure for consumers/insurance schemes from National Health Development Centre (2015, p. 183); Data for fiscal subsidies calculated based on data in Ministry of Health (2009a, 2010, 2011a, 2012) and NHFPC (2013, 2014a, 2015).

As shown in Table 8.8, in rural areas, the average expenditure of one outpatient visit in township health centres is less than half of that in county hospitals. Similarly, in urban areas, the average expenditure of one outpatient visit in community health centres is less than half of that in municipal hospitals.

However, the prices of services in either public hospitals or primary care facilities do not reflect their real costs, because the government has strict price controls and provides subsidies. Based on data from the China Health Statistical Yearbook series, we

can calculate the percentage of fiscal subsidies in total revenues (i.e., the amount of cost subsidised). This percentage can be used to estimate the actual total expenditure of each visit (i.e., the actual cost of the service). For this, some assumptions are needed. First, since the data in Table 8.8 cover only those facilities under the jurisdiction of the Ministry of Health while the revenue data cover all health care facilities, it was assumed that health care facilities within each category share a similar ratio of fiscal subsidies in their total revenues, within or outside the jurisdiction of the Ministry of Health. Second, since there is no separate revenue data for county and municipal hospitals, it was assumed that county and municipal hospitals share the same percentage of fiscal subsidies in their total revenues. Third, due to the lack of data on the distribution of fiscal subsidies between outpatient and inpatient services, it was assumed that fiscal subsidies were equally allocated for different types of services. Under these three assumptions, government subsidies can be added back to the average expenditure of one outpatient consultation. Take township health centres in 2009 for example. Given that they derived 19% of the total revenue from fiscal subsidies and the average expenditure of one outpatient visit was 55 yuan, the estimated actual cost is  $55/(1 - 0.19)$ , or 68 yuan. The calculation results for the four types of health care facilities between 2009 and 2014 are given in Table 8.8.

After accounting for fiscal subsidies, the cost gap between health centres and hospitals becomes significantly narrower. In 2014, for example, while the cost gap between township health centres and county hospitals was 105 yuan before considering fiscal subsidies, the estimated actual cost gap was 77 yuan.

Although it seems that primary care facilities still provide services at a much lower cost, even after fiscal subsidies are accounted for, this is still not enough to support a claim that health centres are cheaper than hospitals. The indicator of per visit expenditure is manipulatable. For example, a doctor can give a two-week prescription to a chronic patient. The patient then has to visit again after finishing the medicine. In this way, the

number of outpatient visits increases, and the average expenditure of each visit goes down, mainly due to the smaller amount of medicines the patient receives in a single visit. Alternatively, health care facilities can refer patients who need more expensive treatments to other facilities. In this way, the per visit expenditure can be lowered.

There do exist incentives for primary care facilities to lower the per visit cost. Indicators used by the government to assess the performance of township and community health centres were given in Table 7.6. One indicator is the per visit expenditure for outpatient care. Having a rapid increase in per visit expenditure would result in a point deduction in the evaluation of a facility, resulting in a cut in subsidies. As discussed in Chapter 6, since the health care reforms, township and community health centres have become more financially dependent on government subsidies. The incentive to perform well in government evaluations has thus become stronger. Additionally, directors of township and community health centres are strongly incentivised to comply with government commands, because they are appointed by county health bureaus (Interview No. 6).

There is also evidence showing that primary care facilities have engaged in manipulating per visit expenditure. For example, in one district of Jiangsu province, the local health bureau introduced a point system to control the behaviours of village doctors. Among the 10 types of misconduct identified by the government, one is the separation of one prescription into several to lower per visit expenditure (Sucheng District Health Bureau, 2013). In one county of Liaoning province, the local Health and Family Planning Bureau introduced a series of rules for the designated facilities of the NRCMS. One rule is that health facilities should not separate one admission into several to lower the per admission inpatient cost (Jiangping County Health and Family Planning Bureau, 2018). In one county of Hubei province, staff in the local audit office noticed that many township health centres are engaged in separating one inpatient episode into several (Shimen

County Audit Office, 2017). These all imply that the manipulation of per visit expenditure occurs in primary care facilities and is a major government concern.

The second problem of the per visit expenditure indicator is that the types and severity of health problems are not considered. It is possible that patients with more severe cases visit hospitals instead of primary care facilities. In fact, this is exactly how the system is designed to operate—primary care facilities are supposed to take care of common and prevalent cases, while hospitals should be responsible for uncommon and complex cases that are potentially more costly to treat. For this reason, it is unclear whether services to treat a same problem are really cheaper at primary care facilities compared to those at hospitals.

Finally, the quality dimension is not considered. If one outpatient consultation in a hospital can fully solve a problem, but one outpatient consultation in a primary care facility results only in another consultation, then it cannot be said that services at primary care facilities are cheap. However, such quality indicators are generally lacking.

To sum up, the government has closely monitored per visit outpatient expenditure and per admission inpatient expenditure to make sure that services offered by primary care facilities are cheap and affordable to the public. However, there are a number of problems associated with these two indicators. The government's subsidies are excluded so that these indicators do not reflect the total/actual cost of services; the indicators can be easily manipulated; the types and severity of health problems and the quality of services are not considered. For these reasons, the two indicators do not provide much information as to whether services at primary care facilities are cheaper than those at hospitals.

It should be recognised, however, that the lack of proper indicators to identify 'products' in the outpatient sector and to measure the associated cost is not unique to China. For hospital inpatient care, the Diagnosis Related Groups (DRGs) have been

developed to classify cases; since patients within each category are clinically similar and expected to use the same level of hospital resources, the cost can be better estimated. Such a system has helped many developed countries to control the unit cost of hospital inpatient services. Nonetheless, similar measures are still lacking for outpatient services and few systems in developed countries have succeeded on this front. This also explains why the international literature on primary care is still adopting very diverse cost-related factors, with inconclusive results (see Section 2.3.2).

### **8.3.2 Primary Care and Equality**

Primary care contributes to equality because the distribution of primary care tends to be more equal compared to that of specialist and hospital care and offers services at relatively low prices. This means that poor people can also use primary care. In this way, primary care benefits the vulnerably populations and improves equal access to care.

The data on outpatient visits from the *China Health Statistical Yearbook* series provides some information on the use primary care facilities by vulnerable persons. There exist outpatient visits for each single type of health care facility. Given that township health centres and village health stations are located exclusively in rural areas, while community health facilities are located predominantly in urban areas, we can gain an idea of how outpatient care is used in urban and rural areas respectively. The yearbooks do not disaggregate outpatient visits to hospitals by urban and rural areas, but this can be remedied by using the figures reported by the NHDRC (2015, p. 221), which disaggregate hospitals into municipal hospitals, district-level hospitals and county-level hospitals.

A few assumptions need to be made. First, due to the source of the data, only those facilities under the jurisdiction of the NHFPC are covered in the report of the NHDRC (2015). Nonetheless, as shown in Table 8.9, the sum of outpatient visits delivered by hospitals under the jurisdiction of the NHFPC is very close to the total number of outpatient visits delivered by all hospitals. This means that not many facilities are

excluded. Second, it was assumed that municipal hospitals, district-level hospitals and community health facilities are used by urban residents, while county-level hospitals, township health centres and village health stations are attended by rural residents. Based on these assumptions, the distribution of outpatient visits in urban areas and rural areas can be drawn (see Figure 8.3). This is not entirely accurate, because not all hospitals are included and almost all types of facilities treat both urban and rural patients. However, it still provides a general idea of how outpatient visits are distributed.

As shown in Figure 8.3, in cities, the vast majority of outpatient care is delivered through hospitals. In contrast, in rural areas, outpatient care is predominantly provided by village health stations and township health centres. Overall, primary care facilities are mainly used by rural patients.

Table 8.9

*Number of outpatient consultations by type of facility (2014)*

| Facility                  | Total*        | No. under NHFPC<br>jurisdiction |
|---------------------------|---------------|---------------------------------|
| Hospitals                 | 2,972,069,922 | 2,510,000,000                   |
| Municipal hospitals       | -             | 1,360,000,000                   |
| District-level hospitals  | -             | 290,000,000                     |
| County-level hospitals    | -             | 860,000,000                     |
| Community health centres  | 536,187,933   | -                               |
| Community health stations | 149,119,766   | -                               |
| Township health centres   | 1,028,659,132 | -                               |
| Village health stations   | 1,986,286,887 | -                               |

*Note.* \* Total values from NHFPC (2016). Data for facilities under the jurisdiction of the National Health and Family Planning Commission from National Health Development Centre (2015, p. 221).

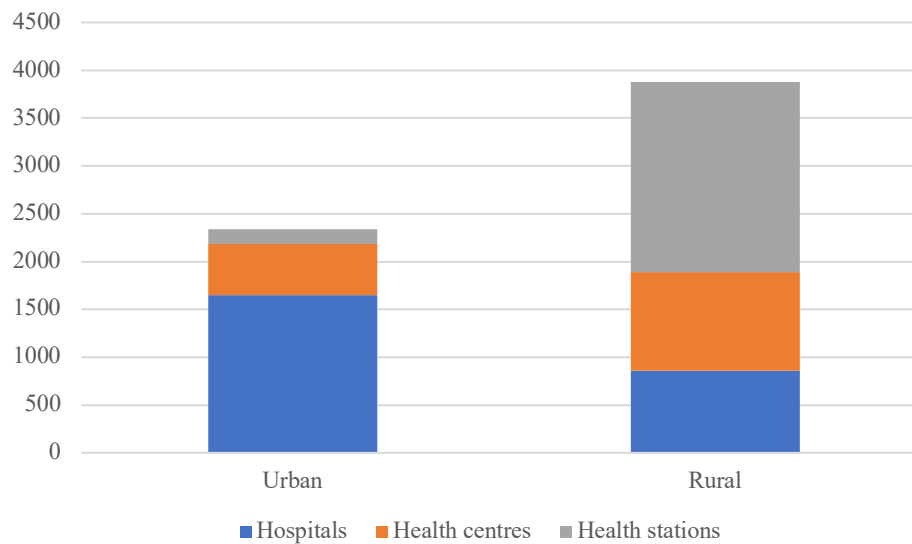


*Figure 8.3.* Number of outpatient visits (million) in urban and rural areas (2014). Drawn based on data in Table 8.9.

