

*Stanford University*  
*Walter H. Shorenstein Asia-Pacific Research Center*  
*Asia Health Policy Program*

*Working paper series*  
*on health and demographic change in the Asia-Pacific*

# **Perverse Incentives in the Chinese Health System and Assessment of the April 2009 Reform**

**Megan Bruce**, Oxford University, Department of Public Health Economic Research Centre

## **Asia Health Policy Program working paper #18**

October 2010

<http://asiahealthpolicy.stanford.edu>

For information, contact: Karen N. Eggleston (翁莹和)  
Walter H. Shorenstein Asia-Pacific Research Center  
Freeman Spogli Institute for International Studies  
Stanford University  
616 Serra St., Encina Hall E311  
Stanford, CA 94305-6055  
(650) 723-9072; Fax (650) 723-6530  
[karene@stanford.edu](mailto:karene@stanford.edu)

**Perverse Incentives in the Chinese Health System  
and Assessment of the April 2009 Reform**

Meghan Bruce

Oxford University

Department of Public Health, Health Economics Research Centre

[meghan.bruce@dphpc.ox.ac.uk](mailto:meghan.bruce@dphpc.ox.ac.uk)

## **Abstract**

Since 1978, China has been primarily market-focused in its provision of health care and social services. The market-driven health care system has been characterized by perverse incentives for individual providers, patients, and hospitals that are inducing improper provision of care: overprescription of pharmaceuticals and high-tech testing, lack of effective primary care and gatekeeping, and competition for patients instead of referral. The national health care reform document that was made public in April 2009 recognizes this failure of the market in health care in China. The document suggests potential policies for improvement on the current system that are focused primarily on a targeted increase in government funding and an increased, changing role for the government. We assess the potential of this national health care reform to achieve the stated goals, and conclude that the reform as designed is necessary but insufficient. For the reform to meet its goals, the promised increase in funding should be accompanied by improved data collection, regional piloting, and a strong regulatory and purchasing role for the government in aligning incentives for individual and institutional payers, providers, and patients.

## **Background**

In the 1970s and 1980s, China received a great deal of international acclaim for the success of its health care system in providing effective, prevention-focused care while maintaining system costs at low levels[1, 2]. However, much of this success was built on the “barefoot doctor” system that had come into being in the 1950s after the birth of New China. This system relied on doctors with limited training who provided preventive and primary care and limited pharmaceutical treatment to most of the population. Nearly universal coverage was achieved within this system at relatively low cost due to the minimal need for administration and physician training. Although the success of the barefoot doctor system was acclaimed into the 1980s, from 1978 Deng Xiaoping, the then-leader of the People’s Republic of China, ushered in a new era of market-driven reforms across all sectors, including health. These reforms shifted the focus of care away from the strengths of the barefoot doctor system and toward the influence of the profit-driven market. Slowly, the health system was transformed into what some analysts have described as an inequitable and incoherent “position of benign neglect” by the government [3].

The Chinese health care system from 1978 to today is best described as a “large-scale natural policy experiment on private financing” [4]. This so-called experiment was successful in decreasing the financial burden on the government but was characterized by the failings that are typical of privately financed systems. These failings included high levels of out-of-pocket payments, inequity of access, and reduction in utilization, due to financial barriers on the demand side and weak purchasing and supplier-induced demand (SID) on the supply side, along with increasing costs. In recent years, these failings have fueled frequent protests at the grass-roots level with the common slogan, “It is too difficult and expensive to see the

doctor” (“看病难, 看病贵”). Pilot projects and smaller-scale reforms, especially the incremental expansion of social health insurance, have been attempts to improve and realign incentives. However, the reform discussions that began in 2003 did not yield a major systemic change until April 2009 [5].

The main goal of the new health reform plan announced by President Hu Jintao in the spring of 2009 is to return to some of the strengths of the earlier barefoot doctor system (prevention, primary care, and evidence-based pharmaceutical use). The reform tries to reprioritize these strengths and improve upon them by including private sector management and efficiency focus alongside public sector stewardship and equity or quality assurance. This new reform plan is a clear acknowledgment that the market alone has not been effective at providing health care, and suggests ways for public players to take a more present role in the areas of insurance, purchasing, provision, and regulation. The reform plan as published by Beijing in April 2009 includes broad policy goals and vision statements on which citizens and policymakers alike can easily agree (henceforth, “The Reform Document” refers to this document in both the Chinese and English versions) [5]. While this bold statement for reform is an important step toward achieving a collective vision, the 27 accompanying policies and further statements will need to provide clear plans for regional and local implementation strategies in order for the goals of the reform to succeed.

