China's Health Reform Update

Gordon G. Liu,[1] Samantha A. Vortherms,[2] and Xuezhi Hong[3]

[1]National School of Development, Peking University, Beijing 100871, China; email: gordonliu@nsd.pku.edu.cn

[2]Department of Political Science, University of Wisconsin-Madison, Madison, Wisconsin 53706; email: vortherms@wisc.edu

[3]School of Management, Beijing University of Chinese Medicine, Beijing 10029, China; email: hxz_2005@163.com

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Abstract

China experienced both economic and epistemological transitions within the past few decades, greatly increasing demand for accessible and affordable health care. These shifts put significant pressure on the existing outdated, highly centralized bureaucratic system. Adjusting to growing demands, the government has pursued a new round of health reforms since the late 2000s; the main goals are to reform health care financing, essential drug policies, and public hospitals. Health care financing reform led to universal basic medical insurance, whereas the public hospital reform required more complex measures ranging from changes in regulatory, operational, and service delivery settings to personnel management. This article reviews these major policy changes and the literature-based evidence of the effects of reforms on cost, access, and quality of care. It then highlights the outlook for future reforms. We argue that a better understanding of the unintended consequences of reform policies and of how practitioners' and patients' interests can be better aligned is essential for reforms to succeed.

INTRODUCTION

After undergoing economic and epistemological transitions within the past few decades (76, 77), China saw an increasing demand for health care, which put significant pressure on its health care system to become more accessible, affordable, and efficient. Major health care reforms since the late 2000s signaled the central government's commitment to meeting public demand, although the reforms have had mixed success. Institutional legacies from the planned economy concentrate resources at higher levels of the health care delivery system and reduce efficiency (5). This review identifies the institutional consequences of the planned economy that are still evident in today's health care system and discusses the recent reforms oriented at increasing access and efficiency while controlling cost inflation. We evaluate the effects of reforms by analyzing their consequences in medical insurance, service delivery, and drug policies. We conclude by highlighting areas for future research and promising paths for continued policy reform.

INSTITUTIONAL CONTEXT

The planned economy before the 1980s left an institutional legacy of a highly bureaucratic and centralized health care delivery system with resources consolidated in large public hospitals. Public hospitals provide 90% of all outpatient and inpatient services (87), and most of these services are delivered in tertiary hospitals with more than 500 beds. Because there are minimal, if any, gatekeepers to services in hospitals, it is common for tertiary hospitals to provide basic outpatient services on top of broader research and advanced medical services. This expansive service provision, combined with greater public trust in larger public hospitals over local health clinics (4, 16, 17, 60, 87), overburdened public hospitals, creating significant systemic inefficiencies. At the same time as China's economy transitioned away from the planned economy beginning in the early 1980s, the government retreated from the financing of services throughout the 1990s (**Figure 1**) (84). With concentrated resources and a lack of market access and competitiveness, the community-based primary care supply shrank substantially, further exacerbating the deficiencies of the centralized system.

Triggered both by a growing societal discontent and by the 2003 SARS (severe acute respiratory syndrome virus) outbreak, the government pushed a new wave of health reforms, beginning with subnational pilot programs in the years before the national rollout in 2009. In accordance with the 2009 State Council's health reform roadmap (14), policy reforms focused on five major areas, including (*a*) universal basic medical insurance coverage, (*b*) the essential drug system, (*c*) primary health care service provision, (*d*) equitable public health services, and (*e*) public hospital improvements. Over the course of reform implementation, three of the pillars became primary areas for reform: health insurance, drug pricing, and public hospitals. Below we review the English and Chinese language literatures on the impact of reforms in the three primary areas from the perspectives of cost, access, and quality of health care.

HEALTH INSURANCE REFORM AND IMPACT

Prior to reform, the supply side of the Chinese health care system was organizationally highly centralized and relied on rigid institutional arrangements. Service delivery epitomized the structural nature of health care services, with services provided through the public hospital–based system. Government financing for health care flowed through these structures, with a supply-side financing model, where government financial support went directly to public providers, rather than the demand side through medical insurance or subsidies. As a result, the supply of health care