Such a utilisation pattern can be partly explained by the distribution of health care resources. Rural areas have much more primary care resources than urban areas. As shown in Table 8.10, in urban areas, there are 4.7 primary care (assistant) practising doctors for every 10,000 people. In the countryside, there are 12.3 primary care (assistant) practising doctors and another 15.9 village doctors for every 10,000 people. In addition to these official data, some studies have examined the factors influencing patient access choices. One recent literature review systematically examined such studies between 2009 and 2016 and concluded that higher income, higher education, and urbanisation are associated with access to higher-level hospitals (Liu et al., 2018).



Table 8.10

*Urban and rural primary care resources (2015)*

|                                                           | Urban       | Rural       |
|-----------------------------------------------------------|-------------|-------------|
| Population                                                | 771,160,000 | 603,460,000 |
| Facility                                                  |             |             |
| Hospital                                                  | 14,513      | 13,074      |
| Health centre                                             | 6,745       | 46,147      |
| Township health centre                                    | -           | 36,817      |
| Community health centre                                   | 6,622       | 2,184       |
| Health station and clinic                                 | 133,941     | 657,361     |
| Community health station                                  | 17,947      | 7,568       |
| Village health station                                    | -           | 640,536     |
| Health care personnel                                     |             |             |
| (Assistant) practising doctors in hospitals               | 1,063,075   | 629,691     |
| (Assistant) practising doctors in primary care facilities | 360,685     | 741,249     |
| Village doctors                                           | -           | 962,514     |
| Health care personnel (per 10,000 people)                 |             |             |
| (Assistant) practising doctors in hospitals               | 13.8        | 10.4        |
| (Assistant) practising doctors in primary care facilities | 4.7         | 12.3        |
| Village doctors                                           | -           | 15.9        |

Source: NHFPC (2016).

This all presents a consistent picture: primary care facilities are used more by rural residents and urban poor people. In the Chinese context, these are vulnerable populations (as discussed in Chapter 3, China has an exceptionally high gap between urban and rural income). Therefore, primary care facilities are used more by vulnerable populations.

### 8.3.3 Primary Care and Efficiency

As discussed in Chapter 3, since the economic reforms, many patients have tended to bypass primary care facilities and go straight to hospitals for primary care. High-level hospitals became increasingly overwhelmed by patients, while the utilisation of primary care facilities was low. This has been targeted by the government as a key problem to be solved through the strengthening of primary care.

To examine whether primary care facilities are underused, data from the *China Health Statistical Yearbook* series are useful. In Table 8.11, three input items and three output items are given for hospitals, township health centres, community health centres and village health stations. These items were selected as they are regularly monitored and reported. They are not perfect indicators, but some conclusions can be derived from them. To make the data comparable, they were converted into terms of per employee (except for bed occupancy rate). This was done by dividing the input and output data by the number of employees. For example, the construction space per employee for hospitals in 2003 was calculated by dividing the total construction space of hospitals by the total number of hospital employees. The calculations were straightforward, but there was one major complication. As discussed in Chapter 6, some village health stations are run by township health centres. The employees working in such facilities are counted as staff of township health centres. Although they work in village health stations, they are on the payroll of township health centres. When calculating the per employee construction space, beds and equipment values, the number of employees by working site was used. When calculating the per employee personnel cost, outpatient visits and bed-days values, the number of employees by employment status was used.<sup>117</sup>

### ***8.3.3.1 Are Physical Resources in Primary Care Facilities Underused?***

One interesting piece of information from Table 8.11 is that township health centres have very high values of construction space and beds per employee. By 2009, township health centres had surpassed hospitals in these areas. The gap further widened thereafter. In 2015, the construction space and beds per employee of township health

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<sup>117</sup> The data were collected from the *China Health Statistical Yearbook* series, but the yearbooks have no explanation on how they classify services delivered through village health stations run by township health centres. This can be implied in one case. The yearbooks provide data on the per doctor outpatient visits for township health centres. In this calculation, the number of people employed by township health centres was used as the numerator, instead of the number of people working in township health centres. This suggests that those services provided by village health stations run by township health centre are counted under township health centres, instead of village health stations. However, there is no explanatory note, so it is possible that this is a mistake made by the yearbooks. It was assumed that the yearbooks made correct calculations and this thesis followed their calculation approach.

centres were 109 m<sup>2</sup> and 1.31 respectively, compared to 64 m<sup>2</sup> and 0.87 in hospitals. As discussed in Chapter 6, the rapid expansion of space and increase in the number of beds has been driven by government investments made between 2004 and 2015. This was done to the point that the national averages for space and beds in township health centres far exceeded the 2015 central government requirements (see Tables 6.3 and 6.6).

The indicator most reflective of utilisation of physical resources is bed occupancy rate. In 2003, the bed occupancy rate in township health centres was only 36.2%. It increased to 60.7% in 2009 and remained at a similar level in 2015. In comparison, hospitals had much higher utilisation rates (see Table 8.11). Based on these figures, the beds in township health centres are underused. Given that the bed occupancy rate in township health centres was already low prior to 2004, it was counterintuitive for the government to make significant investments to increase the number of beds and space (as discussed in Chapter 6, space is closely linked to the number of beds). The increases made it harder to fill the space and beds. From this perspective, the government's investment further aggravated the underuse problem.

Table 8.11

*Inputs and outputs of health care facilities (2003, 2009 and 2015)*

| Facility                 | Inputs                                                     |                              |                                                     | Outputs                                              |                                  |                                   |
|--------------------------|------------------------------------------------------------|------------------------------|-----------------------------------------------------|------------------------------------------------------|----------------------------------|-----------------------------------|
|                          | <i>Construction space<br/>(m<sup>2</sup>) per employee</i> | <i>Beds per<br/>employee</i> | <i>Equipment value*<br/>(yuan) per<br/>employee</i> | <i>Outpatient<br/>consultations per<br/>employee</i> | <i>Bed-days per<br/>employee</i> | <i>Bed occupancy<br/>rate (%)</i> |
| <i>2003</i>              |                                                            |                              |                                                     |                                                      |                                  |                                   |
| Hospitals                | 74                                                         | 0.74                         | -                                                   | 395                                                  | 158                              | 65.3                              |
| Township health centres  | 78                                                         | 0.64                         | -                                                   | 654                                                  | 72                               | 36.2                              |
| Community health centres | 39                                                         | 0.48                         | -                                                   | 1,494                                                | 98                               | 67.1                              |
| <i>2009</i>              |                                                            |                              |                                                     |                                                      |                                  |                                   |
| Hospitals                | 68                                                         | 0.79                         | 70,539                                              | 486                                                  | 235                              | 84.7                              |
| Township health centres  | 89                                                         | 0.97                         | 19,210                                              | 775                                                  | 175                              | 60.7                              |
| Community health centres | 59                                                         | 0.49                         | 21,354                                              | 1,266                                                | 97                               | 59.8                              |
| Village health stations  | 37                                                         | -                            | -                                                   | 1,425                                                | -                                | -                                 |
| <i>2015</i>              |                                                            |                              |                                                     |                                                      |                                  |                                   |
| Hospitals                | 64                                                         | 0.87                         | 118,474                                             | 503                                                  | 259                              | 85.4                              |
| Township health centres  | 109                                                        | 1.31                         | 39,147                                              | 825                                                  | 197                              | 59.9                              |
| Community health centres | 49                                                         | 0.45                         | 37,214                                              | 1,407                                                | 82                               | 54.7                              |
| Village health stations  | 36                                                         | -                            | -                                                   | 1,582                                                | -                                | -                                 |

*Note.* Only items >10,000 yuan are counted.

Source: Calculated by author based on data from Ministry of Health (2004, 2010) and NHFPC (2016).

From Table 8.11, it can also be seen that the equipment value per employee almost doubled in township and community health centres between 2009 and 2015. Again, this was very much driven by government investment (see Chapter 6). For equipment, there is no indicator similar to the bed occupancy rate, but some indirect evidence can be used to understand whether there is underuse. The Ministry of Health concluded that many equipment items in primary care facilities remain idle due to a lack of personnel qualified to use them (CHYEC, 2012, p. 51). In those health centres I visited during fieldwork, most equipment items I saw were not used. In one particularly well equipped township health centre, I asked the director how frequent these items were used. The director did not answer directly, instead stating that the health centre is located close to the overwhelmed local county hospital. Thus, there exists a huge market and, as long as the health centre's employees are well incentivised, they can easily gain sufficient patients to justify the amount of equipment (Interview No. 25). This reply implies that the equipment in the centre has not yet been utilised to its full potential.

The low utilisation of physical resources in primary care facilities has important cost implications. Take X-ray machines for example. Assume that one X-ray machine in a hospital is used for 20 tests a day, while one X-ray machine in a health centre is used for 10 tests a day. Then the marginal cost of one test in the hospital is only half of that in the health centre (excluding cost of human resources). This scenario is hypothetical, but illustrates one channel through which low utilisation can drive up the cost of service provision. This supports the previous point that services in primary care facilities are not necessarily cheaper than those at hospitals (see Section 8.3.1.2).

### ***8.3.3.2 Are Human Resources in Primary Care Facilities Underused?***

One way to examine whether primary care facility employees are productive is to compare their workload to that of hospital employees. Table 8.11 provide two indicators to describe this, outpatient consultations and bed-days per employee. These indicators

have obvious limitations. First, these quantitative data are unable to capture the quality dimension of workload. Services can vary significantly in length and effectiveness. It is possible that consultations in hospitals take longer and require more knowledge and skills compared to those in primary care facilities. Second, apart from providing outpatient consultations and inpatient care, employees in health care facilities are also involved in other major tasks. For example, hospital doctors are engaged in research activities while primary care employees have extra workload from the provision of essential public health services.

With these limitations in mind, some tentative conclusions can be drawn from Table 8.11. The first is that hospital employees have the highest number of bed-days, meaning that the workload of inpatient care is likely to be the heaviest. In township and community health centres, employees provide both outpatient and inpatient care, but township health centres provide more inpatient care, while community health centres provide more outpatient care. In village health stations, employees provide exclusively outpatient care. This pattern is consistent with the description of the main functions of these facilities (see Table 7.5).

It seems that the workload of township health centre employees has increased since the early 2000s. In particular, bed-days per employee more than doubled from 72 in 2003 to 197 in 2015. In community health centres and village health stations, outpatient consultations and bed-days per employee did not change significantly between 2003 and 2015.

It should be noted that employees in all three types of primary care facilities have become heavily involved in the provision of essential public health services since 2009. Table 7.3 estimated the workload of those essential public health services that involve health check-ups or follow-up consultations. Based on this estimation, primary care facilities were required to provide at least 1.028 billion health check-ups and follow-up

consultations in 2015. This number can be used to estimate the workload per employee of essential public health services in primary care facilities.