Financial barriers and improper provision of care are the major obstacles facing the Chinese system in its efforts to ensure efficiency, cost control, and access for all [6]. This paper begins with an analysis of the incentives that induce improper provision of care in three areas: overprescription of pharmaceuticals and high-tech testing, lack of effective primary care and gatekeeping, and competition for patients instead of referral. This paper then assesses the inadequacies of The Reform

Document to account for systemwide implications of policies, regional differences in both demand and supply, human resource structure, and payment in addressing these perverse incentives. Finally, the author recommends strategies for achieving several goals: improving availability and transparency of data collection on providers and populations, accounting for system and regional implications of policy implementation, and focusing government efforts on effective purchasing and long-term human resource training to control costs.

## **Methods**

This critical analysis required obtaining information about a topic that is underrepresented in the English-language literature. First, the author performed a systematic review of the existing English-language literature on the Chinese health care system and recent reforms. The search terms “China + health + care,” “China + health + finance,” “China + health + reform,” and “China + health + incentiv\*” were used in the following databases: London School of Economics CrossSearcher (Economics + Government + Health / Bioscience + Social Policy), Global Health, and Web of Science in July 2009. Only papers that were published after the year 2000 were accepted. Further papers were identified from references cited in relevant papers and reports. Second, the author referenced some reform-related documents and academic papers in the original Chinese (obtained through recommendation and systematic search of the China National Knowledge Infrastructure database), utilizing Mandarin language skills to broaden and deepen the analysis. Third, the author performed interviews with experts Winnie Yip, from Oxford University, and Shanlian Hu, from Fudan University, both of whom are specialists on the Chinese health care system and who recommended further papers for reference in addition to providing their expert insights.

This methodology is characterized by the limitations typical of a literature review, i.e., examining presumed problems and reforms in the health care system without collecting and analyzing primary data to prove the existence of the problem. This limitation is compounded by the fact that primary data and statistics that are available from China, even from official sources, are often of uncertain validity [7].

## **Results**

### **I. Impact of incentives: Overprescription of drugs and high-tech testing**

As the market reforms began to take effect, the Chinese government set prices for basic care below cost in order to maintain a low cost of care to the patient at the point of delivery and to ensure access for the poor. At the same time, there was a gradual shift in hospital financing from a 50% government provision of public hospital revenues in the 1980s to only 10% in 2000 [8], though these hospitals continued to be called public. This reduction meant that public hospitals, the large majority of hospitals in China, were forced to operate like for-profit private providers in order to generate sufficient revenue [9]. With artificially low prices for basic care set by government regulation, providers were encouraged by a policy that allowed a 15% profit margin on drugs to use pharmaceuticals to cross-subsidize the below-cost pricing for basic services. Although the intent of the 1978 reform was to increase access, providers sought instead to increase utilization of high-revenue services such as pharmaceuticals and high-technology testing, creating inequity of finance and barriers to access [10]. This regulation-induced incentive to increase prescribing was added to existing incentives from the market, i.e. pharmaceutical companies often share profits with prescribers, physician bonuses from their clinical department may be based on how much revenue their services generate [11]. It has been argued that

high levels of SID have ensued due to these “perverse incentives to overprescribe drugs and high-tech diagnostic services and procedures.” [9]. Today, it is estimated that at least 30% of drug spending in China is on unnecessary prescriptions [12].

The change in prescription habits resulted in a dramatic shift in the cost structure of care, with a near fourfold increase in per-capita pharmaceutical consumption from the start of the market reforms to 1992 [11]. By 2003, national pharmaceutical expenditure represented almost half of the total health expenditure, three times the average in OECD (Organisation for Economic Co-operation and Development) countries [13]. In parallel to drug prescription, high-technology procedures have similarly increased in volume due to the high level of revenue generated by each test. “...The fierce ‘medical arms race’ has caused the centralization of physicians and an abundant supply of high-tech and expensive medical equipment and facilities in metropolitan areas” [4].

