# Deepening Health Reform In China

## Building High-Quality And Value-Based Service Delivery

### Policy Summary

**China Joint Study Partnership**

World Bank Group, World Health Organization, Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security

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# Foreword

During the last three decades, there has been a momentous social transformation in China, with 600 million people pulled out of poverty. At the same time, China has made impressive strides in health. Since the launch of a new round of reforms in 2009, China has invested substantially in expanding health infrastructure, achieved nearly universal health insurance coverage, promoted more equal access to public health services, and established a national essential medicine system. These measures have significantly improved the accessibility of health services, greatly reduced child and maternal mortality, incidence of infectious disease, and considerably improved health outcomes and life expectancy of the Chinese population. Average life expectancy of the Chinese people reached 76.34 years in 2015, 1.51 years longer than in 2010. China's overall health level has reached the average of middle- and high-income countries, achieving better health outcomes with less input. These achievements have been well recognized internationally.

China has now reached a turning point. It is starting to face many of the same challenges and pressures that high-income countries face. Chinese over the age of 65 now number 140 million, and that cohort is expected to grow to 230 million by 2030. High-risk behaviors like smoking, sedentary lifestyles and alcohol consumption, as well as environmental factors such as air pollution, take a huge toll on health, and non-communicable diseases account for more than 80 percent of 10.3 million deaths every year. At the same time, with higher economic growth, increased personal incomes, and fast changes in consumption patterns, people are demanding more and better health care. As a result of all these factors, expenditures on health care have been increasing continuously. China is facing greater challenge as the high growth rates of health expenditure in the past years may be difficult to sustain under the economic slow-down.

The Chinese government fully recognizes the need to make strategic shifts in the health sector to adapt to these new challenges. President Xi Jinping and Premier Li Keqiang have placed great importance on health care reform. As President Xi Jinping pointed out, it would not be possible to build a well-off society without universal health. He also indicated that China should shift the focus and resources towards the lower levels of care, with an aim to provide its citizens with public health and basic health services that are safe, effective, accessible, and affordable. Premier Li Keqiang has held several State Council Executive Meetings to set priorities in health care reform and asked for development of a basic health care system covering all urban and rural residents. The State Council has set up a Leading Group for Deepening Health Care Reform to strengthen multi-sector

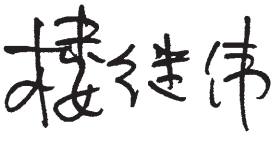
coordination, which provides strong institutional guarantee for the reforms.

In July 2014 in Beijing, the Chinese government, the World Bank Group and the World Health Organization committed to working together on a joint health reform study with an aim to further improve the policy formulation and to deepen the health reform. This report, Deepening Health Reform in China, is the outcome of this joint study. Following the successful model of previous flagship reports such as China 2030 and Urban China, this report offers a blueprint for further reforms in China's health sector.

The report's main theme is the need for China to transition its health care delivery system toward people-centered, high quality, integrated care built on the foundation of a strong primary health care system. This system offers both better health care for its citizens as well as better value for its economy. The report offers a comprehensive set of eight interlinked recommendations that can prepare the Chinese health system for the demographic and health challenges it faces.

This report focuses not only on the top-level design for reform; it also addresses the important question of how to make reform work on the ground. It builds on extensive analysis of literature and case studies from high- and middle-income countries, as well as on ongoing innovations in China that offer lessons and experiences for bringing about desired change. The report draws upon cutting-edge thinking about science of delivery that can help scaling up health reforms—from prefecture to province, and ultimately, nationwide.

Our hope is that this report will provide the research, analysis and insight to help central and local authorities plan and execute major restructuring of the healthcare delivery system in China during the 13th five-year development planning period. Getting this reform right is crucial to China's social and economic success in the coming decades. We believe that China's experience with health service delivery reform carries many lessons for other countries, and we hope this report can also contribute to a global knowledge base on health reform.



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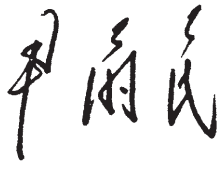

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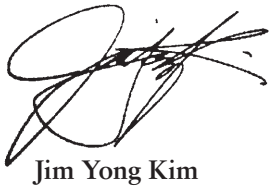

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# Executive Summary

Following decades of double-digit growth that lifted more than 600 million people out of poverty, China's economy has slowed in recent years. The moderating growth adds a new sense of urgency to strengthening human capital and ensuring that the population remains healthy and productive, especially as the economy gradually rebalances towards services and the society experiences shifting demographics and disease burdens. The lower economic growth rates open the space for much needed reforms in the health sector as the high growth rates of health expenditure in the past years may be difficult to sustain under the 'New Normal': a recent OECD study estimates that government expenditures on health and long term care in China will increase three-fold as percent of GDP over the next four decades if adequate reforms are not undertaken. China now has an opportunity to rebalance its health care system by embarking on a high value path to better health at affordable costs.

China was a pioneer in primary care and the prevention and control of infectious diseases, and more recently in universal insurance coverage. The introduction of barefoot doctors, urban and rural social health insurance schemes and ambitious public health campaigns combined with higher incomes, lower poverty and better living standards for both urban and rural areas (sanitation and water quality, education, nutrition and housing) resulted in a huge decline in mortality and an unprecedented increase in life expectancy. The 2009 reforms have achieved a number of intended milestones, producing substantial positive results. Utilization of health services has risen and out of pocket spending as share of total health expenditures has fallen, leading to a more equitable access to care and greater affordability. The essential drug program is contributing to reducing irrational drug use and improving access to effective drugs. The reform, including subsequent regulations, has encouraged greater private sector participation in part to reduce overcrowding in public facilities. Finally, the reform also spearheaded many innovative pilots in health financing and service delivery at the local level – several of which are examined in this report – and provide a strong foundation for the next stage of reform. China is progressing quickly to achieving universal health coverage and some of the reform achievements have attracted worldwide attention. Significantly, a child born in China today can expect to live more than 30 years longer than her forebears half a century ago; it took rich countries twice that span of time to achieve these gains.

China now faces emerging challenges to meet the health care needs of her citizens, associated with a rapidly aging society and

increasing burden of non-communicable diseases (NCDs). There are already over 140 million persons above the age of 65 in China, a number that is projected to grow to 230 million in 2030. NCDs are already China's number one health threat, accounting for over 80 percent of the 10.3 million deaths annually. More so than the aging population, high health risk behaviors such as smoking, poor diets, sedentary lifestyles, and alcohol consumption, as well as environmental factors such as air pollution, are powerful forces behind the emergence of chronic illnesses in China. Traffic safety is another emerging challenge.

Building on past successes, more needs to be done to expand current reforms and build upon front-line innovations to make health care delivery more effective and efficient throughout China. Health costs have been growing at a rate higher than GDP growth since 2008. While this growth started from a comparatively low baseline level, but still below 6% by year 2015, the trend is not likely to reverse in the near future as expenditure pressures related to pent-up demand changing epidemiological and demographic profiles, income growth and technological change will continue to grow. As seen in some high income countries, without adequate controls rapidly escalating health spending can lead to an unsustainable burden on individuals, firms and government.

A study commissioned by the World Bank for this report concluded that business as usual, without reform, would result in growth of total health expenditure from 5.6 percent of GDP in 2015 to 9.1 percent in 2035, an average increase of 8.4% per year in real terms. Over 60 percent of increase is expected to be in inpatient services. China could achieve significant savings – equivalent to 3 percent of GDP – if it could slow down the main cost drivers that are the cost per treatment episode and unit cost increases. To realize these savings health services to be balanced with increased utilization of outpatient and primary health care. The report discusses policy options to achieve that.

On the basis of the great achievements, China needs to deepen its health reform to avoid the risk of creating a high-cost-low-value health system as observed in some high income countries. China's health system is hospital-centric, fragmented and volume-driven. Service delivery has a strong bias toward doing more treatment than improving population health outcomes, and serving more people at hospitals rather than at grassroots levels. Health financing needs better integration and insurance funds need to become more active purchasers of health services. There is a shortage of qualified medical and health workers at the primary care level, which further compromises the system's ability to carry out the core functions of prevention, case detection, early treatment and care integration. Quality of care and population's trust needs to improve, especially at the lower levels, waiting times are long especially at the higher levels, and people's satisfaction with their interaction with providers often do not meet rising expectations. To some extent, this situation affects citizens' confidence in health care providers.

Recognizing these challenges, China's leaders have adopted far-reaching policies to put in place a reformed delivery system. Since the launch of health reform in 2009, China has invested significantly in health infrastructure at the grassroots level and made progress in building the primary care doctors system. Basic public health services capacity have been signficantly enhanced. The State Council General Office has also issued policy guidance for promoting multi-tier diagnosis and treatment system (Guo Ban Fa,] No. 70, 2015). On October 29, 2015 the 18th Session of the Central Committee of the Fifth Plenary Session of the CPC endorsed a national strategy known as "Healthy China" which places population health improvement as the main system goal. This strategy will guide the planning and implementation of health reforms under the 13th Five-year Development Plan, 2016-2020 (see Box). The Government has also initiated enabling legislative actions. The Basic Health Care Law, which will define the essential elements of the health care sector including financing, service delivery, pharmaceuticals, private investment, etc. has been included in the legislative plan of National People's Congress of China and is being formulated by the congress. The Basic

Law CPC Central Committee Suggestions for the 13th Development Plan as well as recent policy directives contain the fundamental components of service delivery reform. For example, policies emphasize strengthening the three-tiered system, including primary care and community-based services, human resources reform, optimizing use of social insurance, and encouraging private investment ("social capital") to sponsor health care. Policies also support "people first principles" such as building harmonious relationships with patients, promoting greater care integration between hospitals and primary care facilities through tiered service delivery and use of multidisciplinary teams and facility networks, shifting resources towards the primary level, linking curative and preventive care, reforming public hospital governance and strengthening regional service planning. However, while important progress has been observed, it is mostly limited to pilot projects. This suggests strengthening implementation and emphasizing scale-up of successful reforms. Acknowledging the difficulty of implementing these reforms and time required to achieve scale, they are collectively referred to as reforms of the emerging "deep water" phase.

The reforms proposed in this report aim to support China during this deep water reform phase. Eight sets of strategic reform directions, referred to as "levers," are proposed. Broadly, these reforms focus on improving 'downstream' service provision as well as creating an enabling 'upstream' financial and institutional environment for that improvement. Each lever contains a set of recommended core action areas and corresponding implementation strategies to guide the 'what' and 'how' of deepening service delivery reform. They are meant to provide *policy implementation guidance* to all governmental levels. The levers are interlocked and should not be considered or implemented as independent sets of actions. Their roll out will require synchronization. For example, actions taken by front line health care providers will require strong institutional support combined with financial and human resource reforms in order to achieve the aforementioned triple goals. In short, the eight levers represent a comprehensive package of interventions to deepen health reform.

As China continues to grow, health spending will increase. However, for sustainability and affordability the rate at which spending on health increases can be managed by prudent choices related to the location, organization and production of health services and the efficient use of resources, even while making care far better. China will soon need to come up with a new model of health production, financing and delivery, which responds to the needs and expectations of its population but at the same time is grounded in the economic reality of today. China has already decided that doing nothing is not an option: continuing the previous health service delivery model in the current environment will result in increasing health costs and a heavier burden on the government or households or both. One of the key messages of this report is the importance of creating value. Value means working toward three goals simultaneously: better health for the population, better quality and care experience for individuals and families, and affordable costs for individuals and government. It also means bridging the gap between health and health care. In moving forward with the delivery reforms, China must maintain its focus on achieving more health rather than more treatment. It has to shift the focus from rewarding volume and sales to rewarding health outcomes – achieving more value for the money spent. With proper delivery system reforms, better care, better health and more affordable costs are all well within China's reach.

## Recommendations

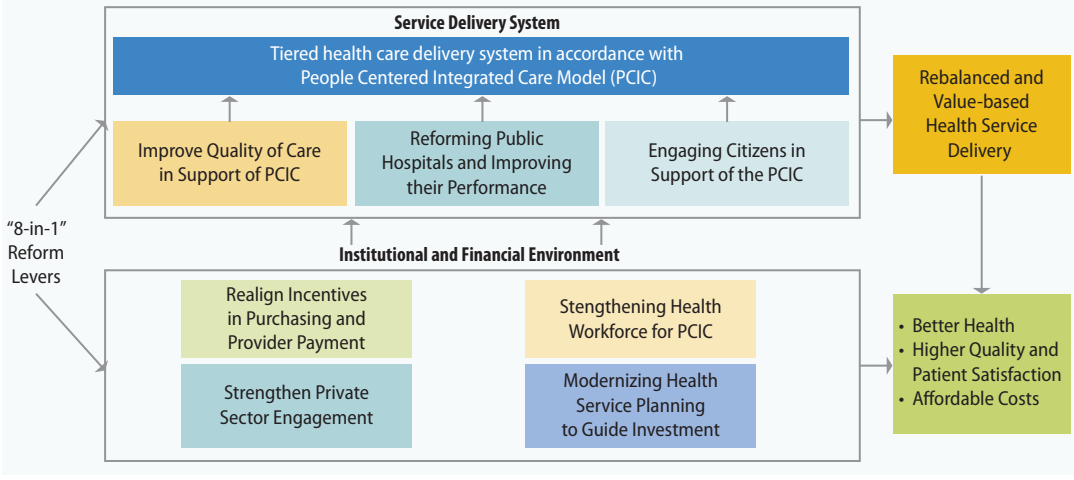
**The report proposes eight sets of strategic reform directions, referred to as "levers" representing a comprehensive package of interventions to deepen health reform.** Each lever contains a set of recommended core action areas and corresponding implementation strategies to guide the 'what' and 'how' of deepening service delivery reform, and are meant to provide policy guidance at all governmental levels. The levers are

conceptualized to be interlocked and are not designed to be implemented as independent actions. For example, actions taken by front line health care providers will require strong institutional support combined with financial and human resource reforms in order to achieve the reform goals.

***At the core of the recommendations is the full adoption of a reformed service delivery model, referred to as people-centered integrated care (PCIC), in order to accelerate progress toward China's vision of health service delivery reform and improve value for money.*** PCIC is the term used to refer to a care delivery model that is organized around the health needs of individuals and families. The bedrock of a high-performing PCIC model is a strong primary care system that is integrated with secondary and tertiary care through formal linkages, good data, and information sharing among providers and between providers and patients, and active engagement of patients in their care. It utilizes multidisciplinary teams of providers that track patients with eHealth tools, measures outcomes over the continuum of care and relentlessly focuses on continually improving quality. Curative and preventive services are integrated to provide a comprehensive experience for patients, and measurable targets for facilities. Large secondary and tertiary hospitals have new roles as providers of complex care and leaders in workforce development. Measurement, monitoring and feedback are based on up-to-date, easily available, and validated data on the care, outcomes, and behaviors of providers and patients.

***Second, continuous quality improvement is a foundational element of PCIC and creating a high value system, and is essential for gaining citizen trust.*** Government leadership and stewardship are vital for building capacity to improve quality of health care. The first priority is to have a full service coordination architecture to oversee systematic improvements to health sector quality throughout the service delivery system, including public and private sectors. This architecture would be publicly responsible for coordinating all efforts aimed at quality assurance and improvement, including linking service quality with the incentives applied by the service purchasers, and would actively engage all stakeholders to facilitate the implementation of quality assurance and improvement strategies. Stakeholder organizations, including NHFPC, MOF, MOHRSS, and key professional and scientific bodies, would be represented. Operationally, at current stage, China may consider to have State Council Health Reform Leading Group to take this functions to ensure the highest level leadership and authority to mobilize public and private stakeholders and citizen engagement. New

**FIGURE ES.1 8-in-1 Interlinked Reform Levers**



national agencies dealing with the area of quality have been created in number of countries, including Australia, England, France and the United States. Whatever the option, this entity would serve as the ultimate source of scientific information on all quality-related topics for both clinicians and the public. It will also become the institutional leader in promoting quality of care and ensuring that evidence-based care is consistently delivered at the highest standard. This entity could also serve as a platform for tapping international experience in care improvement. Many OECD countries have established such institutions. Commitment to improving quality of care can be further enhanced by conducting an in-depth national study of the state of quality of care and quality improvement initiatives at all levels of the system. In a number of countries, efforts to improve health system performance are catalyzed by comprehensive, data-based reports on quality and performance. These reports helped focus the attention of leaders and professionals on avoidable shortcomings in quality and on opportunities to do better for patients and communities.

***Third, recognizing the key role of patient trust for the success of the PCIC model, the report recommends that patients are empowered with knowledge and understanding of the health system and be actively engaged in the process of seeking care.*** Optimal use of scarce resources requires that decisions about investment and disinvestment in services are shaped by patient preferences, which requires a two-way communication between multidisciplinary clinical teams and their patients. Without this exchange, decisions are made with avoidable ignorance at the front lines of care delivery, services fall short of meeting needs while exceeding wants, and efficiency declines over time.

***Fourth, the reformed service delivery model requires new roles for hospitals.*** Public hospital reform is part and parcel of reshaping the service delivery system based on PCIC. Internationally, the role of hospitals is changing. They are no longer standalone facilities at the center of the delivery system, the point of entry to care, or "one-stop shops" for all services. Rather, they are increasingly becoming part of a network of facilities that includes other providers such as primary care, diagnostic units and social services. They are steadily shifting low complexity care to lower levels, and sharing personnel and providing technical assistance and training to them. Moving public hospitals to their new roles in China will require strengthening accountabilities and improving management. Reform will entail enacting a legal framework that specifies organizational forms (such as boards or councils) that serve as the accountable interface between government and hospital management, setting the roles, composition and functions of these boards or councils, granting decision-making autonomy to the same, and putting in place robust accountability mechanisms and incentives that align hospital performance and behaviors with government priorities and the reformed delivery model. China would also benefit from professionalizing hospital management. This would require short and long term measures ranging from studying and adapting innovative management practices in leading public and private hospitals and establishing an executive management program to developing career paths for hospital managers and working with academic institutions to strengthen and expand degree programs in hospital management.

***Fifth, service delivery reform will entail realigning incentives and strengthening purchasing.*** Together with building the skills of the health labor force (see below), PCIC service delivery requires a supporting set of underlying system-wide incentives that motivate and influence the behavior and actions of health providers in ways that strengthen and sustain the fundamental features of the patient-centric model. In addition, financial incentives are a key mechanism of lowering costs, improving quality of care and directing the production and delivery of health services to priority areas determined by the principals taking such decisions. Designing effective incentive programs that can align the varying objectives of the different stakeholders in health is a complex undertaking, one that requires regular tweaking and constant

adjustment as the different players adapt their behaviors to changing rules, but fortunately, there have been many local experiments in different parts of China in recent years that offer replicable lessons. The main actions necessary to realize this vision include: (i) switch from fee-for-service as a dominant method of paying providers to capitation, case-mix (i.e., DRGs), and global budgets; (ii) correct and realign incentives within a single, uniform and network-wide design in support of population health, quality and cost containment; (iii) correct and realign incentives to reverse the current irrational distribution of service by level of facilities; and (iv) consolidate and strengthen the capacity of insurance funds so as to equip them to become strategic purchasers.

***Sixth, human resources will need to reflect the new shape of service delivery.*** PCIC service delivery requires a competent workforce teams and individual practitioners that share its values, which raises questions of the desirable composition of the health workforce in China. At the center of any PCIC model is the need to raise the status of primary care workers. This will require building consensus and shared understanding among government, health providers and general public of the centrally important role of primary care, together with hospitals, in providing the full continuum of care to the citizens. Many countries have adjusted their health workforce in an effort to strengthen primary health care, and offer useful lessons that can be applied in the Chinese context. Specific implementation strategies include: (i) reform the headcount quota system and establish an independent system of professional licensing and career development prospects for PHC workforce, particularly for general practice (GP); (ii) introduce primary health care (PHC)-specific career development path to develop and incentivize the PHC workforce, including separate career pathways for GPs, nurses, mid-level workers and community health workers; (iii) establish general practice as a specialty (such as Family Medicine), with equivalent status to other medical specialties; (iv) enhance compensation system for PHC workforce relative to other specialties; and (v) promote alternative but well-trained cadres of health workers (such as clinical assistants, assistant doctors, clinical officers and community health workers) with eHealth links to other professionals to strengthen primary care delivery.

***Seventh, private sector engagement should be aligned with the new shape of the delivery system.*** China may consider developing a shared vision of the role of the private sector and build the regulatory environment that allows qualified private actors to deliver cost effective services while competing on a level playing field with the public sector. It is important that China decides and states its preferences for select forms and subsectors in the health sector where it would like private enterprise to focus. This clarity will help private investors and health care providers as well as subnational governments. The latter can then develop appropriate supervisory and regulatory mechanisms to guide the private sector in ways that best complement the existing public system of health production and delivery. Specific strategies to secure this vision include: (i) identify areas where the private sector can contribute most effectively; (ii) move away from quantity targets for private sector market share and instead identify priority sub-sectors for private sector growth that are most aligned with the public interest; (iii) endorse the shared vision and articulation publicly and communicate widely; and (iv) formalize the engagement process by drafting guidelines for provincial and local governments to implement according to local conditions. Government will need to strictly monitor the effects of private sector entry and expansion on the health care system and respond thoughtfully but with agility to what is learned.

***Finally, the report recommends modernization* in ways *that capital investment decisions are made in the health sector in China, and suggests moving away from the traditional input-based planning towards capital investments based upon region-specific epidemiological and demographic profiles.*** Shifting from a strategy that is driven by macro standards to one that is determined

by service planning based on real population needs will help China better align its huge capital investments, projected to reach US$ 50 billion annually by 2020, with the demands of an affordable and equitable health care system and achieve value-for-money for its massive investments in the health sector. Moving from capital investment planning to a people-centered service planning model will require prioritization of public investments according to burden of disease, where people live, and the kind of care people need on a daily basis. Within this service planning approach, capital investment planning, which is necessary to optimally use funding opportunities (such as insurance and public reimbursements), can guide the development of facilities of the future, change the status quo of today, and ensure that excess capacity is not created to further exacerbate inefficiency and capital misallocation.

## Spreading Effective and Sustainable Implementation

Numerous health reforms experiments are under way in China to operationalize the reform policies, but for the reforms to be successful and brought to scale, they need to become comprehensive and be implemented in a coordinated and deliberate manner. Bridging the gap between policies and practice requires capacity, resources, accountability and a commitment to collaboration, evaluation and learning. The report recommends putting in place a simplified but actionable implementation framework consisting of four systems adapted broadly to the Chinese context: (i) macro implementation and (external) influence system; (ii) coordination and support system; (ii) delivery and learning system; and (iv) monitoring and evaluation system. The following specific recommendations would contribute to creating an enabling organizational, accountability and collaborative environment for sustained and scalable implementation.

- *Macro implementation and (external) influence system: Establishing strong central government oversight linked to national policy implementation and monitoring guidelines*. Giving more policy weight and providing greater attention to implementation practices by senior policy makers and leaders is critical to the process of service delivery reform. The central government may consider having a more "hands-on" role in guiding and monitoring the implementation phase of the reforms by the State Council Health Reform Leading Group and in crafting a series of policy implementation and monitoring guidelines to orient reform planning and execution by provincial and local governments. These guidelines can provide verifiable tasks or intermediate outcomes related to reform implementation which would foster greater reform implementation integrity at local levels. However, the guidelines are not an implementation plan or one-size-fits all blueprint. They would need to be operational in nature, specifying categorically "what to do." In turn, provincial and local governments should have full authority to decide on "how to do it" --- developing, executing and sequencing implementation plans based on local conditions. These guidelines are best accompanied by a strong monitoring system with corresponding indicators capable of independently assessing and verifying implementation progress and results (see below). Finally, the State Council Health Reform Leading Group can craft strong accountability mechanisms to enforce reform implementation at provincial and local levels. For example, the aforementioned indicators can be placed in "task agreements" with provincial and local government. For some provinces and local governments where institutional capacity is lacking, the central government may want to consider financing and arranging for technical support on implementation.
- *Coordination and support system: Establishing coordination and organizational mechanisms that make provincial and local governments accountable for results and support front line reform implementation*. The coordination and

support system requires an organizational structure proximate to front line implementation to carry out a number of critical functions, including coordinating and ensuring buy in of key institutional stakeholders, arranging for training and technical assistance, developing and adapting implementation plans and timelines, communicating reform activities and expectations to communities, health care organizations and health workers, and making front line providers accountable for implementation progress and results. Strengthening accountability arrangements is of crucial importance, particularly at the provincial and local levels. Any accountability arrangement should be sufficiently powerful to align institutional standpoints and to leverage government interests when dealing with providers and vested interests. One option is to promote and strengthen the empowered "leading groups" or steering committees at the provincial level led by government leaders (i.e., governors, mayors or party chiefs), following the practice in some provinces or municipalities. Leading groups can also be formed at local governmental levels (county, municipality, and prefecture) depending on the context. Such groups already exist in China – Sanming is an example – and they have played important role in coordinating health service delivery and health insurance reforms at local level. The leading groups will require strong leadership and political support and be fully empowered to implement reform within their jurisdictions. A subset of these implementation performance measures can be considered for incorporation into the career promotion system for provincial and local leaders. An advantage of the proposed leading group arrangement is that it is a well-known inter-agency coordination mechanism, and has been applied successfully within the current institutional framework. Nevertheless, the "leading group" option can be considered as an interim organizational arrangement in part to mitigate the challenges of institutional fragmentation on reform implementation. It does not institutionalize inter-agency coordination. A longer term solution would involve institutional consolidation which would be part of a much broader reform to streamline the government's administration systems and organizational structures. China may want to examine organizational structures, distribution of responsibilities and coordination of functions across agencies involved in health system governance in OECD, especially those countries with social insurance financing and mixed delivery systems (i.e., public and private provision).

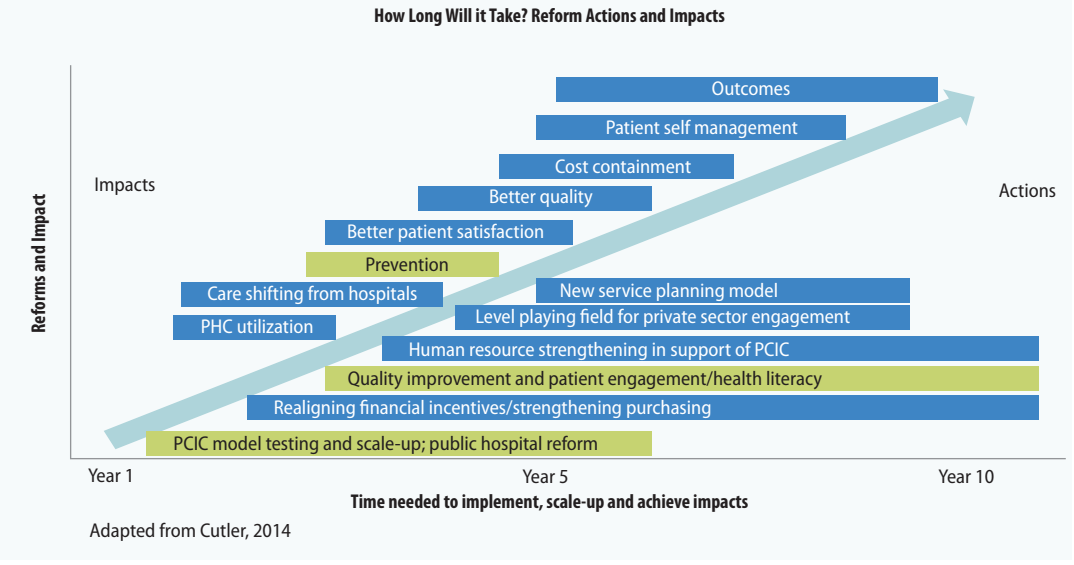
- *Delivery and learning system: Creating "Transformation Learning Collaboratives" (TLCs) at the network and facility levels as the fundamental building block to implement, sustain and scale up reforms on the front line.* The main location of implementation is the front lines of service delivery: health care organizations (hospitals, THCs, CHCs, VCs), networked groups of health care organizations, and communities. Health care organizations must adopt continuous learning and problem-solving approaches to accelerate the successful implementation of reforms. To do this will require local customization of policy implementation guidelines to meet specific needs at the front-lines. To support this learning process, it may be beneficial for public and private providers to come together to form associations committed to implementing the PCIC approach and corresponding reforms in the financial and institutional environment. China can consider forming TLCs – partnerships of groups of facilities within a county, district, or municipality (CDM) –to implement, manage, and sustain reforms on the front lines. The driving vision behind the TLC concept is to assist and guide local care sites (e.g., village clinics, THCs, CHCs, county and district hospitals) to implement and scale-up the reformed service delivery model and close the gap between "knowing" and "doing." Ostensibly,

TLCs are about putting evidence into practice especially in terms of adopting national and international standards for evidence-based clinical practice. But they also entail learning from experience. Provincial (and local) leading groups can select the facility alliances or networks, hospitals and primary care facilities to participate in TLCs.

- *Monitoring and evaluation system: Ensuring strong and independent monitoring and impact evaluation.* Monitoring and evaluating the effectiveness of implementation and reform impact is a critical but often overlooked component of the implementation process. Evidence needs to be gathered to learn from implementation and contribute to evidence-based improvements and future policy making. Careful monitoring can detect whether implementation is aligned with stated objectives, on track (or going off track) or the implemented reforms match the intended reforms. Impact evaluation measures the intended and unintended effects and outcomes. China may consider establishing a strong monitoring and evaluation system capable of independently assessing and verifying implementation progress and reform impacts. It may also consider developing a system to monitor health spending from all sources (i.e., fiscal by different government levels, social insurance, out-of-pocket, etc.) and type of expenditure. These performance monitoring systems can be achieved in partnership with academic institutions. Based on the proposed implementation guidelines and existing monitoring systems, SCHRO can develop implementation benchmarks and other metrics to track reform implementation.

**The pathway of reforms is critical to the outcomes of reforms.** Reform sequencing can proceed along two pathways: one relates to setting accountability and organizational arrangements while the other involves implementing the recommended core actions. In terms of the former, the first step is for the central government to prepare *policy implementation and monitoring guidelines* to steer implementation by provincial and local governments and strengthening the authority and functions of the State Council Health Reform Office. Establishing fully empowered leadership groups led by high level authorities at the provincial and local levels will be another step in moving forward reform implementation. Local government will be responsible for developing and

**FIGURE ES.2 Reform Implementation Roadmap**




Adapted from Cutler, 2014

executing implementation plans adopted to local conditions but aligned with the policy implementation and monitoring guidelines. Creating TLCs to support front-line development and implementation of an initial set of PCIC core interventions would be a third step. Performance agreements between central and provincial governments and between provincial and local governments specifying benchmarks and anticipated results will facilitate timely execution at all stages of the plan. Turning to second pathway related to recommended core actions, in addition to implementing a PCIC-based delivery model, a key step would be realigning incentives in provider payments and building capacity among government health purchasers to incentivize improved health, better quality and lower costs. Changing human resource management and compensation to elevate the position of primary care physicians would be another key step in sequencing the reforms. Building integrated care alliances or networks of tertiary and secondary hospitals, primary care providers and community health workers, incentivized by insurance payments and by budgetary contributions and supported by eHealth information systems, would also be an early intervention.