For this, some assumptions need to be made. The first assumption is that primary care facilities truly delivered these services. According to government documents, the required targets were reached, but research studies have found that primary care facilities sometimes produce fake records without truly delivering services (for example, see Peng et al.; Pan et al., 2016; Tian et al., 2015) (Chapter 7). The second assumption is that community health facilities provide services for urban residents, while township health centres and village health stations provide services for rural residents. In practice, it is not this clear cut, because some community health facilities are located in rural areas and also provide services for rural residents. With these assumptions, we can estimate the workload per employee (see Table 8.12). Community health centres and stations are responsible for providing services to urban residents, which accounted for 56% of the total population in 2015 (see Table 5.1). Thus, the estimated number of health check-ups and follow-up consultations was 1.028 billion\*56%. The total number of employees in community health centres and stations in 2015 was 504,817. Therefore, for community health centres and stations in 2015, the estimated workload per employee was 1,140 health check-ups and follow-up consultations. The workload per employee in township health centres and village health stations can be estimated in this way. One small difference is that for rural areas, the government suggests that township health centres and village health stations should divide the workload 60:40 (CHYEC, 2013, p. 26; Interview No. 7).

Table 8.12

*Estimated workload per employee of selected essential public health services (2015)*

| Facility                              | Task division                                             | Estimated total workload* | No. of employees | Workload per employee* |
|---------------------------------------|-----------------------------------------------------------|---------------------------|------------------|------------------------|
| Community health centres and stations | Provide services in urban areas (56% of total population) | 1.028 billion*56%         | 504,817          | 1,140                  |
| Township health centres               | 60% of workload in rural areas (44% of total population)  | 1.028 billion*44%*60%     | 1,277,697        | 212                    |
| Village health stations               | 40% of workload in rural areas (44% of total population)  | 1.028 billion*44%*40%     | 1,197,160        | 151                    |

*Note.* \* Workload = number of health check-ups and follow-up consultations.

Source: Data on number of employees from NHFPC (2016).

The estimated workload seems heavy, particularly for community health workers whose number is small relative to population served. On average, each employee was responsible for providing 1,140 health check-ups and follow-up consultations in 2015 (note, in practice, not every employee is involved in the provision of essential public health services; the purpose of the per employee form is to make the data comparable). In addition to health check-ups and follow-up consultations, there are many other tasks of essential public health services such as establishing and updating health records and delivering health education seminars.

In comparison, each community health centre employee provided 1,407 outpatient consultations in 2015 (see Table 8.11). Follow-up consultations can be extensive in content and length (see Chapter 7). If health care practitioners truly follow the national guidelines, each follow-up consultation should be no shorter than an outpatient consultation. This suggests that the workload of essential public health services is indeed heavy. In rural areas, the volume of health check-ups and follow-up consultations is much



smaller. However, follow-up consultations are frequently in the form of home visits, which can be very time consuming in sparsely populated rural areas (Interview No. 8; Interview No. 27).

The above evidence shows that the workload of employees in primary care facilities has increased, probably significantly (although this is not entirely certain due to the limitations of the indicators used). The subsequent question is, are they overloaded now and how much more can they do? During my fieldwork, almost all of the directors of health centres I interviewed expressed a view that the current workload is too heavy. They emphasised that the working hours are too long. In particular, clerical work (such as filling in forms) and home visits involved in the provision of essential public health services consume too much time (Interview No. 7; Interview No. 8; Interview No. 19; Interview No. 27; Interview No. 28).

These findings are consistent with the results of a recent study that examined the job satisfaction of primary care doctors (Zhang et al., 2017). In this study, 30 employees of community health facilities in a city in Shandong province were interviewed. The interviewees expressed a view that work in community health facilities is in fact less intensive when compared with hospital medical work with respect to stress, medical skills, urgency, and risk within health services, but that they are overloaded by tasks related to essential public health services, which are trivial and time consuming. In another study that used a relatively large sample set (711 employees of township and community health centres in five provinces), 50% of the respondents indicated that their job pressure is heavy or too heavy (Song, 2014).

*Jiankangbao*, the most influential health industry newspaper in China, initiated a topic called ‘township health centres responding to the challenge from essential public health services’ in February 2014. The editorial office called for papers and received a good response from managers and health workers in primary care facilities. The published

cases provide further evidence of the triviality and heavy workload imposed by essential public health services. For example, one GP in a community health centre described that, apart from regular outpatient services, he is responsible for managing 176 hypertensive patients, 43 diabetic patients and 346 elderly people and needs to complete 1,500 follow-up consultations a year (around four a day). Counting travel time involved, he spends at least half of his working time on such tasks every day. Additionally, he needs to use his leisure time to manage health records (Bai, 2014).

Based on the above information, employees in primary care facilities are already overloaded, that is, human resources in primary care facilities seem to be overused. This raises the question, given that essential public health services consume so much time and energy, are they worth it? This is difficult to answer because, as previously discussed, there exists very limited information on the achieved benefits of essential public health services. The workload has been mainly imposed by the government and justified by their potential benefits, but there is a general lack of evaluation of service outcomes.

However, the lack of evaluation is rather universal and not unique to China. The solution is thus not readily available. A more relevant question would be: what can be done for improvements? Based on the existing information, a good starting point seems to be further evaluating the government's long list of requirements for the delivery of essential public health services. Currently, there seems to be a belief that too much clerical work (such as filling in forms) is involved; home visits are time-consuming and not efficient; too many items are involved and together they are beyond the human capacity of primary care facilities. Such claims can be further examined; the administration may need to be streamlined to reduce unnecessary clerical work; and the government's long list of requirements may need to be modified to better reflect priority and be more realistic given the capacity constraints.

## 8.4 Summary

This chapter placed primary care into the context of China's health care system. Unlike the hospitals in most other countries, Chinese hospitals are also involved in the provision of primary care and they compete directly with primary care facilities for patients. Since the early 2000s, hospitals have thrived. The government has played a significant role in this by providing some direct financial support and a favourable growth environment due to slow progress in public hospital reforms. Although primary care facilities have become more spacious, better equipped and better staffed, the expansion of hospitals has been much more impressive. The capacity gap between primary care facilities and hospitals has widened and the relative use of primary care has declined.

Overall, the post-2003 Chinese health care system has had major achievements. The universalisation of health insurance and substantial increase in government subsidies have significantly increased risk protection and improved the affordability of health care. Also, after several rounds of government fiscal injections, people now have access to a more complete network with renovated facilities.

To what extent the strengthening of primary care has contributed to improving the health care system has no straightforward answer. The government has significantly enhanced the public health function of primary care facilities. However, there is limited information on whether preventive care and chronic disease management have prevented diseases or reduced potential complications. It is also unclear whether services provided by primary care facilities are truly cheaper than those provided by hospitals. For these reasons, whether primary care has contributed to containing total health expenditure is unknown. The available evidence suggests that primary care facilities are mainly used by rural residents and the urban poor. This means that the government's strengthening of primary care has benefited the vulnerable populations. Lastly, physical resources in primary care facilities have relatively low utilisation rates. The workload for the

employees of primary care facilities has increased. In particular, signs indicate that many are already overloaded by the increased work of essential public health services. Unfortunately, to what extent these services are worth the time and energy is still unclear.

From a comparative perspective, the problems of not evaluating effects of prevention and not having quality indicators are not unique to China. Few systems in developed countries have succeeded on this front. This has posed universal challenges for assessing the benefits of primary care (see Section 2.3.2). However, there do exist areas to which the Chinese government should pay more attention. One is chronic disease management. The Chinese performance is poorer compared to other countries (World bank, 2017). This is problematic because the current poor results imply potential complications and expensive treatments in the future. To address the current problems requires a coordinated approach involving more targeted training, better availability of drugs, improved incentives, and strengthened evaluation. Some of these elements have been included in the third implementation phase of health care reforms (2016–2020) and will be further discussed in Chapter 9.

The Chinese government has assumed that the investments and improvements in primary care facilities would help them attract patients and relieve demand on hospitals. However, such a logic has not worked well. Although the government has met the targets in strengthening primary care, there has been a relative decline in the market share of primary care facilities. Another unintended consequence is that the utilisation of physical resources, a result of continuous government investments, has remained low. Clearly, changing patients' care-seeking behaviours is more complex than the government expected. Most importantly, community preferences need to be better understood and the motives and behaviours of hospitals also need to be considered.

## **Chapter 9. Concluding Discussions**

This chapter concludes the thesis by summarising the major findings and discussing several issues that emerged from the findings. After analysing the contributions and limitations of this thesis, this chapter ends with some final remarks on the Chinese government's efforts in strengthening primary care since the early 2000s.

### **9.1 Major Findings**

The government has significantly increased its subsidies for health care since the early 2000s. The overarching goal of the recent health care reforms is to provide 'essential health care for all by 2020' (CCCPC & State Council, 2009, p. 2). Strengthening primary care has been a priority task of, and also a major principle guiding the health care reforms (see Chapter 1). This thesis aimed to evaluate the government's role in strengthening primary care between 2003 and 2015. Two research questions were proposed: 1. What has the Chinese government done to strengthen primary care? and 2. What were the outcomes of these efforts? In recognition of the complexity involved, this thesis considered the strengthening of primary care both as a goal in itself and as a means to improve the overall health care system (Chapters 4 and 5).

#### **9.1.1 Strengthening Primary Care as a Goal in Itself**

When the strengthening of primary care is considered as a goal in itself, it can be further broken down into various components. This thesis followed the dominant approach in the public health literature by breaking down the strength of primary care into inputs and service delivery attributes (see Chapters 2 and 4). Chapter 6 focused on the inputs of the government's efforts, while Chapter 7 focused on the service delivery attributes. Under each input/attribute, the government's objectives and interventions were outlined, followed by intervention outcomes at the time around 2015. These are summarised in Table 9.1.