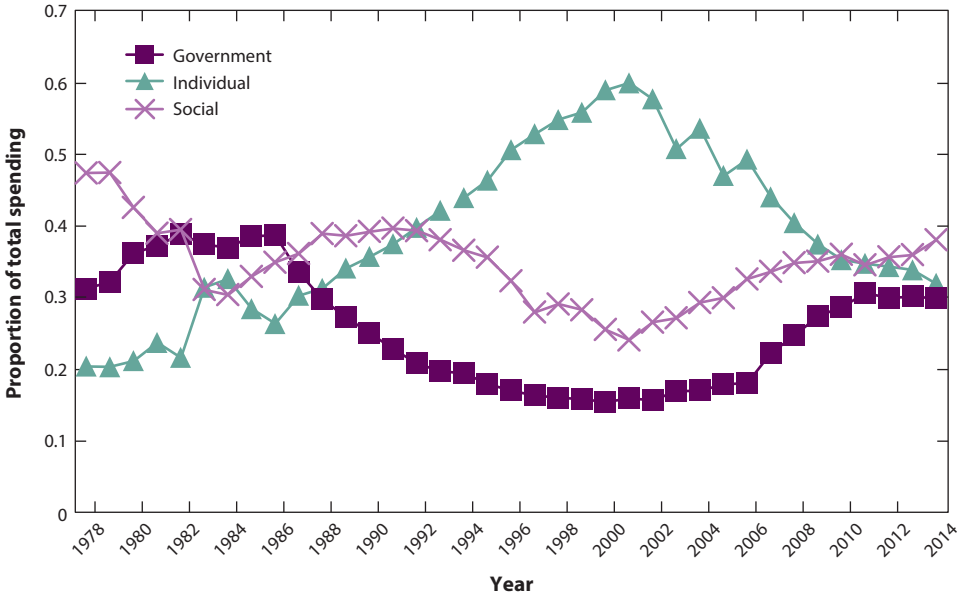

Figure 1

Share of total health expenditures.

services, limited by severe government intervention, failed to meet the growing demand along with the rapid economic and disease transitions (36). Economic growth increased demand beyond the state's capacity to supply health care; in addition, after the epistemological transition when the most significant disease burdens stemmed from chronic rather than communicable diseases, there was a fundamental mismatch between state-provided services and popular need. This mismatch led to increasing patient out-of-pocket (OOP) costs and unmet demand. **Figure 1** shows the peak in individual contribution to total medical expenses in the early 2000s; individual contributions made up 60% of total expenditures, whereas the government contributed less than 20%. Although the government also tried to regulate unit pricing of services to control costs at the same time, the centralized model, from the public's perspective, failed to deliver satisfactory outcomes in terms of cost and access. In response, the current wave of reforms has transitioned the system toward demand-side financing by developing national basic medical insurance programs with significant contributions from public financing. The reforms in insurance policy followed two paths: increasing insurance coverage and initiating provider payment reform. When evaluating reform progress, policies related to health insurance should reduce patient OOP expenses through burden sharing across individuals, social insurance, and government and by reducing perverse incentives for physicians to overprescribe; should increase access by reducing physical barriers to utilization; and should improve quality through better patient–doctor interactions to promote greater health outcomes and improve patient satisfaction.

Insurance Policy Setting

To address the issue of financing, the central government developed a system of universal medical insurance with three major insurance programs: Urban Employee Basic Medical Insurance (Urban Employee Insurance) covering individuals employed in the formal sector in cities;

Urban Resident Basic Medical Insurance (Urban Resident Insurance) for urban residents, defined by household registration status, who are unemployed or who work in the informal sector; and the New Rural Cooperative Medical Insurance (Rural Resident Insurance) for rural residents. The Urban Employee Insurance program provides the most comprehensive coverage; it includes cost-sharing provisions for both inpatient and outpatient services, premiums are based on the level of the enrollee's salary, and the employer provides cost sharing (36). Urban Resident and Rural Resident Insurances are both voluntary programs in which premiums are highly subsidized by the government but coverage remains shallow. In terms of covered services, the Urban Employee Insurance program is most comprehensive for both inpatient and outpatient care, whereas both Urban and Rural Resident Insurance cover primarily inpatient care and some outpatient services for selected chronic conditions. Since 2009, a national reimbursement drug list set 2,349 medicines under regulated price controls (23). Following the most recent policy development, the national reimbursement drug list will be updated by the end of 2016.

Figure 2 depicts the average per-enrollee contributions of individuals and employer/government for the Employee- and Resident-Based Insurance programs, respectively. Spending in all three insurance programs has gone up for all shareholders; the government's and employer's contributions have increased faster than have individual contributions. As discussed above, the overall per-enrollee spending in the employer-based program is much larger than the resident-based programs by an order of magnitude, highlighting the significantly better funding of this insurance program.

As of today, the introduction of the three government-led health insurance programs is widely viewed as the most successful policy pillar, leading to China's universal health coverage. In 2002, less than 10% of rural populations and even fewer urban residents had insurance coverage. Currently, more than 95% of citizens have basic insurance. Furthermore, the government recently called for the development of supplemental insurance for catastrophic conditions. The catastrophic insurance will be developed with premiums drawing largely from residuals from the basic insurance accounts, and its management will be outsourced to professional commercial insurance companies.

Impact of Insurance on Patients

Total expenditures. In the early years of rural health insurance implementation, research showed mixed results, with no significant changes in total expenditures for rural populations (13, 20, 89) and some reductions in expenditures in other studies (25). Less studied are the urban insurance plans, though early and isolated evidence suggests slight decreases in both total expenditures (35) and drug expenditures (96). Although some studies show no impact of health insurance coverage on OOP expenses in either Urban or Rural Resident health insurance (38, 42), some evidence indicates reduced overall OOP expenses in both Rural Resident insurance enrollees (2, 13, 25) and Urban Employee insurance enrollees (34). This mixed evidence is likely due to differences in study samples with different insurance types and inpatient/outpatient variation.