**How long will it take**? No one has the answer to this question. International experience suggests that health reform is a long-term endeavor that requires continuous inflight adjustments. No country ever gets it "right", and what is "right" is context specific and often time bound. What may be "right" now may be wrong in the long term. Realistically, it would take China around 10 years to fully implement the proposed reforms, and reach full scale. How the reforms will be implemented will vary considerably, given China's size and variations in starting and local conditions. Clearly, some regions will be able to move faster than others. As suggested in the chart, some reforms will take longer than others to implement and scale-up. For example, we estimate that PCIC model implementation and scale-up will take about five years while human resource strengthening will take 6 to 8 years. Some impacts, such as cost containment and outcomes, may not be realized until after five years of implementation.

**Caveats**: This study centers on reforms to improve health service delivery and the supporting financial and institutional environment in China. Resource and time constraints did not allow for analysis of other important reform themes which can be the subject of future research. These include: pharmaceutical industry, tobacco industry, education and licensing of medical professionals, traditional Chinese medicine (and its integration with Western medicine) and dissemination and use of medical technologies. Some of the linkages between aged care, health care and social services will be taken up in a forthcoming WBG study. Finally, it is important to keep in mind that this report is a *summary* of findings and recommendations. The final report will expand upon the major themes and recommendations presented herein.

# Abbreviations

| | |
|---|---|
| ABCS | Aspirin, Blood pressure, Cholesterol, Stroke |
| ACTION | Aged Care Transition program (Singapore) |
| AMI | Acute Myocardial Infarction |
| ARS | Regional health agencies (France) |
| BHRSS | Bureau of human resource and social security |
| CDM | County, District, or Municipality |
| CHC | Community Health Center |
| CIHI | Canadian Institute of Health Information |
| CIP | Capital Investment Planning |
| CMS | Centers for Medicare and Medicaid Services |
| CNHDRC | China National Health Development Research Center |
| CoG | Council of Governors (England) |
| CON | Certificate of Need |
| CPAS | Central physician appointment system |
| CQI | Continuous Quality Improvement |
| CT | Computerized tomography |
| DRGs | Diagnostic Related Groups |
| ECG | Excess cost growth |
| EHR | Electronic Health Record system |
| ED | Emergency Department |
| FT | Foundation Trust (England) |
| GDP | Gross Domestic Product |
| GP | General Practitioners |
| HCA | Health Care Alliance |
| HMC | Hospital Management Center/Council |
| HRH | Human Resource for Health |
| IHI | Institute for Healthcare Improvement |
| IMF | International Monetary Fund |
| IOM | Institute of Medicine |
| IT | Information Technology |
| LLG | Local Leading Group |
| MDT | Multi-Disciplinary Teams |
| MoF | Ministry of Finance |
| MoHRSS | Ministry of Human Resource and Social Security |
| MQCCs | Medical quality control committees |
| MSMGC | Medical service management and guidance center |
| MTEF | Medium-Term Expenditure Framework |
| NCDs | Non-Communicable Diseases |
| NCMS | New Cooperative Medical scheme |

| | |
|---|---|
| NCQA | National Committee for Quality Assurance |
| NDRC | National Development and Reform Commission |
| NFO | Non-for-profit Organization |
| NHCQC | National Health Care Quality Council |
| NHFPC | National Health and Family Planning Commission |
| NHS | National Health Service |
| NICE | National Institute for Health and Care Excellence |
| NSW | New South Wales |
| OECD | Organization for Economic Cooperation and Development |
| OOP | Out-of-Pocket Spending |
| OSS | Social Organization (Brazil) |
| P4Q | Pay-for-Quality |
| PCIC | People-Centered Integrated Care model |
| PCMH | Patient-Centered Medical Home |
| PCP | Primary health Care Provider |
| PDSA | Plan-Do-Study-Act cycle |
| PHC | Primary Health Care |
| PLG | Provincial Leading Group |
| PPP | Purchasing power parity |
| PREMs | Patient-reported experience measures |
| PROMs | Patient-reported outcome measures |
| QI | Quality improvement |
| RMB | Ren Min Bi (Chinese Yuan) |
| SATCM | State Administration of Traditional Chinese Medicine |
| SCHRO | State Council Health Reform Office |
| SES | Secretariat of Health of the State Government of Sao Paulo (Brazil) |
| SFDA | State Food and Drug Administration |
| SROS | Regional Strategy Health Plans (France) |
| THC | Township Health Center |
| TLC | Transformation Learning Collaboratives |
| TQM | Total Quality Management |
| UAE | United Arab Emirates |
| UEBMI | Urban Employee Basic medical Insurance scheme |
| UK | United Kingdom |
| URBMI | Urban Resident Basic Medical Insurance scheme |
| US | United States |
| VBP | Value-based purchasing |
| VC | Village Clinic |
| VHA | Veterans Health Administration |
| VTE | Venous Thromboembolism |
| WHO | World Health Organization |
| WMS | Weighted Management Score |

# Introduction

Deepening health sector reform is arguably one of the major social undertakings facing China. In 2009, China unveiled an ambitious national health care reform program, committing to significantly raise health spending with the goal to provide affordable, equitable and effective health care for all by 2020. Building on an earlier wave of reforms that established a national health insurance system, the 2009 reforms, supported by an initial financial commitment of RMB 1380 billion, reaffirmed the government's role in the financing of healthcare and provision of public goods. After nearly six years of implementation, China has made a number of very noteworthy gains. It has achieved universal health insurance (HI) coverage at a speed that has few precedents globally or historically. Benefits have also been gradually expanded. For example, the New Rural Cooperative Medical Scheme (NRCMS), which targets rural populations, has become more comprehensive, incrementally adding outpatient benefits while including coverage for specific diseases. Treatment for many conditions no longer represents a poverty-inducing shock for rural residents.

Fueled by massive investments in health infrastructure and human resource formation at the grassroots level, significant expansion of access to basic public health services and achievement of near-universal health insurance coverage, for example, the coverage stayed above 95%. Service capacity has increased, utilization of health services has risen and out of pocket spending as share of total health expenditures has fallen, leading to a more equitable access to care and greater affordability. For example, by 2014 reimbursement rates for inpatient services of the three main social insurance schemes (UEBMI, URBMI and NCMS) were raised and differences significantly narrowed, reaching 80, 70 and 75 percent respectively. Twelve categories of basic public services, including care for several chronic conditions are now covered free of charge. The essential drug program is contributing to reducing irrational drug use and improving access to effective drugs. The reform, including subsequent regulations, has encouraged greater private sector participation in part to reduce overcrowding in public facilities. The governments have input huge amount of financial resources in the construction of primary healthcare facilities. The capacity of primary healthcare services have been greatly strengthened. Finally, the reform also spearheaded hundreds of innovative pilots in health financing, public hospitals and grassroots service delivery – several of which are examined in this report – and provide a strong foundation for the next stage of reform. China is progressing quickly to achieving universal health coverage and some

of the reform achievements have attracted worldwide attention.

China now faces emerging challenges in meeting the health care needs of her citizens, associated with a rapidly aging society, increasing burden of non-communicable diseases (NCDs) and rising prevalence of risk factors. Reductions in mortality and fertility trends led to a rapidly aging society while social and economic transformation brought urbanization and changed life styles, leading to emerging risk factors of obesity, sedentary lifestyles, stress, smoking, abuse of alcohol and other substances, and exposure to pollution and traffic accidents. NCDs are already China's number one health threat. These trends add to the complexity China is facing, and to which the health system will have to respond in order to prevent disease through reducing the major risk factors for chronic disease, addressing those influences that drive exposure to these risk factors (such as the environment), and ensuring the provision of services that meet the requirements of those with chronic health problems. Rising incomes and levels of education contribute to population demands for more and better health services. China's health system will be judged on how well it handle these new challenges.

China needs to avoid the risks of developing into a high cost and low-value health system (see Box I.1). The health system is hospital-centric, fragmented and volume-driven. Cost-inducing provider incentives and lack of attention to quality are major system shortcomings. The delivery system has a bias toward doing more treatment rather than improving population health outcomes and for admitting patients to hospitals rather than treating them at the primary care level. Services are unintegrated (or uncoordinated) across provider tiers (e.g., tertiary, secondary and primary) and between preventive and curative services. Given the high prevalence of NCDs, this suggests that care is suboptimal. Health financing is institutionally fragmented and insurance agencies have remained passive purchasers of health services. Effective engagement with the private sector is in its infancy and service planning has not been modernized. There is a shortage of qualified medical and health workers at the primary care level, which further compromises the system's ability to carry out the core functions of prevention, case detection, early treatment and care integration.

Recognizing these challenges, China's leaders have adopted far-reaching policies to put in place a reformed delivery system. On October 29, 2015 the 18th Session of the Central Committee of the Fifth Plenary Session of the CPC endorsed a national strategy known as "Healthy China" which places population health improvement as the main system goal. This strategy will guide the planning and

## BOX I.1 What is Value in Health Care?

Value is defined as health outcomes for the money spent (Porter, 2010). Others offer a more expanded definition involving a combination of [better] outcomes, quality and patient safety, and [lower] costs (IOM, 2010). In terms of reform or change strategies to improve health services, value involves "shift[ing] the focus from the volume and profitability of services provided – physicians visits, hospitalizations, procedures, and [diagnostic] tests – to the patient outcomes achieved" (Porter, 2010:3). The concept involves making effective linkages between health care and health outcomes.

*Low value care* refers to services with little or no benefit in terms of health outcomes, are clinically ineffective or even harmful, and are cost ineffective (compared to alternatives). The term encompasses multiple concepts (and terms) that contribute to excess costs, low quality care and poor health outcomes, including inappropriate care, unsafe care, unnecessary care, overutilization, misuse, overtreatment, over diagnosis, missed prevention opportunities, and waste (Busse, et al., 2015).

implementation of health reforms under the 13th Five-year Development Plan, 2016–2020 (see Box I.2). The Government has also initiated enabling legislative actions. The Basic Health Care Law, which will define the essential elements of the health care sector including financing, service delivery, pharmaceuticals, private investment, etc. has been included in the legislative plan of National People's Congress of China and is being formulated by the congress. CPC Central Committee Suggestions for the 13th Development Plan as well as recent policy directives (Guo Wei Ji Ceng Fa, no. 93, 2015) contain the fundamental components of service delivery reform. For example, policies emphasize strengthening the three-tiered system, including primary care and community-based services, human resources reform, optimizing use of social insurance, and encouraging private investment ("social capital") to sponsor health care. Policies also support "people first principles" such as building harmonious relationships with patients, promoting greater care integration between hospitals and primary care facilities through tiered service delivery and use of multidisciplinary teams and facility networks, shifting resources towards the primary level, linking curative and preventive care, reforming public hospital governance and strengthening regional service planning. These are some of the essential features and supporting elements of a value-driven delivery system that incorporates a new service delivery model, the full adoption of which will facilitate achieving China's vision of service delivery reform. However, while important progress has been observed, it is mostly limited to pilot projects. This suggests strengthening implementation and emphasizing scale-up. Acknowledging the difficulty of implementing these reforms and time required to achieve scale, they are collectively referred to as reforms of the emerging "deep water" phase.

China also faces an unenviable conundrum, in that as its economy is slowing down, health spending is not likely to follow suit. Indeed, as the population ages and new technologies get further integrated in preferred treatment options, the upward pressures on health spending will become even more pronounced. In the face of these opposing trends, China will soon need to come up with a new model of health production, financing and delivery, which responds to the needs and expectations of its population but at the same time is grounded in the economic reality of today, based on the economic new normal. China has already decided that doing nothing is not an option: continuing to provide quality health services in the current

**BOX I.2 Suggestions of the CPC Central Committee on the 13th Five-year Plan for National Economic and Social Development on the promotion of a "Healthy China" (pp. 42–43, English translation)**

"China will deepen the reform of the medical and health systems, promote the interaction of medical services, health insurance and pharmaceutical supply, implement the tiered delivery system and establish primary care and modern health care systems that cover both urban rural areas.

Efforts should be made to optimize the layout of medical institutions, improve the medical service system featuring the interaction and complementarity of higher and lower levels of institutions, improve the model of medical service at the grassroots level, develop distance medical service, promote the flow of medical resources to the grassroots level and rural areas, and promote work concerning general practitioners, family doctors, and the medical service capacity of highly needed areas, and electronic medical records.

Efforts should be made to encourage social forces to develop the health service industry, promote the equal treatment of non-profit private hospitals and public hospitals, strengthen supervision and control of medical quality, improve mechanisms for dispute resolution, and build harmonious relations between doctors and patients".

arrangement will result in increasing health costs and a heavier burden on the state exchequer or households or both. In fact, since reforms take time to work their way through the complex healthcare system, the time to *implement and scale-up* transformative measures is now, before it gets too late and even more expensive.

In moving forward with the delivery reforms, China should consider maintaining its focus on achieving more health rather than more treatment. This would suggest shifting the focus from rewarding volume and sales to rewarding health outcomes, and achieving more value for the money spent. It would also suggest paying particular attention to providing affordable and equitable health care for all population groups, so that the poor and disadvantaged people do not face the risks of catastrophic medical spending and forego medical care because of unaffordability. **Making the shift from a health care delivery system focused on production of treatments to one focused on value and producing health suggests a strategic agenda that aligns all stakeholders and works toward three goals: (i) attaining better health for the population; (ii) providing better quality and care experience for individuals and families; and (iii) achieving affordable costs.**

## Objectives and Audience

The objective of this report is to provide advice on core actions and implementation strategies in support of China's vision and policies on health reform particularly in relation to service delivery. A more immediate objective is to contribute technical inputs for the preparation of the 13th Development Plan.

There is much to learn from national and international innovations and experiences to successfully reform service delivery. In China, for example, there are many successful pilot initiatives that have not yet been scaled up. These initiatives represent opportunities that China can build upon and scale up these experiments to shape a world class service delivery system. At the same time, China can draw on OECD countries that are reshaping their health delivery systems to address similar challenges posed by chronic diseases, aging populations and cost pressures. Drawing on commissioned case work and analysis as well as the broader literature, the report summarizes lessons learned from Chinese and international experiences and recommends actions to support policy implementation.

The report is intended for central and provincial level policy makers and regulators as well as planners and implementers at the local level, including insurers and providers. Policy makers may want to focus on the recommended levers and corresponding core actions. The strategies for central and provincial government proposed in the implementation model described in last chapter would also be an area of interest for this group. Meanwhile, planners and implementers can center their attention on the core actions and corresponding specific implementation strategies. They would also benefit from the front line elements of the proposed implementation model.

Before proceeding, a couple of caveats are in order. First, this study centers on reforms to improve health service delivery and the supporting financial and institutional environment in China. Resource and time constraints did not allow for analysis of other important reform themes which can be the subject of future research. These include: pharmaceutical industry, tobacco industry, education and licensing of medical professionals, traditional Chinese medicine (and its integration with Western medicine) and dissemination and use of medical technologies. Some of the linkages between aged care, health care and social services will be taken up in a forthcoming WBG study Second, it is important to keep in mind that this report is a *summary* of findings and recommendations. The final report will expand upon the major themes and recommendations presented herein.

## Report Structure

Chapter 1 summarizes the major health and health system challenges facing China and provides a rationale for the recommendations detailed in this report. More specific challenges are highlighted in each of the subsequent chapters according to theme.

The next eight chapters constitute the main body of the report and are divided into two parts (see Box I.3). The first centers on "downstream" service delivery and the second on the "upstream" enabling financial and institutional environment to support service delivery reforms. **Each chapter concentrates on a single "lever" or strategic direction to support the planning and implementation of government's vision of service delivery reform. The levers aim to provide policy implementation guidance to all governmental levels. Each lever contains a set of recommended core action areas and corresponding implementation strategies to guide the 'what' and 'how' of deepening service delivery reform.**

These levers are interlocked and should not be considered or implemented as independent sets of actions. To be sure, actions taken by front line providers will require strong institutional support combined with financial and human resource reforms in order to achieve the aforementioned triple goals. In short**, the eight levers represent a comprehensive package of interventions to deepen health reform.** A short description of the contents of each part follows.

*Part 1: Service Delivery*: How health services are organized and delivered, and how providers relate to each other and to patients, matter. **People-Centered Integrated Care (PCIC)** is the term used to refer to a health care delivery model that is organized around the health needs of individuals and families. PCIC is also is referred to in the recently proposed

**BOX I.3 Report Structure**

| Chap. no. | Chapter Title (and "lever" number) |
|---|---|
| 1 | Background: Impressive gains in health outcomes but substantial challenges remain |
| | **Part 1: Service Delivery Levers** |
| 2 | Shaping a tiered health care delivery system in accordance with People-Centered Integrated Care (PCIC) models (lever 1) |
| 3 | Improving quality of care in support to PCIC (lever 2) |
| 4 | Engaging citizens in support of PCIC (lever 3) |
| 5 | Reforming public hospitals and improving their performance (lever 4) |
| | **Part 2: Institutional and Financial Environment Levers** |
| 6 | Realigning incentives in purchasing and provider payment (lever 5) |
| 7 | Strengthening health work force for PCIC (lever 6) |
| 8 | Strengthening private sector engagement in production and delivery of health services (lever 7) |
| 9 | Modernizing health service planning to guide investment (lever 8) |
| | **Part 3: Moving Forward with Implementation** |
| 10 | Strengthening implementation of service delivery reform |

WHO global strategy of People-Centered and Integrated Health Services (WHO, 2015, a, b). PCIC consists of a set of characteristics that seek to achieve better health and better quality at affordable costs, or in other words, **more value for the money spent**. It is not a one-size-fits all model. How PCIC is implemented in practice depends on local conditions.

Based on the aforementioned WHO strategy and the broader literature, PCIC involves a number of strategic directions, referred to as "levers", at the service delivery level, including (i) reorienting the model of care particularly in terms of strengthening primary health care, changing the roles of hospitals and integrating providers across care levels and among types of services; (ii) continuously improving the quality of care; and (iii) engaging people to make better decisions about their health and health seeking behaviors. A fourth lever involves improving the governance and management of hospitals. These are the respective topics of chapters 2–5 and constitute Part 1 of the report.

Broadly, the bedrock of a high-performing PCIC model is a strong primary care system that is integrated with secondary and tertiary care through formal linkages, good data, and information sharing among providers and between providers and patients, and active engagement of patients in their care. It utilizes multidisciplinary teams of providers that track patients with eHealth tools, measures outcomes over the continuum of care and relentlessly focus on improving quality. Feedback and audit mechanisms ensure continuous learning and quality improvement. Curative and preventive services are integrated to provide a comprehensive experience for patients, and measurable targets for facilities. Hospitals have new roles as providers of complex care and leaders in workforce development. They also adopt more robust governance arrangements and management practices. Measurement, monitoring and feedback are based on up-to-date, easily available, and validated data on the care, outcomes, and behaviors of providers and patients.

Internationally, many countries are implementing PCIC-like models to address similar challenges facing China. Many countries are experimenting with PCIC approaches to address the same set of challenges facing China: cost escalation, questionable quality and stagnant gains in health outcomes. Germany, Denmark, Australia, New Zealand, US, UK, Brazil, Singapore and Canada are some of the countries testing reformed service delivery models that incorporate features of PCIC. Though expanding rapidly, PCIC-like approaches remain local or regional in most of these countries. Preliminary results suggest that gains can be made in outcomes, quality and cost containment, but results vary considerably within and across countries. Implementing these reforms at scale would make China a world leader in reform service delivery and at the vanguard in health system innovation and development with insightful lessons for many countries.

*Part 2: Financial and Institutional Environment*: Establishing an enabling institutional environment together with strengthening incentives and accountabilities are underlying but recognized drivers of successful PCIC implementation and improved service delivery globally (WHO, 2015 a). China is no different. Implementation and sustained development of service delivery reform in China will require fundamental shifts in incentives, capabilities, and accountabilities, especially in ways that services are purchased, providers are paid, people are reimbursed, and providers report on performance and are held accountable for better care and alignment with public priorities. It will require strong governance arrangements and sustained high level government support. The success of PCIC, for example, will depend on improving the primary care workforce, raising compensation and competencies of primary care clinicians, and reforming human resource management practices. The implementation of service delivery reform will also be enhanced through developing more effective forms of public-private engagement. Finally, new approaches to service and capital investment planning will be required to align investment planning with the new service delivery model. Realigning incentives, developing a qualified and motivated workforce,

strengthening private sector engagement and improving capital and service planning are taken up in Chapters 6 to 9, and constitute Part 2 of the report.

China already has a mixed health delivery system consisting of both public and private providers, and this system requires strong government steering to deliver on public objectives. In this context, the role of the government, both at the central and provincial level, needs to shift from top-down administrative management of services and functions through mandates and circular—a remnant of the "legacy system"—to indirect governance where government guides public and private providers to deliver health services and results aligned with government objectives. Currently, and despite policy directives mandating separation of functions in the health sector, government is still involved in multiple functions, including oversight, financing, regulation, management and service provision.

Many OECD countries, for example, are converging on a health delivery model in which the government plays a large role in financing, oversight and regulation and a relatively limited role in direct management and service provision. What matters, however, are the policy instruments and accountability mechanisms used to align organizational objectives with public objectives. Tools include grants, contracts, regulations, public information and disclosure rules, independent audits, tax policies among others. Some are already in use in China. Other core government functions in a mixed delivery system include establishing public purchasing arrangements, guiding health service and capital investment planning, setting and enforcing quality standard and monitoring, regulating public and private hospitals, accrediting medical professionals and facilities, and creating a system of medical disputes resolution. By using these tools, the government defines public and private roles, creates a level playing field for public and private providers and develops a path for a more formalized and transparent public and private engagements that are aligned with public priorities. However, international experience suggests that these tools be sufficiently strong and transparent, and government possesses adequate enforcement and data monitoring capacity to defend the public interest and avoid policy and regulatory capture by powerful private (and public) actors.

*Part 3: Moving Forward with Implementation*: The final chapter concludes with recommended strategies, coordination arrangements and organizational platforms to facilitate sustained implementation and full scale up. Based on the broader implementation literature, it describes an actionable implementation "system" framework and corresponding strategies relevant to the Chinese context to promote effective and scalable implementation. Recommendations on sequencing and timing of rollout to reach full scale are also provided.

Finally, case studies commissioned for this study are referenced throughout the report. Box I.4 below presents the case names and location as well as the nomenclature used in referring to the same.

Annex 1 displays the set of recommended core actions for each lever. Annex 2 lists government policies supporting each of levers. Annex 3 matches recent policy guidelines on tiered service delivery (Guo Ban Fa [2015] NO.70) to the recommended core actions. Annex 4 presents a short description of the commissioned case studies. Annex 5 includes an inventory of studies measuring the impact of PCIC initiatives internationally.

## BOX I.4 Nomenclature, Name and Location for Commissioned Case Studies

| In Text Reference | Case Studies | Location |
|---|---|---|
| | **Chinese Case Studies** | |
| Beijing, CHA | Beijing Chaoyang Hospital Alliance (CHA), Four cases | Beijing |
| Beijing, PKU IDS | Peking University-Renmin Hospital Integrated Delivery System (PKU IDS). Four cases | Beijing |
| Feixi, SCPHC | Strengthening the Capacity of Primary Health Care (SCPHC) | Anhui, Feixi |
| Hangzhou, TFY | Twelfth Five year (TFY) | Zhejiang, Hangzhou |
| Huangzhong, HCA | Health Care Alliance (HCA) | Qinghai, Huangzhong |
| Shanghai, FDS | Family Doctor System (FDS) | Shanghai |
| Shanghai, RLG | Shanghai Ruijin-Luwan Hospital Groups (RLG), Four cases | Shanghai |
| XI, IC | Integrated Care (IC) | Henan, Xi |
| Zhenjiang, GH | Great Health (GH) | Jiangsu, Zhenjiang |
| Zhenjiang, ZKG | Jiangsu Zhenjiang Kangfu Hospital Groups (ZKG), Four cases. | Jiangsu, Zhenjiang |
| | **International Case Studies** | |
| Canterbury, HSP | Health Services Plan (HSP) | New Zealand, Canterbury |
| Denmark, SIKS | The integrated effort for people living with chronic diseases (SIKS) | Denmark |
| Fosen, DMC | District Medical Center (DMC) | Norway, Fosen |
| JCUH, AEC | James Cook University Hospital (JCUH) – Ambulatory Emergency Care (AEC) | England |
| Kinzigtal, GK | Gesundes Kinzigtal (GK) | Germany, Kinzigtal |
| Maryland, CareFirst | CareFirst Patient Centered Medical Home | United States, Maryland |
| Netherlands, DTC | Maastricht Diabetes Care (DTC) | Netherlands |
| Portugal, ULS | Local Health Unit (ULS) | Portugal |
| Singapore, RHS | Regional Health Systems (RHS) | Singapore |
| Turkey, HTP | Health Transition Plan (HTP) | Turkey |
| US, PACE | Program for All-Inclusive Care for the Elderly (PACE) | United States |
| VHA, PACT | Veteran Health Administration – Patient-Aligned Care Teams (PACT) | United States |

*Source:* Annex 4.

# 1

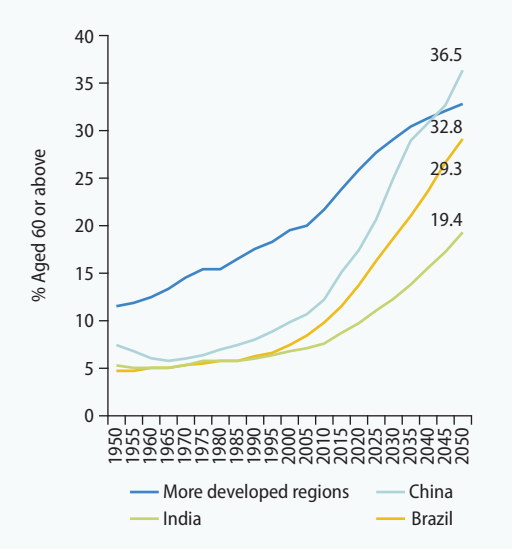
# Background: Impressive Gains in Health Outcomes, but Substantial Challenges Ahead

China was a pioneer in primary care and public health, and more recently in universal insurance coverage. The introduction of barefoot doctors, community- or work-place health insurance, and ambitious public health campaigns drove improvements combined with higher incomes, lower poverty and better living standards (sanitation and water quality, education, nutrition and housing), resulted in a significant decline in mortality and an unprecedented increase in life expectancy (Yang et al. 2008, Caldwell 1986). A child born in China today can expect to live more than 30 years longer than his forebears half a century ago; it took rich countries twice that span of time to achieve the same gains (Deaton 2013).

In the late 1990s, concerns about affordability of health care led to a state decision to initiate a first round of reforms. A key pillar of this reform was the expansion of health insurance coverage. Initially, this expansion was focused on re-establishing insurance for formal sector workers with the introduction of the Urban Employee Basic Medical Insurance scheme (UEBMI) in 1998. This was followed by the introduction of the New Cooperative Medical Scheme (NCMS) in 2003, offering subsidized health insurance for China's rural population, and the Urban Resident Basic Medical Insurance (URBMI) for informal sector workers, children and the elderly in urban areas in 2007.

In 2009, China unveiled a second round of reforms, committing to significantly raise health spending with the goal to provide affordable, equitable and effective health care for all by 2020. Building on an earlier wave of reforms, the 2009 reforms, supported by an initial commitment of RMB 850 billion, reaffirmed the government's role in the financing of healthcare and provision of public goods. After nearly six years of implementation, the reform has made a number of very noteworthy gains. It has achieved near universal health insurance coverage at a speed that has few precedents, reaching over 95 percent in both urban and rural areas by 2011. By 2014 reimbursement rates for inpatient services of the three main social insurance schemes (UEBMI, URBMI and NCMS) were raised and differences significantly narrowed, reaching 80, 70 and 75 percent respectively. Significant increases in government subsidies to social insurance schemes

**FIGURE 1.1 Share of the Elderly in China will Rapidly Catch up with the OECD**




*Source:* United Nations 2015.
*Note:* Country groups according to the WHO criteria.

have contributed to increasing utilization of some health services such as inpatient care, annual medical checkups and antenatal visits, and reducing the share of out-of-pocket (OOP) in total health spending. Benefits have been gradually expanded, and the government has moved to eliminate "drug markups" as a main source of hospital financing. Finally, the government has made massive investments to expand and upgrade health facilities at all levels and raise the number and skill levels of health workers, particularly at lower levels.

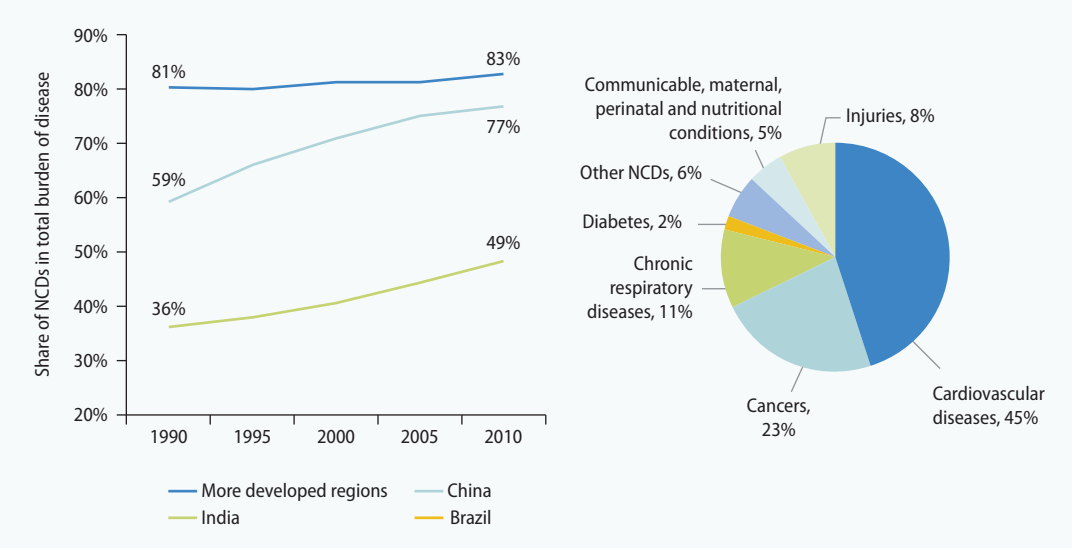
As a first step, and notwithstanding recent accomplishments, it is important to take cognizance of the major challenges in China that are contributing to cost escalation, low value care and citizen discontent, and threatening future health system gains. The first involves emerging demographic and epidemiological trends—a rapidly aging population and the onslaught of non-communicable or chronic diseases (NCDs) and corresponding risk factors. The second challenge relates to measuring and improving quality of care. The third consists of internal system factors related to the hospital centric delivery system, unbalanced resource allocation, cost-inducing provider incentives and other institutional aspects. This chapter first reviews these three challenges and then examines the resulting inefficiencies and potential spending implications if left unchecked.