Table 9.1

*Summary of the government's objectives and interventions for and progress of strengthening primary care (2003–2015)*

|                    | Government objectives                                                                                                                                            | Government interventions                                                                                                                                       | Progress (as of 2015)                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Input              |                                                                                                                                                                  |                                                                                                                                                                |                                                                        |
| Physical resources | A complete primary care network                                                                                                                                  | Health planning and direct public provision                                                                                                                    | Quantitative targets met                                               |
|                    | Increase physical resources of individual facilities                                                                                                             | Entry and construction requirements, capital investments                                                                                                       | Quantitative targets surpassed (on average)                            |
| Human resources    | Sufficient employees for the primary care network                                                                                                                | Entry requirements, public employment through bianzhi posts (matched by salary subsidies), earmarked subsidies for doctors employed by village health stations | Quantitative targets surpassed (on average)                            |
|                    | Improve overall qualifications of primary care workforce                                                                                                         | Subsidies and higher entry requirements for bianzhi posts                                                                                                      | Percentage of university graduates in primary care workforce increased |
| Staff training     | Regular on-the-job training for rural and community health workers                                                                                               | Requirements for primary care workers to attend on-the-job training, subsidies for training programs                                                           | Quantitative targets met                                               |
|                    | Establish a GP workforce, with a target of 180,000 by 2015                                                                                                       | Short-term GP retraining programs for health centre employees                                                                                                  | Quantitative targets met                                               |
| Financing          | Maintain financial viability of public facilities while implementing various pricing policies for public health services, essential drugs, and medical services. | Subsidies to compensate policy-induced deficits (mainly cover personnel costs)                                                                                 | Health centres financially dependent on the government                 |

|                                   | Government objectives                                                               | Government interventions                                                                                                                                     | Progress (as of 2015)                                                                        |
|-----------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Service Delivery Attribute</b> |                                                                                     |                                                                                                                                                              |                                                                                              |
| First contact                     | Establish and promote gatekeeping role of primary care facilities*                  | Requirement for primary care facilities to charge less than hospitals, requirement for insurance programs to reimburse more if using primary care facilities | No clear sign of improvement                                                                 |
| Comprehensiveness                 | Provide a national package of essential public health services free of charge       | National list of services (including detailed requirements for service provision), subsidies                                                                 | Quantitative targets met, essential public health services delivered to users free of charge |
|                                   | Provide essential medicines without mark-up                                         | National list of essential medicines, no-profit requirement for drug sales, subsidies to compensate for loss of drug profits                                 | National Essential Medicines Policy implemented in public facilities                         |
|                                   | Provide essential medical services at government-set prices                         | Requirement for primary care facilities to provide essential medical services at government-set prices                                                       | Low prices for essential medical services maintained                                         |
| Longitudinal care                 | Enable primary care facilities to provide ongoing care*                             | -                                                                                                                                                            | No clear sign of improvement                                                                 |
| Coordination                      | Establish mutual referral mechanisms between primary care facilities and hospitals* | -                                                                                                                                                            | No clear sign of improvement                                                                 |

*Note.* \* Mainly rhetoric, rather than concrete priorities.

#### ***9.1.1.1 Inputs***

In terms of physical resources, the government intended to make the primary care network more complete and increase physical resources for individual facilities. To achieve this, the government has implemented health planning and entry controls, thereby imposing detailed requirements on the desired type and number of facilities within a given area and the physical resources for different types of facilities. The government directly provided the majority of facilities with the resources to meet these requirements through three major rounds of capital investments (2004–2015) (see Table 9.2). In 2015, the primary care network reached the target of ‘having one township health centre in each township, having one community health centre in each street, and having one village health station in each village’. The targets for the physical resources owned by individual facilities were (on average) met. Primary care facilities have become more spacious and better equipped.

In terms of human resources, the government intended to increase the quantity and educational qualifications of primary care facility employees. To achieve this, the government has implemented entry controls for different health professionals (i.e., practising doctors, assistant practising doctors, village doctors and nurses) and facilities (e.g., six practising doctors for each community health centre). The government has directly provided *bianzhi* posts for health centres and partially financed the salaries of these. With the government’s financial support, primary care facilities recruited more employees. In 2015, targets for the number of employees were (on average) met. Further, each village health station was staffed by around two doctors, surpassing the government’s target of ‘staffing each village health station by one doctor’. Through recruitment of young people, who are more likely to hold a bachelor’s degree, the average educational qualification of the primary care workforce has increased.



In terms of staff training, the government intended to set up regular on-the-job training for rural and community health workers and establish a GP workforce. To achieve the former, the government introduced requirements for primary care workers to attend such programs and shouldered the financial responsibility for these programs (see Table 9.2). To establish a GP workforce, the government organised and financed GP retraining programs that targeted existing (assistant) practising doctors working in township health centres and community health facilities. Through the government-organised on-the-job training programs, the target of ‘having more than 500,000 rural health workers and 50,000 community health workers attending on-the-job training each year’ was met. Through the GP retraining programs, large numbers of doctors became GPs and the government’s target of 180,000 GPs by 2015 was met. However, despite the government achieving its quantitative targets, little is known about the quality of various training programs. A small existing literature indicates that there is a lack of quality control and standardisation and a general mismatch between training contents and trainees’ needs.

In terms of financing, the government intended to maintain the financial viability of public facilities while implementing various pricing policies. To meet this objective, the government provided more subsidies for primary care facilities, to compensate for their loss from the elimination of profits from the sales of essential medicines, to cover their costs in providing essential public health services, and also to compensate for their loss from implementing the government-set prices of medical services (see Table 9.2). The injection of government subsidies enabled primary care facilities to implement the government’s pricing policies. Health centres have become more dependent on government subsidies since the launch of health care reforms in 2009.

Table 9.2

*Summary of the government's financial contributions to primary care (2004–2015)*

| Contribution                                                        | Central government contribution <sup>a</sup>                                                                                                                                                                                                                                                             | Total government contribution <sup>b</sup>                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Three rounds of capital investment (buildings and equipment)        | First round: 12.8 billion yuan between 2004 and 2008 (2.6 billion yuan per year).<br>Second round: 11.0 billion yuan between 2009 and 2011 (3.7 billion yuan per year).<br>Third round: 21.8 billion yuan between 2012 and 2015 (5.5 billion yuan per year).                                             | First round: 14.1 billion yuan between 2004 and 2008 (2.8 billion yuan per year).<br>Second round: 29.2 billion yuan between 2009 and 2011 (9.7 billion yuan per year).<br>Third round: 36.9 billion yuan between 2012 and 2016 (7.4 billion yuan per year).                                             |
| Personnel-related earmarked funds (training and recruitment)        | Since 2010, around one billion yuan per year for various personnel-related programs, most used for the on-the-job training for health workers and general practitioner retraining programs.                                                                                                              | No national rules for local contributions. The central funds are supposed to cover related costs in the central and western provinces, with local governments matching funds if necessary. The eastern provinces need to finance the programs themselves.                                                |
| Earmarked subsidy for provision of essential public health services | 10.4 billion yuan in 2009, 10.9 billion yuan in 2010 and 18.2 billion yuan in 2011 (13.2 billion yuan per year between 2009 and 2011); 18.4 billion yuan in 2012, 22.3 billion yuan in 2013, 26.0 billion yuan in 2014 and 29.7 billion yuan in 2015 (24.1 billion yuan per year between 2012 and 2015). | 20.0 billion yuan in 2009, 20.1 billion yuan in 2010 and 33.7 billion yuan in 2011 (24.6 billion yuan per year between 2009 and 2011); 33.9 billion yuan in 2012, 40.8 billion yuan in 2013, 47.9 billion yuan in 2014 and 55.0 billion yuan in 2015 (44.4 billion yuan per year between 2012 and 2015). |
| Earmarked subsidy for National Essential Medicines Policy           | Since 2012, around 7 billion yuan per year for health centres and two billion yuan per year for village health stations.                                                                                                                                                                                 | For health centres, no national rules for local contributions. For village health stations, the total government contribution should reach five yuan per rural resident (around 3–3.5 billion yuan annually).                                                                                            |

| Contribution                                                                                | Central government contribution <sup>a</sup>                                                                                                                                                                                        | Total government contribution <sup>b</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fiscal subsidies for operating costs of public primary care facilities (including salaries) | Supposed to be financed by local governments, but the central government provides some indirect support through the subsidy for county-level government to fill their fiscal deficits. The exact amount for health care is unknown. | <p>No national rules for government contributions (some localities cover the basic salaries of people working in bianzhi posts).</p> <p>The total government subsidy for township and community health centres was: 25.7 billion yuan in 2009, 39.3 billion yuan in 2010, and 66.8 billion yuan in 2011 (43.9 billion yuan per year between 2009 and 2011); 88.5 billion yuan in 2012, 102.1 billion yuan in 2013, 110.8 billion yuan in 2014, and 137.2 billion yuan in 2015 (109.7 billion yuan per year between 2012 and 2015).</p> <p>Data above include earmarked funds for essential public health services and the National Essential Medicines Policy.</p> <p>After subtracting these two items, the government spending ‘solely’ on operating costs was: 19.3 billion yuan per year between 2009 and 2011; 58.3 billion yuan per year between 2012 and 2015.</p> |

*Note.* <sup>a</sup> Based on official reports. <sup>b</sup> Based on central policies.

For the purpose of clarity, only major items are included in this table. Details were discussed in previous chapters.

Source: Compiled by author from *China Health Yearbook* (various issues), *China Health Statistical Yearbook* (various issues) and relevant policy documents.

### ***9.1.1.2 Service Delivery Attributes***

The government promoted the idea of making primary care facilities the gatekeepers of the health care system, but by 2015 this remained at the pilot stage. The major measures adopted by the government were requiring primary care facilities to charge less than hospitals and requiring insurance programs to reimburse more for using primary care facilities. However, these measures were not very effective. Price differences between primary care facilities and hospitals are not particularly evident, and the public health insurance schemes were still in an early development stage in the 2000s, providing little coverage for outpatient services. Although insurance programs have increasingly covered outpatient care, deductibles still exist, meaning that the higher reimbursement rate for using primary care facilities is not always relevant. Between 2008 and 2013, there was little change in the percentage of people choosing primary care facilities as their first point of contact.

The government intended to make primary care facilities provide comprehensive services. Efforts have been made to stipulate the services and price of services delivered by primary care facilities. The government has provided various financial subsidies to support this.

For essential public health services, the government clarified a national package of essential public health services to be delivered, with detailed requirements on how these services should be provided, and the accompanying policy that these services be offered free of charge. To cover the cost of service provision, the government provided an earmarked subsidy for public facilities (see Table 9.2). The government reported that it largely met its quantitative targets. However, evidence from my fieldwork, news reports and other studies indicate the existence of fake patient records. The work associated with essential public health services is time consuming and reduces the time available for medical services. The provision of essential public health services has had positive effects

for maternal and child health, but in other aspects the effects are less clear due to a lack of data. Evidence from some recent studies shows that the outcomes of hypertension and diabetes management in primary care facilities are suboptimal.