Beginning in the early 1980s and continuing until today, many reforms have attempted to reduce pharmaceutical expenditure and overuse, although Chinese pharmaceutical policy has generally not been very transparent (W. Yip, personal communication, 2009). The essential medicines list (EML) concept was one of the earliest of these attempts, rolled out in China nationally in 1982, followed by the first regional list in Shanghai in 1993. The EML has the potential to be used for guiding hospital purchasing and physician prescribing on the supply side and selective reimbursement on the demand side; as the examples of India and Yemen suggest, the EML can be a simple and effective policy tool for improving incentives for both patients and providers [14,15]. However, in China, there is no enforced link between EML-based prescribing and provider payment. Because of this missing link, there has been little reason for providers to change behavior and apply the EML



recommendations to their practice, which would likely entail a decrease in income. On the demand side, until recently, high levels of out-of-pocket (OOP) payment for health care (60.5% of total health expenditure in 2001 [16]) have been coupled with a lack of insurance. This connection meant that limiting reimbursement to EML drugs was not a powerful demand-side control. The ongoing expansion of social health insurance (SHI) programs may help to improve demand-side incentives for use of EML drugs by reducing OOP expenditure while restricting reimbursement to these products. However, as structured, SHI schemes focus primarily on alleviating catastrophic, inpatient expenses, so OOP payment for outpatient prescriptions will likely remain high and thus may not benefit from this potential control.

Another attempt at reform of pharmaceutical expenditure was a tiered price-capping system. This retail-level price control over a selection of pharmaceutical products was instituted in 2000, and Meng et al. measured the impact of the policy in two hospitals in 2005. They found that its implementation resulted in an increase, rather than a reduction, in expenditure, caused by an increased volume of prescriptions overall. “Market drugs” that were not included under policy price controls showed a disproportionate increase in utilization as well as increased postreform prices. Meng et al. critique the policy, noting the following

Expenditure is a function of price and volume, but the regulator has control of only one component, the price... Given a price-elasticity on the demand side, the use of price controls is unlikely to lower demand. People who pay OOP are currently the dominant financiers of the Chinese health system and they are not well organized enough to exert sufficient pressure to contain the gaming responses to price controls. [17]

Among a variety of further explanations cited to explain why these and other reforms have not yet been successful in controlling SID, the most important is unreliable institutional financing: “Barriers to rational prescribing [are] imposed by current hospital funding arrangements, which rely on maximizing drug sales profits”[11]. Pharmaceutical sales are the main source of income cross-subsidizing basic care at the hospital level. Without a loosening of the government price controls on basic care for all hospitals, it is difficult for individual hospitals to simultaneously address overprescription and remain financially viable: “The survival of Chinese public hospitals relies on market revenues” [17]. Though the market is dominated by so-called public hospitals, these hospitals must still operate with an eye on their bottom line.

A rethinking of the government controls on service pricing and hospital or physician payment is necessary to address the root incentives that induce this perverse behavior. Eggleston suggests that the expansion of social health insurance in China, combined with the increased availability of health care technologies, will result in increased pressure on the government to address supplier-induced demand [18]. As has been the case in Taiwan and Korea, government action will likely include more strict separation of prescribing and dispensing, which is intended to decouple the link between provider income and levels of prescription. In the absence of such government action, SHI could quickly become unsustainable, due to SID in a system where consumers are protected from the full costs of treatment and where the cost of care is increasing. Beyond the hospital level, individual physicians accustomed to seeking utility from profit will also need to shift priority to patient benefit–derived utility [12].

## **II. Impact of Incentives: Lack of effective primary health care and gatekeeping**

Without effective, high-quality primary health care (PHC), the implementation of a gatekeeping referral system to secondary and tertiary care is impossible and inefficient. Currently in China, profit-seeking behavior along with low quality and number of primary-care physicians are obstacles to achieving gatekeeping.

Since the beginning of the market reform period, hospitals able to independently generate revenue were the institutions with the means to spend money on and invest in developing services. While this fact has resulted in a proliferation of high-tech equipment in some provincial-level hospitals in eastern China, rural hospitals in less prosperous areas have seen a dramatic decrease in the services that they are able to provide and, as a result, in their ability to compete. Doctors at these lower-level hospitals, who were the chief means of execution for public health policies within the barefoot doctor system, have been unable to truly engage in good PHC, including preventive medicine, and to maintain functions such as immunization: “Preventive medicine...became profit driven. Public education and infectious disease monitoring are unprofitable and therefore largely ignored” [4]. Even the Center for Disease Control and Prevention has become a profit center, shifting its focus from prevention to outpatient care. Village doctors who are unaffiliated with hospitals and who focus on home care have been cut loose from the government support system to become freelance for-profit providers, taking a majority of their income from pharmaceuticals. As a result, the primary-care system has suffered in quality and in patient perceptions and levels of utilization [12].