## Aging, chronic disease, and risk factors

**Aging:** While reductions in mortality and fertility represent progress, these demographic changes are leading to a rapidly aging population, which has profound implications for economic and social policies, and places new demands on the health system to deliver care that ensures that people live healthy longer lives. In 2013, there were 202 million people age 60 or older, accounting for 15 percent of the total population (China National Bureau of Statistics 2014). This number is expected to double by 2030 and grow to more than a third of the population by 2050 (United Nations 2015, 2013). China will have far less time to adjust to the challenges imposed by an aging population than OECD countries did (Figure 1.1). At the current rate, it will experience in 26 years a change in population aging that took 115 years to occur in France (Kinsella and Phillips 2005).

**Chronic disease:** The greying of China's population has profound implications for the country's mortality and morbidity profile. A mere quarter century ago, injuries, communicable diseases, and newborn, nutritional and maternal conditions accounted for 41 percent of the burden of disease in China, not much different from the situation in the average developing country today (Figure 1.2). Currently, non-communicable diseases (NCDs) are responsible for 77 percent of the loss in healthy life and 85 percent of all deaths, a profile similar to that of most OECD countries. Cardiovascular diseases and cancers alone account for over two-thirds of total mortality (WHO 2014). Strokes, ischemic heart disease, chronic obstructive pulmonary disease and lung cancer top the list of causes of premature mortality while diabetes has emerged as a principle cause of years lived with disability, along with musculoskeletal disorders and

**FIGURE 1.2 Prominence of NCDs in the Burden of Disease and Causes of Mortality**




*Source:* IHME 2010, WHO 2014.
*Note:* Country groups according to the WHO criteria.

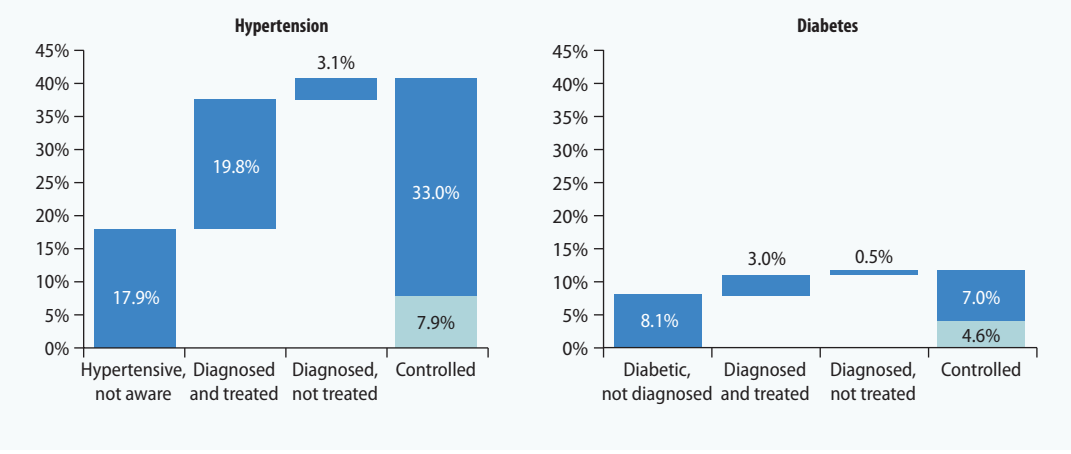
major depressive disorders (IHME 2010, Yang et al. 2013). And the NCD epidemic is projected to continue to grow. By some estimates, the number of NCD cases among Chinese people over age 40 is predicted to double or even triple over the next two decades; diabetes will be the most prevalent disease, while lung cancer cases are likely to increase fivefold (Wang, Marquez, and Langenbrunner 2011).

There has been steady improvement in diagnosis, awareness, treatment and control of chronic conditions associated with the principal causes of loss of healthy life, though more efforts are still required. Between 1991 and 2002 about 130 million (65 percent) hypertension patients are still unaware of their condition, mostly living in rural areas (Liu 2011). Mortality from the major complication of hypertension—stroke—in rural areas has exceeded stroke mortality in urban areas. Among those who are aware, 30 million had not received treatment (43 percent), and among those who are receiving treatment, 75 percent did not have their blood pressure under control. In their analysis of the 2011–2012 China Health and Retirement Longitudinal Study of people aged 45 or older, Feng, Pang, and Beard (2014) find further improvements in diagnosis, treatment and control (to 56.2, 48.5 and 19.2 percent of the sample, respectively). Nonetheless, this means that 33 percent of the randomly selected sample had hypertension that was not well-controlled (Figure 1.3).

The proportions of those who are aware, treated and controlling their high blood pressure in China were all lower than that of the average middle-income countries, whose overall management of hypertension is, in turn, worse than high-income countries (Table 1.1). In the United States, for example, 85.3 percent of hypertensive patients aged 35 and above were aware of their health condition, 80.5 percent were on medication, and 59.1 percent had their blood pressure controlled, compared to 41.6, 34.4 and 8.2 percent respectively in China (Chow et al. 2013, Ikeda et al. 2014). In short, China is still facing significant challenges in effectively managing NCDs.

**Risk factors:** More so than the aging population, high-risk behaviors such as smoking, poor diets, sedentary lifestyles, and alcohol consumption, as well as environmental factors such as air pollution, are powerful forces behind the emergence of chronic illnesses in China (Yang et al. 2008, Batis et al. 2014,

**FIGURE 1.3 Management of Hypertension and Diabetes**




*Source:* Feng, Pang, and Beard (2014), (Xu et al. 2013) and (Yang et al. 2010)
*Note:* Hypertension figures are for 2011–12. Diabetes figures are for 2007 and 2010, and uses a midrange of estimates from Xu et al. 2013 and Yang et al. 2010.

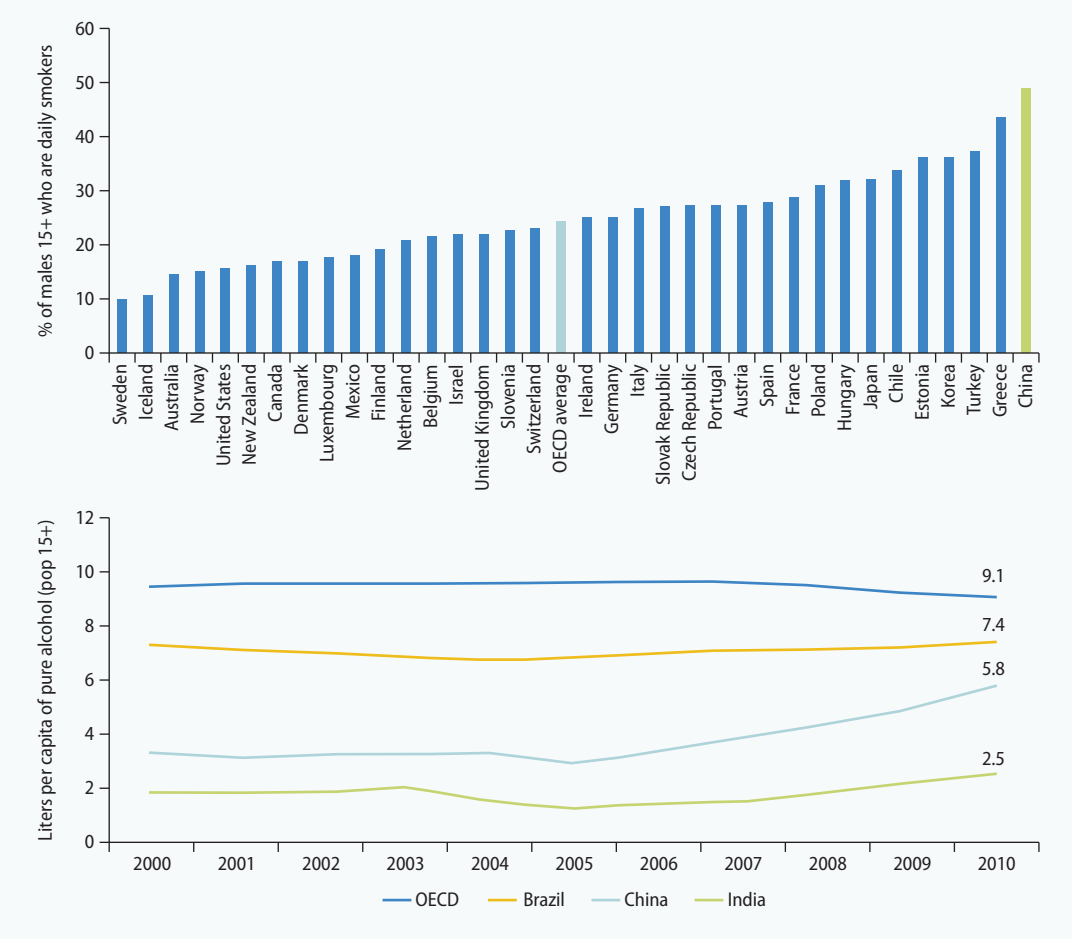
**TABLE 1.1 Hypertension diagnosis, treatment and control (age 35–84): international comparison**

| Country | Diagnosed (%) | Treated (%) | Controlled (%) |
|---|---|---|---|
| **China** | **41.6** | **34.4** | **8.2** |
| Thailand | 46.0 | 38.4 | 17.7 |
| Turkey | 49.7 | 29.0 | 6.5 |
| South Africa | 52.8 | 37.6 | 21.0 |
| Germany | 53.1 | 39.2 | 7.4 |
| Mexico | 55.8 | 49.5 | 28.0 |
| UK | 62.5 | 53.5 | 32.3 |
| Bangladesh | 62.7 | 54.6 | 30.2 |
| Jordan | 73.9 | 71.0 | 38.2 |
| Russian Fed. | 74.9 | 59.9 | 14.2 |
| USA | 85.3 | 80.5 | 59.1 |
| Japan | NA | 48.9 | 22.9 |

*Source:* Ikeda et al. 2014; Chow et al. 2013.

Ng et al. 2014, Gordon-Larsen, Wang, and Popkin 2014). Adult overweight prevalence nearly tripled from 1991 (11.8 percent) to 2009 (29.2 percent), with the strongest increase among men. An alarming 49 percent of Chinese men are daily smokers, more than twice the OECD average; alcohol consumption per capita (5.8 liters per capita) nearly doubled between 2000 and 2010, a steeper increase than Brazil and India, though still considerably below the OECD average of 9 liters per capita (Figure 1.4). In recent years, China has taken important steps to curb risk factors, such as enacting public policies to control the tobacco epidemic. Until these policies bear fruit, the rise in risk factors associated with NCDs will continue to test the ability of the Chinese health system to respond effectively in delivering care that meets the growing needs of the population.

**FIGURE 1.4 Smoking and Alcohol Consumption in China Compared to Other Nations**




*Source:* OECD (2015).
*Note:* Data on smoking is for 2013 or nearest year.

**Financial implications of NCDs:** Chronic diseases can have disastrous outcomes for individuals and society. If not effectively managed, diabetes, hypertension and other conditions tend to result in complications, which in turn may lead to disability, suffering or premature death. Direct medical costs associated with treatment and economic costs associated with lost productivity, caregiving and loss of healthy life can be staggering. At the system level, the direct medical cost of NCDs in China was 1.48 trillion RMB (210 billion USD) in 2005, and is estimated to grow to over US$ 500 billion by 2015 (Bloom et al. 2013). Taking into account the impact of NCDs on labor supply and capital accumulation, the total economic impact of the five major NCDs is projected to be US$ 27.8 trillion for the period 2012–2030. NCDs also pose a threat to the financial health of households, because they are expensive to treat and require care over an extended period. In 2009, the average health spending per hospital admission due to NCDs had already mounted to 50% of the disposable annual income of an urban resident (750 USD per capita per year) and 1.3 times that of a rural resident (291 USD per capita per year); a coronary artery bypass operation costs 1.2 times and 6.4 times the annual disposable income of an urban and rural resident respectively (Chen and Zhao 2012).

## Quality of care[1]

Although systematic evidence is hard to come by, quality is a significant issue in China's health system. It is the major bottleneck for re-directing patients to primary care facilities because they perceive that disparities exist in the quality of care among different levels of providers (Yang et al. 2014, Bhattacharyya et al. 2011, Jing et al. 2015). Available evidence shows that many health professionals at the grassroots level lack the knowledge and skills needed to effectively diagnose and treat common conditions (Sylvia, et al., 2014; Wu, Luo et al, 2009). Doctor's qualification is a strong correlate of technical quality, yet there still are large variations in doctor training and qualification standards across different levels of care, across types of practitioners (physicians, nurses, etc.) and between urban and rural areas. The shortage of competent primary care doctors and the general poor quality of primary care contributes to a rising trend of unnecessary and avoidable hospitalization (Ma et al., 2015; Jiang et al, 2015), a recognized indicator of poor access to and quality of primary care. Although quality of care is considered better at secondary and tertiary hospitals, systematic evidence on whether care is provided according to best evidence or guidelines (*process of care*) and data on effects on the health of patients as a result of receiving care (*outcome of care*) is scarce. A recent study found significant variations in outcomes across tertiary hospitals (Xu et al., 2015). Over-prescription of drugs and treatment, especially antibiotics and intravenous treatments, is a problem in all facilities (Yin, Chen, et al., 2015; Yin, Song, 2013; Liao, 2015). In addition, patient experience with health care could stand to be improved; patients complain about poor attitude and lack of effort or short consultation time with doctors and nurses, and over-prescription of unnecessary medications (Center for Health Statistics, 2010).

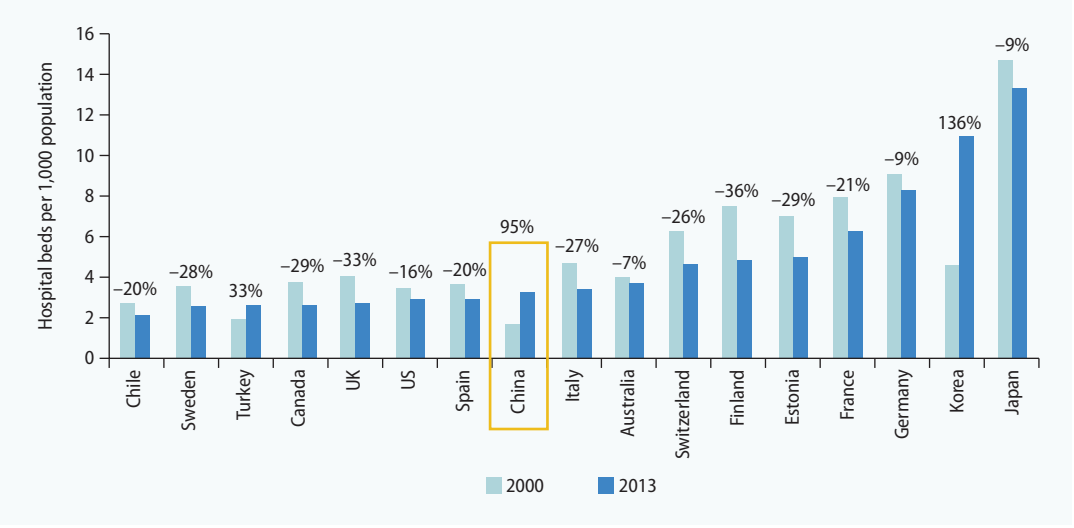
Quality is increasingly viewed as a "system property" rather than simply the duty of a particular physician, department or facility (IOM, 2000: p4). Currently, many essential policies and institutional structures to foster quality improvement (QI) require development and improvement in China. These include a clear vision, goals, and unified leadership; a standardized quality measurement system; a coordinated institutional architecture to oversee systematic QI; and transparency/accountability for quality. All these can be fixed if China can articulate and effectively implement a comprehensive strategy for quality improvement.

## Inefficient service delivery: hospital-centrism, fragmentation and distorted incentives

**The continued dominance of hospital-based care and spending:** China's health system remains both hospital-centric and fragmented. The number of hospital beds increased two fold between 1980 and 2000 (from 1.19 million to 2.17 million), and doubled again in just thirteen years (to 4.58 million in 2013). China today has more hospital beds per 1,000 population than Canada, UK, US and Spain. Although admittedly starting from a lower base, the expansion of hospital capacity in China is bucking international trends. Most OECD countries, with the notable exception of Korea, significantly reduced the number of hospitalbeds over the last decade, in many cases by as much as 30 percent (Figure 1.5). Fulfilling the prediction that "a hospital bed built is a hospital bed filled," hospitalization rates rose rapidly from 4.7 percent in 2003 to 14.1 percent in 2013, an annual rate of growth of 11.5 percent. The volume of hospitalization, in both secondary and tertiary hospitals, tripled in roughly the same period (Xu and Meng 2015). Currently, hospitals account for 54 percent of China's total health expenditure compared to the OECD average of 38 percent (OECD 2015).

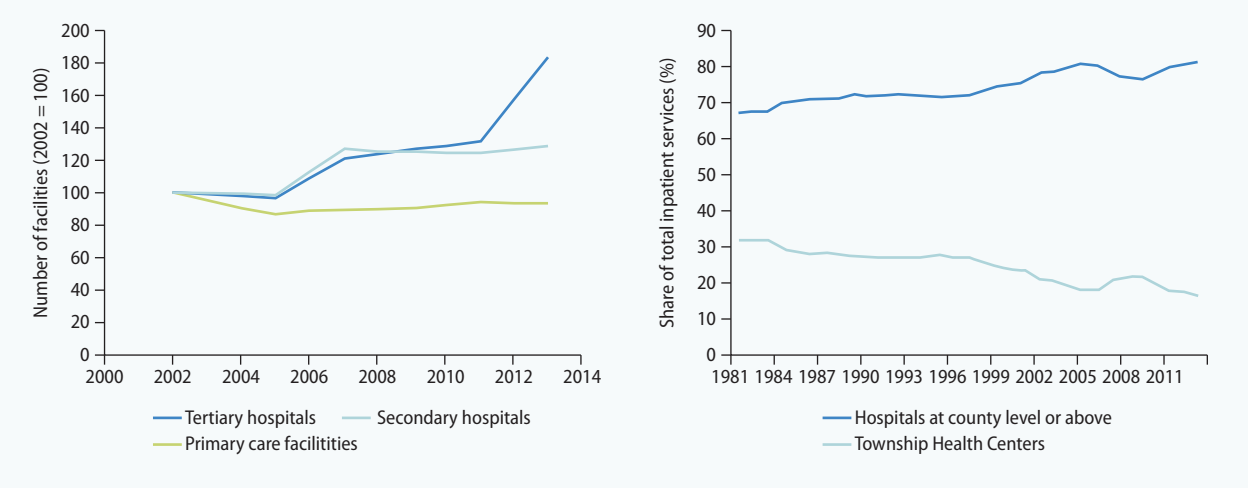
There has also been a shift in capacity expansion and utilization towards higher-level facilities (Figure 1.6). Between 2002 and 2013, the number of tertiary and secondary hospitals increased by 82 and 29 percent, respectively, while there was a decline, albeit small (6 percent), in the number of primary care providers. Health workers, especially those with formal medical education (a

**FIGURE 1.5 Hospital beds in China compared to OECD, 2000–2013**




*Source:* OECD (2015).

**FIGURE 1.6 Rapid Growth in the Number of Hospitals and Shift toward Higher Level Facilities**




*Source :* Xu and Meng (2015).

measure of quality), are moving to high-level facilities and have become particularly concentrated in hospitals (Xu and Meng, 2015, Meng et al. 2009). A number of studies point to inefficiencies associated with patients bypassing lower level facilities to seek care in hospitals, particularly the better-equipped and staffed tertiary hospitals (Sun, Wang, and Barnes 2015, He and Meng 2015, Eggleston et al. 2008).

Although secondary hospitals still provide the largest volume of inpatient services, hospitalizations are growing faster at the tertiary level than in secondary facilities, 18.3 percent per annum compared to 14.1 percent (Xu and Meng 2015). Township health centers are becoming marginalized as county hospitals are taking over the role of principal providers of inpatient services in rural areas. Hospitals are also playing a greater role in provision of

outpatient services. Since 2004, all types of providers experienced rapid growth in outpatient visits. From 2010–2014, the percentage of all healthcare services occurred in hospitals (among all the healthcare facilities) have increased from 34.9 to 39.1 percent, while the proportion in primary care facilities dropped from 61.9 to 57.4 percent.

**Incentives and Inefficiencies:** Over-utilization of medical technologies and high-profit margin procedures in hospitals is well documented. For example, one of the most salient issues facing China is that over-servicing of medicines, diagnostic tests and high-technology services continues to afflict the delivery system. Facilities derive significant revenue from the sale of these services. Over time, this has translated into financial incentives for individual providers to prescribe drugs and perform diagnostic and other procedures, while at the same time shaping patient expectations of what comprises "good" health care. For example, numerous studies have shown that over-prescription is now pervasive in China. A systematic review found that 50.3 percent of outpatient prescriptions contained antibiotics, among which 25 percent prescribed two or more antibiotics (Yin et al. 2013). Over prescription leads to unnecessary health expenditures and risks to patients (as well as the public health threat of antimicrobial resistance). Pharmaceutical expenditure per capita has increased more than threefold over the past decade. While spending on medicines has declined recently as a share of total health expenditure, it still accounts for 40 percent of overall health expenditure, which is on the high end compared to other countries in East Asia and the Pacific, and significantly higher than the OECD average of 16 percent. Additionally, the structure of insurance reimbursement incentivizes use of inpatient over outpatient services; the average length of a hospital-stay, a key driver of higher costs, is high in China relative to OECD countries (9.8 days, in contrast to 7.3 days).

These inefficiencies have been attributed to specific features of the financing and delivery system, such as reliance on the fee-for-service payment method, lack of effective referral or tiered copayment, unbalanced price schedules that favor drugs and high-technology procedures over healthcare services, concentration of health workers and other resources in urban areas, and medical staff remuneration tied to volume- and revenue-based bonus payments (Li et al. 2012, Liu, Wu, and Liu 2014). Some provinces documented insurance funds running in the red, unable to cover reimbursements due to hospital expenses. One prefecture (Sanming) had annual increases in hospital expenditures as high as nearly 50 percent prior to implementation of its hospital reform.

**Lack of provider integration:** Chinese providers at various levels do not routinely communicate to coordinate patient services. Linkages between hospitals and primary health care (PHC) providers, including structured referral systems, patient discharge and handover mechanisms, and patient outreach are generally not in place (McCollum et al., 2013; Xu et al., 2010). Providers at different levels have strong incentives to compete with each other and maximize their profits, rather than managing population health in a coordinated way. Moreover, China could benefit from more systematic adoption of cost effective delivery and life cycle models that focus on the prevention, treatment and management of NCDs. Weak provider integration, gate keeping and screening systems, and post discharge care may contribute to costly (and avoidable) admissions and readmissions for mostly NCD conditions which can be cost-effectively treated on an ambulatory basis, and increasingly, in patients' homes. For example, a recent study of 2.57 million admissions in 822 hospitals in 31 provinces found that between 8 and 12 percent of admissions were avoidable (e.g., sensitive to treatment by primary care providers) for a sample of NCD conditions (asthma, chronic obstructive pulmonary disease, congestive heart failure, diabetes and hypertension). Avoidable admissions accounted for 2.7 to 4.4 percent of hospital expenditures.

Additional factors in the institutional and financial environment contribute to service delivery inefficiencies:[2]

**Institutional fragmentation:** The health sector suffers from institutional and governance fragmentation, which hampers reform efforts. Over ten government agencies are involved in the health sector. Each pursues its bureaucratic objectives with limited vision of the big picture beyond its own sphere of decision-making. Because the ministries have a vertical line of management, the same fragmentation exists at the provincial and local level. Coordination among institutional actors has been identified as an impediment to innovation and sustained reform implementation (Qian, 2015).

**Human resource shortages at the grassroots level:** China faces a shortage of general practitioners (GPs) and nurses, which weakens delivery at the primary health care level. Primary health care facilities and poor rural areas have difficulties to recruit and retain qualified health professionals and, while the overall health workforce has increased in the past decade, the PHC workforce has fallen from 40 percent of total workforce in 2009 to 36 percent in 2013. A majority of health workers at the primary care level has only post-high school training, which further compromises the health systems' ability to deliver quality care at the primary care level. Unsurprisingly, patients prefer to bypass PHC and seek care directly in hospitals, which produce the same level of care at higher costs relative to PHC centers.

**Headcount quota system:** Health facilities have reported many quota-related issues, such as unfilled quotas and large number of contracted staff without a quota who have no benefits and are paid less compared to quota staff. The quota is linked to the facility, which means that health workers stand to lose all benefits if they leave the facility. Such a system creates rigidities and inefficiencies in the recruitment and management of health workers, limits the mobility of health professionals and leaves little autonomy to health facility managers to manage their workforce. The health sector lags behind other sectors in reforming civil service policies to create a functioning labor market. This also hampers private sector development because many health workers are reluctant to leave their public positions in part out of fear of losing their benefits.

**Service and capital planning:** China should consider transforming its regional service planning model from an input- into a needs-based model. Despite policy intent, regional service planning in China is driven by input-based, such as availability of beds per 1,000 population. All resource planning is thus driven by bed numbers and the maximum size of the different facilities types. Consideration of population needs are limited to the total size of the population and the distribution of facility types by level of care, rather than the actual health service needs of the population, at least based on the sample of localities in this study. There is also concern regarding enforcement of regional service planning. Additionally, there are no consequences for regional development of projects that are not in line with central government guidelines or standards. Beds continue to expand despite central government guidelines to limit the number and size of hospitals.

**Private sector engagement:** The private sector has not been sufficiently engaged to help improve and rebalance the service delivery system. The pace and scope of policies targeting private sector development has accelerated during the past five years, including by the 2012 national goal that private health care providers should account for 20 percent of hospital beds and provision of services by 2015. Still, a unified vision for private providers' role in improving service delivery is missing, and government policies do not clearly articulate what private providers should and can do to contribute to national health objectives and how they fit into the whole health delivery system. As a result, there is little consensus between different government agencies and between the public and private health sectors on how the private sector can be "complementary" to the public sector.

There is also lack of clarity on whether the private sector should be integral to the primary care delivery system. In every area, the private health sector continues to receive mixed messages. The private sector remains constrained by weaknesses in existing policy, regulatory and financial environments.

**Purchasing:** China's health insurance agencies are yet to become strategic purchasers. They currently focus on fund management rather than creating strong incentives for providers of health services to transform inputs into cost-effective services. Performance of the purchasing agencies for social insurance is assessed mainly by their ability to balance revenues with claims, rather than on their contributions to achieving better care at lower cost for communities and individuals. In terms used in other nations, the agencies are "passive purchasers" rather than "active purchasers". A lot of effort has been directed toward strengthening the capacity to process and audit claims. Greater attention needs to be accorded to putting in place the right set of incentives and supports to motivate provider behavior toward production of high-value services at low costs. In addition to changing the financial incentives facing patients, insurance reform efforts should focus more on reforming incentives facing providers to ensure service quality and patient safety. Insurance agencies need to invest more in enhancing their ability to monitor the mix and quality of services delivered or to drive a more efficient rebalancing of utilization patterns. Such abilities would be enhanced by scaling up pilot provider payment reforms, including prospective case-based payments and case-mix based global budgets for hospitals, incentivizing day-care and day surgery, risk-adjusted capitation based financing of primary health care with special performance incentives for special high priority outcomes (e.g. vaccination coverage, effective case management for diabetes, high blood pressure). If used effectively, the result of strategic purchasing is that scarce inputs are transformed efficiently into health services that people use, reducing costs and enhancing financial protection afforded by universal coverage.

## Risk of low value care: Diminishing gains in health with escalating health spending

**Rising costs:** Health expenditures in China have been rising steadily, more rapidly than any OECD or BRICS countries. Over the last two decades, total spending on health increased fourteen-fold from about 220 billion yuan to 3,170 billion yuan in real terms (CNHDRC 2014). This is largely due to China's strong economic growth.

The rise in total health expenditure was driven mostly by the sharp growth in public health spending including social health insurance. This has resulted in an impressive decline of out of pocket expenditure from 60% in 2001 to 32% in 2014. This however is still high relative to WHO's recommended benchmark as 20% for reducing impoverishment due to disease. Though the country still spends considerably less on health as a share of GDP (5.6 percent), lower than OECD countries and in the middle of BRIC countries, but the growth of health expenditure outpaces that of GDP, to what extent China can continue to increase public health spending at this pace under the new normal of economy is questionable, which raises concerns about future affordability (Figure 1.8).