For essential medicines, the government released a national list of essential medicines, with the requirement that such medicines be provided without any mark-up. To support implementation of the NEMP, the government provided an earmarked subsidy to compensate the NEMP-related losses of primary care facilities (see Table 9.2). The implementation of the NEMP has had unintended consequences. Evidence from existing studies shows that the policy has adversely impacted the stock of drugs at primary care facilities and the irrational prescription and use of medicines has persisted. That many drugs are frequently out of stock at primary care facilities reduces the range of medical care these facilities can provide.

For essential medical services, the government required a range of services to be provided, but the requirements remained general and ambiguous as of 2015. Only in 2018 did the government issue detailed lists of diseases expected to be treated in township and community health centres. The government maintained tight control of the pricing of medical services offered at public facilities. To compensate for their related losses, the government partially covered operating costs (see Table 9.2). Since the launch of health care reforms in 2009, the comprehensiveness of medical services has been adversely impacted by other policies, such as the introduction of essential public health services and NEMP.

The government also promoted the idea that primary care facilities should provide ongoing and coordinating care. In particular, various policy documents stated that primary care facilities should establish mutual referral channels with hospitals. However, this was largely rhetoric and, as of 2015, had not been turned into specific targets or policies. Little was mentioned about how to enable primary care facilities to provide

longitudinal care, and there were no guidelines to instruct when and how referrals should be made. Given this, it is unsurprising that these two attributes of Chinese primary care facilities remained weak as of 2015.<sup>118</sup>

### **9.1.2 Strengthening Primary Care as a Means to Improve the Health Care System**

The strengthening of primary care is not only a goal in itself, but also a means to improve the health care system. Chapter 8 placed the development of primary care in the broad context of the Chinese health care system to examine and discuss to what extent the strengthening of primary care contributed to improving the overall health care system.

In China, patients can choose freely whether to visit a hospital or primary care facility. Generally speaking, hospitals tend to be staffed by doctors with higher qualifications, offer more types of diagnostic tests and stock a wider variety of drugs. These advantages have been enhanced since the early 2000s. Compared with primary care facilities, hospitals have become much more spacious and better equipped; they have recruited the great majority of the best qualified new graduates, as well as many experienced doctors from primary care facilities. These have made hospitals more competitive. In absolute numbers, both primary care facilities and hospitals have received significantly more outpatient visits. However, in relative terms, the percentage of outpatients who visit primary care facilities has declined. Overall, patients have become increasingly concentrated in hospitals.

The Chinese health care system has been significantly improved in the past one and half decades. Government subsidies increased, health insurance was universalised

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<sup>118</sup> Since 2015, the government has increased its efforts to improve the service delivery attributes of primary care facilities. The government has promoted the hierarchical diagnosis and treatment system and integrated delivery system, to enhance the role of primary care facilities as gatekeepers and service coordinators; introduced the family doctor contract program, to improve service continuity; and specified the content of medical services to be provided by primary care facilities, to ensure the comprehensiveness of services. These new government endeavours and their outcomes were outside the research period of this thesis and, thus, were not discussed here. They will need to be examined in the future (see Section 9.3).

and out-of-pocket payments as a percentage of total health care expenditure decreased. While many people suppressed their health care demand in the 1990s, the increased affordability of health care since the early 2000s has seen a vast improvement/increase in care seeking. Through financial subsidies and investments, the government improved the completeness of the network, making health care more physically accessible to the population.

The contribution of primary care to the health care system can be considered from three perspectives: cost containment, equality and efficiency. The contribution to cost containment is usually based on two assumptions. First, primary care providers provide preventive care and identify problems at an early stage. Preventive care can avoid some health problems, and consequently also their treatment, while early management of certain diseases can slow down their progression and help prevent complications, reducing the health care costs that otherwise would be incurred. Since 2009, the government has enhanced the public health function of primary care facilities, particularly, through the introduction of essential public health services. However, there is limited evidence on whether preventive care and disease management efforts have prevented diseases or reduced potential complications. Some recent studies suggest that the outcomes of chronic disease management at primary care facilities are suboptimal, meaning that primary care facilities have not yet fulfilled their potential in realising cost savings. The second assumption for primary care to contain costs is that primary care is itself a lower cost environment compared to specialist care. However, there is a lack of data on whether services provided by primary care facilities are truly cheaper than those provided by hospitals in China. The main indicator used by the government is expense per outpatient visit. This indicator has important limitations. Since the two assumptions are not necessarily met in the Chinese context, whether the government's strengthening of primary care has contributed to cost containment is unknown.

The public health literature suggests that primary care can contribute to equality, because it tends to be used disproportionately by vulnerable populations. In China, the evidence suggests that primary care facilities are mainly used by rural residents and those urban residents with relatively low income. This means that vulnerable populations have benefited from the increased government subsidies for primary care facilities. From this perspective, the strengthening of primary care has contributed to a more equal distribution of health care.

Finally, a particular problem the government intended to address was the low utilisation of primary care facilities. The utilisation of physical resources has remained relatively low, and seems to have partly resulted from government investments. As for human resources, the workload for primary care facility employees has increased, and many are overloaded by work related to essential public health services. This seems to suggest that the utilisation of human resources in primary care facilities has improved, but it is insufficient to draw a clear conclusion, because it is unclear to what extent these services are worth the time and energy. More evidence on the benefits of various essential public health services is needed, and the way the work has been done requires further justification.

## **9.2 Discussion of the Findings**

Many discussions were included along with the findings in the three preceding empirical chapters (Chapters 6–8). This section highlights three main issues. These issues were chosen based on their practical implications and relevance to recent developments.

### **9.2.1 Factors that Compromised the Effectiveness of Government Efforts**

Overall, the Chinese government has been very successful in meeting its quantitative targets. However, various problems remain. Three key factors emerged as particularly important in explaining why government interventions are not always effective in strengthening primary care.



### ***9.2.1.1 Mismatch between Targets and Funds***

Since the early 2000s, the government has significantly increased its subsidies for primary care facilities and introduced new and higher requirements for these facilities. As discussed in Chapters 6 and 7, the funds outlined in policy documents are frequently insufficient to meet the government's targets. Take infrastructure for example. The government's total investments seem substantial (see Table 9.2), but they are actually inadequate when considering the large number of beneficiaries and the detailed requirements for physical conditions, accessory facilities and equipment (see Chapter 6 for detailed calculations). To fill the gap, local governments have used extrabudgetary revenues such as land sales and debts to finance capital investments. Another example is essential public health services. Again, the subsidy level is low when the long list of tasks considered (see Chapter 7 for detailed calculations). This gap was filled by public primary care facilities using other resources to cover the personnel costs incurred in the provision of essential public health services. This is possible because primary care facilities also receive government subsidies for other purposes (see Table 9.2).

The mismatch between targets and funds and how this has been resolved in practice have many undesired consequences. It prevents us from knowing the true costs of government projects. We can calculate the amount of government subsidies by referring to policy documents and government reports (as summarised in Table 9.2 and done for specific areas throughout Chapters 6–8). However, projects tend to involve additional resources that are not tracked and recorded. In this way, wastes are obscured. On the surface, it seems the government has not been particularly wasteful in its funding of any single project—this is because the real use of public resources remains unknown.

The government's current approach creates an illusion that public ownership is superior and necessary. The cross subsidisation only makes sense for public facilities, because they have benefited from government support in many other ways (e.g., free use

of land, capital investments and subsidies to cover personnel costs). When not provided with sufficient subsidies for a given task, they can draw on additional resources. This also means that, on the surface, public facilities are more willing to and capable of meeting government targets. The mismatch between targets and funds poses challenges for the government in procuring public services. The government aimed to provide essential public health services through public or private facilities (see Chapter 6), but the low subsidy level means that only public facilities are likely to complete tasks, not necessarily because they are more efficient, but because they can draw on additional resources. This contradicts the government's goal for the procurement of public services (to promote competition and increase the efficiency of public funds).

When additional resources are also inadequate to fill the gap, either because they are limited or used inefficiently, quality can be compromised. This is particularly evident for essential public health services. Primary care facilities find themselves unable to fulfil the long list of tasks required by the central government. In response, they select some items to fulfil. For the remainder, they produce fake records to meet targets (see Chapter 7). Primary care facilities are strongly incentivised to do this, because meeting targets is necessary to acquire government subsidies, their most important source of revenue (see Chapter 6). An unintended consequence is that, although the government's quantitative targets were met, fake records exist and the quality of provision is not guaranteed.

#### ***9.2.1.2 Weak Monitoring and Poor Data Foundation***

The above discussions also imply that the government has a very weak monitoring of its own financial spending. The government is responsible for funding capital investments and paying part of the salaries of public health centre employees. Under such an arrangement, one would expect that the government would be clear on how much it spends on capital investments and salaries. In reality, it is unknown how much the government spent on capital investments between 2003 and 2015. The central

government's contribution is reported, but the amount of real local spending is unknown at the national level. It is also unknown how much of the fiscal subsidies have been spent on subsidising salaries (see Chapter 6).

To ensure quantitative targets for primary care facilities are met, the government has relied on inspections (see Chapter 6). However, these inspections are not always effective, as demonstrated by the prevalence of fake records (see Chapter 7). One director of a township health centre commented that the inspections were unable to evaluate the quality of services (Interview No. 7): 'During inspections, government officials could at most call some patients and ask them whether our centre has done home visits and checked their blood pressure. However, this does not mean much'.

A factor that permeated earlier discussions is a lack of data. Many important data that are supposed to be recorded are missing. One interviewee, the head of personnel management in a prefectural health department, indicated that it took over six months to figure out how many beds there were in public hospitals (Interview No. 27) (see Section 6.2.2).

To cope with the lack of data and to perform monitoring and evaluation, the central government has adopted a sampling approach. For example, in a recent project, the central government commissioned the NHDRC to study the salary of GPs. This is surprising in itself, because GPs work in public facilities and their salaries are largely financed by the government. The NHDRC sent research teams to 10 localities to ask GPs in township and community health centres how much they earn (Event No. 6). To understand the effects of primary care reforms, the central government selected 34 prefectures in 17 provinces in which to collect and monitor data. These prefectures were selected based on recommendations from local governments. These areas reported data directly to the NHFPC. Based on these data, the central government evaluated primary care reforms and derived successful experiences to promote (Interview No. 30). These

samples are small relative to the size of China,<sup>119</sup> raising questions as to how representative these data are and whether they are sufficient to perform evaluations and guide policymaking.