Quality issues in primary-care facilities and hospitals are another barrier to patient buy-in to the PHC system: “Relative neglect of township and district level hospitals...encourages patients to bypass local services and further weaken local hospitals” [7]. The patients are facing below-cost prices for consultations at all

levels of care, so price signals do not function to deter them from overuse of nonprimary care. Paying OOP and wanting to get the best value for their money, patients can and do go directly to the best hospital available. In 2005, Tier III hospitals (the highest level of care) received 18% of patient visits despite representing only 1.2% of the total hospitals in China [19]. This behavior further reduces the revenue of local primary- and low secondary-care facilities in underserved areas. Given the government commitment to universal SHI, patients' use of primary care could be incentivized through external controls restricting insurance-based reimbursement to care that is obtained through primary-care referral channels. These controls have been missing due to low levels of insurance coverage in the population.

Improving incentives for patients and the quality of already practicing doctors will not solve the third fundamental obstacle to effective PHC and thus gatekeeping: the lack of primary-care physicians. For example, in the Ningde City administrative region, 391 of the 2200 villages had no doctor, and 140 had a barely functioning village doctor, leaving almost one quarter of the population unable to immediately access primary care [20]. This situation is common particularly in rural areas, where providers generally do not choose to live unless they are native to the local area, so the quality of the limited supply is very low. Township hospitals are likely to become the postreform providers of rural primary care, and yet more than 70% of these physicians had only a high school-level education or even less (P Nowlin, personal communication, 2008).

Because changes in the structure of care provision were seen as a natural result of the market reforms in 1978, subsequent reform designed to address the absence of gatekeeping has been limited. However, increasing anger among the populace at

the decreasing quality of patient-provider relations and oversubscription of Tier III hospitals drove the government to act. In the Reform Draft Plan of 2008, the government described its commitment to return to the primary community-based care of the barefoot doctors through focused investment in community hospitals and rural clinics, which would take on a gatekeeping role [21]. In order to achieve gatekeeping, changing the incentives for patients is a prerequisite. If only SHI patients who progress through the recommended chain of referral are reimbursed, while quality and availability of PHC are being improved, patients will be encouraged to adhere to the new plan: “Patients are more willing to accept new ‘rules of the game’ when the rulemakers are the ones footing the bill”[18].

### **III. Impact of incentives: Competition for patients instead of referral**

Within a gatekeeping system, the quality of care at a hospital is the primary determinant of referrals. While patients in a general practitioner (GP)-based system are often allowed a choice of GP, it is assumed that patients will establish a relationship with a given practice and then, if the service is satisfactory, will maintain that relationship. In theory, this system allows hospitals and practitioners to focus on provision of quality care without needing to advertise, while allowing patients to receive continuity of care and have a long-term relationship with their agent. The lack of enforced gatekeeping in China (as described in Section II) has decreased or eliminated the role of primary-care physicians in aiding patients to choose high-quality hospitals. Instead, patients are free to seek the hospital that they believe meets their need for care, the choice of which may be based on convenience, cost, or a variety of other factors not correlated with quality. Within the existing system, which is characterized by a lack of gatekeeping combined with high levels of OOP financing, hospitals have a strong incentive to actively compete for high-revenue patients, those

who have levels of income that allow them to purchase expensive imported drugs or higher levels of “hotel services” (private rooms, food quality, and so on).

In much of Asia in the past and in China today, the lack of a gatekeeping system means in part that providers are often motivated by a “spot-market” exchange rather than a relational one. Without the relationship-based barriers to overprescription that are inherent in an effective, relational principal-agent contract, providers in spot-market exchanges emphasize income-derived utility over patient benefit-derived utility [18]. Because the patient will often choose to “exit” the relationship for reasons unrelated to quality of care, the provider tries to achieve the maximum utility from income (i.e., prescriptions and high-technology testing) rather than from patient benefit. This principle is especially important in China, where about 85% of prescriptions are filled at hospital pharmacies [17] and profit margins for pharmaceuticals are high (see Section I), so prescribing quantities are directly proportional to provider income.