**Persistent financial burden:** The aforementioned inefficiencies entail a cost not only to the health system, but also to patients who face congestion in high-level hospitals and incur expenditures associated with sometimes-unnecessary procedures. Out-of-pocket payments have been rising in real terms in China (figure 1.9). This is to be expected: as incomes rise, households are better able to afford goods and services; health care is no exception. Evidence of the impact of reforms in extending financial protection is mixed. At the household level, there is some evidence of positive impacts of health insurance. For instance, the rate of self-discharge from hospital for financial reasons has declined steadily since 2003. Nonetheless, the incidence of catastrophic spending has remained stable and impact evaluations of both urban and rural health insurance have

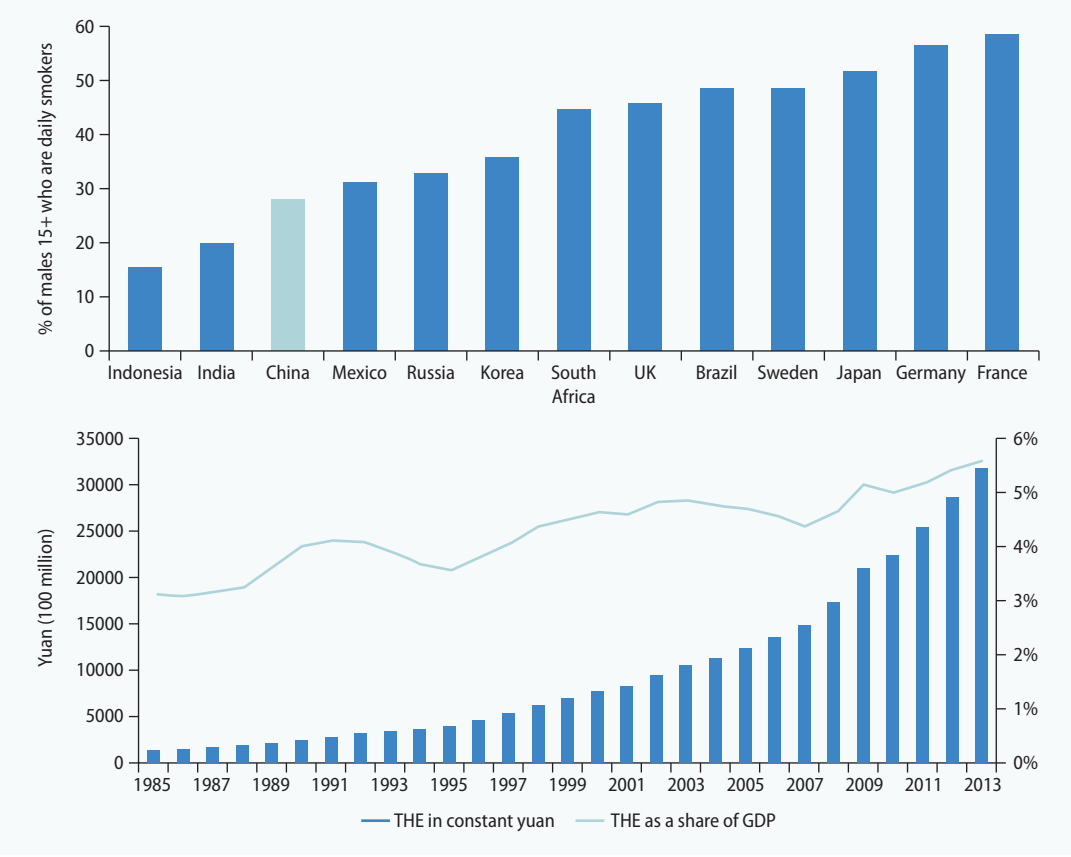
not found evidence that the introduction of health insurance has resulted in a reduction in out-of-pocket spending (Liu, Wu, and Liu, 2014). Critically, the study found that reimbursements through insurance mechanisms were more than offset by increases in expenditure due to the use of higher-level facilities, longer length of stay, and use of more expensive treatment items.

The reduction in the share of out-of-pocket payments in total health spending, despite its impressive decline from 60 to 32 percent in little more than a decade, may not have benefited urban and rural populations evenly. Out-of-pocket payments still account for 50 percent of total per capita health spending for the rural population, and households continue to spend a non-trivial share of their income on health, roughly 9 to 10 percent of annual household income depending on the measure used (Long et al. 2013, Liang and Langenbrunner 2013). Some studies project that the ratio of OOP expenditures to disposable personal income may increase under a more constrained public finance environment scenario (Zhang and Liu 2014).

China needs to make sure that increasing investments in health and health care will continue to translate into continuous improvements in health outcomes. China has enjoyed rapid improvements in longevity but the progress has slowed down over the last decade (Figure 1.10).

**Unmet Patient Expectations.** Fueled by rapid urbanization and rising incomes, the Chinese population has increasing expectations that the health system will provide more

**FIGURE 1.7 Rising Health Care Cost in China**




*Source:* World Bank (2015) and CNHDRC (2014).

accessible, affordable and higher quality care. However, there is conflicting evidence whether these expectations are being met. Many citizens appear dissatisfied with the delivery system and consider that providers don't necessarily act in the best interests of patients. This situation has contributed to well-publicized disputes between patients and medical personnel, some of which turned violent (Chen 2012, Yuan, 2012). Surveys and press reports suggest poor attitudes of health professionals, short consultation times, and poor provider-patient communication which may contribute to these incidents (Deloitte, 2011; Center for Health Statistics, 2010). Recent government documents reporting on progress under the 12th Development Plan (NHFPC, 2015) reported the 5th National Health Survey found that 76.5 percent of outpatients and 67 percent of inpatients were satisfied with their care seeking experiences.

## Spending projections

Though health policy decisions can have a noticeable impact on trends in health spending, rising expenditures reflect, in part, improvements in medical technologies, as well demographic and epidemiological factors. Societies, rich and poor make the policy choice to invest in health based on an understanding that these investments have the potential to generate significant value. This value comes from longer life and absence of disability, which, although not reflected in GDP, increase individual well-being and tend to be highly valued by society. Value also comes from reducing the direct economic costs from poor health related to use of health care, as well as reductions in labor supply and productivity and possible impacts on savings and investment associated with illness and premature death (Bloom et al. 2013).

Cost pressures in China's health sector are likely to grow in coming decades. As in many other countries, population aging, growing prevalence of chronic disease and the introduction and expanded use of new drugs, procedures and other medical technology are all putting upward pressure on spending. Expenditure pressures will also come from addressing coverage gaps and disparities in the health system. For example, millions of people with diabetes, hypertension and other chronic disease are currently undiagnosed and not receiving the care they need (see Table 1.1; Chow, et al, 2013; Feng, Pang and Beard, 2014; Xu et al., 2013; Yang et al., 2010). Extending coverage may require substantial increases in spending. Additionally, extending financial protection and reducing rural-urban disparities are important policy objectives, but doing so will come at significant fiscal costs. Health insurance coverage is now nearly universal, but coverage guarantees only the very basic health needs, leaving many important areas uncovered. At the moment, weakness in primary care, hospital centrism, lack of integration, volume-based incentives and uneven quality all contribute to important health system shortcomings that are an impediment to achieving better health outcomes and higher returns to investments in health.

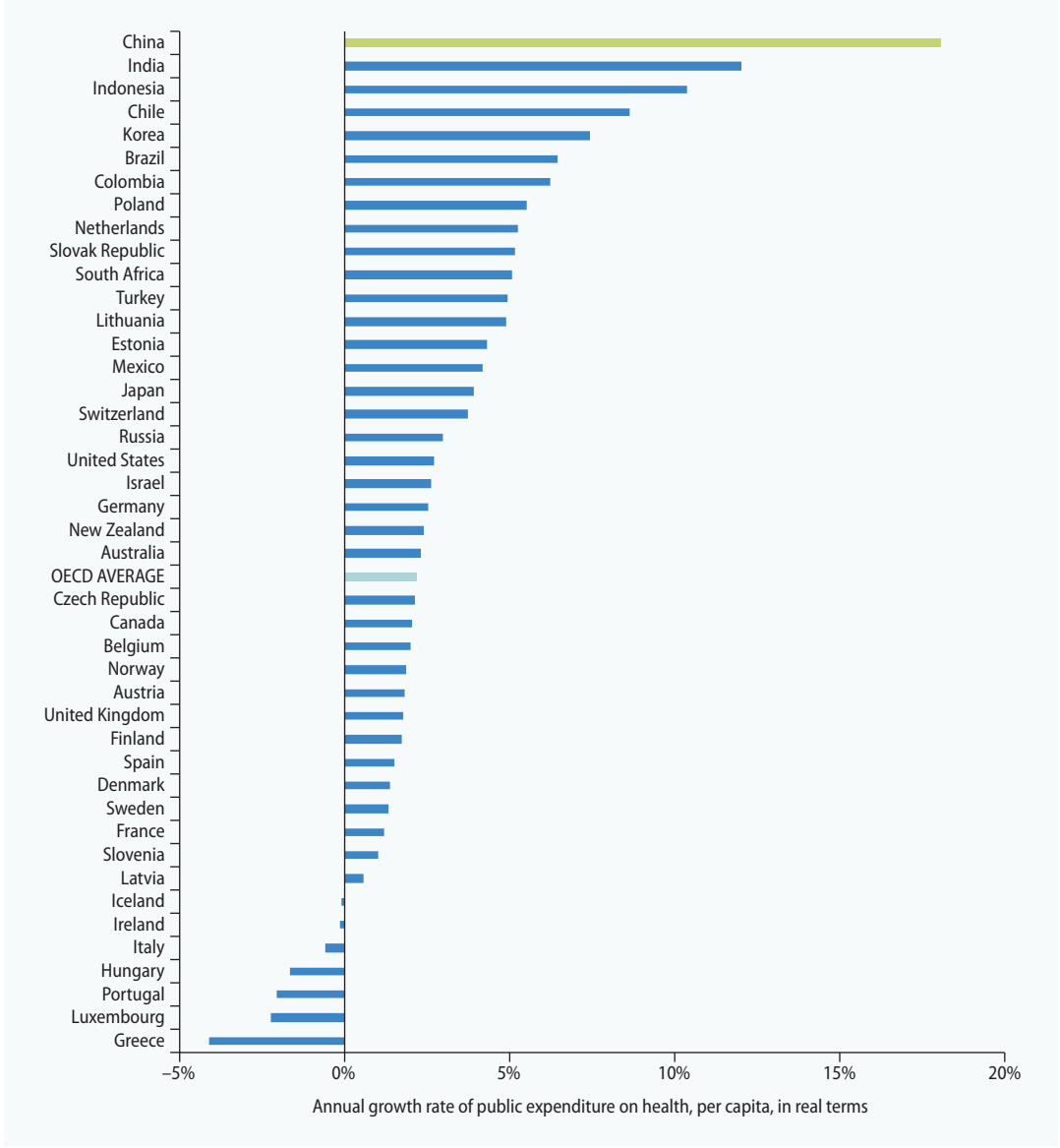
OECD projects a threefold increase from today's level of public health spending (including social health insurance) in China, to nearly 10 percent of GDP by 2060 in the absence of cost containment measures, but suggests that expenditures could be controlled to under 6 percent of GDP—which nonetheless roughly doubles current spending—if adequate reforms are undertaken (de la Maisonneuve and Oliveira Martins, 2013). Due to data limitations, these projections may be severely underestimated. Nevertheless, a critical component of these projection methodologies is the potential impact of policy and institutional factors to contain costs. In the OECD econometric estimates, these factors alone explain a substantial portion (almost one percentage-point) of the annual increase in public health spending. These estimates highlight that health system reforms contribute significantly to the trajectory of health spending in the medium to long term.

Using older data, IMF projections of public health spending from 2011–30, showed significant differences in excess cost growth (ECG: the excess of growth in real per capita spending in health over growth in real per capita GDP after controlling for aging) among high income countries. For example, the US

and Luxemburg were projected to have ECG of over 3 percent during this period compared to negligible ECG in Italy and Japan (IMF, 2010). While the IMF study shows that ECG in emerging economies is low due to lower initial health spending, it is likely that future increases will also vary considerably across countries. This suggests that the challenge for emerging markets is to choose an efficient and high value path to public spending.

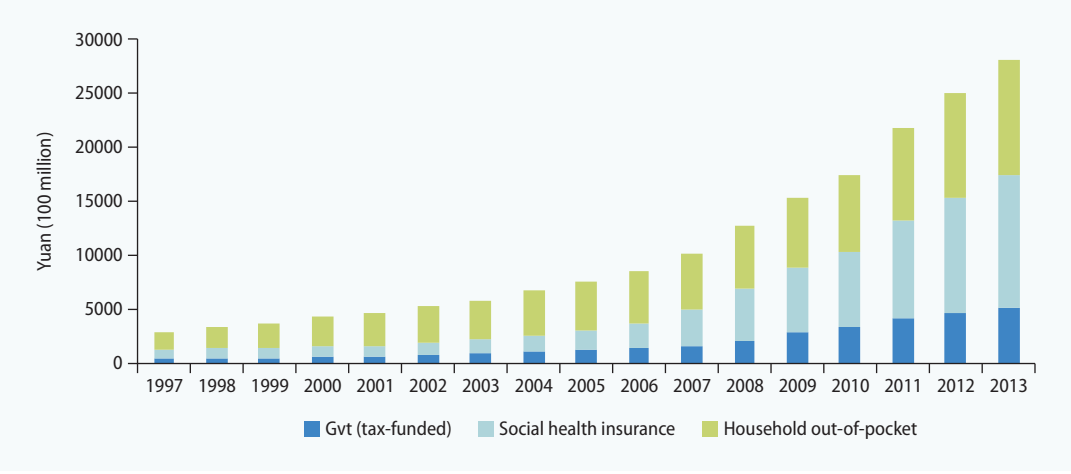
An inconvenient truth is that, as China continues to grow, health spending will increase. However, the rate at which spending on health increases can be controlled by prudent choices on the organization and production of health services, a focus on quality, investment in prevention and the efficient use of resources. A high cost path will result in two or three times the per capita spending than the low cost path, and will not lead to

**FIGURE 1.8** **Health Care Expenditure Growth Rate in China**



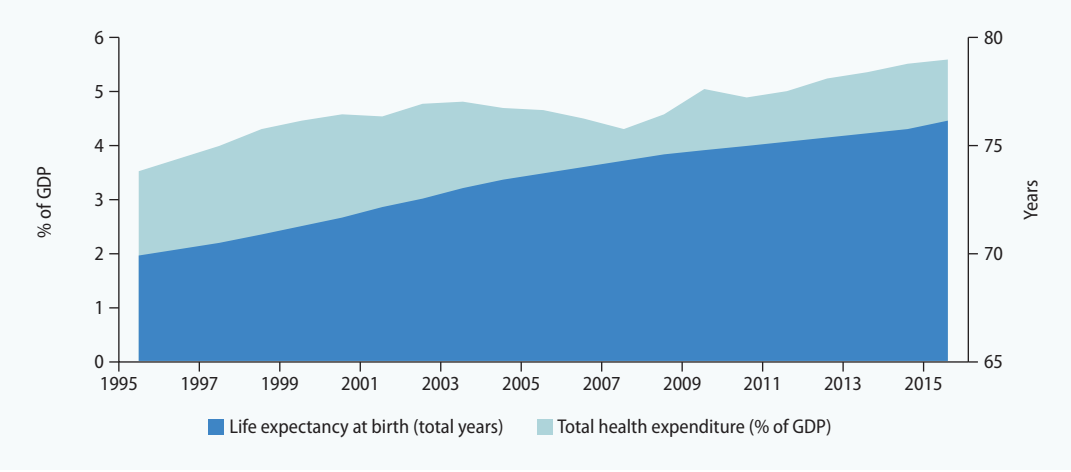

*Source:* OECD, 2015.

**FIGURE 1.9 Composition of Health Spending in China, 1997–2013**




*Source:* World Health Organization, 2015.

**FIGURE 1.10 Trend in Life Expectancy Compared to Total Spending on Health, 1995–2015**

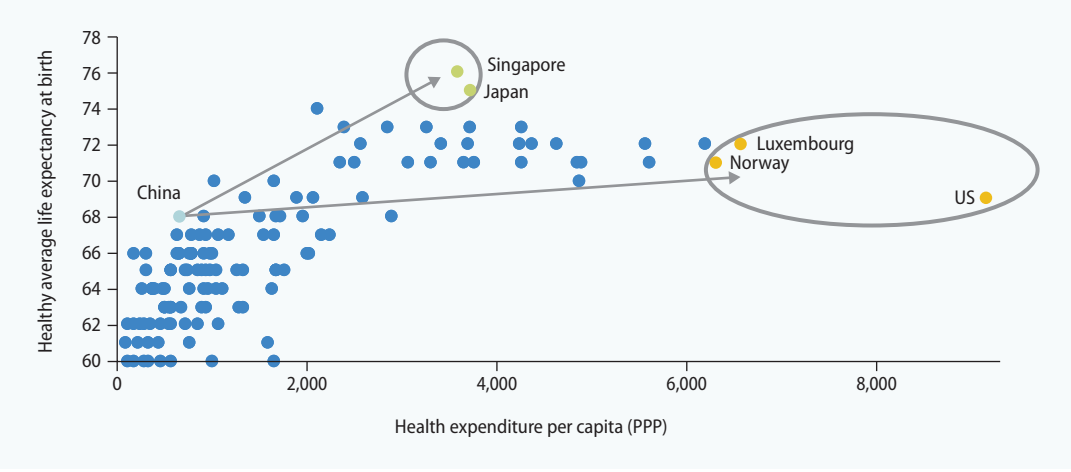



*Source:* World Bank (2015) and China Statistical Yearbook (2015).

better outcomes (Figure 1.8). While factors other than health care and health spending contribute to health outcomes, it is instructive that the United States is a poor value health care system, spending nearly $9,000 per capita (PPP). Singapore is a higher value system, spending only US$3,000 per capita and achieving better health outcomes and higher life expectancy than the United States. China has important choices to make regarding the structure of its health financing and delivery system if it wants to progress along the high value path to improved outcomes.

A study commissioned by the Word Bank Group and carried out together with researchers from China concluded that business as usual will result in growth of real health expenditure of at 9.4 percent a year in the period 2015 to 2020, during which GDP is projected to grow at 6.5 percent a year. In

**FIGURE 1.11 Diverse Paths to Better Health**




*Source:* WHO (various years); Economist Intelligence Unit, 2014.

the period 2030 to 2035, during which GDP growth is projected to slow down further, health expenditure will grow at 7.5 percent per year. In other words, under business-as-usual assumptions, health expenditure in China will increase in real terms (2014 prices) from 3,531 billion yuan in 2015 to 15,805 billion yuan in 2035—an average increase of 8.4 percent per year. This will increase current health expenditure from 5.6 percent of GDP in 2015 to more than 9 percent of GDP in 2035.

Under the business as usual scenario, over 60 percent of the growth in health expenditure is expected to be in inpatient services. Inpatient expenditure will grow by 7,915 billion yuan as compared to growth for outpatient expenditure of 3,328 billion yuan, pharmaceutical expenditure of 1,256 billion yuan and growth of other health expenditure of 155 billion yuan.

China could, however, achieve significant savings—equivalent to 3 percent of GDP—if it could slow down the main cost drivers. To realize these savings, the growth in hospitalization needs to come down and utilization of outpatient care needs to go up. This implies strengthening the primary care system, raising peoples' confidence in the health system outside of the hospital setting, providing high quality people-centered care that is integrated across all levels, and enriching peoples' experience with the health care system. Potential for savings also allows for affordable fiscal space for needed investments into people-centered integrated care that would be well below the potential savings to be achieved.

## Notes

1. A more detailed review of quality issues is presented in Chapter 3.
2. These themes are discussed in more detail in the respective chapters.

# Part I

# Service Delivery Levers

# 2

# Shaping tiered health care delivery system in accordance with People-Centered Integrated Care Model (Lever 1)

## Introduction

How health services are organized and delivered, and how providers relate to each other and to patients, matters. A country's health care service delivery system should ensure that patients receive the appropriate high quality care at the best setting for their needs in a timely, equitable and affordable fashion. A flexible model organized around the health needs of individuals and their families will help China rapidly achieve its vision of service delivery reform in ways that is consistent with the special but diverse characteristics of its health system**. People-Centered Integrated Care (PCIC)** is the term used in this report to refer to such a model. PCIC is a shorter nomenclature for the WHO global strategy of People-centered and Integrated Health Services (WHO, 2015a).[1] Box 2.1 defines PCIC drawing on the WHO strategy.

The ultimate goal of PCIC is to provide the right service at the right place and right time. It involves far-reaching changes along major policy and service delivery domains: (i) individuals, families, and communities; (ii) health providers; (iii) health care organizations; and (iv) health systems (WHO, 2007). For example, in addition to responding to patient needs and perspectives, this approach prioritizes integration of services across the spectrum of care, from promotion and prevention to curative and palliative needs, in order to reduce fragmentation and wasteful use of resources across a health system. Effective PCIC promotes primary care as the first point of contact for patients for a majority of their healthcare needs, coordinating care between other providers such as hospitals at different levels of the healthcare system and across the spectrum of health needs. Ultimately, PCIC implies rebalancing and structuring the delivery system into functional and accountable networks of tiered and interconnected providers.

PCIC consists of at least four strategic directions at the *service delivery level*: (i) reorienting the model of care, particularly in terms of strengthening primary health care and changing the roles of hospitals;

## BOX 2.1 Defining People-Centered Integrated Care

People-centered care is "an approach to care that consciously adopts the perspectives of individuals, families and communities, and sees them as participants as well as beneficiaries of trusted health systems that respond to their needs and preferences in humane and holistic ways."

Integrated care consist of "health services that are managed and delivered in a way that ensures people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services, at the different levels and sites of care within the health system, and according to their needs throughout their life course."

WHO, 2015a; pgs. 10–11.

(ii) integrating providers across care levels and among types of services; (iii) continuously improving the quality of care; and (iv) engaging people to make better decisions about their health and health seeking behaviors (WHO, 2015a.b; 2007; Shortell, et. al., 2014; Ham and Walsh, 2013; Craig, Eby and Whittington, 2011; Ovretveit, 2011, Health Care Foundation, 2011; Curry and Ham, 2010; Curtis and Hodin, 2009; Berwick, Nolan and Whittington, 2008; Hofmarcher, Oxley and Rusticelli, 2007; Barr, et al, 2003; Wenzel and Rohrer, 1994). The first two of these directions are taken up in this chapter.[2]

Primary health care (PHC) is the foundation of patient-centered integrated care. Better outcomes at potentially lower costs are produced by systems that prioritize critical primary health care functions of accessibility, comprehensive capacities for most general non-emergent clinical needs, continuity of care and information, continual quality improvement and integration of care (Macincko, 2009; Friedberg, 2010). No country can provide high quality, effective person-centered integrated care while also keeping costs low without a robust primary health care system. Primary health care is organized around the health needs of individuals and communities, not simply diseases. Patients need to have confidence in and trust that their health needs will be met in a responsive, quality and timely manner in the primary care setting. They also need to be empowered by knowing that that their own health-promoting behaviors will be amplified through interaction with the formal service delivery system.[3]

Reforming hospitals is part and parcel of reforming service delivery and adapting PCIC-like models. Hospitals will continue to play an important role, but one that over time is less financially dominant and more focused on providing only the specialized services that only they can offer. As primary care is strengthened and the PCIC model is put in place, a wide range of care processes will be shifted out of hospitals to ambulatory settings (e.g., certain surgeries and diagnostics, chemotherapy) and primary care facilities. Hospitals will become centers of excellence but with adequate volume to deliver high quality care. They can perform important training and workforce development functions. They can also focus more on biomedical research and providing clinical support to lower level providers. As described in the chapter, some of these functions are slowly rolling out in China.

Across the globe, PCIC initiatives are gaining traction as central parts of health care reform. While they have different names, their core features—strengthened primary care, a focus on patient needs, and integration with the rest of the health system—are ubiquitous. In the United States, the patient-centered medical home model has become an important form of primary care improvement. Across high-functioning European health systems such as those in the Netherlands, the UK, Australia,

## BOX 2.2 Impacts of PCIC-like models

The literature reviewed in Annex 3 shows:

- **Lower hospitalizations and emergency care use:** Reviews of a wide variety of PCIC approaches, including PACE and the VHA's PACT, highlight reductions in ED visits, unscheduled readmissions, and hospital days. Admission rates for Ambulatory Care Sensitive Conditions decline in many cases.
- **Improved processes of clinical care:** Interventions report improvements in pain assessment and treatment, adequacy of medicine dosages, adherence to prescriptions, use of care plans, and patient education. For example, of the 48 clinical processes studied in the VHA's PACT, 41 improved.
- **Improved outcomes and patient satisfaction:** PCIC interventions decrease pain, and improve quality of life and depression severity. Benefits include glycemic control and lipid profiles, and improvements in physical function, nutritional status, and physical balance. When measured, patient satisfaction almost always increases.
- **Mixed impacts on costs;** While reviews do find interventions in the US and Europe which generate savings, the vast majority of studies produced limited or inconclusive evidence on cost stabilization or curtailment, and a handful even report increases. However, nearly all studies examined short term impacts on costs.

*Source:* Author's elaboration.

Canada and Denmark, PCIC-like reforms are taking shape. And even in middle income countries such as Costa Rica, Brazil, Singapore and Turkey there is a marked orientation toward reshaping service delivery upon the foundation of PCIC. Though expanding rapidly, PCIC-like approaches remain local or regional in most of these countries.

While results are often context specific and most of the evidence is based on PCIC initiatives in high income countries,, preliminary findings suggest that gains can be made in outcomes, quality and patient experience. Most studies show only limited impact on costs in the short term, but further research is needed to determine if improved quality and outcomes will bring about cost-savings in the long term. Results also varied considerably within and across countries. However, given the unfavorable mix of specialty vs. primary care services in China, there is greater potential for future cost savings. Box 2.2 reviews evidence on impacts of PCIC-like models on health outcomes, quality and costs will be included in the final report.[4] Based on an exhaustive review of the literature of PCIC initiatives globally, (WHO 2015 a,b) identified an array of *potential* benefits to individuals, communities, health workers and health systems (Box 2.3).

In China, central government has enacted a series of policies and supported investments to promote a delivery system based on PCIC (Guo Ban Fa, 2015: nos. 33, 38, 70; CPC, 2009). From a policy perspective, the "paradigm shift" toward a PCIC-like model is already underway in China. Of particular relevance are recent State Council guidelines outlining the roles and responsibilities of different levels of a tiered delivery system (Gu Ban Fa, 2015: no. 70). These guidelines establish the essential tenets and features of the PCIC delivery model in China and set the stage for the core actions presented in this chapter. Important attributes include strengthening grassroots providers, promoting first contact at grassroots levels, fostering two-way referrals, defining provider roles while fostering integration of providers across a tiered delivery system; emphasizing special care arrangements to treat and manage chronic diseases, expanding the supply of general practice physicians to staff primary care facilities; and organizing provider networks and advancing the use of eHealth and mHealth innovations. Moreover, government has made significant

## BOX 2.3 The Potential Benefits of People-Centered Integrated Care

To individual and their families:

- Increased satisfaction with care and better relationships with care providers
- Improved access and timeliness of care
- Improved health literacy and decision-making skills that promote independence
- Shared decision-making with professionals with increased involvement in care planning
- Increased ability to self-manage and control long-term health conditions
- Better coordination of care across different care settings.

To health professionals and community health workers:

- Improved job satisfaction
- Improved workloads and reduced burnout
- Role enhancement that expands workforce skills so they can assume a wider range of responsibilities
- Education and training opportunities to learn new skills, such as working in team-based health care environments.

To communities:

- Improved access to care, particular for marginalized groups
- Improved health outcomes and healthier communities, including greater levels of health-seeking behavior
- Better ability for communities to manage and control infectious disease and respond to crises
- Greater influence and better relationships with care providers that build community awareness and trust in care services
- Greater engagement and participatory representation in decision-making about the use of health resources
- Clarification on the rights and responsibilities of citizens to health care
- Care that is more responsive to community needs.

To health systems:

- Enables a shift in the balance of care so that resources are allocated closer to needs
- Improved equity and enhanced access to care for all
- Improved patient safety through reduced medical errors and adverse events
- Increased uptake of screening and preventive programs
- Improved diagnostic accuracy and appropriateness and timeliness of referrals
- Reduced hospitalizations and lengths of stay through stronger primary and community care services and the better management and coordination of care
- Reduced unnecessary use of health care facilities and waiting times for care
- Reduced duplication of health investments and services
- Reduced overall costs of care per capita
- Reduced mortality and morbidity from both infectious and non-communicable diseases.

*Source:* World Health Organization 2015 a: 12.

investments since 2009 in building and renovating thousands of village clinics, community health service centers, and township health centers to provide the infrastructure that can better support PCIC. New primary health care provider training programs have spread across the country and thousands of new workers have been trained to provide frontline primary healthcare to address both quality and human resource gaps. In 2013, the central government invested in a program to improve capacity and service provision of Traditional Chinese Medicine as a way to further augment frontline service delivery capacity.

This chapter consists of two parts. The first briefly reviews the challenges that provide a rationale for and the constraints to reforming service delivery based on PCIC. Drawing on 22 case studies commissioned for this study, the second part, the main body of the chapter, summarizes the core actions

and implementation strategies required to rebalance the service delivery system based on PCIC.

## Challenges

Many of the challenges underscoring the urgency in China to adapt a PCIC-like model were highlighted in Chapter 1. Slower economic growth adds urgency to maintaining a healthy and productive population, especially considering shifting demographics and disease burdens. A rapidly aging population and increasing burdens of non-communicable diseases (NCDs) constitute major demographic and epidemiological challenges for China. As NCDs expand, China may like to consider addressing both their underlying causes as well as increasing early detection and chronic disease management. Otherwise, these current silent epidemics will, over time, create steeply rising adverse outcomes and higher costs.

China must also contend with its severely hospital-centric and volume-driven delivery system. Spurred by profits and poor management, many public hospitals are costly yet achieving their societal goals. In China, neither vertical (across provider tiers) nor horizontal (across types of care: promotion, preventive, curative, and palliative) integration are routinely present. This suggests that care is fragmented which may compromise effectiveness and raises costs. This gap in integration also reflects the current split in China between public health (focusing on promotion and prevention services) and health care delivery (focused on primary through tertiary services), the absence of an effective electronic health (eHealth) system able to ensure care integration, and the financial incentives to motivate linkages among providers.

The case studies (see Annex 4) identified the following constraints to implementing PCIC-based service delivery reforms. Importantly, as highlighted in this and other chapters, innovative initiatives are underway in China to address these challenges.

- Registering or empaneling patients and stratifying them by their conditions or risks are in their infancy in China.
- Experience with gatekeeping is limited and referral systems need improvement to support the goal of first contact at the primary care level.
- Downward referral systems (i.e., from hospital to primary care) function irregularly.
- Hospitals have few incentives to shift care to lower levels or to integrate care with lower levels.
- While there is a clear movement toward forming multidisciplinary teams, the health care workforce lacks the knowledge, skills and culture to work collaboratively.
- Unattractive compensation levels discourage qualified professionals and health workers to seek and retain positions at grassroots levels. Higher income opportunities at upper levels encourage migration of health workers to large hospitals.
- Despite government calls to integrate individual preventive and curative care at the primary level, integration remains insufficient throughout China.
- There are only minimal differences among copayments charged at hospital outpatient departments and primary care facilities to deter "hospital first" care seeking behaviors.
- China is experimenting with the formation of integrated facility networks known as "hospital alliances." However, these alliances are often dominated by larger hospitals and become channels to capture patients at higher levels of care.
- China's health sector has adopted many eHealth innovations, but often these initiatives are stand alone and lack interoperability. Many innovations tend to center on supporting hospitals rather than grassroots providers.
- China should consider a unified and standardized local and national systems to measure and improve the quality of primary health care service delivery, chronic disease management and patient satisfaction. Such measurement systems should be linked to improvement efforts.