The lack of basic data has made policy implementation crude. One example is the provision of essential public health services. Each primary care facility has a catchment area, but the government does not know the exact number of people covered by each facility. In practice, primary care facilities estimate and report the number of people within their catchment area, but they are incentivised to overstate this, because government subsidies for essential public health services are allocated on a per capita basis (i.e., the more people a facility serves, the more funding it receives). The sum of the number of people reported by all primary care facility usually exceeds the total number of residents within a given area. Local governments then adjust the number of people reported by primary care facilities (Interview No. 19). For example, if a district has one million people, but all primary care facilities together report 1.5 million people, the government allocates two-thirds of the claimed subsidy for each facility. This means that primary care facilities seldom receive the amount they need. It also implies that those facilities that do not overstate the number of people served get less, therefore creating an incentive for primary care facilities to overestimate this number, thus further biasing data.

Probably most problematically, the poor data foundation presents a huge obstacle for the public to hold the government accountable and also prevents the government itself from identifying problems and correcting inappropriate decisions.

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<sup>119</sup> This can be understood in the context that China has a small central government with limited staff capacity (Wong, 2013). In fact, the National Health and Family Commission and the National Health Development Centre already work almost to full capacity. During my fieldwork, I learned from different interviewees how intense the data collection activities were. One of my interviewees once joined a project run by the National Health and Family Planning Commission and described that experience as visiting several provinces in a week, collecting data during the day, and writing reports until late at night (Interview No.13). This is consistent with what I learned directly from my interviewees working either in the National Health and Family Planning Commission or the National Health Development Centre. They are frequently involved in data collections involving a great deal of overtime (Interview No.1; Interview No.3; Interview No.12; Interview No.14). The information above means that although the sample sizes seem small, they represent the best effort of the central government and its affiliated research institute.

### **9.2.2 Primary Care Facilities Under Fragmented Administration**

In the Chinese context, the government faces one particular challenge in the strengthening of primary care: the administrative structure is both horizontally and vertically fragmented (see Figure 9.1). Before 2018, the major ministry responsible for health care was the NHFPC, created from the former Ministry of Health and National Population and Family Planning Commission in 2013. Two agencies under the NHFPC are the State Administration of Traditional Chinese Medicine and the State Centre for Disease Control. Apart from the NHFPC, many other ministries are also involved in the making and implementation of health policies. The most important include the China Food and Drug Administration, National Development and Reform Commission, Ministry of Human Resources and Social Security, Ministry of Finance, State Commission Office for Public Sector Reform, Ministry of Education and Ministry of Civil Affairs.

The central level structure is duplicated at the provincial, prefectural and county levels. Local health authorities at provincial, prefectural and county levels are in charge of health administration in their respective jurisdictions, under the supervision of their local government and the upper-level health authority (Meng, Yang, Chen, Sun & Liu, 2015). For example, a county-level Health and Family Planning Commission reports to both to its county government and the corresponding prefectural Health and Family Planning Commission (whose focus is professional direction). At the township level, there is no independent health administration and health development is directly overseen by county health authorities.

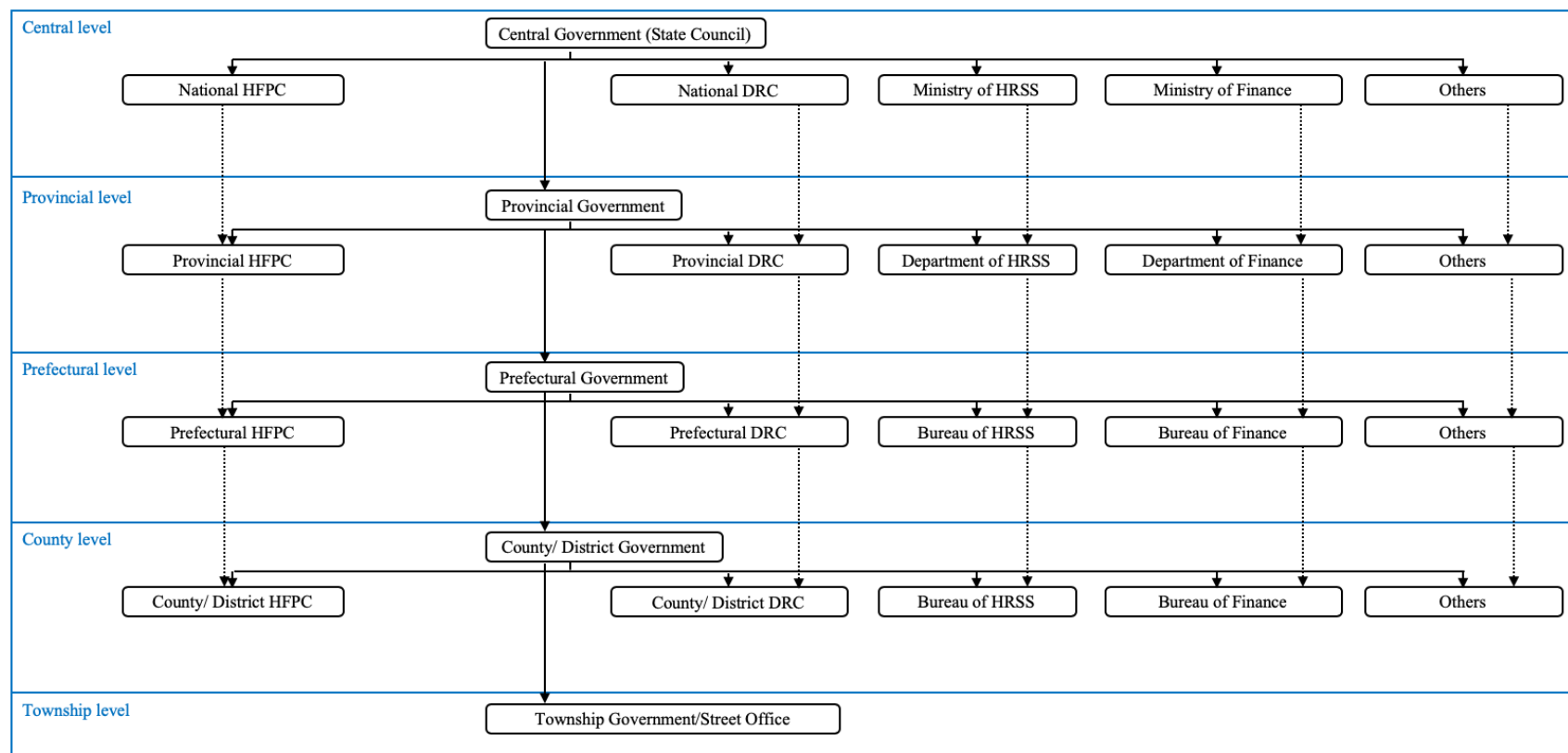


*Figure 9.1.* The structure of health administration in China (prior to the 2018 government restructure) (adapted from Meng, Yang et al., 2015). Solid arrows represent subordination. Dotted arrows represent professional direction. HFPC = Health and Family Planning Commission, ATCM = Administration of Traditional Chinese Medicine, CDC = Centre for Disease Control, MCHI = Maternal and Child Health Institutions, FDA = Food and Drug Administration, DRC = Development and Reform Commission, HRSS = Human Resources and Social Security.

Reflecting the broad fragmentation of health governance, the administration of primary care facilities falls under the jurisdiction of many ministries:

- The major ministry in charge is the NHFPC, responsible for ensuring the accessibility of health services and monitoring the quality of services.
- Under the supervision of the NHFPC, the State Administration of Traditional Chinese Medicine focuses on the regulation of the traditional Chinese medicine industry.
- Drugs are regulated by the Food and Drug Administration.
- The construction of primary care facilities is under the jurisdiction of the National Development and Reform Commission, which is also responsible for setting the prices of medical services.
- The management of bianzhi posts is under the jurisdiction of the State Commission Office for Public Sector Reform.
- The salaries and benefit policies for people working in bianzhi posts (i.e., the majority of employees working in township and community health centres) are set by the Ministry of Human Resources and Social Security.
- Medical education and continuous medical education (for primary care facility employees) are organised by the Ministry of Education.

Such a fragmented administrative structure poses considerable challenges for coordinating different government programs. As discussed in Chapter 7, the delivery of public health and medical services is dependent on the capacity of primary care workers and the availability of equipment and drugs. The capacity of primary care workers is influenced by their academic qualifications and various training programs while their behaviours and performance are also shaped by the incentives embedded in the financing and payment mechanisms. The interdependency of these different elements means that

different policies need to be closely coordinated, which can be very difficult given the current fragmented administrative structure.

The fragmentation is particularly relevant for primary care facilities also because they are an interface of all relevant health services. At or above the county level, there exist separate institutions for medical care and public health services—hospitals deliver medical care and specialised public health institutions provide different public health services. Specialised public health institutions include centres for disease control, maternal and child health institutions, health supervision institutions, and mental health professional institutions. These facilities operate at national, provincial, prefectural and county levels (see Figure 9.1). Such facilities do not exist below the county level—here, many of their functions are covered by health centres and stations (as part of the national package of essential public health services [see Table 7.2]). This means that health centres are under the guidance, orders and evaluation of many different government agencies. For example, the provision of essential public health services is supervised by centres for disease control, maternal and child health institutions, mental health professional institutions, traditional Chinese medicine hospitals and health supervision institutions (Interview No. 5; Interview No. 19). People at these institutions are responsible for supervising work under their own jurisdictions (e.g., staff from maternal and child health institutions are responsible for supervising maternal and child health management in health centres). The involvement of so many actors at the health centre level makes it very hard to integrate services.

Further complicating matters, primary care facilities are subject to a particularly long chain of accountability. Township and community health centres are administered by county health authorities, which are at the bottom of the health administration structure (see Figure 9.1). This means that the successful implementation of government programs depends on the cooperation of many government agencies beyond the control of health



centres. The cooperation of local governments is not always guaranteed, as evident in financing. Under the current arrangement, the central government issues policies, but only provides part of the funding necessary to support these (see Table 9.1). The central government sometimes makes requirements for local contributions, but the amount that finally reach health centres depends on the fiscal capacity of local governments (Interview No. 12; Interview No. 17; Interview No. 23) (see Chapter 6).

Health stations are subject to one more additional level of administration. Some supervisory work of county health authorities has been delegated to health centres. This is out of necessity, because within each county there are usually a dozen of health centres and hundreds of health stations. However, this has brought about a conflict of interests for health centres. One example in Chapter 6 is the split of government subsidies for essential public health services. Both health centres and health stations are providers of essential public health services and recipients of government subsidies. However, township health centres are delegated the authority to evaluate the work of village health stations and distribute subsidies based on evaluation results. Such a structure creates a problematic incentive for township health centres to keep the subsidies and justify this on the basis of dissatisfactory evaluation results for village health stations.