Similarly, each time that patients need treatment, they are faced with a consumption decision about where to access the system. Because patients in general cannot accurately assess which hospitals provide high-quality care even with the aid of quality reporting data (which are frequently underused or misunderstood) [22], decisions are often made based on information in the public realm. This information includes direct-to-consumer advertising by the hospitals, on billboards, and in newspapers: “Patients assume that hospitals with advanced diagnostic equipment provide better-quality care...therefore, hospitals actively purchase innovative, advanced medical equipment to compete with each other and attract more patients” [4].

In parallel with the nationwide efforts toward modernization, quality is often understood synonymously with high technology, so hospitals feel justified in making such equipment investments, seeing them as both good marketing and good clinical improvement even though the result may be a regional excess of equipment and overspecialization [7]. Meanwhile, these advanced machines must be utilized at high rates to provide a good return on the investment, further driving the SID described in Section I.

This hypercompetition has resulted in a decrease in allocative efficiency in the use of hospital budgets and in patient dissatisfaction with the quality of care. “Competition through marketing may encourage over-capitalisation and reduced productivity” [7]. The excessive use of funds for non-health care services (e.g., advertising and public relations), as well as on “unnecessary” medical equipment, reduces the budget that is available for ensuring patient care standards. Dissatisfaction is not limited to the “losers” of the system; “...The entire population—even the rich—is unhappy with the current system, which has not elicited trust in quality, reliability, honesty, and client orientation” [23]. There have been limited attempts to reform the level of competition. However, the planned increase in community hospitals described in Section II will likely help to address this issue. The community hospital should serve as an independent referee to direct patients to secondary and tertiary care. While community hospitals may be affiliated with a particular hospital, one would expect that the reputational and business implications of referring returning patients to poor-quality hospitals would be strong enough to deter perverse behavior by the gatekeepers. Similarly, secondary and tertiary care providers would be incentivized to provide better care on a regular basis in order to attract the repeat business of PHC providers. If gatekeeping is coupled with primary-care fund-holding, as it is in the

United Kingdom, this strategy could also reduce unnecessary referrals and overuse of nonprimary care.

#### **IV. Potential of the Reform**

The Reform Document of April 2009 is the long-awaited acknowledgment of the failure of the market in health care in China. The redefinition of the role of the government that this acknowledgment encompasses fits into the larger movement of the Chinese state toward a moderate presence in the life of its constituents for provision of public services. This balance has been found after the extreme swing from socialism in 1949–78 to the highly market-oriented decades of 1980 to the present, the latter period characterized by a near absence of social welfare programs. As the Minister of Health Chen Zhu stated in the article by Cheng, the government has committed to taking the lead in the health care sector “...in overcoming the failure of the market to provide health care and insurance efficiently” [24]. Whether that role will be as the sole provider or at the heart of a mixed system remains unclear.

The 850 billion RMB in reform funds will be directed mainly to five projects, though many other areas are touched upon in The Reform Document. These key projects are as follows: expanding SHI with a target of universal coverage by 2011, setting up an EML system and reforming the pharmaceutical market, solidifying and expanding the primary health care system and facilities, equalizing the public health coverage across regions, and piloting public hospital reforms [20]. At the heart of this reform is the recognition of the need to return to the benefits provided by the barefoot doctor system. However, that system should not be idealized; it was characterized by a lack of technology and lack of access to advanced care for the general public. China today is searching for the proper balance among the provision of high-quality basic care, equity of access, and technological sophistication.



The main tenet of reform addressing overprescription leverages the essential medicines concept to improve evidence-based prescribing and access to medicines. Under the umbrella of a national EML, China aspires “...to establish a secured production and supply system of essential medicines, and bring market forces into full play under government macro-control; open tender and unified distribution shall be adopted for the essential medicines procurement, and the intermediary links shall be reduced, so as to ensure the people’s access to the essential medicines” [5].

Use of essential medicines will be encouraged through clinical guidelines and reimbursement mechanisms. The Reform Document suggests that prices for these medicines will be set by means of national retail pricing limits and provincial central purchasing prices through tenders. This purchasing structure may mean that provinces with less effective purchasers or smaller markets may obtain fewer, less competitive tenders such that these regions would pay more for equivalent drugs. Additionally, “richer” provinces are generally more generous with SHI matching funds, giving further protection to citizens of richer regions, in violation of the principle of vertical equity. At the hospital level, it is likely that the separation of prescribing and dispensing will be more strictly enforced, which will strongly affect the source of hospital income. Surveillance of pharmaceutical pricing in hospitals is also recommended by The Reform Document, but no details about the responsibility for data collection or repercussions for excessively high pricing are given.