Out-of-pocket. Studies on OOP spending for inpatient treatment show that insurance encourages individuals to go to higher-level care, with an approximate 3% rise in higher-level visits—meaning people go to a county-level health care center rather than a township-level health care center, which is more centralized in the government hierarchy—and stay longer, with a marginal increase of 1.37 days for Rural Resident Insurance enrollees (2), raising the overall cost of care for insured persons (55). These contrasting forces, the increased insurance coverage but more expensive care at higher-level health care centers and greater utilization such as longer stays, drive

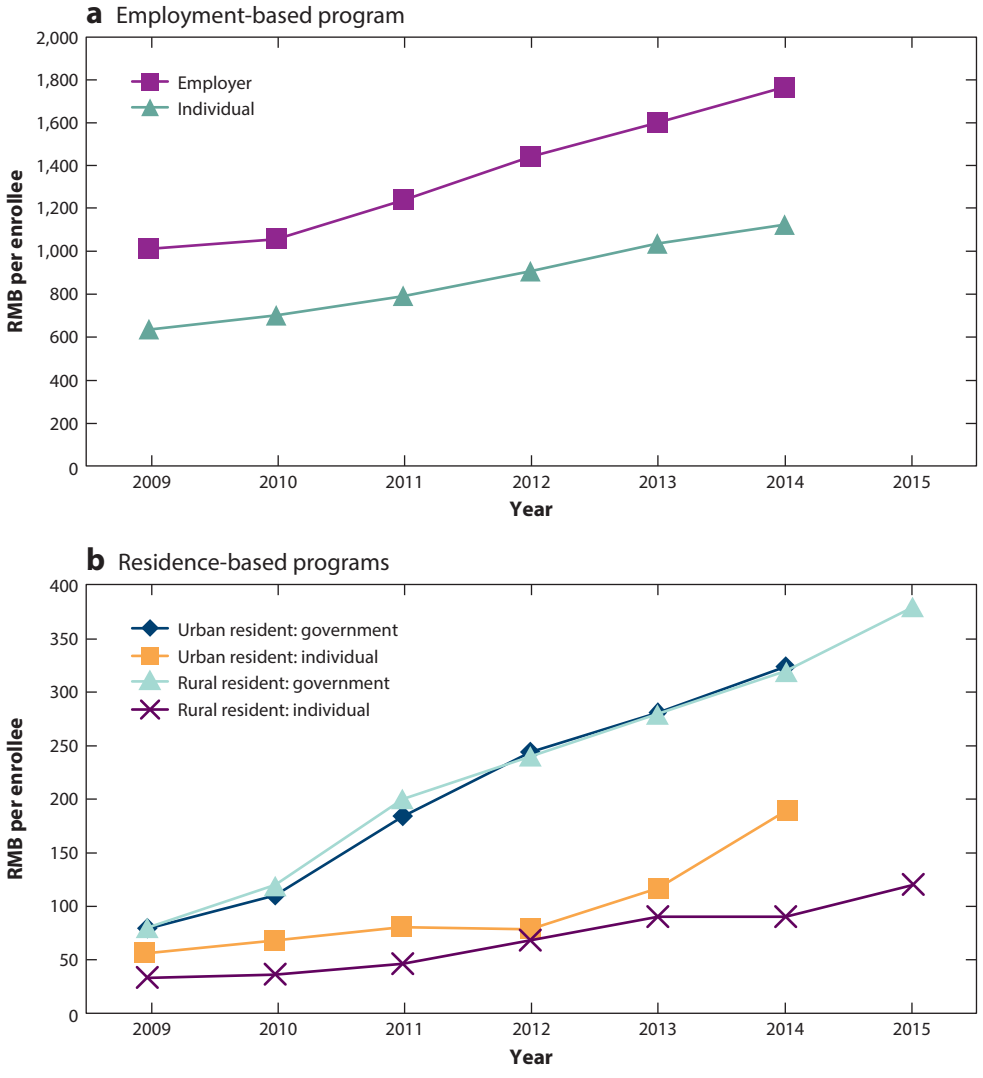

Figure 2

Premium contributions by enrollees and insurance program over time. Panel *a* shows the distribution of financial burden between employers and employees for the Urban Employee insurance program, whereas panel *b* shows the distribution of burden sharing across the two primary actors in Resident-Based insurance. RMB, Renminbi (200 RMB = $29).

much of the variation in research study results, depending on if the study measures burden sharing or total OOP expenses (26, 40, 71), and highlight the need for both cost control mechanisms and careful economic evaluations of the impact of reforms.