In 2018, there was a major government restructure that involved several major changes to health administration. Most significantly, the State Medical Insurance Administration was established.<sup>120</sup> The new agency is responsible for formulating policies, plans and standards for medical insurance, maternity insurance and medical assistance. It is also responsible for handling insurance funds, improving the platform for

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<sup>120</sup> There were two other major changes in the area of health. First, the NHFPC was replaced by the National Health Commission. The new commission takes over certain functions of the former NHFPC, Office of the Leading Group Overseeing Health Care Reform, and National Working Commission on Ageing. Second, the China Food and Drug Administration was dissolved, and the National Medical Products Administration was established to oversee drugs and medical devices (Wang, 2018). However, these two changes are less significant in the sense that the responsibilities of the newly established agencies largely overlap with that of their predecessors.

interprovincial medical services and expense settlements, and organising various concerned parties to fix and adjust prices for drugs and medical services (including negotiating inclusion on the National Reimbursement Drug List). Essentially, the new agency takes over certain functions of the Ministry of Human Resources and Social Security, former NHFPC, Ministry of Civil Affairs, and National Development and Reform Commission (Wang, 2018). The new agency consolidates administration of China's three national health insurance schemes and the function of fixing and adjusting prices for drugs and medical services.

The recent restructure demonstrates that the government has recognised the issue of fragmentation and is working on consolidating functions. The establishment of the State Medical Insurance Administration is expected to form an institutional foundation for the integration of different social health insurance programs and increase their leverage over controlling the behaviours of health care providers (Li, 2018). However, this restructure has only partially addressed the fragmentation problem. As previously discussed, the administration of primary care facilities is highly fragmented and infrastructure, human resources, staff training, pricing, drugs and services are overseen by many different government agencies, which has not yet been changed by the recent government restructure. This means that fragmented administration is likely to continue to pose challenges for the government in strengthening primary care.

### **9.2.3 Reflections on the Government's Blueprint for Primary Care Facilities**

The government's blueprint for primary care facilities has remained consistent. In 2006, when the government decided to accelerate the development of urban community health services, it suggested that such facilities should gradually replace hospitals to become the provider of general outpatient care, rehabilitation and nursing services (State Council, 2006). Upon the launch of health care reforms in 2009, the government reiterated this goal and stated that it would take measures to divert patients from hospitals to primary

care facilities and gradually make primary care facilities the gatekeeper of the health care system (CCCPC & State Council, 2009). In 2015, the government proposed to promote the hierarchical diagnosis and treatment model. Under this model, primary care facilities would provide first contact care, treat common and prevalent diseases and attend to those patients in the rehabilitation phase, while hospitals would focus on complex and urgent cases (General Office of the State Council, 2015b; State Council, 2016).

In brief, according to the government's blueprint, primary care facilities would become the cornerstone of the health care system. This thesis's findings shed some light on whether primary care facilities have the capacity to fulfil this role and whether the government's targets are appropriate.

#### ***9.2.3.1 Are Primary Care Facilities Capable of Realising the Government's Blueprint?***

The situation in rural areas already seems to align with the government's blueprint. The great majority of rural residents use primary care facilities as their first point of contact and most outpatient services are delivered through primary care facilities (see Table 7.1 and Figure 8.3). Two important contextual factors explain this. First, rural areas are more sparsely populated than urban areas, and village health stations and township health centres are usually more physically accessible than hospitals. Second, the human resources for rural primary care facilities are relatively abundant. In 2015, every 10,000 rural residents were served by 12.3 (assistant) practising doctors in primary care facilities and another 15.9 village doctors, compared to 10.4 (assistant) practising doctors in hospitals (see Table 8.10).

It is mainly in urban areas that hospitals are likely to be used as the first point of contact and for outpatient use, which is against the government's blueprint (see Table 7.1 and Figure 8.3). The two contextual factors that promote the use of primary care facilities in rural areas are not present in cities. In urban areas, health centres are not necessarily

more physical accessible than hospitals. In 2015, the number of hospitals in urban areas was 14,513, compared to 6,622 community health centres (see Table 8.10). This means that, compared to hospitals, community health centres are not necessarily closer to many patients. Further, the human capacity for urban primary care facilities is limited. In 2015, every 10,000 urban residents were served by 4.7 (assistant) practising doctors in primary care facilities, compared to 13.8 (assistant) practising doctors in hospitals (see Table 8.10). This raises the question as to whether urban primary care facilities have the capacity to treat all patients with common and prevalent conditions, per the government's blueprint.

In terms of the current use of resources, primary care facilities in rural and urban areas have extra physical capacity—buildings are relatively empty, the bed occupancy rate could be significantly increased and equipment is largely idle (see Chapters 6 and 8). However, physical resources alone are unable to provide health care. Employees in primary care facilities are already overloaded by their work, in particularly the time-consuming tasks of essential public health services (see Chapter 8). In some areas, the workload of essential public health services has already adversely impacted the capacity of primary care workers to provide medical care (see Chapter 7). Without considerably reducing this workload or increasing the number of employees, it is unlikely that primary care facilities can attend to significantly more patients.

Another concern is whether primary care facilities are capable of treating common and prevalent diseases. As discussed in Chapter 7, some studies on the knowledge and skills of primary care staff indicate that village doctors and those (assistant) practising doctors working in health centres have limited clinical knowledge of common chronic diseases such as hypertension and diabetes. The literature consistently shows that antibiotics and injections are still overused. Their use is significantly higher than the level suggested by the WHO and poses problems for the health of patients. The quality of

medical services remains poorly characterised, but some existing evidence points out significant gaps. For example, the study of Sylvia et al. (2015) showed the high percentage of misdiagnosis in rural primary care facilities and Li et al. (2017) demonstrated the dissatisfactory outcomes of chronic disease management. Based on this discussion, it seems that primary care facilities are not yet capable of realising the government's blueprint.

#### ***9.2.3.2 How Appropriate Are the Government's Targets?***

Related to the above discussion is a broader question: how appropriate are the government's targets? Are they reasonable for achieving the government's broader goals and objectives? It is paradoxical that most targets for the strengthening of primary care have been met (Table 9.1) but the government has not fulfilled its blueprint.

The government's targets in the strengthening of primary care are still very much input- and quantity-focused. The government has very detailed targets for inputs. These targets include the number and distribution of facilities, physical space and equipment of each facility, human resources and training for personnel (Chapter 6). The government's targets for outputs also focus on quantity. Much emphasis has been put on the volume of essential public services (Chapter 7).

Indeed, having a certain level of input is essential for the provision of services and quantitative targets can be helpful and straightforward in monitoring progress. However, they are not sufficient. The existing literature is still inconclusive about the benefits of increasing primary care supply (Section 2.3.2.1) and suggests that measuring primary care's strength should involve not only inputs and outputs but also many other elements. The general trend is to emphasise service delivery, in particular how the core functions of primary care have been fulfilled (Section 2.3.1).

In China, the targets for strengthening primary care were frequently given without much justification for how they were set. For example, it is unclear why a community

health centre needs at least 1,000 m<sup>2</sup>, at least six practising doctors and nine nurses, and also fulfils a number of other requirements to provide health care. It is also unclear whether providing free traditional Chinese medicine consultations to children aged 0–6 and people aged 65 or over is needed and should be included in the national package of essential public health services. The government managed to reach and surpass various targets, but it is unclear how the increased supply and volume has been transformed into improvements in health care provided in primary care facilities, and more importantly, how various health outcomes have been improved.

A key complicating factor is hospitals. Primary care facilities are not the only option for patients when seeking care. The rapid expansion of hospitals has made many structural improvements of primary care facilities less impressive (Chapter 8). The hospitals still have better physical and human resources than primary care facilities, which makes the latter less attractive to patients. Essentially, this means that the government's blueprint requires other essential elements that are not captured by the current targets.

### ***9.2.3.3 Recent Government Initiatives***

In recognition of the limitations in the capacity of primary care facilities, the government has started to promote the integrated delivery model. Under this model, hospitals are encouraged to team up with primary care facilities, whereby different facilities within a team share resources and support each other. The government requires that all public secondary hospitals and government-run primary care facilities participate in such teams by 2020 (General Office of the State Council, 2017a). The integrated delivery model is supposed to facilitate better coordination between and integration of services in primary care facilities and hospitals, thereby enhancing the overall capacity of primary care facilities.

The government has also realised that diverting patients from hospitals to primary care facilities requires more control over the behaviours of public hospitals. The government has piloted and signalled its intent to introduce the DRGs as a new payment mechanism for public hospitals. Since the DRG-based payments system pays hospitals on the basis of the number and types of cases treated, it incentivises hospitals to increase efficiency and contain costs. For these reasons, DRG-based funding has become the principal means of reimbursing hospitals for acute inpatient care in most high-income countries (Mathauer & Wittenbecher, 2013; Geissler, Quentin, Scheller-Kreinsen & Busse, 2011). The Chinese government is currently working to replacing the FFS payments with the DRG-based mechanism in social health insurance programs (General Office of the State Council, 2017b). This can be helpful for the development of primary care facilities, because under the current FFS system, hospitals are incentivised to treat as many patients as possible and, thus, they compete with primary care facilities for patients. Ideally, the replacement of FFS by DRGs would make it unprofitable for public hospitals to treat common and prevalent cases (Qin, 2016). In this way, such cases would be referred to primary care facilities, thereby achieving the government's desired change in the distribution of patients.

The introduction of these initiatives demonstrates that the government is aware of the complexity of achieving its objective of diverting patients from hospitals to primary care facilities. The capacity of primary care facilities is still relatively limited. Strengthening primary care facilities alone is not enough—controlling the behaviours of hospitals is also important. Overall, it seems that the government is on the right track. However, the issues identified in this thesis, including mismatch between targets and funds, weak monitoring, poor data foundation and fragmented administrative structure, have not yet been addressed. It is likely that these issues will continue to pose challenges for the government in achieving its intended goals.

### 9.3 An International Perspective

To have a fairer understanding, the Chinese government's strengthening of primary care needs to be situated in the larger international context. As discussed in Chapter 2, even among developed countries, there is only a small number of health care systems that can be viewed as having strong primary care. Each system tends to be different, with primary care playing different roles. There is no clear preference for the gatekeeping model over the direct access model among OECD countries (Mossialos, Wenzl, Osborn & Sarnak, 2016).