## Core action areas and corresponding implementation strategies for developing and implementing PCIC-based service delivery model: lessons from international and national experience

This section draws on the analysis of 22 cases of PCIC-like initiatives commissioned for this study. Ten cases originated from China and 12 from other middle- and high-income countries. Annex 4 presents a short summary of each case and specifies the nomenclature used to refer to the same. Based on the cases and where appropriate the broader case literature, *eight* core action areas were extracted that are fundamental to the establishment of effective PCIC systems. For each core action area, key strategies were identified to guide implementation. These are displayed in Table 2.1 below. Following the sequencing indicated in Table 2.1, the remainder of this chapter describes each of the core action areas and implementation strategies, drawing on examples from the cases.

Before proceeding, it is important to note that establishing an effective delivery system based on PCIC will require raising the incomes of health professionals and workers at grassroots levels as well as eliminating income-enhancing incentives for over prescription and over servicing. These themes are taken up in Chapters 6 and 7.

### Core Action Area 1: Primary health care is the first point of contact

Primary health care is the focal point of people-centered integrated care, addressing both the health of the individual and that of the community. One of the foundational characteristics of a strong primary health care system is that it establishes primary health care as the first point of a contact for the majority of patients' needs. When patients consistently use trusted and competent primary health care providers (PCP) as an entryway into a tiered health system, they can receive care that is continuous and coordinated across the range of health care delivery levels (e.g., hospital, PCP, specialist). By achieving these core components of effective PHC, patients

**TABLE 2.1 Core actions areas and implementation strategies to achieve PCIC**

| Core action areas | Implementation Strategies |
|---|---|
| **1:** Primary health care is the first point of contact | • Empanelment<br>• Risk Stratification<br>• Gatekeeping<br>• Ensure Accessibility |
| **2:** Multidisciplinary teams | • Team composition, roles and leadership<br>• Individualized care plans for patients |
| **3:** Vertical Integration, including new roles for hospitals | • Definition of facility roles within a vertically integrated network<br>• Provider-to-provider relationships<br>• Forming facility networks |
| **4:** Horizontal Integration | Integration of different types of care |
| **5:** eHealth | • Integrated Electronic Medical Record systems<br>• Communication and care management functions<br>• Interoperability |
| **6:** Integrated clinical pathways and dual referral systems | • Integrated clinical pathways for care integration and decision support<br>• Dual referral pathways within integrated care networks |
| **7:** Measurement and feedback | • Standardized performance measurement indicators<br>• Continuous feedback loops to drive quality improvement |
| **8:** Certification | • Certification criteria for local and national use<br>• Targets for criteria and use to certify facilities |

receive the needed care at the right place and avoid unnecessary hospital admissions and procedures thus avoiding unnecessary risk and medical expenses.

Based on the findings from the case studies, four strategies for ensuring that PHC is the first point of contact for patients for a majority of their health care needs were identified: 1) empanelment; 2) risk stratification; 3) gatekeeping; and 4) accessibility.

**Use empanelment to facilitate population health management.** Empanelment is the process by which all patients in a given facility and/or geographic area are assigned to a primary care provider or care team. Empanelment is considered a fundamental component of population health management. Among the 22 PCIC performance Improvement Initiatives analyzed, ten described empanelment as a key initiative element, including three of the eight China initiatives. Empanelment is the mainstay of service delivery systems in a number of European countries, including England, Scotland, Denmark, Finland and the Netherlands. In China, including empanelment as an initiative element is likely to be an important step in improving the patient-provider relationship and trust, ensuring responsibility at the PHC level for the health of a population and shifting health-seeking behavior away from hospitals.

There are two main ways in which empanelment can be approached: allowing some elements of patient choice or assigning patients solely by geographic region. The simplest approach to empanelment is to assign patients based on geographic location. This is typically done using pre-existing community demarcations. For example, the success of *Shanghai, FDS* largely hinged on contracting residents with primary health care providers. The FDS empaneled populations by neighborhood in all of its districts. The program focus was on building strong relationships between patients and PCPs, which furthered community trust in the family doctors as a first point of contact in the health system.

Though simple, geographic empanelment can limit patient choice for physicians and thereby decrease their acceptance of the system. Empanelment by patient choice is alternative approach that was utilized in other initiatives. *Turkey, HTP's* 2003 National Health Transformation Program focused on the establishment of family medicine centers in every district of the country, each with a defined reference population. The Turkish government initially decided to geographically assign patients to family medicine doctors, creating "patients registrars". However, patients could request to switch out of their geographic empanelment to join the panel of another family physician of their choice. This freedom of choice prioritized patient agency but proved to be a challenge for continuity of care, particularly when patients moved between panels without effective communication between physicians. The process of transfer could take significant time. If China were to implement a similar choice-based empanelment system, it would be imperative that the transfer of patient information as patients change providers be done seamlessly and efficiently through effective real-time information management systems.

**Stratify risks of empaneled population:** One of the first tasks PCIC planners have to consider is defining the health needs of the target population. Risk stratification is the proactive identification of individuals within an empaneled reference population who are at a higher risk for developing poor outcomes or who have or are at risk for having high rates of service utilization, particularly hospitalizations. Individuals identified through this process can therefore be proactively targeted for interventions designed to provide needed higher intensity and coordinated care in the PHC setting. At the same time high utilizers can be engaged to understand and address their needs and reduce preventable use of higher cost and intensity services. Ten of the 22 total case studies included risk stratification as an important initiative element, although only one of the ten Chinese case studies did so.

Risk stratification can be done on an individual patient level or based on disease burden. At the individual level, risk stratification can be based on clinical guidelines, the

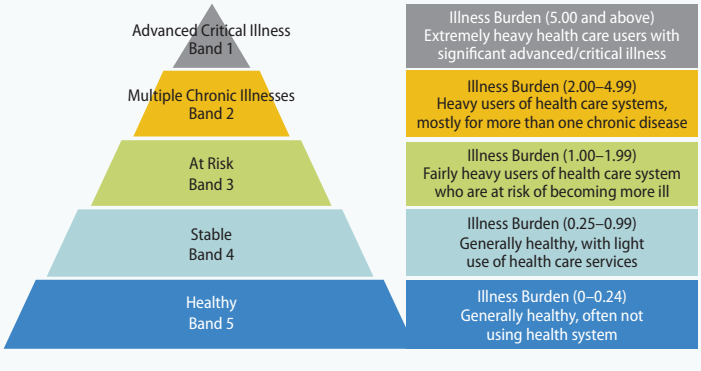
presence of particular target conditions, or a recent history of high utilization. Clinical staff can also use a summative process of their clinical intuition to create lists of patients who they predict are at high-risk and necessitate a higher level of attention from the team. The *Xi, IC* initiative used summary clinical judgment of staff to stratify patients by risk and identify higher risk patients who were then targeted for integrated clinical pathways across referral mechanism to increase delivery of appropriate care and improve outcomes of care. Past history of utilization can also be used to identify patients at risk for high utilization in the future. *Maryland, CareFirst*'s patient-centered medical home model found that risk stratification based on a past history of utilization was highly effective without being overly burdensome to the provider. The program uses an Illness Burden Score to quantify patients' risk. Illness Burden Scores are calculated using the past 12 months of claims data and diagnoses (See Figure 2.1 below). The *Netherlands, DTC* and *Denmark, SIKS* initiatives applied risk stratification by identifying specific diseases that were associated with high costs, require complicated management, or associated with high risk for poor outcomes. In the *Netherlands, DTC*, a diabetes management program was implemented to take patients who had complications or whose diabetes were out of control and give them comprehensive, coordinated care.

**Strengthen gatekeeping:** Gatekeeping is an important mechanism for ensuring that patients receive the right care at the right place at the right time. However, patients may also perceive it as limiting choice and imposing undue restrictions. Therefore, gatekeeping systems must be designed with both patient autonomy and overall utilization controls in mind. Having primary health care perform gatekeeping functions limit specialty care access and can help systems reduce overuse of inappropriate care, though at times at the expense of needed care. However gatekeeping must include a strong referral system so that patients, when appropriate, have access to higher levels of care.

Gatekeeping can be done explicitly or implicitly. In *explicit gatekeeping*, patients cannot receive secondary or tertiary care without first seeing and getting approval from their primary health care provider, the "gatekeeper." This mechanism is often enforced by imposing financial or regulatory penalties on non-compliant patients or their providers. In *Hangzhou, TFY*, explicit gatekeeping is employed for patients with hypertension or diabetes. These patients must access the health care system through their primary care provider, who can then refer to more advanced care at the community health center.

In *implicit gatekeeping* systems, patients are strongly encouraged to see their primary

**FIGURE 2.1 Illness Burden Scorecard to risk stratify patients**




| Percent of Population | Percent of Cost | Cost PMPM |
|---|---|---|
| 3% | 29% | $4,436 |
| 8% | 23% | $1,160 |
| 12% | 21% | $578 |
| 27% | 20% | $218 |
| 50% | 7% | $49 |

*Source:* Maryland CareFirst Case Study.

health care provider before they visit a specialist, but are not formally required to do so. This may be more preferable to explicit gatekeeping because it allows patients to choose providers. *Turkey HTP* chose not to enact a formal gatekeeping program, and instead encouraged patients to use family medicine practices as first contact for problems through the use of financial incentives. The hospital copayment is waived for patients coming to the hospital with a referral from their family medicine physician. This initiative has decreased the number of patients coming to the hospitals, but has also resulted in family medicine physicians feeling that they are sometimes used only for referrals to the hospital.

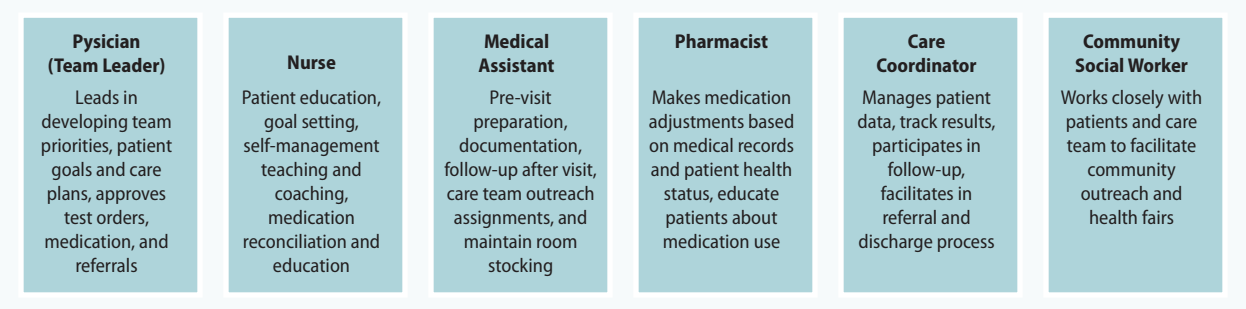
**Expand accessibility:** Providing options for patients to see or speak to their providers when they perceive the need is a critical function of primary health care. Compared to hospitals, PHC must be made more accessible and convenient to people. After-hours care options and same-day visit opportunities strengthen the ability of primary health care to avoid unnecessary upstream utilization of more expensive care options. Increasing accessibility for patients was addressed in 14/22 (64 percent) PCIC initiatives. For example, *Zhenjiang, GH*'s 3+X teams were required to spend three days per week providing home visits to community members. Additional services included appointment booking and online communication. These services were most often used by the elderly.

## Core Action Area 2: Functioning multidisciplinary teams

Multidisciplinary teams (MDT) are a building block for most successful PCIC initiatives. In principle, MDTs are non-hierarchical groups of clinical and non-clinical staff whose goal is to provide comprehensive and integrated care to patients. Teams composed of clinical and non-clinical members with a variety of training backgrounds are able to provide a fuller range of services. Multidisciplinary teams were implemented by 17 out of 22 (77 percent) of initiatives and viewed as a facilitator in most of these initiatives. The case studies contained a number of key approaches to make the MDT's successful, including ensuring appropriate team composition and leadership, and providing comprehensive, coordinated patient care.

**Define team composition, roles and leadership:** The personnel on a multidisciplinary team can vary, but having clearly defined roles and responsibilities amongst team members are critical for success. An experienced primary health clinician typically forms the core or team lead. For example, in VHA, PACT the leader of each care team is a physician, and the teams consist of a nurse, medical assistant, pharmacist, care coordinator, and community social worker. The program mandates that all care teams clearly define the role of each of their members (see Figure 2.2). However, each team is also given the flexibility to adapt these roles to their individual needs and context.

**FIGURE 2.2 Responsibilities of PACT team members**




*Source:* Cambridge Health Alliance in VHA Case Study.

MDTs can designate a care coordinator to relieve stress of other team members, counsel patients on improving their health, and assist them navigate the delivery system. The VHA and Xi County present effective illustrations of care coordinator functions. A large proportion of VHA patients have complicated chronic conditions that require well-coordinated care to manage. Therefore, each VHA team includes a designated care coordinator who manages patients' appointments, follow-ups, referrals, test data, and discharge from the hospital. The VHA has found the care coordinator to be a critical position on the care team, explicitly responsible for coordination of clinical staff and the range of provided services. Xi County created the position of "liaison officers" who were hired at THCs to manage care coordination and referrals and oversee the use of customized care plans for follow-up at the community level (VCs).

**Form individualized care plans for patients.** A care plan provides a "road map" for all providers who care for a patient. Care plans are generally used for high risk patients but can be applied to all patients. Care plans can also be used by the patients themselves to manage their conditions at home. *Maryland, CareFirst* has developed care plans for particularly high-risk and high-utilizing patients. Successful care plans act as a "contract" of mutual commitments and contingency plans between the physicians or nurse practitioner and the patient.

## Core Action Area 3: Vertical integration including new roles for hospitals

Vertical integration is a key element of tiered service delivery and involves communication and coordination among primary, secondary, and tertiary health facilities delivering care across the care continuum. It involves redefining the role of and interactions among facilities at these three tiers, especially hospitals. All three must work together towards the 3-in-1 principle: "one system; one population; one pot of resources." Vertical integration can also link providers at different levels to provide support and technical assistance and strengthen the quality of care across the different levels. 15 of the 22 cases reported efforts to strengthen vertical integration. Strategies can be categorized along three dimensions: (i) defining facility roles within a vertically integrated network; (ii) strengthening relationships among providers through technical assistance and skill building; and (iii) developing formal networks of facilities based on the "3-in-1" principle.

**Redefine the role of facilities, especially hospitals, within a vertically integrated network:** To ensure coordination and continuity, vertical integration requires cooperation among health facilities at different levels of the healthcare system, many of which do not traditionally collaborate. It is therefore necessary to redefine the roles of facilities to function within a robust vertically integrated network, determine what range of services specific health facilities will provide, and decide how higher level facilities will support lower level facilities through supervision, technical assistance, and partnership.

Internationally, the role of hospitals is changing. They are no longer standalone facilities at the center of the delivery system, the point of entry to care, or "one-stop shops" for all services. Rather, they are becoming part of a network of facilities that includes other providers such as primary care, diagnostic units and social services (Porignon, et al., 2011). They will become centers of excellence concentrating technology and expertise and focusing on providing high complexity care and valuable rescue services for life-threatening conditions. They will also share personnel and provide technical assistance and training to lower levels.

Integrating county hospitals, township health centers, community health centers, and village clinics is not a particularly new concept in China but one that continues to be difficult. Often, integration can force numerous health facilities into new roles that may be uncomfortable and foreign to them, but clarifying roles from the outside can provide needed direction and guidance. A prime example of this is Xi, IC. In June 2014, four county hospitals and 19 THCs were contracting with each other for inpatient care.

The IC Management Office established these contracts and clearly laid out roles and responsibilities for each level of facility. Furthermore, facilities were incentivized to fulfill their responsibilities by linking payment and reimbursement to performance.

**Establish provider-to-provider relationships through technical assistance and skill building.** Linkages between providers across the vertical levels of care can be established and strengthened through hospitals helping improve quality and competency at the lower levels of care facilities. The majority of the Chinese initiatives used technical assistance provided by hospitals to PHC facilities as a way to establish the inter-facility relationships and communication required for effective vertical integration. Two examples are Feixi, SCPHC and Huangzhong, HCA. Both counties established technical assistance programs between village clinics, THCs, and county hospitals. It was the responsibility of the upper-level facility to provide clinical TA through training and education and joint consultations to physicians in lower-level facilities. This interaction increased coordination between the levels and was further supported by an eHealth system that allowed health facilities to communicate with one another.

**Develop formalized facility networks:** In many health systems, vertical integration occurs through the creation of provider networks. At their most developed stage, these networks offer a broad continuum of care across all possible service lines, connected seamlessly through eHealth tools. These types of fully integrated networks also often take on financial risk for the health and outcomes of the populations they serve. Looser networks also exist for vertical integration. These "virtual" networks often form out of joint proximity or with the goal to negotiate favorable contracts with payers. They often lack strong governance structures and shared eHealth tools, such as unified patient records. Therefore, looser networks are often less successful at reigning in costs while integrating care.

Network formation, either through virtual informal mechanisms or more formal governance structures, appears to drive vertical integration. There are many ways China can consider creating networks that achieve PCIC goals without fostering hospital control. The Fosen, DMC District Medical Center created virtual networks with St Olav's hospital through daily teleconferences for staff/providers and telemedicine consults for patients. Daily conferences between the two sites helped to solidify their virtual relationship. The Xi, IC has also created a more formalized network of health facilities that jointly care for patients, and the financial incentive scheme reinforced the integration across facilities and encouraged providers to recognize how connected their system was. The Xi, IC initiative greatly emphasized the importance of following clinical and integrated care guidelines that explicitly advised how and at what facility level to care for a patient with a given condition.

However, networks should not be solely operated by hospitals. In Singapore, RHS, the movement to integrate public health services, secondary hospital care, and contract with primary health care providers through Regional Health Systems aimed to move away from the concept of the hospital as the anchor of the system. Instead, Singapore, RHS aimed to center the system on the patient's needs. Hospital capture can occur when hospitals "capture" patients who could be treated in primary care and pull them up into the hospital system. In order to avoid hospital capture, the management of the RHS is separate from hospital management and the chairperson of the private corporation that oversees all RHS's is a government-appointed employee. These actions signal an important shift away from the hospital-centric model and towards a PCIC system.

## Core Action Area 4: Horizontal integration

Horizontal integration aims to provide more complete and comprehensive services inclusive of promotional, preventive, curative, rehabilitative, and palliative care coordinated by the providers at the frontline facility. Such service integration allows for more effective management of health care delivery,

and better-coordinated care within a cohesive health system centered on the needs of the patient rather than the convenience of the delivery system. Horizontal integration can also contribute to more efficiently use of resources through reducing wasteful service duplication. Half of the cases reported horizontally integrating care.

**Promote horizontal integration of different types of care.** At the systems level, the main form of horizontal integration is the co-location of services within a single facility. For example, the District Medical Center initiative, Fosen, DMC, integrated their public health, primary health care, and emergency care into one facility. This allowed the population to access services—ranging from vaccinations to emergency medical care—from public health professions and primary care providers in one location. Hangzhou, TFY centered on creating non-communicable disease joint centers in community health centers. The joint centers integrated public health, specialty and primary care for NCDs within community health centers, successfully transforming previously fragmented care delivery. These joint centers also made it easier to receive a broader array of services within one visit to a frontline facility. *Feixi, SCPHC* emphasized the importance of integrating holistic care into modern medical services, thus created a partnership between a traditional medicine center and a township health center in Zipeng. Finally, horizontal integration can contribute to greater economies of scale. Zhenjiang, GH consolidated clinical diagnosis and laboratories across hospitals and community health centers into single units. This co-location of services allowed for the more efficient use of resources through reducing service overlap.

## Core Action Area 5: Advanced information and communication technology (eHealth)

EHealth not only lays the foundation for successful communication between facilities but also provides health workers and patients with the tools to more fully engage with the care process and improve care management and decision-making. Information technology also acts as an enabler of PCIC by facilitating new forms of interaction beyond short in-person visits. These can include multifaceted, shared electronic health records with registries, tele- or web consultations, and online scheduling systems. eHealth can greatly enhance the functionality and effectiveness of PHC systems by connecting providers to achieve horizontal and vertical integration, coordination and continuity of information over time. This coordination has been shown to result in more effective care and decrease unnecessary costs related to duplication of testing, inappropriate medication and avoidable complications due to gaps in follow-up. Within an advancing technological environment, a robust eHealth platform is the backbone of an interconnected healthcare system that puts patients at the center of their care (Bates & Bitton, 2010).

However, the time, effort, and resources needed to achieve these putative savings are substantial. eHealth strategies were employed by 21/22 (95 percent) of the PCIC Improvement Initiatives, underscoring the importance and centrality of this action area to health systems strengthening. Three main eHealth strategies emerged from the cases: (i) applying electronic health records; (ii) establishing electronic communication and management functions; and (iii) ensuring interoperability.

**Establish electronic health records systems (EHR) accessible to providers and patients.** At the center of an effective eHealth system is the electronic health records which has been shown to improve clinical decision support, registries, team care, care transitions, personal health records, TeleHealth technologies, and measurement (Bates & Bitton, 2010). When these key factors function smoothly in a healthcare setting, both providers and patients experience a more coordinated care pathway. Providers across different levels are able to communicate in real-time and easily access current and new patients' health information in one place. In Xi, IC, a new EHR management system was developed that allowed township health centers to monitor clinical services at village clinics, providing critical information about

the state of their dual referral system and linked inpatient and outpatient facilities. Physicians at THCs can view the outcome of follow-up appointments and whether or not the referred-to physician adhered to clinical pathways and the individualized care plan developed by the upper-level facility doctor. The EHR system also captured patient referrals.

**Establish communication and care management functions.** EHealth can provide patients with increased access to quality care through functions including online scheduling systems, e-consultations, text messaging, and tele-conferences. Online appointment scheduling is one method to improve patient access to health services. For example, the Turkish initiative created a Central Physician Appointment System (CPAS), which schedules appointments for primary, secondary, and tertiary facilities over the telephone and online. CPAS allows patients to request an appointment with a specific physician, office location, or specialty area and has decreased long waiting times at clinics that plagued the health system before the initiative. Both Shanghai, FDS and Xi, IC aimed to reach a younger generation through their health initiatives and used WeChat, a Chinese messaging app. It proved to be a quick and easy way to get health information to patients, and can be used by patients to check physician information, make appointments, and update patient registration and payment forms. Telemedicine and video conferencing played a particularly important role in rural Fosen, DMC's initiative. Video conferencing expanded access in two ways: primary health care providers were able to consult with secondary and tertiary care providers and patients were able to see secondary care providers.

**Ensure interoperability of eHealth across facilities and services.** EHealth tools carry great potential to improve the quality and safety of care; but this promise has to be met with maximum interoperability capacities between facilities. Interoperability refers to the potential for eHealth tools and records to be viewed by different providers in different facilities. Interoperability often requires regulation. Where multiple eHealth system exist, a major challenge exists in getting the systems to "talk to each other" in order to safely and effectively share information about critical patient care needs. Interoperability needs to be built into eHealth systems from the onset. Fosen, DMC achieved interoperability between its records and the tertiary hospital to which it is linked (St Olav's). Because the center was developed with this particular partnership in mind, the center adopted the same EHR system as the hospital rather than creating its own system.

## Core Action Area 6: Integrated Clinical Pathways and Functional Dual Referral Systems

Integrated clinical pathways attempt to standardize the treatment and referral pathways between providers across at least two levels within a health system to address particular conditions. They clarify relationships and responsibilities between different providers in the system as well. Because these pathways may often lead to referrals to another level of care, they are most effective in the context of strong horizontal and vertical integration. Dual referrals include not only referral from primary to secondary care, but also back to primary health care from secondary care. Integrated pathways and strong dual referral systems are important facilitators of providing the "right care at the right time". 13/22 (59 percent) of case studies used dual referrals in their initiatives and 15/22 (68 percent) of case studies applied integrated care pathways. Two main strategies were applied in the cases: (i) crafting integrated pathways to facilitate care integration and decision support for providers; and (ii) promoting dual referrals within integrated facility networks.

**Craft integrated pathways to facilitate care integration and decision support for providers:** Clinical pathways can facilitate improved care integration across providers and act as a valuable decision support tool for providers. As a part of the Canterbury, HSP initiative, a program call Health Pathways was developed by clinicians to create 570 clinical pathways for referral. The goal of the pathways

was to make secondary care referral decisions explicit in order to reduce variation in referral patterns and avoid unnecessary or duplicate referrals. The healthcare initiative in Xi, IC also emphasized the importance of adhering to Clinical Pathways, which were established for 188 diseases in county hospitals and 104 diseases within township health centers at an inpatient level. The Pathways made clear the scope of responsibility for hospitals and THCs, clarified when patients should be transferred to a THC for continued inpatient care and provided guidelines for discharge and follow-up care at village clinics.

**Promote dual referrals within integrated facility networks.** All Chinese PCIC cases employed upward referrals using the "Green Channel." Through the Green Channel, patients referred from participating facilities in their system were expected to receive expedited care at hospitals. However, green channels functioned irregularly. Moreover hospitals were even less likely to refer patients to community health centers, and some patients resisted these downward referrals. It is worth noting that the dual referral system in Xi, IC was incentivized by cost sharing and reimbursement. Under this scheme, upper-level facilities were reimbursed for the entire cost of a referred case and shared that payment with the lower-level facility depending on a previously-determined price and the care workload. Reimbursement however, was dependent on whether or not the patient care pathway was satisfactorily fulfilled in both health facilities.

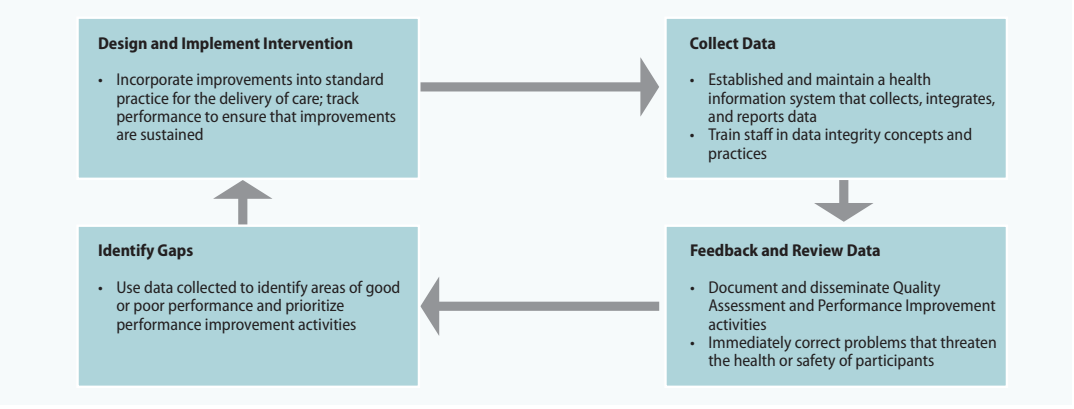
## Core Action Area 7: Measurement Standards and Feedback

Establishing a measurement system is critical to ensuring the quality and performance of PCIC-based care. Performance measurement indicators need to reflect national standards, which in turn reflect and the core functions and goals of an effective PCIC-based delivery care system (coordination, comprehensiveness, integration and technical and experiential quality). However, collecting performance data will not alone result in improvement. A feedback loop is needed to ensure that the results are communicated back to stakeholders at all levels from the community to providers to management and policy makers. The measurement can also identify early positive outliers who can teach others and identify effective intervention components for broader implementation. A total of 20/22 (91 percent) of case studies used measurement and evaluation to strengthen their initiative.[5] Two common strategies for promoting measurement and feedback emerged from the cases: (i) development and use of standardized performance metrics; and (ii) creation of feedback loops to drive continuous quality improvement.

**Utilize standardized performance measurement indicators.** Performance measurement should be standardized through use of common, verifiable and meaningful performance indicators. The German initiative included standardized reports using a core set of indicators for care providers, the management team, and other stakeholders. The performance measures covered a range from systems to technical and experiential quality (patient experience) and included indicators from the following care dimensions: 1) structure, 2) process, 3) outcomes, 4) quality, 5) integration, 6) patient experience, and 7) efficiency. Use of a core set of measurement standards facilitated communication about progress and allowed for comparisons across facilities. Outcomes/processes chosen for measurement should also account for priorities of the system. Many OECD countries have established patient reported outcome measures (PROMs) and patient reported experience measures (PREMs) as part and parcel of health system performance assessment (OECD, 2014).

**Create continuous feedback loops linked to action plans to drive quality improvement.** Regular feedback loops enable identification of services gaps and drive and support continual learning and correction. To ensure ongoing learning, developing a resilient system able to continuously improve and adapt to new challenges, a strong focus on feedback

**FIGURE 2.3 PACE Continual Feedback Loop**




linked to action at all levels of the system is critical. This transforming of data into action and improvement requires a process with the following main elements: performance measurement, feedback and review of the data, identification of gaps, and design and implementation of interventions—all underpinned by support and training of staff in improvement methods. The cycle continues with re-measurement to assess if the gap has been closed, and if new ones have been identified. For example, US, PACE built the presence of continual feedback into its charter, and the process continues to be an active part of the program. Providers are given feedback performance measurement results regularly and review their personal performance and identify problem areas across the practice. Figure 2.3 illustrates how US, PACE follows the continual feedback loops.

## Core Action Area 8: Certification

Certification refers to the process of facilities meeting certain pre-defined structural or performance targets within a mandated time period. At its core, certification is a defined mechanism for externally assuring accountability for minimal standards to be met. Implementation of certification requires setting standards, defining metrics against which facilities will be measured, and establishing a transparent and reliable process for conferring certification, ideally conducted by a nationally designed process.

Certification was only addressed by five of the 22 PCIC Performance Improvement Initiatives. Strategies to launch certification include developing criteria and setting targets

**Develop certification criteria which are nationally and locally relevant.** Criteria need to reflect the priorities and structure of a PCIC-based delivery system. Efforts to catalyze frontline facility transformation can be guided by certification programs. Such programs define model standards, addressing the range of areas from infrastructure (resources, IT, HR) systems organization (integration, hospital and PHC role), how they deliver care (people-centeredness, comprehensive, continuous, coordinated) and the outcome achieved. For example, in order for facilities to be recognized as "patient-centered medical homes," a form of PCIC recently launched in the US, the National Committee for Quality Assurance (NCQA) requires that the following criteria be met: team-based care, care coordination, patient self-management, enhanced access and continuity, care management, and quality improvement. The measures developed through these standards provide a basis to ascertain the relative quality of care being provided and compare quality performance across providers a standardized way. China may like to draw on a wide array of easily available and scientifically proven protocols and guidelines for care available at websites sponsored by the NCQA and other organizations.