The impact of insurance reforms on outpatient OOP payments varies by insurance type; Urban Employee enrollees have seen a decrease by as much as 35.2% (26), whereas Rural Resident enrollees have seen an increase (66). Given that Urban Employee Insurance is more likely to cover outpatient services than Rural Resident Insurance is (28), this finding is not surprising. While poorer and more rural areas saw significant improvements in medical insurance coverage

(9, 88), urban areas and wealthier families continue to benefit disproportionately from insurance subsidies because urban insurance plans provide substantively more coverage (10, 28, 54).

Access and utilization. Overall, insurance improved access to medical care and has increased utilization post reform (7, 13, 66, 88, 99). Although some studies show no significant increases in utilization of outpatient services for certain subpopulations, such as the elderly (34), or decreased usage during the initial implementation in the 1990s (26), the balance of research shows increases in outpatient utilization. Outpatient visits increased by 3.6 percentage points for Rural Resident Insurance enrollees (57) and by 7–13 percentage points for Urban Resident Insurance enrollees (38), and the probability of outpatient treatment increased by 12.6% for Urban Employee Insurance enrollees (34). Additionally, more generous insurance plans, including immediate cost-sharing at higher levels, increased outpatient visits (24, 68, 95). There are significantly fewer studies on inpatient treatment, but insurance coverage has generally increased inpatient visits (89), with significant geographic variation because the magnitude of the impact of insurance is dependent on province (34). Health ministries and governments below the national level have control over policy specifics, such as reimbursement rates and coverage depth, driving significant variation across provinces (28). This overall increase in utilization also drives the increase in overall costs because individuals increase their use of services in reaction to the lower costs.

One of the key goals of insurance is to enable individuals who are sick to seek care on time without underutilization. Although some evidence points to a null effect of insurance on underutilization (7), on average both Urban Resident Insurance and Rural Resident Insurance increased the probability that those who need treatment would seek treatment (13, 22, 35, 96, 98). Additionally, policy variation in cost-sharing (copayment versus reimbursement) does not affect hospitalization rates of those who should be hospitalized (95, 98).

In sum, initial evidence suggests that even though insurance coverage has decreased patients' copayment share, incentivized care has also led patients to seek treatment at higher-level facilities and incur longer inpatient stays, creating a mixed effect on OOP expenses. Therefore, the rise in OOP payments should be viewed with caution because it may partly reflect improvements in access to and quality of care, as well as increased consumption for health along with income growth over time. This issue can be better addressed when more evidence becomes available to document changes in patient welfare and health outcomes. Such studies remain rather limited in the current literature.

On quality, earlier studies using data on the elderly show a decline in mortality rates (25, 27) and an increase in longevity (25) associated with insurance reform, but studies in later years that control for endogenous insurance enrollment show no impact of Rural Resident Insurance on mortality measured for the general, maternal, and child populations (11, 12). Even though enrollees of the Urban Employee Insurance program had the highest levels of self-reported health across multiple household surveys, the introduction of insurance did not have a positive impact on health status (26, 41). According to a national survey of the elderly (China Longitudinal Healthy Longevity Survey) and a multicity survey of de facto residents (Urban Resident Basic Medical Insurance Survey), the introduction of both Rural Resident and Urban Resident Insurance improved self-reported health status (13, 41, 49, 52); in the elderly population, cognitive function and daily activities improved (12). Overall, access to health insurance improves patient satisfaction, although expensive services (12, 50) and variations in policy implementation, including the misalignment between patients' incentives and officials' incentives to implement reform, have both decreased patient satisfaction (58).

Two key areas remain in need of further reform in medical insurance policies: coverage for catastrophic illness and mobility of insurance management across geographic areas. Evidence from

the rollout of the Rural Resident Insurance program suggests that while insurance coverage made small reductions in OOP payments and reduced the severity of catastrophic financial burden (62, 70), these effects are minimal once other covariates are controlled for and, in some comparative cases, are not statistically significant (13, 39). Medical plans still lack sufficient coverage for catastrophic illness (84), and the central government has called for the implementation of catastrophic illness insurance (47). According to the latest government announcement in 2016, catastrophic illness insurance will be paid primarily out of the residual unused funds from the three basic medical insurance programs. In addition, the central government will encourage private insurance companies to play a leading role in managing catastrophic coverage to supplement the government-run basic medical insurance programs.

The second remaining task is the integration of insurance programs both across regions and policies. Currently, policies related to the Urban Employee, Urban Resident, and Rural Resident Insurance programs operate in isolation of each other, creating inequalities in the system across insurance programs. Institutional barriers, such as the household registration system, sort individuals into different insurance types with varying levels of coverage, reducing the equity of the system, and migrant workers, defined as individuals outside of their place of registration, continue to face barriers to using their existing coverage (28, 30, 81, 89, 94, 96, 97). First, recently announced reforms (48) will begin the process of minimizing the differences in funding and functioning of the various insurance schemes, integrating the residence programs, and diminishing urban and rural differences. Although political incentives have increased local officials' drive for implementing reforms (100), more emphasis is needed to align officials' and practitioners' interests with those of the general public. Second, geographic integration is still necessary. Upon initial implementation of these reforms, insurance benefits could be accessed only where the patient was registered. If an individual sought treatment outside the city of registration, they would have to return home in order to claim benefits. The central government has announced reforms (43, 44) to integrate the management and provision of insurance benefits to allow individuals to access benefits nationally, increasing insurance mobility and lowering barriers to insurance use.