When compared with developed countries, it could be argued that the level of hospital domination is more extreme in China and the role of primary care facilities is more marginal. Among the health care systems in developed countries, it is uncommon for hospitals to get involved in the provision of primary care. Japan is an exception but still, general clinics provide the bulk of outpatient services: in 2014, the number of outpatient visits provided by general clinics alone was about 2.6 times of that provided by hospitals (Japanese Ministry of Health, Labour and Welfare, 2015a). In China, the number of outpatient visits provided all types of primary care facilities was only around 1.4 times of that provided by hospitals (NHFPC, 2016).

The comparison between China and developed countries is problematic in two ways. First of all, the health care system models adopted in developed countries differ vastly from that of China. China inherited the Semashko model, which is featured by an overwhelming orientation towards hospitals. The hospital-centric issue is rather common for countries with a history of the Semashko model. Second, China is still a developing country, with relatively limited per capita economic resources when compared to developed countries. The primary care sector may improve as China's economy further develops and more resources become available. Unfortunately, there is still a paucity of



data that can be used to compare primary care in developing countries (Veillard et al., 2017) (see Chapter 2).

Despite the difficulty of evaluating whether China's primary care is particularly weak from an international perspective, there do exist areas which are more clearly problematic for China. One of such areas is chronic disease management. An international comparison suggests that the proportions of people who are aware, treated and controlling their high blood pressure in China were all lower than that of the average middle-income countries, as well as high-income countries (World bank, 2017). This points to an urgency for China to further improve the management of chronic diseases.

Strengthening primary care and reorienting health care systems towards primary care have been a common reform theme among both developed and transition countries, but successful experiences are rather limited, which indicates the difficulty of such reforms. In particular, health care systems are faced with some common dilemmas. The shrink of primary care workforce is a shared worrying trend; Integrating and coordinating different health care services are hard to achieve; Discouraging patients from using specialist services and large hospitals is also fraught with difficulties, particularly in direct access systems. Even among developed countries, few systems have succeeded in monitoring the quality of primary care. The exact effects/benefits of different primary care reforms remain inadequately understood. These broad issues were also present in China's strengthening of primary care, but they reflected more of the common dilemmas instead of particular problems of China's health policy or health system.

What differs China's strengthening of primary care from the commonly discussed experiences is perhaps that the Chinese government has stick to a planned economy logic. The government has relied heavily on targets, which are very much input- and quantity-focused. Such an approach sets China apart from the commonly discussed developed countries because the provision of primary care tends to be dominated by private

ownership and the government's interventions in primary care tend to be indirect (see Chapter 2).

The analysis in this thesis suggests that the target-driven approach has strong limitations in health care due to the dynamics and complexities involved (discussed in 9.3.2). It is relatively easy to meet a given target such as having a certain number of beds in a facility or even providing a certain volume of services. However, the targets cannot effectively control the behaviours of primary care facilities or influence the care-seeking pattern of patients. This has led to a rather paradoxical situation in which the government has been very successful in reaching its targets but still unable to achieve the intended outcomes. This suggests a need to better recognise the limitations of the target-driven approach and improve the governance of health care in China.

## **9.4 Research Contributions and Limitations**

This thesis systemically evaluated the Chinese government's role in strengthening primary care between 2003 and 2015. It fills a gap in the literature on China's primary care reforms. Studies in this area tend to be fragmented in terms of coverage. They tend to focus on the effects of a single intervention (e.g., the NEMP or provision of essential public health services) or one particular type of facilities in a given area (e.g., community health facilities in one city). In contrast, this thesis took a systematic approach by presenting an overall picture of what the government has done to strengthen primary care. It contributes to a more comprehensive understanding of primary care reforms in China and their effects.

The literature on China's health care policy and reforms in the past decade has focused more on insurance programs. This is understandable, because there have been significant developments in this area. The NRCMS and URBMI have absorbed significant government subsidies and covered the majority of the population. Their importance is evident. Many studies (in particular within the discipline of economics)

evaluate how different insurance programs have impacted out-of-pocket payments, catastrophic spending and utilisation of health care, and whether these programs have improved the affordability and equity of health care. In comparison, recent developments on the supply side are less well understood. This is an important gap, because health care providers are essential for the delivery of health care. Indeed, the government has increased its demand-side subsidies, but it has also significantly increased its direct subsidies to suppliers, and introduced many initiatives. These new developments on the supply side also need to be analysed, potentially complementing the literature on insurance programmes and helping to produce more balanced comprehension of China's health care policy and reforms.

This thesis has limitations. First, it relied heavily on official data and statistics published by the Chinese government. The completeness, consistency and interpretability of such data are not always ideal. For example, although the *China Health Yearbook* series provide a relatively comprehensive coverage of government projects, once a project has become a routine it is less likely to be reported. Also, if the government has many projects in a year, the less important ones tend to be omitted. Although the *China Health Statistical Yearbook* series provide many useful statistics, the explanatory notes tend to be short and it is sometimes unclear what an indicator exactly means. In this thesis, this was addressed by cross-checking and supplementary reading to make educated guesses (when such guesses were made, explanations were provided in text or footnotes). When indicators were used for calculations, the associated assumptions were always described. A more ideal approach would have been directly interviewing officials in statistical departments to ask why certain indicators were chosen to be reported and data were collected. That might well be an interesting research project in itself.

A strength of this thesis is that it provides a comprehensive overview of the Chinese government's interventions in primary care. Nonetheless, many aspects were not

covered. In particular, regional disparities and local initiatives were not dealt with. The central government allows local governments to take initiatives, as long as they are within the broad framework outlined by the central government. Frequently, local governments run pilots first and, when the central government finds the experience successful, it turns that into a national pilot that may later lead to a national policy. This thesis focused on those that eventually became national policies. This means many local initiatives (e.g., the Sanming experience in Fujian,<sup>121</sup> and more recently, the Luohu pilot in Shenzhen<sup>122</sup>) were not discussed in any detail. However, unpacking all the complexities was not feasible given the study time and word limit of this thesis. The findings of this study can be taken as a foundation for further exploration and investigation in the future.

This study focused mainly on primary care facilities. However, primary care facilities are an integral part of the health care system, which is very complex. Different policy subsystems are closely interconnected. In particular, in the Chinese context, hospitals and primary care facilities compete for patients. In this study, the development of hospitals and some of its implications for primary care facilities were discussed. However, such discussions were relatively limited in length and depth. A deeper understanding of how hospitals resisted or reacted to the changes in primary care facilities would be helpful for a more complete understanding.

Further, the health care system is embedded in the broad socio-economic context. The government intentions and interventions are shaped by various contextual factors; the health sector interacts with and is influenced by other policy systems. Not only can

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<sup>121</sup> The Sanming model was a four-in-one reform package to realign the entire provider system. The four reform dimensions covered governance, drug procurement, medical insurance, and service providers. A single, city-wide integrated management was set up to unify governance; drug procurement was centralised for all public hospitals with a ‘two invoices system’ (‘两票制’) to eliminate drug mark-ups by providers; medical insurance funds were merged and centralised to reduce the number of risk pools; and incentives were shifted from prescribing to medical services. In 2016, the Sanming model was promoted by the State Council as the leading health care reform model (KPMG, 2016).

<sup>122</sup> The Luohu model was an integrated care model. In 2015, the Luohu hospital group was established, consisting of five district-level hospitals, 23 community health centres and one institute of precision medicine. The group also established six resource-sharing centres and six administrative centres to improve the efficiency of both resource use and administration (Wang et al., 2018).

context shape policies, government interventions can also change context, which necessitates or enables policy adjustments. This study dealt with some of the contextual factors but did not fully explore these dynamics. One promising approach for future studies would be to examine these issues through the lens of complexity theory and complex social systems.

Finally, it is in fact still early to evaluate the Chinese government's efforts to strengthen primary care. Changes take time. The relatively low level of the qualifications and skills of primary care facilities employees can hardly be improved over a short period. Many government initiatives to strengthen primary care facilities have been introduced very recently. The government has become more committed to developing general practice only since 2010. It is much more recently that the government has turned more attention to making primary care facilities the gatekeeper of the health care system and taking concrete action to improve the continuity and coordination of care. Future studies are needed to evaluate these endeavours and track their progress.

## **9.5 Final Remarks**

Since the early 2000s, the Chinese government has significantly increased its subsidies and made new promises for health care. Impressive progress has been made. The government has universalised social health insurance, bringing risk protection to more than one billion people who were previously uncovered and paid health care out of pocket. Through financial contributions, the government has also made the health care network more complete/physically accessible, with renovated facilities and medical services offered at subsidised prices in hospitals and primary care facilities.

The strengthening of primary care has been a key component of the government's grand plan to provide 'essential health care for all by 2020' (CCCPC & State Council, 2009, p. 2). In the past one and half decades, the government has gradually increased its efforts to strengthen primary care. The initial focus was on increasing physical and human

resources, in particular, for rural facilities. With the launch of health care reforms in 2009, the government increased its previous efforts in capacity building and also introduced new programs to make primary care facilities the providers of a set of essential health care services (including essential public health services, essential medicines and essential medical care).

Overall, the Chinese government has been successful in enhancing the inputs of primary care and meeting its own quantitative targets. Primary care facilities have become more spacious, better equipped and better staffed. They have delivered a large quantity of essential public health services free of charge, offered essential medicines at wholesale prices and provided many medical services at below-cost prices. Since primary care facilities are disproportionately used by rural residents and those urban people with a relatively low income, the strengthening of primary care has benefited vulnerable populations.

Despite these achievements, problems exist. The quantitative targets set by the government are not always well justified. The government's financial injections fuelled the increase of physical resources, but the utilisation of these resources is relatively low, suggesting a waste of public funds. The government imposed a heavy workload of essential public health services on primary care facilities, but the effects and benefits of these services are not well understood. In general, the effectiveness of various government efforts has been compromised by a mismatch between targets and funds, weak monitoring, and a poor data foundation, compounded by the fragmented administrative structure.

The strengthening of primary care facilities has been further complicated by their competitive relationship with hospitals. In the past 15 years, hospitals expanded rapidly, and the relative market share of primary care facilities dropped. The government has realised that diverting patients from hospitals to primary care facilities requires a more

comprehensive approach. In recent years, more attention has been given to integrating services in hospitals and primary care facilities and containing the growth of hospitals. Some promising initiatives have been launched, but the aforementioned problems persist and may continue to pose challenges for the government in achieving its goals.

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