The Reform Document identifies improvement to primary care as one of the overarching goals of the reform process: “[China should]...ensure that the basic health care system be public goods provided to the entire population” (Section 2.2). This stated goal implies the active presence of the government in ensuring access to primary health care and public health interventions for all citizens through

improvements in equity of distribution of funding and provider distribution. However, this active presence does not imply the necessity of public provision. If universal SHI is achieved as planned, the purchasing power of the government-cum-insurer would allow for either public or private hospitals to provide the socially desirable quantity of these services.

Beyond guaranteeing basic care, The Reform Document directly states that gatekeeping is a necessary condition for the health care system to succeed. In urban areas, community hospitals are to take on this role: “Transform the community health care service mode, continuously raise the service level, take the initiative to offer services, provide household visits, and gradually assume the responsibility and duties of the ‘gate-keeper’ for residents’ health” (Section 3.5). In rural areas, the gatekeeper role will likely fall to the township hospitals and village clinics, one of which will be located in each administrative village. Both the rural and urban gatekeepers are likely to be publicly owned, staffed, and financed, so the definition of responsibilities (especially prescribing or dispensing) and payment of these physicians is of paramount importance. In order for them to provide public goods (inclusive of public health education as well as services), salaries should be subsidized by the government to preclude perverse, profit-seeking behavior.

The Reform Document does not directly present a means to reduce competition between hospitals and improve the referral system. It states that “...efforts should be made to establish the mechanism of labor division and work coordination between urban hospitals and community health service institutions...[to] develop and improve the community health service network” (Section 3.5). While this statement begins to address the issue of competition, it is more focused on the clear delineation of responsibilities for each hospital than on the way that an individual

patient might travel through the system. The Reform Document in large part maintains a very macroscopic approach to patient issues, despite claiming to strive for user-centric care. The universal SHI, as envisioned, divides the nation into two distinct constituencies, urban and rural, reflecting the *hukou* (residence permit) system. This out-of-date distinction creates another barrier to achieving smooth patient referral and integration. Improving physician education and training standards for rural PHC providers will increase urban hospitals' acceptance of test results and diagnoses from these sites. Within urban areas, where competition for patients is the most fierce, the government has stated an intention to limit the amount of high-tech equipment available in each region and to encourage hospitals of the same level to accept test results performed by other hospitals of equivalent level. These measures are designed to be implemented in tandem with gatekeeping to achieve maximum impact.

The Reform Document discussion of physician payment does not specifically target any of the problem areas delineated earlier in this paper, but it has the potential to impact all these areas. At present, most physicians are paid on a salary basis that is supplemented by bonuses within departments or institutions. These bonuses are generally volume-based rewards for high-value services without regard for the efficiency or quality of care provided. Because the outcome data collected in aggregate at most hospitals are of questionable reliability [7], it is difficult to imagine designing a successful outcome-based pay-for-performance model of provider payment to address quality issues. However, payment for adherence to process measures based on clinical guidelines and EML prescribing could be an effective first step toward improving levels of evidence-based care, reducing unnecessary prescriptions and increasing the emphasis on gatekeeping.

## Discussion

Although The Reform Document provides a founding vision for extensive health care reform, many details remain unformulated and imprecise. As the reform moves forward, the following recommendations provide some guidance on addressing incentives to improve the chances for success:

1. *Improve availability, accuracy, and transparency of data to inform need-based resource allocation and to promote quality and efficiency of provider performance.*

The value of improvements in data quality and availability are not specific to the success of the any individual part of the reform but will help in monitoring adherence to reform regulations across the board. Increasing transparency of existing data collection methods and publishing the data sets from which statistics are extracted would be a positive first step. With sufficient funding, quality assurance and auditing of these data should also be implemented.

The use of risk-adjustment mechanisms based on accurate population needs data will help equalize the subsidies to each province and hospital. At present, public spending on health is pro-rich [10], via demand-side subsidies at higher levels to urban SHI programs and supply-side subsidies focused on urban facilities. The shift in public finance that risk adjustment would achieve could help improve the quality of care and number of providers in less prosperous areas, potentially increasing the willingness of patients to utilize primary care and to adhere to gatekeeping based in such centers.