Impact of Insurance on Providers

Another key insurance reform is provider payment reform. The prior supply-side system employed fee-for-service (FFS) payments, which created perverse incentives for excessive treatment and overuse of expensive services (83). Although international and domestic consensus indicates that FFS should be abandoned, these reforms have not yet been implemented on a national scale. Province- and city-based reforms have experimented with different kinds of approaches, including capitation, pay-for-performance (PFP), and diagnosis-related groups (DRGs) for inpatient care.

Overall, provider payment reforms helped reduce costs. Switching to PFP alone or in combination with capitation reduced spending on drugs, a primary extractive source of revenue, by up to 25% in small-scale experiments (63, 69) but has not had an impact on drug prescriptions in larger contexts (21, 86). These reforms, however, did decrease OOP payments (21) and total expenses (86).

A study of Beijing's experimentation with DRGs reduced both health expenditures and OOP payments by 6.2% and 10.5%, respectively, without reducing quality, as measured by readmission rates (29). Additionally, provider payment reforms have reduced the irrational use of drugs and antibiotics (63, 86), providing some evidence of improvement in care quality. To date, no evidence has shown that provider payment reforms significantly impact patient satisfaction (21, 86). Although length of stay has decreased (21), provider payment reform has not significantly impacted the number of patients (86), inpatient visits, or outpatient visits above the village level

(57, 69). These results suggests that these reforms have decreased costs and OOP expenses without compromising access or quality of care. Resistance to full conversion to capitation and PFP, as well as perverse incentives to refer sicker patients to higher-level institutions, undermines the effectiveness of financing reform (69). As reform continues, more dedication to provider payment reform is necessary to fully correct the perverse incentives for ineffective medical practices.

ESSENTIAL DRUG SYSTEM AND IMPACT

While government interventions such as price and personnel controls remained pervasive during the 1990s and 2000s, direct government financing decreased to an average of less than 10% of public hospital budgets. This lack of direct funding created significant financial pressures within public medical facilities. Public hospitals were then encouraged to generate income from services to make up for lower government financing. In particular, regulatory policies allowed a 15% markup on drug prices, generating significant incentives for profit-making activities such as excessive treatment and overprescriptions (1). This practice led to rampant increases in both total and patient costs (67, 84) and the inappropriate use of antibiotics (73). In the two decades prior to essential medicine reform, pharmaceutical costs remained consistently over 45% of total health expenditures, well above global averages (59).

Evidence from prescribing behavior before drug policy reform suggests that when faced with prescribing drugs with the same chemical name, dosage, and specification but different trade names and per-unit costs, physicians tended to prescribe the more expensive drugs. Based on weighted volume and price differences of four equivalent specification drugs in Shanghai, the average maximum financial waste of prescribing the more expensive drug ranged from 879,333 to 70 million RMB ($136,330 to $10.8 million) per drug from 2000 to 2008 (6). The perverse incentives that drove physicians to overprescribe expensive medicines also drove inexpensive medicines out of the market (23).

Essential Drug System Reform

Following the 2009 reform announcement, a series of national policies were launched to develop the Essential Drug System, which aimed to improve drug access, quality, and appropriate use. In particular, the Essential Drug List (EDL) was created, including 307 western and traditional Chinese medicines (23). A subset of the National Reimbursement Drug List maintained by the national medical insurance program, the EDL identified drugs of particular importance to primary care services across the country. All public grassroots primary care facilities in townships and counties are required to stock these medicines, and the previously exploited 15% price markup was disallowed. Upper-tier facilities are encouraged, but not required, to follow the policy (46). Provinces are allowed to independently create supplemental lists, providing the system with flexibility to adapt policy to local needs (23, 65). Hospitals are no longer allowed to buy medications directly but instead have to purchase medications through a bidding process managed by the provincial government.

Impact of Reforms

Implementation of the EDL reduced medication prices, especially for proprietary brands, and reduced drug expenditures per visit (8, 19, 78, 80, 90, 93). In a quasi-experimental survey analysis of 55,800 prescriptions in primary care facilities in Hubei province, implementation of the EDL decreased the average cost per prescription [from 26.67 RMB to 44.67 RMB ($4.13–$6.93)] but

did not reduce either prescription of antibiotics or parenteral drug delivery (79). Although early studies suggest decreases in inpatient spending due to EDL implementation (92), later studies suggest an increase in overall spending. In a comparison of two counties in Hubei province, total OOP payments and inpatient spending increased by 5.66% and 28.7%, respectively (93), which suggests that health care facilities and providers shift services to make up for income lost from drug reform. In the same study, average physician service charges and therapeutic service charges increased by 137 RMB and 550 RMB ($21.00 and $85.27), respectively (93). This pattern of decreasing fiscal dependence on drug revenue and increasing dependence on other services and government subsidies is also found in other provinces (75, 90) and in national studies of claims data (82). These studies suggest that increases in provider-induced demand for services are an unintended consequence of reform.