**Set targets for criteria and use to certify facilities.** Once criteria have been developed, setting targets and using the criteria to certify facilities through a transparent and reliable mechanism are the next steps. In VHA, PACT, to be recognized as a PCMH by the NCQA (National Committee for Quality Assurance), the primary health care clinic must meet certain criteria. The NCQA uses a point-based system with three levels of classification. Depending on performance in this audit, the PACT center is classified as level 1 (35–59), level 2 (60–84), or level 3 (85–100). In addition to the levels, there are six "must-pass" elements that are required for all levels. The score for each "must-pass" section must be greater than 50 percent in order to receive certification.

## Notes

1. The shorter PCIC nomenclature was used for translation purposes.
2. Quality of care and citizen engagement are the subjects of Chapters 3 and 4 respectively.
3. Patient engagement is the subject of Chapter 3.
4. Annex 3 categorizes the impact of over 300 studies, including the case studies commissioned for this report, on reducing hospital care, improving care processes, raising outcomes, bettering patient experience and containing cost escalation. A more indepth review of evidence will be included in the final report.
5. Implementing improvement initiatives with feedback loops is examined in Chapter 10.

# 3

# Improving Quality of Care in Support of People-Centered Integrated Care (Lever 2)

## Introduction

A salient challenge China faces is that of improving quality of care to meet the rising expectations of the public for better health and health care, and its success in rebalancing service delivery based on a PCIC model will depend on the health system's ability to produce and deliver high quality services to its citizens. Abstract and complex (Dayal and Hort, 2015; La Forgia and Couttolenc, 2008), "quality" in healthcare can be described as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge"(IOM, 1990). In the context of health systems, the term "quality" incorporates a range of positive features that contribute to the overall performance of health-care systems, a view that underscores the "systems property" of quality rather than simply the duty of a particular physician, department or facility (IOM, 2001). Indeed, evidence-based high-quality clinically appropriate care, delivered with high technical skills, is a key lever to achieve China's reform aims of improved population health, patient experience, and efficiency of health care (see Box 3.1).

Evidence from OECD countries suggests that between 10–30 percent of the reduction in premature mortality over the past decade can be attributed to improvements in the quality of care (Nolte and McKee, 2011, 2012). While better quality is associated with improved patient outcomes and experience, policy makers also cannot overlook the close link between quality and costs. Studies have consistently found that high quality care is not necessarily more expensive, but low-quality care is associated with more hospitalizations, more intensive treatments and use of medicine, longer stays in hospitals, and unnecessary re-admissions, resulting in wasted resources and poor outcomes (Baicker and Chandra, 2004; Berwick et al, 2008). For example, US healthcare costs due to improper and unnecessary use of medicines were estimated to exceed $200 billion in 2012 (IMS Institute for Healthcare Informatics, 2013). Studies have found similar results in other countries. The UK's NHS was found to waste up to 2.3 billion pounds a year on a range of unnecessary procedures

and processes (AoMRC, 2014). Prevention of medical errors could have saved US$3 billion annually in the Australian heath system during 1995–96 (Australian Ministry of Health, 1996). Low quality care is thus harmful to patients' health and compromises the efficiency of health systems.

In China, there is a need for information on quality of care and implications for spending. It is safe to assume that the quality-cost links observed elsewhere also exist in China, though more research would be needed to confirm this hypothesis. Quality shortcomings have been associated with low utilization of primary care services (Zhang et al, 2014; Bhattacharyya et al., 2011) and increasing number of patient-doctor disputes over medical practice, resulting in litigations and violence (Heskesh, 2012; China Consumer Association, 2014). A well-documented quality problem is the over-prescription of unnecessary services and drugs (Yin, Chen, 2015; Li, Xu, 2012; Yin Song, 2013). Patients have expressed dissatisfaction about over-prescription, as well as poor attitude, lack of effort and short consultation time with doctors and nurses (Center for Health Statistics, 2010)

The Government of China has launched a series of policy initiatives to raise quality standards and strengthen regulation. Since 2009, NHFPC has established national and local Medical Quality Control Committees (MQCCs), and charged them with developing standards and enforcing quality control within respective medical specialties. Located in tertiary and teaching hospitals only, these MQCCs are considered to be the technical leaders in their field in the local area in which they operate. A year later, NHFPC issued a set of policy directives and guidelines aiming at improving medical quality, including medical quality management policy (NHFPC, public consultation draft, May, 2014), tertiary hospital accreditation standards (Weiyiguan fa, 2011, No. 33), medical errors and adverse events reporting (Weiyiguan fa, 2011, No.4), rational use of antimicrobial drugs (NHFPC, 2012, No. 84), and implementation of clinical pathways (Weiyizhen fa, 2012, No. 65). Since 2010, NHFPC has issued several quality control guidelines directed at public hospital reform pilots, and has initiated a campaign to reduce overuse of antimicrobial drugs, and adopted measures to improve patient experience by piloting online appointment and extending clinic hours. Recent policy documents on urban public hospital reforms (*Guo ban fa*, 2015, No.38) and county hospital reforms (*Guo ban fa* 2015, No. 33) restated the call for quality assurance and improvement. In March 2015 NHFPC took an important first step in developing institutional leadership to support quality improvement. It set up a national Medical Service Management and Guidance Center (MSMGC) under the NHFPC with a range of mandates with a focus on providing technical support to local quality improvement efforts. Implementation is just underway. However, some important quality improvement functions are yet covered under the MSMGC mandate, including developing, validating and mandating the use of national standardized quality measures, managing the monitoring and evaluation of quality at the facility level, and coordinating efforts for quality improvement across various stakeholders.

In the past decade, most OECD countries have recognized continual quality improvement as a central goal of health sector development and have implemented systematic reforms to improve quality of care. Governments increasingly act as stewards of the public and payers for health care, leading the changes in health care delivery to improve quality of care. Drawing on their experience combined with relevant experience from China, this chapter first summarizes the major challenges in improving health care quality, and then proposes a set of actions and strategies for quality improvement in China.

## Challenges to Improving Quality of Care in China

The rapid expansion and upgrading of health care infrastructure in China has laid the foundation for delivering higher quality care, but attention has recently been directed to managing and improving the processes and outcomes of care. A review of what is known about quality of health care in China suggests three main challenges that China may like to address as it moves towards a patient-centered model of health care production,

## BOX 3.1 What is Quality? Why Quality is important?

Quality of care is an abstract and complicated construct to define. It has at least two dimensions: technical and personal. Technical quality refers to the correctness of diagnosis, the appropriateness of prescribed interventions based on best evidence, and the competency of the clinical team in delivering those interventions, resulting in an increased likelihood of improved health outcome. Personal quality refers to the responsiveness of care to patients' preferences: the ability to see preferred clinician, continuity of care, good communication, demonstration of empathy and respect for privacy contribute to perceived higher quality of care. Quality can be a moving target with the change of time because new medical knowledge and technology tend to change our expectations for high quality care, thus quality standards require constant revisiting and updating. Ensuring the highest standard of quality means all patients receive the right care, at the right time, in the right setting, every time.

Quality of care is important because it is a proximal determinant to health outcomes. The Institute of Medicine report *To Err is Human* documented 98,000 preventable deaths due to medical errors each year in U.S. hospitals. Potentially preventable hospitalization due to poor primary care account for one out of every ten hospital stays in 2008. Low-quality care as indicated by medical errors and adverse events also drive up health expenditure. In that same year medical errors alone cost the United States an estimated $19.5 billion.

*Source:* AHRQ. Potentially preventable hospitalization for acute and chronic conditions. (2010) http://www.hcup-us.ahrq.gov/reports/statbriefs/sb99.pdf; Adel, et al., 2012.

financing and delivery: (i) institutional support for sustained quality improvement; (ii) information on quality of care; and (iii) management practices at the facility level targeted to enhancing quality and patient experience. These are discussed in turn.

**Institutional support:** Although local efforts to improve quality have expanded in recent years, system level institutional support remains under developed in China relative to OECD countries. First, there does not appear to be a national quality improvement strategy, which identifies and prioritizes areas of intervention and sets standards for acceptable level of quality. Current efforts seem to respond to existing problems, such as over-use of antibiotic drugs and violence against doctors, but these could be enhanced with a more comprehensive and system-wide approach. Second, strong and unified leadership on quality issues has yet to take shape to influence all relevant (public and private) stakeholders, define a quality improvement agenda, provide resources for the same, build consensus around standards and quality indicators, and share lessons in quality improvement. While the MSMGC and MQCCs are expected to play important roles in quality improvement, according to available NHPLC documents, they are part of the NHFPC system and at least currently focus more on public hospitals only rather than providing institutional support to all providers at different levels and of different ownership. Many OECD countries have established such institutional leadership by creating a coordinating technical body to assess quality and oversee systematic improvements at all levels of their health systems. Such a technical body is not always a government agency but has technical authority and the ability to reach out to all stakeholders including public and private providers, professional associations, patients and health workers.

NHFPC has taken steps to put in place the essential institutional, regulatory and policy architecture to ensure medical quality. However, much more could be done. For example, regulation emphasizes entry qualifications (for hospitals) and structural readiness (e.g. setting up internal quality committees), but greater attention needs to be directed to clinical processes and outcomes. Since 2009, NHFPC established national and local Medical Quality Control Committees (MQCCs) charged

with developing standards and enforcing quality control within respective medical specialty. These MQCCs are located in tertiary or teaching hospitals considered as the technical leaders in certain specialty within the local area. Nevertheless, MQCCs for primary care have yet to be formed. In addition, the NHFPC issued a set of policy directives and guidelines aiming at improving medical quality, including medical quality management policy (NHFPC, public consultation draft, May, 2014), tertiary hospital accreditation standards (Weiyiguan fa, 2011, No. 33), medical errors and adverse events reporting (Weiyiguan fa, 2011, No.4), rational use of antimicrobial drugs (NHFPC, 2012, No. 84), and implementation of clinical pathways (Weiyizhen fa, 2012, No. 65). Finally, the government has launched quality improvement campaigns targeted at hospitals (e.g. annual 10,000 Miles Medical Quality Inspection Tour) and quality awards (e.g. China's 100 Best Hospitals).

While these valuable efforts are taking China in the right direction, it is uncertain whether government administrative agencies alone have the capacity to oversee the implementation of these regulations. Further, government uses inspections as the main approach to assess and enforce regulatory compliance which may alone may be insufficient to drive continuous quality improvement on the front lines. It would be important for policy makers to consider complementary approaches that will create the right incentives for raising quality. In many OECD countries such a comprehensive approach is supported through multi-stakeholder engagement and coordination.

**Information on quality of care:** Given insufficient oversight of quality of care in China, there is little systematic information on quality issues that can guide effective and targeted policy interventions. Most assessments of quality are descriptive studies of single or a handful of tertiary hospitals (e.g. Nie et al, 2014; Wei et al., 2010). Evidence on the quality of care provided by secondary hospitals and primary care facilities is thin.

Donabedian (1980) provides a useful framework of structure, process and outcomes for critically examining problems related to quality of care in China. Structural quality evaluates the relatively stable characteristics of the environment where care takes place, including infrastructure, equipment, and human resource. Process quality assesses interaction between clinicians and patients, whether the clinician follows recommended care or clinical guidelines to reach correct diagnosis and appropriate treatment plan, and skillfully deliver treatments. Outcomes offer evidence about changes in patients' health status as a result of health care. All three dimensions provide valuable information for measuring quality, but the existing quality-of-care literature on China focuses mainly on structural features of the delivery system.

As far as structural aspects of quality are concerned, China seems to be doing very well, especially following recent investments in health infrastructure that resulted in the construction of many health facilities and equipping them with adequate equipment for better diagnosis, treatment, and patient care. However, the essential medicine policy may have negatively affected drug availability at grassroots facilities (Shen, 2014). In addition, grassroots facilities still face a shortage of qualified health professionals, especially in rural areas.[1] Not much is documented about process quality, but available evidence suggests room for improvement, especially at grassroots institutions. Knowledge of and experience in managing common chronic diseases is insufficient (Wu, Luo et al 2009; Liu, Hou et al, 2013). In one study with standardized patients, village doctors asked only a third of questions deemed essential, correctly diagnosed a mere 26 percent of unstable angina cases, and dispensed medication assessed to be unnecessary or harmful by an auditing physician in 64 percent of interactions in which a medication was prescribed (Sylvia et al. 2014). Processes of care are somewhat better at secondary and tertiary hospitals, but evidence is limited and mixed. For example, Wei et al (2010) found a high uptake of secondary prevention of ischemic stroke by doctors in a nationwide sample of urban hospitals, but Qian et al (2001) show that obstetric practice is not following best practice in four hospitals located in Shanghai

**BOX 3.2 Existing evidence of over-utilization of drugs and health interventions**

| | |
|---|---|
| Over-prescription of drugs: | Average number of drugs per prescription (3) exceeds WHO rational drug use reference level (Yin, Chen, et al 2015); 50 percent prescriptions were for antibiotics and 10–25 percent were for two or more types of antibiotics (Li, Xu et al, 2012; Yin, Song, 2013). |
| Over-use of intravenous injection drug: | Intravenous injection rate (53 percent) exceeds WHO rational drug use reference level (Yin, Chen, et al. 2015). |
| Over-use of surgical procedures: | Cesarean section rate in all deliveries is 46 percent, among which 50 percent were unnecessary (Liao, 2015). |
| Over-use of CT scan: | True positive rate of CT scan is only 10 percent, as compared with global average of 50 percent (Liao, 2015). |

and Jiangsu, with three out of six practices that should be avoided routinely performed with rates more than 70 percent. Similar results were found for medication for patients with acute coronary syndromes (Bi et al, 2009). Finally, regarding outcome aspects of quality, available but limited evidence suggests large variations in patient outcomes in tertiary public hospitals (Xu et al, 2015). For example a meta-analysis found that surgical site infection rate in China was 4.5 percent on average between 2001 and 2012 (Fan et al, 2014), which can be prevented by effective prophylaxis. The shortage of competent primary care doctors and the general poor quality of primary care contributes to a rising trend of unnecessary and avoidable hospitalization (Ma et al., 2015; Jiang et al, 2015). Patients experience poor attitude of doctors and nurses and are discontent about the short consultation time and lack of effort (Center for Health Statistics, 2010).

Over-prescription of drugs, especially antibiotics, is a well-documented problem in all facilities (Box 3.2). For example, a prescription audit of rural clinics in Shandong found that use of a variety of drugs, including antibiotics and steroids, exceeded the WHO reference levels for rational drug prescription. Excessive use was found to be particularly problematic in grassroots facilities and in less-developed western China (Yin, Song, 2013). There is limited evidence of unnecessary tests e.g. CT and MRI scans, and procedures, e.g. cesarean section, coronary artery stent implantation, coronary artery bypass graft (Liao, 2015), but data are not reported and analyzed systematically.

**Quality management practices at the facility level.** Hospital management is biased by system incentives to reward volume rather than quality of care, and limited by low management capacity. The perverse incentives that encourage profit-making and increasing volume of care, instead of rewarding high quality care, affect behaviors of management and frontline service delivery at all facilities. Hospital managers lack of sufficient motivation and public hospitals face weak requirements from the government and social insurers to demonstrate improved quality. Over-prescription of drugs is a common practice (Yin, Chen 2015; Li, Xu, 2012; Yin, Song 2013). A study found that even after a recent policy pilot that tried to put a hard ceiling on hospital cost inflation, managers were still reluctant to limit physicians from over-prescribing (He and Qian 2013). While the situation has improved under the reforms, many public hospitals continue to pursue profits Revenue making and expanding the topline are top priorities of hospital managers (Yip and Hsiao, 2014). Besides investing in more advanced medical equipment, which are highly profitable, there are no incentives for hospitals to invest in improving the less visible aspects of quality like process of care. Due to a lack of organizational focus on quality, there is a lack of structured organizational

mechanisms and resources for leading quality improvement initiatives.

In addition, most public hospital managers are lacking of training in management. A commissioned on hospital management practices in China[2] found that quality of management practices in sampled public hospitals is below the standard average score and highlighted the need for improvements in areas such as monitoring and performance management, continuous improvement and consequence management (Liu, 2015). In addition, public hospitals were not given autonomy to reward high quality providers and remove poor quality providers. Weak management capacity poses barriers for improving quality at the front line.

## Recommendations for Improving the Quality of Care

The aforementioned challenges are fixable, but will require unified leadership, institutional architecture, stakeholder participation, and implementation tools to foster continuous quality improvement at all levels of the service delivery system. China may like to consider a comprehensive strategic framework consisting of three core action areas: 1) strengthening institutional leadership and system support; 2) establishing quality measurement and feedback mechanism; and 3) transforming organizational management to cultivate continuous quality improvement. Provider skills and patient engagement are two additional core areas that are addressed in chapters 4 and 6. Box 3.3 displays the core action areas and corresponding the implementation strategies.

### Core Action Area 1: Promote an organizational structure to lead the creation of an information base and development of strategies for quality improvement

Government leadership and stewardship is vital for building capacity to improve quality of health care. International experience

**BOX 3.3 Core action areas and implementation strategies to improve healthcare quality**

| Core action areas | Implementation Strategies |
|---|---|
| 1. Promote an organizational structure to lead to the creation of an information base and development of strategies for quality improvement | • Explore options to cultivate a national authority to lead improvement efforts<br>• Conduct an in-depth national study of the state of quality of care<br>• Develop a national quality improvement strategy |
| 2. Systematically measure data on quality of care, and use it continuously to support quality improvement | • Establish a standardized quality measurement system with emphasis on processes and outcomes of care<br>• Create and maintain an "Atlas of Variation" in process quality and outcomes<br>• Use quality performance information for accreditation, public reporting, and payment incentives. |
| 3. Develop and promote use of tools to improve quality of care in health facilities | • Promote evidence-based standardized care<br>• Promote the use of management tools to foster quality improvement in medical organizations<br>• Use eHealth innovations to support quality improvements |

points to three categories of activities that the government can consider: expanding the mandate of current bodies or setting up coordination architecture to lead, oversee and implement quality improvement initiatives; conducting national reviews; and developing national strategies for quality enhancement.

**Explore options to cultivate a national coordination architecture to oversee systematic improvements to health sector quality.** This architecture would be publicly responsible for coordinating all efforts aimed at quality assurance and improvement, and would actively engage all stakeholders to facilitate the implementation of quality assurance and improvement strategies. Key functions would include: (i) ensure that national aims for quality are set; (ii) establish quality standards and develop quality measures; (iii) measure and report on continuous progress toward those standards; (iv) develop a standardized national medical curriculum, incorporating the best available scientific knowledge; (v) ensure that the medical professions are certified to deliver care in accordance with these standards; (vi) oversee efforts to accredit and certify both public and private providers; (vii) define treatments and interventions that are reimbursable under social health insurance based on cost-effectiveness analysis and ethical considerations; (viii) assess and promote clinical guidelines; and (ix) conduct research and build the capacity needed to advance the continual improvement of quality care.

Stakeholder organizations, including NHFPC, MoF, MOHRSS, key professional and scientific bodies, private providers and the public, could be represented in this coordination architecture.[3] The entity could also serve as the platform for tapping international expertise and sharing knowledge in care improvement. In the long run, it would serve as the ultimate source of scientific information on all quality-related topics for both clinicians and the public. It will also become the institutional leader in promoting quality of care and ensuring that evidence-based care is consistently delivered at the highest standard.

Over the last 15 years, many OECD countries have established such institutions. Well-known examples include but not limited to: (i) National Institute for Health and Care Excellence (NICE) in UK which is responsible for developing evidence-based clinical guidelines and pathways, and evaluation of clinical interventions. (ii) the French National Authority for Health (Haute Autorité de santé, HAS) which is tasked with the assessment of drugs, medical devices and procedures to the publication of guidelines and accreditation of health care organizations and certification of doctors" (Chevreul et al. 2010) (iii) the Quality Institute in Holland which crafted a mandatory framework for the development of care standards, clinical guidelines, and performance measures; (iv) the Agency for Healthcare Quality and Research (AHRQ) in the United States, which supports quality measure development, national quality reporting, and healthcare quality research; and (iv) the Institute for Quality and Efficiency in Health Care (IQWiG) in Germany, which is tasked with reviewing the evidence of diagnosis and therapy for selected conditions, providing evidence-based reports on for example drugs, non-drug interventions, diagnostic and screening tests, and developing recommendations on disease management programs.

Operationally, one option would be to broaden MSMGC's mandate, incorporate additional government and non-government actors, and enhance its capacity to perform the recommended functions. While the MSMGC is mandated with some of these responsibilities, its limited staff (30), lack of stakeholder representation and narrow focus on public hospitals may be insufficient to perform the proposed functions. Another option would be to establish an coordination architecture under the State Council, such as the current State Council Health Reform Leading Group, to ensure the highest-level authority to mobilize various public, private and professional stakeholders. Importantly, the institution will apply the same quality standards to both public and private facilities.

**Conduct an in-depth national study of the state of quality of care and quality improvement initiatives at all levels of the system.** In a number of countries, efforts to improve health system performance have been catalyzed by comprehensive, evidence-based reports on quality and performance. These reports helped focus the attention of leaders and professionals on avoidable shortcomings in quality and on opportunities to do better for patients and communities. In effect, such studies can serve as game changers in bringing quality issues to the forefront of the policy debate. Moreover, by showing commitment to addressing real needs, these reports can also help improve public confidence in the health care system. For example, prompted by mounting evidence of quality failures, public demands, and increasing costs, several countries carried out systematic reviews of national approaches to quality, assessment of the status quo, and proposed recommendations. Two seminal reports include the Institute of Medicine (IOM)'s *To Err is Human* (2000) and *Crossing the Quality Chasm* (2001) which exposed the breadth and depth of quality issues in the US and set out a strategy to address these failures. Another example is the Quality in Australia Health Care Study (QAHCS), commissioned by the Australian Ministry of Health, which used retrospective clinical auditing methods to assess adverse events in hospitals. England also replicated the study and published *A first-class service: quality in the new NHS*. This report highlighted key mechanisms for enhancing accountability, performance measurement, and inspection in health care.

Such studies, which are not yet available in China, contribute to collecting reliable information on quality performance and analyzing problematic areas. China has piloted collecting data and monitoring quality and patient safety in hospitals, but rigorous analysis of these data has yet to be published (Jiang et al., 2015). Led by the proposed national quality authority organization, similar research in China can systematically document quality problems related to structures, processes and outcomes. This would help galvanize quality improvements throughout the nation. To make this happen, an independent panel including both Chinese and international health care quality experts, together with Chinese academic research institutions, can be enlisted and commissioned to conduct the proposed study. The independent panel would summarize the findings and issue a comprehensive report on quality of care in China, as well as recommendations for goals and targets for quality improvement and reforms in policy, training, and practice.

**Develop a national quality improvement strategy.** Drawing on the results of the aforementioned study, a strategy can be developed that would an acceptable level of quality, set forth quality goals, clarify roles and responsibilities of stakeholders, and mandate activities at different levels. For example, the U.S. National Strategy for Quality Improvement in Health Care was launched in 2011 (US Department of Health and Human Services, 2011). It articulated three national aims (better care, healthy people/healthy communities, and affordable care), and six priorities:

- making care safer by reducing harm caused in the delivery of care
- ensuring that each person and family are engaged as partners in their care
- promoting effective communication and coordination of care
- promoting the most effective prevention and treatment practices for leading causes of mortality
- starting with cardiovascular disease working with communities to promote wide use of best practices to enable healthy living.
- making quality care more affordable for individuals, families, employers, and government by developing and spreading new health care delivery models.

The aims and priorities of the strategy are the basis for designing local initiatives, and for monitoring progress. The strategy builds on existing work (the national reviews provide inputs to the strategy), and serves as an evolving guide for the nation, and can be revised and enhanced annually with increasingly refined strategies.

## Core Action Area 2: Systematically measure data on quality of care, and use it continuously to support quality improvements

An outstanding feature of quality improvement efforts in the past decade in OECD countries is the broad use of quantitative data on health care processes and outcomes. Thanks to both proliferation of data and advancement in statistical methods, reliable quality indicators are much easier to obtain today than in the past. These measures give policy makers a powerful tool to benchmark providers' quality, identify low and high performers, devise incentives to reward higher quality, and evaluate progress over time.

**Shift measurement of quality from structure to process and outcomes.** Structural quality is relatively easy to measure. For example, reliable data on infrastructure, equipment, and human resources is readily available in China. While adequate structural quality is *necessary*, it is not *sufficient* to improve outcomes or experience of health care; both of which are determined in part by how structural inputs to health care are used in processes of care that take place between patients and providers. Development of measures that capture such processes is more complex, and should be conducted on the basis of best scientific and clinical evidence or clinical guidelines. To make evidence-based care the norm, doctors' clinical actions must be measured against recommended processes; for example, is statin prescribed at discharge to AMI patients? What is the percentage of patients who had their hemoglobin A1c level measured twice in the past year?

Changes in quality of processes of care are in turn reflected in changes in outcomes. Outcome measures, which center on the rate of survival and extent of health and functional restoration as a result of health care, are arguably the measures that matter the most to beneficiaries of any health system, and as such are critical to measuring the performance of any patient-centered care model. Although data on patient outcomes like mortality and complications are collected in China, these are broad measures and not useful for comparing provider quality. For example, mortality analysis in China does not typically conduct case-mix adjustment to take into account health risk differences of patients admitted to hospitals, leading to estimates that are not comparable across health facilities.

Many OECD countries are making efforts to engage patients in quality assessment and developing tools to measure health outcomes from the patient perspective. Patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs) are patient-reported physical, mental and social health and feedback on how well they are managing their chronic diseases or health conditions. As stated in Chapter 2, they may be incorporated in the quality measure framework for both integrated health systems and single health provider.

**Create and maintain an "Atlas of Variation" in process quality and outcomes.** In most nations, China included, the quality of health care and outcomes vary from one geographic area to another and even among clinicians in the same city. This variation derives from differences in professional opinions, habits, training, and application of scientific standards. The use of certain clinical procedures on specific conditions showing these large variations are considered "supply-sensitive", since they are largely due to provider choices (whether providers deem it necessary to admit a patient or perform a surgery), not science or patient preferences. Controlling variation begins with understanding it. For example, significant variations in elective surgeries (e.g. tonsillectomy, prostatectomy) and hospitalization associated with chronic diseases have been documented in the US and internationally (Wennberg, 2010). Xu et al. (2015) found that after risk-adjustment, variations in patient outcomes are significant among Beijing's tertiary public hospitals.

China may consider developing a Chinese-version of the "Dartmouth Atlas" of geographic variations in health care[4] to inform the public and professionals about differences in practice on important health topics. The Dartmouth Atlas in the US is a visual map of the variation in health care quality,

outcomes, costs, and utilization. Measuring this regional variation allows leaders to identify opportunities to improve care through standardization. In England, the "NHS Atlas" measurement and reporting system offers similar insights[5]. Such data can help to uncover "best practices" that should be spread more widely, and reveal where inappropriate, excessive, or deficient care is occurring. Under the supervision of the proposed authority responsible for quality, a designated team could create an Atlas of Variation for China.

**Use quality data and measures in a meaningful way:** In general, there are three important uses of quality measures that can contribute to front-line quality improvement: accreditation, public reporting, and pay-for-performance. Together they provide a comprehensive system for providing performance feedback and incentives for improvement.

- *Accreditation*: In the U.S., reporting of quality data and measures is mandatory for hospital accreditation and accreditation is a pre-requisite for hospitals to participate in the public insurance schemes Medicare and Medicaid. The Joint Commission, an independent organization responsible for accrediting health facilities in the US, requires accredited hospitals to report data for at least six core measure sets for specific conditions or processes (e.g. AMI, perinatal care, stroke, emergency department, surgical improvement project, VTE), drawing from medical charts or electronic medical records. China can consider mandating quality data reporting requirements for public and private hospitals seeking accreditation.
- *Publicly disclose information on quality of care of providers*: Making quality measures publicly available is an effective way to create peer pressure among providers, or to nudge them to consciously pursue quality improvement by making them aware that they are being monitored. Public disclosure of provider quality can also help patients make informed choices about providers based on their safety and quality performance. In the past decade, this has become the norm in OECD countries. For example, in the U.S., state-level quality benchmarking maps can be found at AHRQ's website , and facility and health plan level quality information can be found at multiple websites including CMS's Hospital Compare[6], NCQA[7], Joint Commission[8]. Similarly, provider quality information was publicized online in France on the Scope Sante website[9], and in Canada by the Canadian Institutes of Health Information (CIHI)[10]. For example, Hospital Compare allows users to compare three hospitals at a time on six quality dimensions: surveys of patients experience, timely and effective care, complications, readmissions and deaths, use of medical imaging, payment, and value-of-care. Patients may choose the most suitable hospital based on their need and preferences.
- *Link payment to quality improvement*: Pay-for-quality (P4Q) schemes provide financial incentives to improve quality. Although P4Q's impact is mixed and depends on the design of incentives, several countries have adopted such schemes. In 2004, CMS in the US began financially penalizing hospitals that did not report to the CMS the same performance data they collected for the Joint Commission, an accreditation body. It also decided it will no longer pay for 28 "never events"—serious, preventable, and costly medical errors that should never happen starting in 2008 (such as falls and trauma; surgical site infection after certain orthopedic procedures and bypass surgery, catheter-associated urinary tract infection, and air embolism). It also initiated two P4Q programs: (i) the Hospital Readmission Reduction program focusing on linking payments to reducing readmissions for selected high-cost or high-volume conditions like heart attack, heart failure, and pneumonia; and (ii) the Hospital Value-Based Purchasing (VBP) program, in which Medicare adjusts a portion of payment to hospitals based on how well they performed

on quality measures and how much progress they made in quality improvement. The UK government introduced a Pay-for-Performance scheme for family practice quality since 2004, covering the management of chronic diseases, practice organization, and patients' experience of care. Payment makes up as much as 25 percent of family practitioners' income (Kroneman and Madelon, 2013; Doran, 2010). Some evidence showed that the impact on quality improvement is enhanced when coupling public reporting with pay-for-quality incentives (Werner, 2009; Lindenauer, 2007).

The concept of pay-for-performance has gained prominence in China in recent years. While a payment system based on workload, service quality, and patient satisfaction can be implemented, the lack of standardized measures and the still dominant fee-for-service incentives for revenue generation make this challenging. Pay-for-quality schemes are ideally designed to avoid unintended cost-shifting. For example, an experiment in Guizhou removed incentives for over-prescribing medication, but doctors increased non-drug services such as injections and unnecessary referrals to hospital care, which in turn increased total health care costs (Wang et al, 2011). But there are promising examples. For example, in Ningxia Province, an intervention combining capitation with pay-for-quality incentives reduced antibiotic prescriptions and total outpatient spending, without significant adverse effects on other aspects of care (Yip et al, 2014).

