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## Review

# Pharmaceutical pricing and reimbursement in China: When the whole is less than the sum of its parts

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## ABSTRACT

**Background:** In recent years, there has been rapid growth in pharmaceutical spending in China. In addition, the country faces many challenges with regards to the quality, pricing and affordability of drugs. Pricing and reimbursement are important aspects of pharmaceutical policy that must be prioritised in order to address the many challenges.

**Methods:** This review draws on multiple sources of information. A review of the academic and grey literature along with official government statistics were combined with information from seminars held by China's State Council Development Research Center to provide an overview of pharmaceutical pricing and reimbursement in China.

**Results:** Pricing and reimbursement policy were analysed through a framework that incorporates supply-side policies, proxy-demand policies and demand-side policies. China's current pharmaceutical policies interact in such a way to create dysfunction in the form of high prices, low drug quality, irrational prescribing and problems with access. Finally, the country's fragmented regulatory environment hampers pharmaceutical policy reform.

**Conclusions:** The pricing and reimbursement policy landscape can be improved through higher drug quality standards, greater market concentration, an increase in government subsidies, quality-oriented tendering, wider implementation of the zero mark-up policy, through linking reimbursement with rational prescribing, and the promotion of health technology assessment and comparative effectiveness research. Addressing broader issues of regulatory fragmentation, the lack of transparency and corruption will help ensure that policies are created in a coherent, evidence-based fashion.

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## 1. Introduction

Pharmaceutical policy is a crucial component of any healthcare system. This is particularly true in China, where drug expenditure accounts for 40% of total health expenditure, far higher than the OECD average of 19% [1,2]. Between 2000 and 2012, growth in drug expenditure has increased rapidly at an average annual rate of 14% [2]. While this is projected to slow over the next few years, by 2017 China

will nonetheless be the world's second largest drug market by value [3]. This level of expenditure is not necessarily yielding optimal returns in terms of drug quality, access or coverage. Much effort is being put into improving pharmaceutical policy from multiple directions, but lack of a coherent policy strategy has made reforms difficult.

Two key aspects of pharmaceutical policy are pricing, which describes how drug prices are determined, and reimbursement, which relates to how and to what extent insurers pay for drugs. Pricing and reimbursement policies in China affect not only access and affordability of medications, but they are intimately linked to other areas of the healthcare system, including insurance coverage, drug

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quality and hospital reform. In 2009, China announced an ambitious plan to systematically reform its healthcare system, with pharmaceutical policy as one of the five key reform pillars [4]. Despite major reform efforts, China's current system continues to struggle with many issues. There is significant fragmentation in the regulatory environment, with multiple players at the central, provincial and local levels whose actions are not necessarily coordinated. In addition, there are large disparities in coverage for healthcare and pharmaceuticals that have resulted in problems with affordability. The drug manufacturing and distribution industries are also highly fragmented, leading to quality and pricing problems. Finally, pricing and reimbursement policies do not incentivise rational drug production or drug prescribing.

We present an overview and a policy analysis of the complexities and challenges of China's pharmaceutical and healthcare environment up to September 2015. This paper focuses on pricing and reimbursement policy. A framework that incorporates supply-side policies, proxy-demand policies and demand-side policies is used to conceptualise how interacting factors create dysfunction in terms of high drug cost and low drug quality. Finally, policy recommendations for improving decision-making for pricing and reimbursement are presented.

## 2. Background to China's healthcare and pharmaceutical environment

### 2.1. Historical context of healthcare in China

In the early 1980s, alongside China's market liberalisation reforms, much of its once-public healthcare system was dismantled. From 1978 until 2001, the central government's share of total healthcare expenditure fell from 32% to 15%, while the burden of out-of-pocket (OOP) expenditure as a share of total health spending increased from 20% to 58% [2]. In the late 1980s and 1990s, the government allowed hospitals and physicians to make up funding shortfalls by charging a 15% mark-up on sales of medications. This policy introduced a profit-seeking incentive into the healthcare system that encouraged the use of expensive and inappropriate medications. Both direct subsidies to hospitals and physicians' base salaries were low. Thus, hospitals encouraged physicians to sell drugs in order to raise revenue, and physicians' incomes were heavily supplemented with bonuses based on department or hospital-wide drug revenues [5].

Following widespread discontent with the state of healthcare in China, the central government launched large-scale reforms in April 2009 [6,7]. The reforms centred on five priority areas:

1. Expanding insurance coverage with the goal of establishing universal coverage by 2011.
2. Increasing government spending on public health services.
3. Establishing primary care facilities that would serve as gatekeepers to the healthcare system.
4. Promoting pilot projects for public hospital reform.

5. Reforming the pharmaceutical market and developing an Essential Drug List.

In reforming the pharmaceutical market, the government sought to rationalise policies which included drug development, registration, production, and distribution, as well as pricing and reimbursement. The development of an Essential Drug List (EDL) was intended to ensure that a minimum set of essential, high-quality, low-cost medications was available nationwide.

### 2.2. Healthcare and pharmaceutical spending trends in China

China currently spends 5.4% of GDP on healthcare, significantly lower than the OECD average of 9.3%. Compared to other BRICS countries, China spends proportionally less than Brazil (10%), Russia (7%) and South Africa (9%) but more than India (4%) [8,9]. Both total health expenditure (THE) and total pharmaceutical expenditure (TPE) have increased rapidly over the past few decades. Since 2000, THE growth has outpaced that of TPE [2]. Thus, while TPE once made up close to 60% of THE, it has gradually fallen to around 40%. (Fig. 1) [2]. Nonetheless, drug spending makes up 2.28% of total GDP, a figure much higher than the OECD average of 1.5% [1,2]. China's TPE/THE ratio is higher than that of Brazil (~12%), Russia (~18%) or India (~26%) [9–12]. While health spending has increased across the country, there is significant interprovincial variation.

Hospitals are reliant on drug sales which account for over 40% of hospital revenues versus only 9% which come from direct government subsidies [13]. A significant difference between pharmaceutical sales in China compared to other countries is that the majority of medications are purchased in hospitals rather than in pharmacies. In 2012, 69.6% of drugs by value in China were sold in hospitals versus 31.4% in pharmacies [2]. By contrast, in European countries, the hospital drug market represents between 13% and 26% of the total pharmaceutical market [14–16].

Increases in Chinese hospital drug spending have historically been driven by both volume and price increases (Fig. 2) [17]. In recent years, volume growth has exceeded price growth, but prices can still be very high. Some of the growth in drug spending can be attributed to the broadening of insurance coverage and to the increases in average income. However, the 15% mark-up policy has also contributed to expensive and unnecessary prescribing. Furthermore, patients concerned about the quality of domestic generics will purchase more expensive off-patent originators (driving up prices). In addition, pharmaceutical reimbursement policies that are not linked with clinical effectiveness can lead to irrational prescribing or requests for unnecessary medications (driving up volume).

### 2.3. Governance and regulatory structure of healthcare

Responsibility for healthcare is fragmented across a number of ministries, all of which fall under the State Council, China's highest executive body (Fig. 3). The three ministries most involved in healthcare are the National Health and Family Planning Commission (NHFPC), the

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