The majority of studies on EDL policy focus on the impact of drug policy on primary care institutions, which are the focus of initial EDL implementation and are currently required to implement the EDL policy. Upper-level institutions are encouraged to apply the zero-markup policy and prioritize essential medicines but are not required to do so. In a 2012 study of prescriptions from hospitals in Guangdong province, tertiary hospitals enjoyed significant financial gains from nonpriority essential medicine use and prescribed fewer essential medicines than did lower-tier hospitals, although part of this difference is likely caused by tertiary hospitals treating more complicated medical cases as well as providing primary care (91).

Some evidence indicates that the EDL policy improved the quality of services by improving the appropriate prescription of medicine, although overprescription remains a problem (61, 78). The literature on the impact of reform on antibiotic use is mixed; some studies show no impact of reform on the number of prescriptions with antibiotics (8, 79), whereas other studies suggest a slight decrease in the number of prescriptions (from 60.26% to 58.48%) (61). This discrepancy may be the result of sample differences, with the national study showing a larger effect. Concerns of reduced quality have been raised, although little to no research has evaluated the impact of reform on quality.

Overall, reforms to drug pricing and the implementation of the EDL appear to decrease drug cost inflation for both overall and OOP expenses, but shifts toward service-based charges and therapeutic services may undermine the systemic benefits of reform. These findings suggest that although some drug prices have decreased, the interventions may incentivize practitioners to shift care to other services with greater financial gain, leaving little impact on overall cost of care. Given the disruption of the market for drug purchasing, serious concerns remain regarding the quality and accessibility of drugs. When sheltered from market competition, pharmaceutical manufacturers who win below-market value bids for drug production are likely to reduce either quality or quantity.

One of the most critical remaining challenges is access: Evidence suggests that EDL policy reduced the availability of essential medicines (82). Using the World Health Organization/Health Action International standardized protocol to study drug availability in pharmacies, longitudinal studies find a significant decrease in drug availability in Shaanxi, especially among EDL drugs (19, 31, 32). Existing research shows that the reduction in quantity is a serious unintended consequence of Essential Drug System reforms, and media reports of low-quality medications highlight the potential dangers of isolated drug reforms.

PUBLIC HOSPITAL REFORMS AND IMPACT

As noted above, public hospitals dominate health care delivery in China (53, 87). Because of institutional legacies from the planned economy era, the 1980s saw many grassroots health clinics

shutter, and hospitals took on the load of all outpatient services in addition to inpatient services. Because China has no referral system, patients can go directly to the hospital for all outpatient care, meaning specialists in large hospitals must see 60 to 100 outpatients in the morning, on top of their traditional specialist practice. This led to increasingly long lines and wait times, which in turn created an informal market for people who would wait in line specifically to sell their place in the line, thereby increasing costs and decreasing access to health care. The forced rationing of practitioners' time in primary care also created great distrust between patients and doctors: With heavy caseloads, doctors had only a few minutes for each patient, with minimal technical assistance rather than full communication. Beyond issues of misdiagnosis, the limits on communication led to intense conflict between doctors and patients, a significant societal issue across China.

Before China's economic reform, health care and hospitals were managed through a centrally planned bureaucracy; the provision of services and finances was dominated by the state. After economic reform, government funding for hospitals decreased even though the central-planning restrictions on personnel management and payment systems, as well as management and oversight, remained. Public hospitals are accountable to several hierarchical government organizations and lack independent authority over human resource management and fee schedules, while the same bureaucracies both operate and supervise hospitals, creating the potential for regulatory capture (1). Since 2000, many hospitals have consolidated, creating more larger hospitals and fewer township and village clinics (3). Larger hospitals, because of their wider purview including comprehensive primary care and research, are seen by the general public as providing higher-quality services (4, 16, 17, 60, 87), which increases demand for their services. This perception creates a vicious cycle of supply and demand that concentrates at the top of the supply hierarchy and overburdens large hospitals.

Following national policies issued by the State Council in 2015, public hospital reforms in the next five years will be centered on several key tasks. First, the public hospital governing system will be reformed by separating the regulatory authorities from the operational management entities. By clearly defining the line of authority and accountability between government regulatory and management parties, this task intends to provide public hospitals with greater management autonomy to increase efficiency while ensuring that the public benefits—the central objective of public hospitals.