**Establish an engagement model to support peer learning and energize collective quality improvement:** Besides benchmarking its own quality to peer organizations, hospitals should be encouraged to share valuable lessons and support each other in organizational transformation toward better quality and collectively achieving clearly defined goals. An example is the CMS Partnership for Patients in the U.S. and its Hospital Engagement Networks. Physicians, nurses, hospitals, employers, patients and their advocates, and the federal and State governments have joined together to form the Partnership for Patients. They have adopted the common goals to make care safer and improve care transitions. The Hospital Engagement Networks help identify solutions already working to reduce hospital-acquired conditions, and work to spread them to other hospitals and health care providers. A form of provider-to-provider peer networks to share information and learning is proposed in Chapter 10.

## Core Action Area 3: Transform management practice to improve quality of care in health facilities

Effective organizational management is indispensable for safe and quality assurance. Even capable health professionals can make mistakes in hectic and often over-crowded clinical environments in which they are practicing increasingly complex medical interventions. Managers can use known and tested tools to support quality improvement.

**Promote evidence-based standardized care:** Clinical guidelines and pathways are valuable tools to standardize care and reduce variations in practice. In 2009 China's Ministry of Health signed two memoranda of understanding with UK's National Institute for Health and Care Excellence (NICE) to begin technical assistance on the development of evidence-based clinical pathways. The clinical pathways developed were used in several pilot rural public hospital reforms, to standardize procedures and limit providers' discretionary prescription of services and drugs. A preliminary evaluation suggested that implementing the pathways reduced average length-of-stay and unnecessary services. Patients paid less out of pocket, and there was substantial improvement in communication and relations between patients and providers, leading to higher patient and provider satisfaction (Cheng, 2013). However, other studies noted resistance from both managers and physicians in implementing the clinical pathways due to risks of income loss. Managers were driven by revenue generation and did not see clinical pathways as a useful managerial instrument (He and Yang, 2015). China may considering analyzing lessons from these

experiences to inform further development and adoption of clinical pathways.

Although an undetermined number of hospitals have implemented a subset of clinical pathways, China has no standard, evidence-based system for ensuring standardized care throughout the nation, nor for continually aligning Chinese guidelines with appropriate world-wide clinical standards, adapted to China. It is important to scale up this effort both in terms of broadening the scope of standardized clinical pathways and mandating all hospitals to use these clinical standards. Under the guidance of the proposed national authority, and with the assistance of prestigious Chinese hospitals, professional associations and clinical leadership groups, evidence-based care guidelines can be created or adopted (based largely on international standards), and then modified to suit the specific characteristics of the Chinese health system. The standards could focus on (a) evidence-based care protocols, (b) appropriate medication use, (c) person-centered care, and (d) continual quality improvement skills and methods.

**Embed the "quality culture" in medical organization management philosophy and promote modern managerial techniques.** High quality health care does not arise from "inspection" alone, and that safety assurance and sustained quality improvement requires a quality culture and continuous attention to quality improvement by managers and staff. Important cultural factors that foster quality improvement include openness toward errors, less hierarchical management, more collaborative teamwork and learning environment, and a focus on continuous system improvement. In contrast, the accountability mechanism centered on individuals and sanction of individual providers for errors by "name and shame" contribute to a culture that averts reporting errors, as well as a deeply embedded belief that quality of care is the result of being well-trained and trying hard. Some evidence suggests that "name and shame" may still be a common management practice. A survey of employees of 6 secondary, general public hospitals in Shanghai in 2013 using a modified version of the U.S. patient safety climate in health care organizations found that although hospital staff are generally positive about the safety climate in their workplace, but "fear of blame" and "fear of shame" are two outstanding concerns. In the U.S., they are among the least concerns (Zhou, 2015).

Sound scientific evidence exists for treating many conditions and can drive care improvement, and in some cases, lower costs. But much of this science is not fully applied in daily clinical practice. Identifying and filling the gap between what is known and what is done requires continuous quality improvement efforts at each health organization. Health organizations can benefit from using modern managerial approaches to improve quality through changing health worker behaviors and optimizing clinical care system (Langley, Nolan and Nolan, 2009; Deming, 2000). For example, Continuous Quality Improvement (CQI) and Total Quality Management (TQM) approaches emphasize a continuous effort by all members of the organization to meet the needs and expectations of clients. Managers and clinicians work together to identify undesirable variations in process of care and try to eliminate them. Six Sigma targets reducing error rates to six standard deviations from the process mean to ensure standardized service, where appropriate. Plan-Do-Study-Act (PDSA) cycle is a mechanism in which clinical teams learn how to apply key change ideas to their organizations in a series of testing "cycles", using specific and measurable aims that are tracked over time. These and other management approaches can be combined and applied with flexibility, but the intention is to cultivate a sense of continuous attention to the quality improvement in management practice through such activities. Some of them are already under implementation in some large Chinese hospitals, for example, Anzhen Hospital applied the PDSA to hospital strategic management (Nie et al, 2014), Peking University People's Hospital used TQI with PDSA to improve the efficiency of specialist clinic registration (Chen et al, 2014). Lessons from these experiences should be examined and similar initiatives expanded throughout China.[11]

**Use EHR to support quality improvements:** Electronic health record (EHR) systems provide a digital version of all of a patient's medical and clinical records and a comprehensive patient history. EHRs, correctly designed and carefully implemented, can help with data capture and sharing for measurement and feedback on quality of care, real time clinical decision support, and improving coordination of care and patient-provider interaction. Currently much health-related information in China is based on the official and routine reporting system without independent verification. Over the past decade, China invested in upgrading the health information infrastructure, introducing computers and electronic health record systems in many facilities including village clinics. This provided a good foundation for improving the national health information system by adding rich clinical data to the existing body of data derived from household surveys, surveillance of communicable diseases, and periodic disease-specific prevalence surveys. Some localities have used EHR systems to support clinical processes. Feixi, SCPHC used medical information technology system to limit doctor's prescriptions to recommended drugs for specific conditions, and to prompt physicians to follow clinical pathways. A similar system was implemented in Xi County, Henan province. Advanced applications using computer algorithms and clinical data mining are used to support real-time automatic hospital-wide surveillance of nosocomial infections and outbreaks in the Chinese PLA General Hospital (Du et al, 2014). China may like to rigorously evaluate the impact of these changes to improve processes and administration of medication.

## Notes

1. Health labor force shortages are discussed in Chapter 7.
2. Chapter 5 discusses this study in more details.
3. Chapter 4 includes discussion on engaging patients and the public in quality measure development and reporting.
4. http://www.dartmouthatlas.org/.
5. http://www.rightcare.nhs.uk/index.php/atlas/nhs-atlas-of-variation-in-healthcare-2015.
6. http://nhqrnet.ahrq.gov/inhqrdr/state/select?utm_source=AHRQ-EN&utm_medium=article&utm_campaign=SS2015.
7. https://www.medicare.gov/hospitalcompare/search.html.
8. http://www.ncqa.org/HEDISQualityMeasurement.aspx.
9. http://www.jointcommission.org/accreditation/top_performers.aspx.
10. www.scopesante.fr/.
11. https://www.cihi.ca/en/health-system-performance.
12. Chapter 10 presents an approach for scaling up care improvement that applies PDSA.

# 4

# Engaging Citizens in Support of the People-Centered Integrated Care Model (Lever 3)

## Introduction

The People-Centered Integrated Care (PCIC) organizes primary health care around the health needs of citizens and communities of China, and not simply the diseases they suffer from. The model hinges on patient confidence in the system, and their trust that the system will meet their needs in a responsive, appropriate, and timely manner. At the same time, beneficiaries of the health system need to be empowered with knowledge and understanding of individual-level health-promoting behaviors that will be amplified through interaction with the formal service delivery system. Such empowerment and engagement of citizens is the foremost strategic direction advocated in the WHO's global strategy on people-centered and integrated health services (WHO, 2015a).

Patient empowerment and engagement is central to any health system reform that aims to improve efficiency and make providers accountable for the services they deliver. For optimal use of resources, patients' preferences must inform decisions about investment and disinvestment in services (Coulter et al, 2013; Mulley, 2015). This is because while medical studies on the comparative effectiveness of interventions estimate the probabilities of different health outcomes, they cannot determine how a particular patient will benefit from an intervention. Moreover, different outcomes matter more or less to different patients. When their preferences are overlooked or misunderstood by clinicians, the consequences can be as harmful as misdiagnosing disease (Mulley et al, 2012). Outside the hospital and other acute care settings, much of healthcare, including disease prevention and health promotion, is a knowledge-intensive service industry where value is co-produced from two-way communication between multidisciplinary clinical teams and the patients they serve (Mulley, 2009). This underscores the need for approaches and processes that support greater health literacy and sharing of knowledge. The latter includes patients' and careers' knowledge of managing disease as well as the risks, harms, and benefits of health interventions. Without this exchange, decisions are made with avoidable ignorance at the frontlines of care delivery, services fall short of meeting needs while exceeding wants, and efficiency declines over time.

Strengthening patient engagement is a goal relevant for China, and is reflected in a number of state policies that call on the health system and its stakeholders to: (i) strengthen health promotion, education and dissemination of medical and health knowledge, advocate healthy and civilized lifestyle, promote rational nutrition among the public, and enhance the health awareness and self-care ability of the people; (ii) build sound and harmonious relations between health care workers and patients; and (iii) promote the transparency of hospital information through a regular disclosure of the financial situation, performance, quality safety, price and inpatient cost, etc. (Zhong Fa [2009] No.6; Guo Fa [2012] No.57; Guo Ban Fa [2015] No.38; Guo Ban Fa [2015] No.33; Guo Ban Fa [2015] No.14). The most recent state directive explicitly mentions use of media "to publicize disease prevention and treatment knowledge…as well as reasonable selection of medical institutions", and "more publication" to "increase people's understanding" toward diagnosis and treatment (Guo Ban Fa, 2015: no. 70).

These policies are in turn reflected in a number of initiatives in China to improve patient engagement. Changshu, Jiangsu Province, has applied diabetes prevention and control measures as part of the Alliance for Healthy Cities initiated by the WHO, and the approach has shown promise in addressing the spread of diabetes (Szmedra and Zhenzhong, 2013). Among other actions, the NHFPC released in 2014 a 6-year plan to raise health literary in China through provision of information on basic health knowledge, healthy lifestyles, and basic medical skills (NHCP, 2014). In 2005, the Ministry of Health and the China Journalists Association launched the "China health communication awards". Every year, the project develops health communication strategies focused on one selected disease, e.g. hypertension (2005) and cancer prevention (2006). A self-management program for hypertension based around a hypertension manual and delivered in the setting of a community anti-hypertensive club in Shanghai showed promising blood pressure reductions (Xue et al, 2008). The Shanghai Chronic Disease Self-Management Program improved participants' health behavior, self-efficacy, and health status and reduced the number of hospitalizations (Fu et al, 2003). The recently published "Shared decision making is the core of humanistic spirit" (Health News, June, 19, 2015) argues for the need for shared decision-making in China. Further, the "National Clinical Information System" established in 2013 is an official website that provides a platform for news on quality control.

## Challenges to engaging citizens

While these initiatives are encouraging and a step in the right direction, a much-needed comprehensive, system-wide approach to engage citizens in health, with well-defined roles for patients and providers, is still missing. China's health system needs to become more patient-centered. Concerns about quality of care and providers not acting in the patient's interest have eroded citizen trust in the system. In part due to rising incomes, rapid urbanization, and increased demand for health services, the Chinese population has high expectations that health system reforms will improve service delivery performance. It is important to meet these expectations; public dissatisfaction with the health system has sometimes led to violence toward providers (Chen 2012; Yuan, 2012). In the recent years, there is an increasing tendency of medical disputes in China. (China Consumer Association, 2014; Moore, 2012; China Medical Tribune, 2012; Hesketh et al, 2012; Chinese Medical Doctor Association, 2013); of these, roughly a third caused direct injuries to medical personnel (GuangZhou Daily, 2014). The current patient-physician relationship needs to be improved, in particular to avoid the violence targeting doctors. On a more positive note, recent government documents reporting on progress under the 12$^{th}$ Development Plan (NHFPC, 2015) reported the 5$^{th}$ National Health Survey found that 76.5 percent of outpatients and 67 percent of inpatients were satisfied with their care seeking experiences.

The challenge of course lies in designing interventions and strategies to unleash the power of the ideals embodied by existing state policies—how to improve the responsiveness and patient-centeredness of the health system, and build patient confidence?

**BOX 4.1 Why is citizen engagement important?**

> "At the most fundamental level, it is people themselves who spend the most time living with and responding to their own health needs and will be the ones making choices regarding health behaviors and their ability to self-care or care for their dependents. Since people themselves tend to know better the motivations that drive these behaviors, people-centered care cannot be provided without engaging them at a personal level."

*Source:* WHO 2015a: 22.

International experience points to patient empowerment as a critical part of the solution; a vision of healthcare where patients are "co-producers of health" or "autonomous partners in treating, preventing, and managing disease", with health providers working to "promote and support active patient and public involvement in health and healthcare, and to strengthen patient influence on healthcare decisions, at both the individual and collective levels" (Coulter, 2011: 10).

## Recommendations: Strengthening Citizen Engagement

Broadly, citizen engagement encompasses two key aspects: empowerment and activation. Engagement can occur at the level of individual, household and community. It also involves provider relations with patients and families. Drawing on WHO's strategy on People-Centered and Integrated Health Care, Box 4.1 summarizes the importance of citizen Engagement.

Patients and communities need to be empowered with knowledge and information to make sound health care choices, ranging from generating changes in behaviors, selecting providers to seek services from, weighing the costs and benefits of surgical vs. non-surgical treatment options to access to timely and effective complaint resolution mechanisms and addressing potential causes of ill health in their living environment. Once equipped with essential information, they can be "activated" to participate in various activities for managing their health and health care, addressing risky behaviors and safeguarding their living environment. Health providers play a vital role in patient engagement by providing information about treatment options; explaining the potential risks and benefits of each option; encouraging patients to deliberate on and express their preferences; and developing long-term self-management plans. Patient engagement in healthcare, thus, requires change and effort from both providers and patients themselves.

Health systems use a variety of approaches to empower and activate patients. Box 4.2 summarizes the key elements used in these approaches, which almost invariably rely on some combination of building health literacy, strengthening self-management, and improving shared decision-making.[1] A substantial body of evidence highlights the impacts of these approaches, with benefits accruing in the form of improvement in quality of care, appropriateness of decisions, and health outcomes. A Commonwealth Fund survey of 11 OECD countries found that engaging patients can improve quality and patient experience, reduce medical errors, encourage compliance, and ultimately lead to better health outcomes with lower cost (Osborn and Squires, 2012). Self-management interventions improve not only patient knowledge, coping skills and confidence to manage chronic illnesses, especially among the elderly, but also intermediate health outcomes, and in some cases even reduce hospitalization rates (Picker Institute Europe, 2010). Shared decision-making has the potential to improve patient satisfaction and health care in multiple settings (Stacey et al 2011, Coulter and Collins, 2011), and may also successfully increase use of less invasive treatments that are often also less expensive (Morgan et al, 2000; Kennedy et al, 2002; Deyo et al, 2000; Wennberg, 2010; National Voices, 2014).

**BOX 4.2 Citizen Engagement to improve health care: core action areas and corresponding implementation strategies**

**Health literacy**
- Provision of printed, computer or web-based health information and videos
- Targeted mass media campaigns
- Targeted approaches to tackle low levels of health literacy in disadvantaged groups

**Patient self-management of health**
- Training for providers on communication and support to patients, teamwork, and relationship-building
- For patients, self-management education, and support for self-monitoring and self-administered treatment, and telecare
- Self-help group and peer support

**Shared decision-making**
- Joint treatment goal setting
- Patient decision aids
- Coaching and question prompts for patients

**Creating a supportive environment for citizen engagement**
- Develop Healthy Cities
- Creating environmental "nudges" to better health choices

This chapter draws on experience with strengthening patient engagement in health systems around the world, and summarizes the core actions or approaches to patient engagement, and the strategies employed to implement these. The chapter is divided into three parts, focusing on the three aforementioned elements of engagement, namely (i) building health literacy; (ii) strengthening self-management; and (iii) improving shared decision-making.[2] These approaches of patient engagement complement, build on, and ultimately reinforce each other. For example, shared decision-making cannot take place in the absence of a basic level of health literacy among patients, which in turn is linked to and cultivates a certain confidence in the patient's own ability to manage his or her health. This experience is critical in shaping the patient's ability to provide useful inputs to discussions with health providers when making decisions about care, and hence the range of influence the patient can wield on the outcome of such decisions.

## Core Action Area 1: Building health literacy

Health literacy is the ability to, understand and act upon health information so that people have greater motivation and ability to control their health. The concept entails the ability to understand basic health knowledge and use this to make health-related decisions. Health literary is essential to good health, and fundamental to public health. If people cannot obtain, understand and use health information, they will not be able to look after themselves effectively, navigate the health system without difficulty, or make appropriate health choices for their own, their family, and their community's health. Adults with limited health literacy report less knowledge about their medical condition and treatment, worse health status, less understanding and use of preventive services, and a higher rate of hospitalization and use of emergency rooms (IOM, 2004, Berkman et al., 2011). Surprisingly, as much as half of all adults in the United States have difficulty understanding and acting upon health information, which end up in confusion and ineffective care (IOM, 2004).

Nutbeam's (2008) distinguished two perspectives on health literacy: health literacy as a risk factor and health literacy as asset. These two perspectives have subtle differences in their approach to the same concept. The health literacy-as-a-risk factor approach focuses on identifying ways to mitigate the

negative impacts of low health literacy on health-related behavior and health outcome. To this end, the Institute of Medicine defined health literacy as "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions" (IOM, 2004). Research following this theory has linked health literacy with a range of health behavior and outcomes, including effective management of chronic disease, compliance with medication and other health advice, and participation in health and screening programs. Health illiteracy can also be a demand side barrier. Particularly, low health literacy among the poor and ethnic/racial minority groups is associated with poorer health status, and experience of more hospital admissions, more drug and treatment errors, less use of preventive services and poorer adherence to treatment recommendations literacy (Institute of Medicine, 2004; Berkman et al, 2011). Lower health literacy among seniors is associated with higher mortality (Liu et al 2011). Tackling health literacy is considered an important element in optimizing clinical effectiveness and reducing health inequities.

The health literacy-as-asset approach promotes the positive role of health education and communication in developing competencies for different forms of health action that benefits health of individuals and the population. Particularly, the WHO (2007) proposed that "health literacy implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions". Gaining health literacy as asset could fundamentally address some of the social determinants of health outside the narrowly-defined healthcare system.

Clearly the two approaches are distinctive in their clinical versus public health perspectives, but both are valuable and complementary for guiding policies to promote health literacy. They imply different strategies in response to low levels of literacy that may supplement each other. In addition to improving access to effective school education and providing adult education to targeted populations with low basic literacy (WHO Commission on the Social Determinants of Health, 2007), health systems must also enhance the quality of health communications and education, and provide greater support and tailored information to increase functional literacy to understand and use health information for managing health and diseases (Coulter & Ellins, 2007).

**Improve citizen understanding of evidence-based care, the importance of health-related behaviors, and preventive practices.** While health literacy is the outcome of a complex array of individual, social and economic processes, the health system is a critical intervention point. Patients look to health providers for information and education on how to manage illness and long-term conditions. Beyond information acquired through one-to-one patient-provider interactions, formal educational approaches have been implemented in many countries to target disadvantaged population groups. These include courses for small groups, colleges and adult education institutions, and one-to-one counseling. One example is "Skilled for Health", a national program run by the Department of Health in England that aimed to help people improve their health while boosting their language, literacy and numeracy skills (box 4.3). Another example is genetic screening in the UAE through student "ambassadors" at universities, who were trained on the basics of genetic screening and then encouraged to spread the word to their peers about the importance of being screened (Laurance et al, 2014). Both interventions were enormously successful.

**Launch public media campaigns to encourage health-promotion and prevention activities.** Other strategies that tackle literacy across whole populations and focus on improving the provision of high quality health information. Some media-based campaigns focus on both providers and people such National Literacy and Health Program in Canada that promotes awareness among health professionals and patients of the links between health literacy and health. Many media-based campaigns also make use of

**BOX 4.3 Health Education in the UK: Skilled For Health**

"Skilled for Health", a national program run in part by the Department of Health in England aimed to help people improve their health while boosting their language, literacy and numeracy skills. Educational sessions on a range of health topics, such as healthy eating, exercise, and first aid, were delivered to people in deprived areas. The programs were intended to provide useful information and skills, and improve people's confidence to look after their health. Participants' health knowledge in the areas of healthy eating, smoking, exercise, drinking, and looking after their mental health, was targeted.

*Source:* Contin You (2010).

other interventions including printed materials, videos, websites, formal and informal courses, etc. Good quality health information that is timely, relevant, reliable and easy to understand, is an essential component of any strategy to support self-care, shared decision-making, self-management of long-term conditions and health promotion[3]. The following methods are typically used:

- Good quality information materials, provided at health facilities or electronically, tailored to the individual and reinforced by verbal information from clinicians, and web-based interventions as part of an educational program.
- Newspapers, magazines, and broadcast media: health education campaigns across the world that incorporate media publicity as a key component have targeted smoking, use of folic acid among pregnant women (Netherlands), excessive and rising hysterectomy rates (Switzerland), stigma associated with depression (UK), uptake of immunization and cancer screening, education about HIV risk, and appropriate care for suspected myocardial infarction.
- Social marketing is used by government departments and health authorities to achieve specific behavioral goals for a social good (French and Blair-Stevens 2007), and typically involves a systematic approach to health promotion using tried and tested techniques, informed by commercial insights (e.g. segmentation, marketing theory) and theories of behavior change. Such marketing interventions aim to help people make healthy choices, adopt healthier lifestyles, or make better use of health services and have targeted healthy eating, substance misuse, physical activity, and workplace health and well-being. Box 4.4 describes an example already implemented in China.

In China, messaging should focus not only be on changing expectations about medications, intravenous therapy, and other diagnostics and therapeutics, but also on making citizens aware of harm caused by overuse and misuse of treatments. A series of messages and public education efforts should be launched to change public perceptions regarding medications, procedures and clinical services. It would require a continuous, multi-year, multi-channel communication program, and ideally would utilize the energies of health care professionals as well as civil society agencies. The goal would be to help people understand what good, evidence-based care is. However, it would best that campaign planners draw on research on why and how people understand and use information in choosing to seek care in China. In particular, this education effort would need to decrease the non-scientific over-dependency on procedures, such as intravenous infusions, medications, and hospital visits and admissions that the current volume-based payment system has encouraged.

Further, a national appeal to the public to engage in a collective pursuit of health could be explored. This would start with generating

**BOX 4.4 Social marketing in China: Prevention and control of Hepatitis B**

China's anti-Hepatitis B campaign has been described as an excellent example of social marketing whose design and implementation maximized effectiveness due to ample attention paid to social, cultural, and regulatory context. The first public service advertisement (PSA) was aired by a Chinese TV station in 1986, and since then, the Chinese government and media have been hosting annual national PSA campaigns and presenting awards to outstanding pieces (Cheng and Chan, 2009). The Chinese government played a major role in this nationwide campaign, which was co-sponsored by the China Foundation for Hepatitis Prevention and Control, and the Information Office of the Ministry of Health, with donations of expertise from McCann Health China and airtime and space from many media outlets.

*Source:* Cheng et al (2011).

a technical review of three to five major evidence-based changes that individual citizens could make in their personal lives that would lead to a healthier future (e.g., for smokers this would be smoking cessation, for alcohol drinkers this would be reducing their intake, for the overweight or diabetic patients this would be to walk at least a mile a day, etc.). These would be assembled into a National "Campaign" or Provincial "Campaigns" to get every citizen to engage in one or more of these health-enhancing behaviors. However, given that not all people have equal access to information, complementary and more targeted interventions may needed for low-income, elderly and ethnic population groups.

One example that could serve as a model for China is the Million Hearts Campaign in the US (box 4.5), a national initiative that set an ambitious goal for prevention of 1 million heart attacks and strokes by 2017 by improving access to effective care, raising the quality of care through the ABCS strategy (aspirin, blood pressure, cholesterol, smoking cessation), focusing clinical attention on the prevention of heart attack and stroke, activating the public to lead a heart-healthy lifestyle, and improving prescription and adherence to appropriate medications under ABCS. Scotland's ongoing "Early Years" Collaborative is another international example of this kind of campaign. In this Collaborative, Scotland is asking all parents nationwide to read their children a bedtime story each night, which has been shown to improve future literacy and educational attainment China could use these models as examples while tailoring the campaign to the specific Chinese context.

## Core Action Area 2: Strengthening self-management practices to help patients manage their conditions

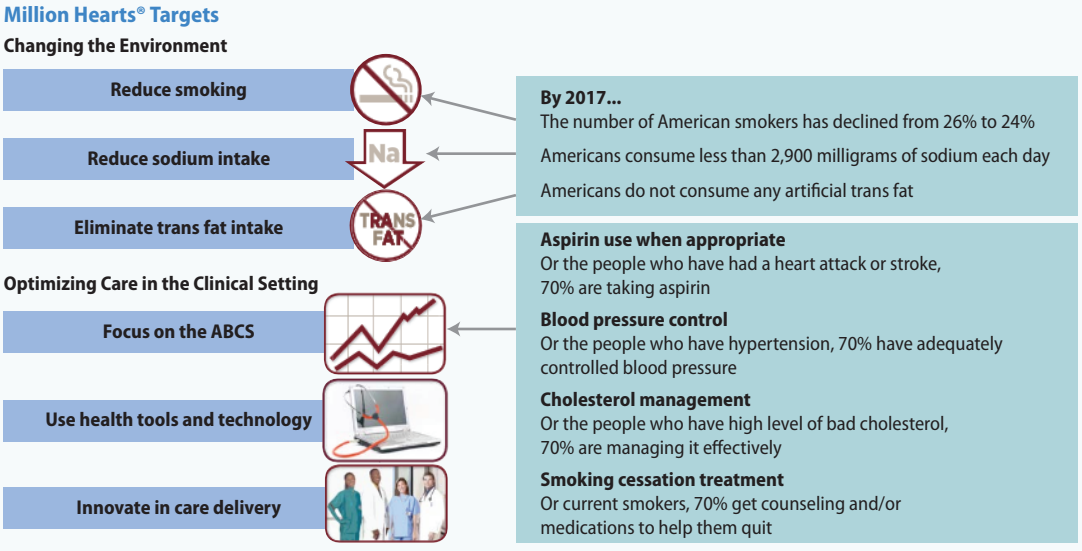
Barring self-care for instances of minor illness of short duration, such as a cold or other common viral infections, much self-care across the world today consists of the day-to-day management of chronic illnesses, such as asthma, arthritis, and diabetes. Strictly speaking, people suffering from these conditions "self-manage" most of the time: they manage their daily lives and cope with the effects of their conditions the best they can, for the most part without any intervention from their providers. More technically, self-management is defined as: "the individual's ability to manage symptoms, treatment, physical and social consequences and lifestyle changes inherent in living with a chronic condition" (Barlow et al, 2002: 178). It is also about enabling people ". . . to make informed choices, to adapt new perspectives and generic skills that can be applied to new problems as they arise, to practice new health behaviors, and to maintain or regain emotional stability" (Lorig, 1993:11). By promoting systems for patient self-management, health systems can empower individuals to reduce their utilization and make more informed decisions relating to office visits, medication, procedures as well as behaviors that contribute to controlling their conditions.

## BOX 4.5 The Million Hearts Campaign

The Million Hearts Campaign rallies communities, health care professionals, health systems, nonprofit organizations, federal agencies, and private-sector organizations around a common goal: preventing 1 million heart attacks and stroke by 2017. A small set of changes serve as targeted interventions to achieve this goal, as illustrated below.

Progress so far includes:

- More than 100 partners formally committed to the campaign goal and specific activities
- Promoting optimal care with the ABCS strategy (Aspirin when appropriate, blood pressure control, cholesterol management, and smoking cessation) has achieved some early success.
- Helped pass laws that creates a healthier environment, e.g. smoke-free laws, sodium reduction in communities program, and trans-fat elimination laws.




Million Hearts® promotes clinical and population-wide targets for the ABCS. The 70% values shown here are clinical targets for people engaged in the health care system. For the U.S. population as a whole, the target 65% for the ABCS.

All approaches to self-management include careful elicitation of patient's view of his or her problems, concerns, values and preferences; sensitive sharing of relevant evidence-based information by health professionals, and discussion to find common ground. Patient self-management involves systematically educating patients and their families about their conditions, how to monitor them, and how to incorporate healthy behaviors into their life styles. When people with chronic diseases seek professional advice, they need appropriate help and support to enhance their self-management skills. For example, people with asthma must know when to use their inhalers, people with diabetes must monitor their blood glucose levels, and arthritis patients must learn to cope with pain and when possible how to ameliorate it.

**Train health providers to support and facilitate self-management by patients.** Cultivating appropriate self-management practices involves a culture shift on the part of practitioners. Professionals are urged to stop believing that their goal is to increase

patients' compliance to whatever they choose to recommend, and instead to increase the patient's capacity to make informed decisions. The five A's paradigm summarizes this: (1) Assess knowledge, behaviors, and confidence routinely; (2) Advise from scientific evidence and present information; (3) Agree on goals and treatment plan for improving self-management; (4) Assist in overcoming barriers; (5) Arrange helpful services (Glasgow et al, 2006).

In practice, training is needed for health professionals, who should, at a minimum:

- Inform the patient about the disease, treatment, or management options;
- Educate the patient about effective self-management;
- Training patients on skills, for example, how to carry out technical tasks such as testing blood glucose levels for diabetics, how to monitor peak flow for asthma, etc.;
- Advise on behavior change: how to modify existing behaviors or adopt new ones;
- Challenge unhelpful beliefs, including beliefs about the causes of illness;
- Counsel patients on managing emotions, how to cope with the impact of their illness and its effect on their emotions; for example, dealing with anxiety and depression.