Accurate data on patient outcomes by hospital and/or physician could be used to pay providers based on performance, reflecting the quality of care provided and the efficiency of resource use. For example, improved information on drug pricing and utilization by hospital and region could be used to measure provider adherence to clinical prescribing guidelines. These outcome-adjusted data could

be weighted to represent a larger part of income as risk-adjustment mechanisms were improved. Physician payment should also be increased overall (proportional to the training received), and the government should ban direct payment between pharmaceutical companies and physicians.

2. *Account for systemwide and regional implications of implementation of each policy.*

While focusing on cost containment for pharmaceuticals is a necessity to reduce overprescribing, policy interventions should consider cost containment for the health care system as a whole. As the case of government-controlled costs of basic care and the ensuing SID for pharmaceuticals illustrates, a cost containment intervention that is isolated to one part of the system will likely result in increased costs in other unregulated areas. Interrelation of inputs such as staff, equipment, and training required for the production of various services suggest that a successful reform will need to be more holistic in its approach in order to succeed in the long run. For example, as controls on the prescribing of Western medicines become tighter, there is a risk that providers could increase parallel prescribing of allopathic and traditional medicines for the same condition. A risk of gaming exists if regulators do not anticipate provider attempts at using dual prescribing to supplement income and to circumvent tightening prescribing regulations.

However, the statement of need for a broad, systemic response to problems of cost control, overprescribing, and human resources risks masking the extreme regional differences that characterize China. With provinces as large as major European countries, China remains highly federated in spite of its one-party system. High variation in levels of per-capita GDP and availability of nonprimary health care resources exist; Smith et al. found that regional per-capita public

health spending in 2003 ranged from 32.36 yuan in Guizhou to 266.52 yuan in Zhejiang [25]. Without increased central funding for reform projects, the contents of The Reform Document will remain only recommendations from Beijing rather than a mandated policy platform. The provincial and local governments will be responsible for providing both the means of realizing these recommendations and, in many cases, most of the funding. The Chinese national government should rely on data from regional pilot centers and from other countries in creating and validating region-specific plans for reform, and should use central government funding to strengthen regional implementation while maintaining a unified national vision.

3. *Focus government efforts toward cost control on effective purchasing and human resource planning, rather than on provision.*

Given the goal of achieving universal SHI coverage by 2011, the government should take advantage of its monopsony position to design innovative purchasing mechanisms (including supply-side cost sharing) to achieve cost control. SHI programs must leverage supply-side cost-sharing mechanisms either through capitation or diagnosis-related group (DRG)–style payment for hospitals treating SHI patients to control cost and limit SID. Capitation-based funds should be held by the primary-care physician, increasing the value of the gatekeeping function in reducing excess demand and controlling costs. This more transparent form of cost control will serve both to improve provider acceptance and decrease the risk of provider gaming.

Because the state can maintain external controls on pricing through monopsony purchasing, public hospitals should be given the option to officially privatize. Allowing hospitals the management flexibility of a private enterprise

would likely be beneficial for their efficiency and in many cases would be merely a formal recognition of how they have already been operating. Leaving provision to the market could allow the state to invest in collection of data as a regulator and steward, which could be used in rewarding hospitals and physicians for quality of care as well as informing patient choice and improving regulation.

Finally, completing and achieving national and regional plans for reform implementation will be a time-consuming process. For projects that impact human resources (for example, the creation and training of a new cadre of primary-care physicians that the gatekeeping system will demand), the benefits will not be reaped until several years after decisions are finalized. The government should focus on expediting planning for any changes that affect the human resource structure so that appropriate education and training can be executed as soon as possible.

## **Conclusions**

This researcher concludes that The Reform Document, as currently designed and detailed, is not sufficient to achieve the national goals for equity, efficiency, and far-reaching change within the Chinese health care system. China must develop innovative incentives and management that are considerate of regional distinctiveness to achieve an efficient health system “with Chinese characteristics” (Section 1.2). More detailed, evidence-based reform proposals will help provide a concrete means to realize the broad aims of ensuring interprovincial equity of finance and access for this phase of reform and to renew the people’s faith in the system.