Second, a new set of operational mechanisms for public hospitals will be established to focus on changing revenue sources. In the past, financial revenues for public hospitals came primarily from direct public financing, service charges, and the 15% markup on prescriptions. The new policy calls for increasing the first two sources while eliminating the last one, with the hope of improving the quality of care and controlling cost inflation.

Third, payment reform will be accelerated toward more efficient approaches such as DRGs, global budget, or capitation. There is a wide consensus among health economic researchers that the ultimate solution to rationalize hospital behavior comes from alternative payment approaches that align the interests of both patients and medical providers. Provider payment reform is essential to achieving this goal.

Fourth, reform called to change the income policy for physicians to be more commensurate with the characteristics of the medical profession. Changes would consider the nature of services with long periods of job training, high risk levels, uncertainties in advancement opportunities, and heterogeneity in career outcomes. The current income policy for physicians in public hospitals is a rigid tenure system with tiered wage structures that are based on administrative formulas. The reform policy is intended to improve the overall level and equity of income between tenured and nontenured positions on the basis of service performance, leading to better service quality and patient satisfaction.

Fifth, nonpublic forces are encouraged to participate in the supply of medical services in general and in public hospital reform specifically. Priority will be given to the development of not-for-profit medical providers. Considering the domineering power of existing public hospitals in the market, the policy specifically gives priority to private investors in the competition for new hospital projects subnationally.

Sixth, reform seeks to establish a gatekeeper system for care-seeking to optimize resource allocation. In particular, it calls for downward allocation of tertiary hospital-based resources toward community-based primary care facilities. This initiative will involve favorable changes in both insurance policies and human resources in support of primary care development.

Below we review three major reform areas with relatively consistent evidence available in competition, management separation, and physician multisite practice reform.

Market Entry and Competition

Many scholars and bureaucrats resisted private competition in the health care service delivery market for fear of increasing costs brought on by market forces and asymmetric information (where different actors have different types and levels of information) (16, 85), but studies suggest that greater competition either has no impact on cost of care or may even decrease costs. For some services, private hospitals were no more expensive than public hospitals (15, 18, 37, 74), and greater competition with more private hospitals led to lower outpatient costs (37, 53). Yearbook data on inpatient expenditures suggest that increased competition, calculated on the basis of private hospital discharge data, is not correlated with either increases or decreases in inpatient costs (37). When competition is measured as hospital market entry and market concentration, drug expenses as a percentage of total expenses for both inpatient and outpatient services are unaffected (53), suggesting that hospital providers are not reverting to destructive money-making techniques through excessive drug sales to make up for competitive pressures.

Initial evidence does suggest that greater competition and private hospital ownership improve health care quality. On the basis of data from an urban resident survey, patient satisfaction is higher in privately owned hospitals (15, 33). Although competition in the hospital market did not reduce emergency room mortality or inpatient mortality rates, it did improve observation room mortality and outpatient wait times (53).

Overall, little evidence from the literature has suggested that increased private entry and competition in the hospital market lead to higher total costs; instead, these actions may decrease outpatient costs. Additionally, initial evidence suggests improvement in quality through improved patient satisfaction and a potential for reduced mortality.

Separation of Regulations from Operations

The bureaucratic structure of China's health care system leaves hospitals under the purview of several bureaucracies. For example, personnel management within hospitals is managed by the Ministry of Health, the Organization Department of the Chinese Communist Party, and the Ministry of Human Resources and Social Security, three organizations with often competing interests and mandates (51), thus diluting the lines of authority over operations management. This organizational structure creates a lack of flexibility and, because the management of public hospitals is governed by bureaucratic entities, the organization of hospitals is aligned to meet bureaucratic interests, which are often political rather than focused on positive health outcomes (51). Beyond the issue of institutional flexibly is the issue of regulatory capture. The same government ministries are responsible for regulating and managing hospitals, which creates barriers to market competition

and exacerbates inefficiencies and perverse incentives for mismanagement that lead to escalating costs and a shortfall in service supply (51).

Significantly less research has studied the impact of separation reforms in China (72). One study (51) identifies the forms of separation reform in three cities in China—Weifang, Shandong; Wuxi, Jiangsu; and Suzhou, Jiangsu—whose strategies range from "significant separation" of management and supervision to "full separation" (p. 2). In their study, the authors compare health care access indicators measured through beds, health workers, and number of doctors before and after reform through a difference-in-differences design with hospitals in nonreform cities as the control. In general, they have found increases across all three indicators, and the impacts increase over time. Although still in its infancy, research on hospital management suggests that reforms could increase access through increasing the number of service providers. More research is necessary to determine the impact of these reforms on costs and quality.

Physician Multisite Practice

There are two general approaches to public hospital reform; both aim to disaggregate service provision to lower-level primary care facilities. One approach argues for greater government intervention on the demand side by regulating insurance payments or patient copayments in favor of patients using the lower-level services. The problem with this approach, however, is that it ignores the supply side of practitioner distribution, which will remain centralized in larger hospitals. If most high-quality practitioners are still concentrated or constrained in big hospitals, then the impact of such an intervention would be limited to demand side only, changing care-seeking patterns but not improving supply.

The alternative argument is to focus more on supply-side reform or personnel management reform. If physicians are free to choose an option similar to that of the office-based practice found in many international settings, rather than being limited by hospital-specific licenses, the system would be able to develop a greater capacity to supply quality services at the lower levels. If qualified doctors are allowed or encouraged to leave hospitals for grassroots primary care practices, then the demand will follow resources. Local general practitioners should be more effective at providing primary care at outpatient clinics, which would improve the overall quality and efficiency of health care.

Some critics may argue that this increase in market influence may increase costs owing to profit-driven practice and asymmetric information, but the preliminary evidence presented above suggests that health care quality would not suffer with increased private entry and competition. In fact, preliminary evidence from reform trials in the city of Kunming suggests that physician multisite practice increased facility revenue and increased patient visits to lower-tier hospitals (64). Multisite practice reform (45) is the first step toward a freelance model for primary care; such a direction is, in our opinion, one of the best routes to developing a more efficient and higher-quality supply system with more physicians practicing primary care in community-based outpatient clinical settings.

CONCLUDING REMARKS

China's transition to a market-based economy was not accompanied by a full shift of service provision based on market competition and value assessment. Even though a fully free-market setting may not be ideal for both the demand and supply sides, the Chinese health care system would likely benefit more from at least a partial increase in market forces in service supply to provide greater efficiency and systemic improvements in access, quality, and cost of care.

There is room for greater market influence in spheres such as the factors of production market, including the market for the inputs of medical services. When public hospitals purchase drugs from pharmaceutical manufacturers, there is little information asymmetry or uncertainty: Because drug products at this stage are nonindividualized because patients are not yet involved, drugs are essentially a standardized good. In this context, market forces should provide more optimal outcomes following economic principles for price, quality, and quantity. To this end, greater competition should be allowed in the pharmaceutical purchasing process, as opposed to government controlled operations. A more competitive market would help alleviate the serious problems with drug quality and quantity that are faced by the current system.

Appropriate government interventions may be warranted to help deliver better outcomes where the market for clinical services lacks standardization or is highly individualized and where information asymmetries exist between providers and patients. Government interventions can increase efficiency and reduce costs if they focus on two areas where the government maintains a comparative advantage. First, as China initiated a government-led universal health insurance system, it can and should take advantage of the significant population claims data to formulate efficient, outcomes-based prospective payment contracts with providers. Such payment contracts would allow providers to benefit from revenue residuals while being held accountable for care outcomes, incentivizing providers to offer adequate types and levels of services for the sake of patients. Second, government interventions can also employ a systematic analysis of claims data and regularly publicize per-provider statistics of both cost and health outcomes to empower patients and payers with more symmetric information and more choices, which are essential for engaging value-based competition for optimal care outcomes (56). With China's growing big data and information technologies, one can hardly overestimate the potential impact of such powerful interventions on care quality and cost management.

Structurally, significant work is necessary to break down the aggregation of resources in the public hospital system. As discussed above, one of the greatest challenges faced by the Chinese system is the highly concentrated allocation of supply-side resources at the tertiary public hospitals. Of all the necessary initiatives, the most crucial is the decentralization of human resources by detaching physicians from hospitals and allowing them to become societal assets through community-level, office-based care, while allowing hospitals to concentrate on specialty and advanced care in line with their comparative advantages. Only by focusing on strengthening physician office-based primary care can public hospital reform accomplish the intended goals by 2020 as laid out in China's 13th Five-Year Plan.

Reforms should be approached systematically. Initial reforms of the early 2000s isolated individual system-level problems, such as the overprescription of drugs, but failed to consider the responses of different stakeholders to policy settings with different incentives. Future reforms should evaluate perverse incentives offered to health care facilities and medical professionals, where the most central and challenging task is to develop optimal payment policies that align with the mutual interests of patients and physicians. Shortsighted reforms with narrow foci can undermine any cost or quality gains, creating unintended consequences and new problems for future reforms to resolve.

Finally, following the recent National Congress of Healthcare and Health in August 2016, the Chinese government reshaped the state health reform to include health promotion as a significant addition to the conventionally medicine-focused policy approach. The roadmap from the 13th Five-Year Health Reform Plan and the roadmap from the 2030 Health China campaign both make strong calls to shift the current health system from a disease-centered to a health-centered model. To accomplish this necessary transition, the government calls for not only further reforms of the health care sector, but also the involvement of many other sectors, including the environment,

education, culture, and sports ministries. Conceptually, this policy change correctly identifies that disease treatment is never independent from health promotion, offering great potential to improve the overall efficiency of the health system through more optimal allocation of resources toward health. Practically, however, one should not underestimate the challenges in determining how to incentivize and engage ordinary people and different stakeholders to join the national campaign to promote greater health and wealth.

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