## References

1. Halstead S et al., eds.: *Good health at low cost*. Rockefeller Foundation Conference Report, 1985.
2. Evans et al.: **Health care in the developing world: problems of scarcity and choice**. *N Engl J Med* 1981, **305**(19): 1117-1127.
3. Yip W: **Disparities in health care and health status: the rural-urban gap and beyond**. In *One Country, Two Societies: Rural-Urban Inequality in Contemporary China*. Edited by M. Whyte: Harvard University Press, Cambridge, MA; 2009, 147-165.
4. Ma et al.: **From a nationally, centrally planned health system to a system based on the market: lessons from China**. *Health Aff* 2008, **27**(4): 937-948.
5. CPC National Congress: **Opinions of the CPC Central Committee and the State Council on Deepening the Health Care System Reform**. Updated 06 April 2009. [[http://www.gov.cn/jrzq/2009-04/06/content\\_1278721.htm](http://www.gov.cn/jrzq/2009-04/06/content_1278721.htm)] (Chinese); [[http://www.china.org.cn/government/scio-press-conferences/2009-04/09/content\\_17575378.htm](http://www.china.org.cn/government/scio-press-conferences/2009-04/09/content_17575378.htm)] (English). Accessed June 2009.
6. Cheng T: **China's latest health reforms: a conversation with Chinese Health Minister Chen Zhu**. *Health Aff* 2008, **27**(4): 1103-10.
7. Pei, L., Legge, D., & Stanton, P: **Policy Contradictions Limiting Hospital Performance in China**. *Policy Studies*, **21**(2), 99-113.
8. Ramesh and Wu: **Health policy reform in China: lessons from Asia**. *Soc Sci Med* 2009, **68**(12), 2256-62.
9. Yip W and Mahal: **The health care systems of China and India: performance and future challenges**. *Health Aff* 2008, **27**(4): 921-932.



10. Wagstaff et al.: **China's health system and its reform: a review of recent studies.** *Health Econ* 2009, **18**: S7-S23.
11. Reynolds and McKee: **Factors influencing antibiotic prescribing in China: an exploratory analysis.** *Health Policy* 2009, **90**, 32-36.
12. Hsiao: **When incentives and professionalism collide.** *Health Aff* 2008, **27**(4): 949-951.
13. Wagstaff et al.: *Reforming China's Rural Health System.* World Bank: Washington, DC; 2009.
14. Chadhury et al.: **Quality medicines for the poor: experience of the Delhi program on rational use of drugs.** *Health Policy Plan* 2005, **20**(2): 124-36.
15. Hogerzeil et al.: **Impact of an essential drugs program on availability and rational use of drugs.** *Lancet* 1989, **1**(8630): 141-2.
16. Wang YR: **The Chinese pharmaceutical market at the crossroads.** *Appl Health Econ Health Policy* 2005, **4**(3): 147-151.
17. Meng et al.: **The impact of China's retail drug price control policy on hospital expenditures: a case study in two Shandong hospitals.** *Health Policy Plan* 2005, **20**(3):185-196.
18. Eggleston K: **Incentives in China's health care delivery system.** Working Paper 373, Stanford Center for International Development; Stanford, CA, 2008.
19. Ministry of Health: *National Statistics Yearbook.* Beijing, China, 2005.
20. Ren and Liu: 真实新医改. *Caijing* 2009, **6**(233): 79-86.
21. National Development and Reform Commission: 关于深化医药卫生体制改革的见. [[http://shs.ndrc.gov.cn/yg/qwll/t20081014\\_240214.htm](http://shs.ndrc.gov.cn/yg/qwll/t20081014_240214.htm)] (Accessed 31 July 2009.) 2008.

22. Gilliat et al.: **Public services and the consumer: empowerment or control?** *Soc Policy Admin* 2000, **34**(3): 333-349.
23. Tang et al.: **Tackling the challenges to health equity in China.** *Lancet*, **372**: 1493-501.
24. Cheng T: **China's latest health reforms: a conversation with Chinese Health Minister Chen Zhu.** *Health Affairs* 2008, **27**(4): 1103-10.
25. Smith et al.: **Public expenditure and resource allocation in the health sector in China.** [[http://siteresources.worldbank.org/INTEAPREGTOPHEANUT/Resources/502734-1129734318233/publicexpenditureonhealth\\_08-20-04.pdf](http://siteresources.worldbank.org/INTEAPREGTOPHEANUT/Resources/502734-1129734318233/publicexpenditureonhealth_08-20-04.pdf)] (Accessed 29 June 2009.) 2004.