Training on communication, teamwork, and relationship-building skills should be embedded in medical school curricula, postgraduate clinical training, and continuous medical education, with providers' ability to communicate competently with patients becoming a condition for qualification to practice and due attention paid to lessons from research on interpersonal and communication skills. One widely used model is the Calgary-Cambridge framework, which divides a consultation into five stages: initiating the session, gathering information, physical examination, explanation and planning, and closing the session, with a list of tasks that must be accomplished in each (Kurtz et al, 2003). Providers can also be trained to use decision aids and be ready to answer questions, especially in communicating about uncertainty, the relative risks of different treatment options, and the specific time frames that define risks and outcomes. Interpersonal and communication skills can be learned and improved. For example, trainees can be taught how to express empathy (Bonvicini et al, 2009), how to break bad news (Makoul et al., 2010), and how to practice shared decision-making (Bieber et al., 2009). Another evidence-based educational approach, the Flinders Program, is oriented to chronic care management. It seeks to assess and improve the relationships between providers and patients that will lead to patients' actively monitoring their conditions while promoting healthy life styles (Horsburgh, et al., 2010).[4] The program contains a series of training modules to enhance provider knowledge of chronic care management with a focus on communication skills.

**Educate and support patients on how to self-manage.** Instituting a culture of self-management among patients requires education. A typical format is short (usually six weekly sessions) peer-led self-management education courses where people with chronic conditions learn from other people with the same chronic conditions (Lorig et al, 2001). These are often run by voluntary organizations. This model of educational courses has been used across a wide variety of settings, including England, the US, Australia, Barbados, Chile, Denmark, Japan, Peru, South Korea and others. Participants learn how to set goals and make action plans, problem solve, develop their communication skills, manage their emotions, pace daily activities, manage relationships with family, friends and work colleagues, communication with health and social care professionals, find other healthcare resources in the community, understand the importance of exercise, keeping and healthy eating, and manage fatigue, sleep, pain, anger and depression.

New technologies have also been adopted to create interactive approaches delivered electronically. For example, the Expert Patient Program in the UK is a web module with email reminders (Lorig et al, 2008). Web-based packages that combine health information with social support, decision

support or behavior change support have been developed for people with chronic diseases such as asthma, diabetes, eating disorders, and urinary incontinence. In the US, telephone health coaching (providing people with advice and support over the phone as a component of disease management systems) and telecare technologies (that include devices to enable transmissions for information phone lines to sophisticated machines to monitor people's vital signs and computers that control features in people's homes) are also used (Rollnick et al, 2002; Audit Commission, 2004). Giving patients access to their medical records—either by making it possible for them to read and review these, or by encouraging them to hold their own copy—can also increase patient confidence to self-manage.

Self-management education works best when integrated into the primary and secondary healthcare systems and the learning is reinforced by professionals. The most effective self-management programs are those that are longer and more intensive, are well-integrated into the health system, and where the learning is reinforced by health professionals during regular follow-up. The VHA in the US encourages self-management through disease-specific action planning and intensive education of patients, especially around medication management. In general, efforts should focus on providing opportunities for patients to develop practical skills and the confidence to self-manage their health. Hands-on participative learning styles are better than traditional didactic teaching. Box 4.5 describes three examples of such programs.

## Core Action Area 3: Improving shared decision-making

Shared decision-making is a process in which patients are involved as active partners with professionals in clarifying acceptable treatment, management or support options, discussing goals and priorities, and together planning and implementing a preferred course of action. Shared decision-making is the essential underpinning for truly people-centered care delivery, a mechanism to ensure that doctors make correct diagnosis not only based on science but also patients' preferences, so that patients receive "the care they need, and no less; the care they want, and no more" (Coulter and Collins, 2011: vii). It offers a more collaborative approach in which providers and patients work together to identify problems, set priorities, establish goals, create treatment plans and solve issues. As such, shared decision-making is a reflection of the extent to which citizens feel empowered to engage in their health care.

There are compelling ethical and practical reasons to engage patients in making shared decisions about their health. Patients may have expectations and preferences about treatments and health outcomes that differ from those of their health provider. Recognizing those expectations and preferences is vital for ensuring responsive and respectful care. In reality, providers consistently overestimate their ability in predicting patients' preferences. In one study, doctors reported believing that 71 percent of patients with breast cancer would rate keeping their breast tissue as a top priority, whereas in reality, only 7 percent of patients said so (Lee et al, 2010). In another, informing patients about the trade-off of the surgical solution to the treatment of benign prostate enlargement led to a 40 percent reduction in the number of patients opting for surgery (Wagner et al, 1995). Surgery can ameliorate urinary symptoms associated with the disease, but many informed patients would rather forego surgery to avoid post-surgical sexual dysfunction. A Cochrane review (Stacey et al, 2014) found that, compared to usual care, decision aids increased health knowledge, particularly when the decision aid tool provided detailed rather than simple information. Exposure to a decision aid with expressed probabilities resulted in patients more accurately gauge the risks associated with health interventions. Exposure to a decision aid with explicit value clarification resulted in a higher proportion of patients choosing an option congruent with their values. Decision aids were also found to have a positive effect on patient-provider communication, satisfaction with the decision and the health care process, and

### BOX 4.6 Encouraging self-management of health: Examples from the UK and India

The Year of Care in Diabetes in the UK was a pilot program launched to go further than simply providing education to actively involve with diabetes patients in deciding, agreeing, and working on how their condition is managed. The core idea was to transform the annual review, which often just checks that particular tests have been carried out, into a genuinely collaborative consultation by encouraging patients to share information with their healthcare team about their concerns, their experience of living with diabetes, and any services or support they might need. Both the patient and the team then jointly agree on the priorities or goals and the actions to take in response to these.

The Big White Wall is an online mental health community in the UK where members can find support managing their care from clinicians, family members, and each other. The initiative provides members with access to immediate support, which may avoid the need for more expensive help later on. The community enables members to measure their mental health through tests and questionnaires, access help on guided support programs, get individual live therapy over a secure Skype-like connection, and track their progress. While the focus is on self-management, the intervention incorporates elements of health literacy as well.

The 7-day Mother and Baby Health Checklist developed by the WHO, implemented in India, helps mothers identify danger signs in the crucial first week after birth. At time of discharge from the health facility, a healthcare worker explains the list to the mother. Texts and audio messages are sent by mobile phone to remind the mother to check the baby and herself for danger signs. This intervention too has elements of both health literacy (education on what are the danger signs?), but also develops the capacity for self-management (when to seek professional help?).

*Source:* Laurance et al (2014).

reduced patients' decisional conflict related to feeling uninformed and unclear about their personal value. The Cochrane Review Group on consumers and communication provides continuous updates to effective interventions to enhance patient-provider communication and patient engagement for achieving better health outcomes.[5] The China Cochrane Center in West China Hospital, Sichuan University may expand their clinical reviews to cover high quality provider-patient interaction using decision aids.

Just as cultivating a culture of self-management cultivates a sense of empowerment through education and building patient confidence in their ability to monitor their own condition, cope, and seek professional help when needed, shared decision-making too leads to a redistribution of power in the patient-provider relationship. It can be achieved by changing the ethical and legal requirement of informed consent into a more active standard of informed patient choice (Wennberg, 2010). Possible steps follow (Coulter 2011).

**Cultivate an expectation of patient involvement in decisions about their health care.** Surveys have found that about three quarters of all patients expect clinicians to take account of their preferences and want to have a say in treatment decisions (Coulter and Magee 2003). For example, an NHS inpatient survey found that nearly half of patients wanted more involvement in treatment decisions. Providers should communicate to patients that they are expected to take an active role in their health care. Patients should understand that although they do not have the technical knowledge, they nevertheless bring in different but equally important form of expertise to the decision-making process. It is their collective responsibility to design and agree on participant's health goals. Under the PACE model in the US, for example, patients and health care teams collectively design and agree on participants' health goals. In the Shanghai Family Doctor System, patients and families are encouraged to jointly set treatment goals with their providers, and monthly patient satisfaction

### BOX 4.7 Improving patient involvement at the Beth Israel Deaconess Medical Center in the US

At the Beth Israel Deaconess Medical Center in the US, efforts to improve patient-centeredness incorporated elements of shared decision-making, patient literacy, and self-management. A patient care committee was established, responsible for setting up patient and family advisory councils. The mission was to make sure that the patient's voice was heard, to improve communication, and to foster innovations that enhance the patient's experience of care. Patient and family advisors participated in focus groups and meetings about proposed design changes. The Center developed a web-based portal that allowed patients to see their results, communicate with their physician or practice by email, and request appointments and prescription refills. A "trigger response" system encouraged family members who had a serious concern about the patient to request a review by the care team. Patient education was conducted on the right to see test results, read the medical notes made by their physicians, and communicate with their physicians. Strategies employed included dissemination of information packages, and provision of support to foreign language speakers. Finally, training and education of staff members about building a patient-centered environment began at recruitment, when they were asked to work through patient-oriented scenarios to learn about best practices and the Center's standards.

*Source:* Laurance et al (2014).

scores track progress. Likewise, the German Gesundes Kinzigtal system places a particular emphasis on joint treatment goal setting and attainment as a core feature of the program. Shared decision-making tools augment this process along with case managers who support the patient through their conditions and behavior changes. The Denmark SIKS project prioritizes patient involvement in developing their own treatment plans, setting goals through shared care plans, and providing feedback about whether these goals were met in partnership with the care team. Efforts to improve patient-centeredness at the Beth Israel Deaconess Medical Center in the US provides another example of for how to improve patient involvement in health care processes at the facility level (box 4.7).

**Develop and promote use of decision aid tools at health facilities.** Decision aids provide reliable, balanced, and evidence-based information outlining treatment options, outcomes, and uncertainties and risks associated with treatment options, with the goal to help patients discuss their preferences with providers. They can be prescribed to the patient before they come to the consultation, so that patients can review and absorb at home and be better prepared to discuss their preferences with the doctor and decide how to treat or manage their condition. Patient decision aids can take a variety of forms, ranging from simple one-page sheets outlining treatment options, to more detailed leaflets, computer programs (box 4.8), apps, or interactive websites. An important feature is that they are not designed just to inform patients, but to help them think about what the different options might mean for them and to shape preferences on the basis of scientific information.

Benefits achieved from use of patient decision aids can be enhanced by patient activation methods like health coaching and one-on-one interactive interviews with doctors, as well as nurses, pharmacists, doctors, psychologists, health educators and genetic counsellors. These coaching or interview sessions provide opportunities for clarification and decision support, but they also encourage patients to be more confident in managing their own health and to make treatment decisions. Patients can also benefit from question prompts, which are checklists to spark ideas about questions to ask during interactions with health professionals. Most health coaches are nurses who have received additional training in motivational interviewing,

### BOX 4.8: Decision Aid for Stable Coronary Heart Disease by the Informed Medical Decisions Foundation

The decision aid for Stable Coronary Heart Disease is an interactive computer-based resource with information tailored to patients' specific clinical circumstances. The aid uses predictive models that help patients envision short- and long-term consequences of their choices. For example, the decision aid helped patients understand that surgery can both increase long-term survival rates and lower short-term survival rates due to potential complications. Based on such information, a patient whose only remaining desire in life was to attend his daughter's wedding six months later hence might choose to forgo the surgery. Among other features, the aid also gave patients access to videotaped conversations with patients who had already lived through various treatments and outcomes. This was intended to help patients struggling to assess how they might feel in the future about health states that they had not yet experienced. The tool also generated printouts aiming to facilitate conversations between patients and caregivers—conversations that made it easy for patients to clearly express their preferences.

*Source:* Mulley et al (2012). For more information, see http://med.dartmouth-hitchcock.org/csdm_toolkits.html.

### BOX 4.9 Health Coaching to Coordinate Care in Singapore

To improve the quality and efficiency of care, Singapore implemented a national transitional care program for elderly adults with complex care needs and limited social support called the Aged Care Transition (ACTION) Program. It was designed to improve coordination and continuity of care and reduce rehospitalization and visits to emergency department. The program trained and deployed dedicated care coordinators to provide coaching to help individuals and families understand the individual's conditions, effectively articulate their preferences, and enable self-management and care planning. These care coordinators are mostly nurses and medical social workers who are hired by the Agency for Integrated Care. The program targeted complex cases: patients who are older than 65 year-old, had multiple diagnoses and comorbidities, taking more than 5 different types of medication, and/or with impaired mobility or significant functional decline.

*Source:* Wee (2014).

which embodies a shift from "monologue to dialogue" between patients and providers, or specific decision support techniques. These approaches avoid directive styles of teaching and advice-giving, which can generate resistance or a sense of hopelessness among those on the receiving end. Coaching has also shown to be highly important in helping patients navigate the health care system so that they can actively choose providers based on their health needs, preferences, and knowledge of providers. Box 4.9 describes an example from Singapore.

## Core Action Area 4: Creating a supportive environment for citizen engagement in health promotion and improvement

The conditions under which people live have a vital influence on their healthy behavior and the state of their health. An informed public is an essential prerequisite for health promotion and improvement, but knowledge cannot be transformed into actions and sustained over time without a supportive environment. This supportive environment is not

solely about the clinical environment, but also pertains to the ecology of individuals, families, communities and organizations, and the society. All societal forces can be mobilized to create conditions that enable people to live a healthy life. This important aspect of supporting citizen engagement in health promotion and improvement underlies WHO's Healthy Settings approach, clearly laid out in the 1986 Ottawa Charter for Health Promotion. In addition, recent behavioral economic research has shown the importance of immediate environment features on people's behavior choices (e.g. Thaler and Sunstein, 2008). Designing "nudges" that are embedded in the physical and social environment to cue people towards adopting healthier behaviors may be a promising health promotion strategy. These strategies were discussed below.

**Improving macro environment for health promotion: develop Healthy Cities (and Healthy Villages):** In the physical and social contexts in which people engage in daily activities, the environmental, organizational, and personal factors interact to affect health and wellbeing. These social determinants of health contribute to the level of distribution of health in the population, and are important targets for health promotion. With the rapid urbanization of China, a series of "urban diseases" have emerged such as environmental pollution, traffic jams, housing shortage, insufficient public services, unsafe drinking water and food, NCDs, increased stress, accidents and injuries. These environmental and societal factors pose severe threats to people's health. Similarly, environment degradation and lack of social support in rural China are prominent concerns for health. To address these complex challenges, the WHO promoted the global "healthy cities" movement as a comprehensive strategy to create the supportive environment essential for health improvement and addressing social determinants of health problems.

The Healthy Cities movement envisions cities with health-promoting environment that enables people to mutually support each other in performing all the functions of life and developing to their maximum potential (Hancock and Duhl, 1986). The key factors affecting health in cities can be considered within three broad themes: the physical environment, the social environment, and access to health and social services (Galea and Vlahov, 2004). Municipal governments will plan, construct and manage the city in a way that continuously improves the physical and social environment and access to public services that promotes health; for example, modifying the physical environment (increase urban green spaces or design wider bike lanes) or regulations of public health (e.g. smoking ban in public areas or requirement for safety belt for drivers). Building a healthy city is by nature an inter-sectoral endeavor, for example, local government policies on housing, the housing market, citizen action on housing conditions and local lead poisoning control programs may all interact to influence rates of lead poisoning in a particular city (Galea, Freudenberg and Vlahov, 2005). Therefore, it will involve political commitments of the local government, institutional changes, capacity building, innovations and partnership. The Healthy Cities movement includes a strong focus on citizen empowerment and participation. The approach promotes participatory governance by empowering individuals and valuing community knowledge in decision-making and action on health (WHO, 2008: 18).

Globally, Healthy Cities has been a successful movement in terms of the number of participating cities (Green et al, 2015; De Leeuw et al, 2009, 2015). The Chinese government also responded positively to the Healthy Cities movement. A few cities were selected to participate in the Healthy Cities collaboration project with the WHO since as early as 1994. More recently, ten cities including Hangzhou, Dalian and Suzhou joined the Healthy Cities pilot in China. Two International Healthy Cities Mayors Forums were held in 2008 and 2010, which helped exchange lessons and experiences. A policy is being drafted to scale up the Healthy Cities movement in China, which will put health at the heart of local development agenda, and potentially linking local government official's performance review to its progress.

An UCL-Lancet Commission on Healthy Cities arrived at five key recommendations

for implementing the Healthy Cities strategy (Rydin et al, 2012):

- City governments should work with a wide range of stakeholders to build a political alliance for urban health. In particular, urban planners and those responsible for public health should be in communication with each other.
- Attention to health inequalities within urban areas should be a key focus when planning the urban environment, necessitating community representation in arenas of policy making and planning.
- Action needs to be taken at the urban scale to create and maintain the urban advantage in health outcomes through changes to the urban environment, providing a new focus for urban planning policies.
- Policy makers at national and urban scales would benefit from undertaking a complexity analysis to understand the many overlapping relations affecting urban health outcomes. Policy makers should be alert to the unintended consequences of their policies.
- Progress towards effective action on urban health will be best achieved through local experimentation in a range of projects, supported by assessment of their practices and decision-making processes by practitioners. Such efforts should include practitioners and communities in active dialogue and mutual learning.

**Create environmental "nudges" to better health choices:** Most people value their health yet persist in behaving in ways that undermine it. There are many psychological reasons underlying this gap between value/cognition and behavior, one being that people's behavior can be subconsciously triggered by environmental and/or emotional cues, driven by default, habits, or perception of social norms (Thaler and Sunstein, 2008). These inherent human biases offer an opportunity for non-coercive policy interventions to change behavior towards healthier choices. By changing the seemingly subtle cues in the physical, social and policy environment, so-called "nudging" interventions can signal people into making better health choices without coercion or any form of material incentives.

Nudges might involve subconscious cues (such as painting targets in urinals to improve accuracy) or correcting misapprehensions about social norms (like telling us that most people do not drink excessively). They can alter the profile of different choices (such as the prominence of healthy food in canteens) or change which options are the default (such as having to opt out of rather than into organ donor schemes). Nudges can also create incentives for some choices or impose minor economic or cognitive costs on other options (such as people who quit smoking banking money they would have spent on their habit but only being able to withdraw it when they test as nicotine free).

Some of these strategies have proven to be highly effective. Australia, France, Poland, and Portugal have adopted "opt-in" as default for indicating willingness to organ donation and as a result, 90–100% of their citizens are registered donors, compared to only 5–30% in countries that do not use the donor default strategy (Johnson and Goldstein, 2003). In some states in the US, the default for written prescription is that the pharmacist can fill them with generics unless the physician opts out by placing "dispense as written" on the prescription (Blumenthal-Barby and Burroghs 2012). An example of making health messages more salient to act on is the requirement for restaurants to put caloric amounts on menus in New York resulted in people ordering meals containing fewer calories and restaurants lowering the calories of meals (Rabin, 2008). People respond to a change in perception of social norm. The State of Montana ran an intensive "Most of Us Wear Seatbelts" media campaign from 2000 to 2003 in which the Department of Transportation let people know that most people (85%) wear seatbelts. This resulted in significant increase in reported use of seatbelts (Linkenbach and Perkins, 2003). Finally, a successful technique to increase fruit consumption among school students is by placing fruits and vegetables in prominent places in the cafeteria and displaying them attractively, which demonstrates the behavior-shaping effect of priming cues.

**BOX 4.10: Examples of using nudging and regulation to change target behaviors**

| | Nudging | Regulating |
|---|---|---|
| **Smoking** | Make non-smoking more visible through mass media campaigns communicating that the majority do not smoke and the majority of smokers want to stop | Ban smoking in public places |
| | Reduce cues for smoking by keeping cigarettes, lighters, and ashtrays out of sight | Increase price of cigarettes |
| **Alcohol** | Serve drinks in smaller glasses | Regulate pricing through duty or minimum pricing per unit |
| | Make lower alcohol consumption more visible through highlighting in mass media campaigns that the majority do not drink to excess | Raise the minimum age for purchase of alcohol |
| **Diet** | Designate sections of supermarket trolleys for fruit and vegetables | Restrict food advertising in media directed at children |
| | Make salad rather than chips the default side order | Ban industrially produced trans fatty acids |
| **Physical activity** | Make stairs, not lifts, more prominent and attractive in public buildings | Increase duty on petrol year on year (fuel price escalator) |
| | Make cycling more visible as a means of transport, eg, through city bike hire schemes | Enforce car drop-off exclusion zones around schools |

*Source:* Marteau, Theresa M., et al. "Judging nudging: can nudging improve population health?" BMJ 342 (2011).

Box 4.10 gave a few examples of nudging strategies, as compared with regulatory strategies (Marteau et al, 2011).

## Notes

1. Several countries have taken a broader and more ambitious approach to citizen engagement by pursuing approaches to involve patients and the wider public at different levels of the decision-making process, including health services planning and, at the national level, health care policies, e.g. in England ( https://www.nice.org.uk), the US (http://www.pcori.org), and Germany (https://www.iqwig.de/en). The Consumer Health Forum in Australia (https://www.chf.org.au) acts as a national voice and collaborative for health consumers including advocacy, research, issue identification and consumer representation related to a large array of themes including health literacy, consumer-centered regulations and policy making, quality and patient safety, access to information, new technologies and equitable access to care Such approaches could very well serve as a long-term goal for China
2. A related theme, providing information on safe and high quality providers, is taken up in Chapter 3.
3. Public education campaigns should be part and parcel of a comprehensive strategy for health prevention that includes legislation and regulation, for example, legislative action against smoking through banning of cigarette advertisements, banning of smoking in public places, taxation of cigarette sales, etc. A full treatment of possible options goes beyond the scope of this report.
4. Also see: https://www.flinders.edu.au/medicine/sites/fhbhru/self-management.cfm.
5. http://cccrg.cochrane.org/our-reviews.

# 5

# Reforming Public Hospitals and Improving their Performance (Lever 4)

## Introduction

Hospitals consume about 54 percent of all health spending in China and over half of patients' first contacts with the delivery system for an illness episode occur in hospitals. They are the center of the health care universe in China, the face of the delivery system for the citizenry and key drivers of cost escalation. As highlighted in Chapter 1, available information suggests that hospitals suffer from problems in efficiencies, quality of care, and patient satisfaction. Recognizing the importance and challenges of hospitals in terms of quality of care and efficiency, public hospital reform was identified as one of the main pillars of the 2009 reform program. There is broad agreement in China that deeper reforms are needed to improve hospital performance in cost control, quality of care and patient satisfaction.

There is a consensus that public hospitals in China need to strengthen governance and management to drive improvements in quality and efficiency, promote service integration, and counteract vested interests so that they act in the public interest (Allen, et. al., 2013; State Council, 2015 a, b; He, 2011; Tam, 2008). Emerging evidence suggests that public hospital reform initiatives need to be improved and expanded. Although some pilots have shown significant progress (see below), reforms need to place greater emphasis on reforming the governance, separating hospital management and governance (oversight) functions, improving efficiency of operations through raising managerial performance, adjusting pricing, compensation and hospital payment mechanisms that delink revenues and physician bonuses from service volume. China State Council has acknowledged that reforms in some in-depth institutional issues lag behind hindering emergence of comprehensive reform (State Council, 2015 a: 9–10).

This chapter examines two major tenets of the government's public hospital reform program: governance arrangements and managerial practices.[1] State Council directives since 2009 have emphasized the importance of governance and management reforms as part and parcel of a comprehensive strategy that includes reforms in pricing, compensation and care integration (State Council, 2012; Guo Ban Fa, 2015, No. 33, No 38, No. 70). Central government envisions public hospitals as independent entities with legal personality. Policy directives aim to grant hospitals greater managerial autonomy from direct hierarchical control

by the government administrative apparatus in terms of major managerial functions such as human resource, financial management and income distribution. However, hospitals would retain their "public institutional" identity and their accountability to government priorities particularly in terms of acting in the public interest. Upon relinquishing direct control over hospitals, government agencies would center their functions on strengthening regulation, sector planning, standard setting, and monitoring and evaluation of hospital performance. Policy directives also aim to improve managerial practices in hospitals. They promote professionalized management and endorse strengthening managerial functions such as cost accounting, clinical management, logistics and material management, patient flows and nursing management. Finally, it is important to note that alternative models of hospital governance and improvement in managerial practices are only two pieces of a complex reform puzzle that involves reforms in financial arrangements, human resources, planning and service integration. These themes are taken up in other chapters of this volume.

The chapter first reviews experiences and lessons from public hospital governance reforms in China. The second part summarizes what is known about hospital managerial practice. The final section offers recommendations for strengthening governance and management drawing on national and international examples.[2]

## Challenges and lessons in Public Hospital Governance and Management in China

Following a framework developed to analyze public hospital governance and management reforms,[3] and drawing on available literature as well as cases and surveys commissioned for this report, this chapter examines five major elements of public hospital reform: (i) the accountability mechanisms put in place by government (as owner or payer) to ensure hospitals perform well and are aligned with public objectives; (ii) the incentives facing the organization to support accountabilities and public priorities; (ii the organizational arrangement (e.g., boards and other entities) in which responsibility is vested by government to oversee, monitor and supervise hospital and managerial performance; these entities are the usual interface between government owners and hospital management and are ultimately held accountable for hospital behaviors and performance; (iv) the autonomy or degree of decision-making authority granted to hospitals; and (v) the quality of managerial practices to implement decisions and respond to accountabilities and incentives.

**Accountabilities:** Mechanisms to hold hospital managers accountable for efficient and quality services or fulfilling social functions need to be developed. Given the underlying incentives to enhance revenues, managers are oriented toward augmenting service volume and expanding infrastructure, including the acquisition of high tech equipment. In principle, lines of accountability are formalized, but diffuse. Hospital directors are accountable to multiple government agencies at local government levels. These bureaus' main form of oversight is hierarchical; usually applied through directives, known as "red letters", issued to hospitals to implement public policies and follow relevant public administration rules for human resource management, use of funds, use of public assets, product procurement, etc. But these directives often provide ambiguous and sometimes conflicting guidance because functions, responsibilities and accountabilities of public hospitals are not clearly defined and the agencies themselves have unaligned policies and diverse interests (Yip, et al, 2012). Enforcement is not rigorous in part because supervision itself is divided across different agencies. While financial reporting is strong, public hospitals face weak requirements from government and social insurers to improve safety processes, quality, patient satisfaction and efficiency. Improvements along these lines are generally not a priority (Tam, 2008). Directors are rarely monitored or sanctioned for noncompliance with government directives or failure to meet agreed targets. This situation, combined with the fact that most public hospitals receive minimal government subsidies

(less than 10 percent on average), has led to a general consensus that public hospitals are unaccountable to public authorities and act in their own interests.[4]

Public hospital reforms in Shanghai, Zhejiang and Sanming aim to impact hospital behaviors through linking hospital director income to performance. However, insufficient information is available to judge the impact of this performance assessment system and how it differs from routine systems to evaluate managers' performance. Anecdotal evidence suggests that Sanming does a better job in hospital reform implementation because directors' position are at risk based on performance assessments.` Dongyang's Board has established a comprehensive hospital-based performance assessment system that embraces financial, efficiency, quality, patient satisfaction and safety domains. Unlike Dongyang, Shanghai and Zhenjiang do not independently assess hospital performance or compliance with rules and standards, and appear to piggyback on supervisory practices performed by government agencies. Sanming's LG conducts careful supervision of the implementation of human resource, compensation and pricing reforms. Nevertheless some observers suggest influencing managers' behaviors may be difficult because they appear more accountable to higher-level leaders who appointed them than to the government agencies responsible for reform implementation or on-the-ground performance (Qian, 2015)

**Incentives:** While some services are still priced by the government, hospitals earn a large share of revenues through selling services to social insurers and individual self-pays, usually through fee-for-service payment systems. Surpluses are distributed to staff through non-transparent bonus schemes that are based on service production and revenues usually at the department level. Under these conditions, hospitals and their clinicians have strong incentives to maximize revenues through increasing service volumes, providing unnecessary care, generating admissions and extending bed days.[5] Given the incentives for capturing more patients, hospitals have little interest to integrate with or shift care to lower levels or fulfill their social functions. Meanwhile, hospitals' revenue-seeking behaviors have led to considerable citizen discontent. Significantly, Dongyang and Sanming delinked physician "bonus" income from revenues derived from sales of drugs, medical supplies and diagnostic tests and placed them on salaries. Their salaries contain fixed and variable components in which the latter is linked to some combination of productivity, cost control, quality and patient satisfaction measures, and are unrelated to revenues. Shanghai has placed a hard budget constraint on total personnel spending, but the effect on the bonus system is not yet known. `Hospital directors can be dismissed by Dongyang's Board and Sanming's LG for poor performance. While Shanghai and Zhanjiang rely on government agencies to apply sanctions for non-compliance with standards and rules, Dongyang's Board and Sanming's LG are fully empowered to apply sanctions themselves.

**Organizational arrangements:** Most public hospitals in China are governed directly by government bureaus. Except for a limited number of pilots, no independent supervisory structures such as boards or councils have been created or given responsibility to oversee and monitor hospital activities and performance. A number of cities have adopted a governance model in which a newly created agency, usually referred to as a hospital management center or council (HMC), is responsible for a set of hospitals and other facilities within a given jurisdiction, usually a municipality. HMCs in Shanghai and Zhenjiang are typical examples and are considered pilots. In these cities, the HMCs are staffed by civil servants and led by high-level municipal officials and consists of representatives of public agencies involved in health sector, and therefore not independent of the government administrative apparatus. The HMCs were granted legal personality but the hospital members also maintain their original legal personalities. In Dongyang, a fully independent board was established in a single hospital with representatives of government agencies, private corporations and local and foreign medical schools. The hospital has special legal status and its statutes are similar to corporate

governance models observed in private hospitals.[6] Finally, Sanming did not create a new agency, but decreed a fully empowered "leadership group" (LG) to enact health system reforms with an initial focus on the prefecture's 22 tertiary and secondary hospitals.[7]

**Autonomy:** Public hospital autonomy in China has few parallels internationally. Most enjoy considerable autonomy in financial and asset management, retaining financial surpluses, opening and closing services, expanding or contracting physical plant and equipment, and entering into and servicing debts. However, the legacy of "command-and-control" remains with the appointment of senior managers and management of "quota" personnel with fixed but low salaries conducted directly by local government leaders or agencies. Thus, hospital managers do not have full decision-making authority to hire, dismiss and set compensation for all staff. This may limit the quality of management practices (see below). The aforementioned HMC pilots have not resulted in major changes in decision making rights. For example, key decisions on human resource management and compensation and service pricing remain with government agencies and were not transferred to HMCs (or member hospitals) in Shanghai and Zhenjiang. Also, residual claimant status and asset management were retained mostly by the hospitals themselves. In contrast, Dongyang's Board and Sanming's leadership group exhibits considerably more decision rights.

**Managerial practices:** How well management responds to accountabilities and incentives in their governance and organizational environments is a key determinant of hospital performance. Hospital management entails a wide range of clinical and non-clinical functions related to selecting, using and supervising resources. Studies of hospital management in several countries have shown that better management practices are associated higher outcomes, improved quality of care and financial performance (Tsai et al., 2015; Bloom, et al, 2010; Mc Connell, et al, 2013; Kebede, et al., 2010).

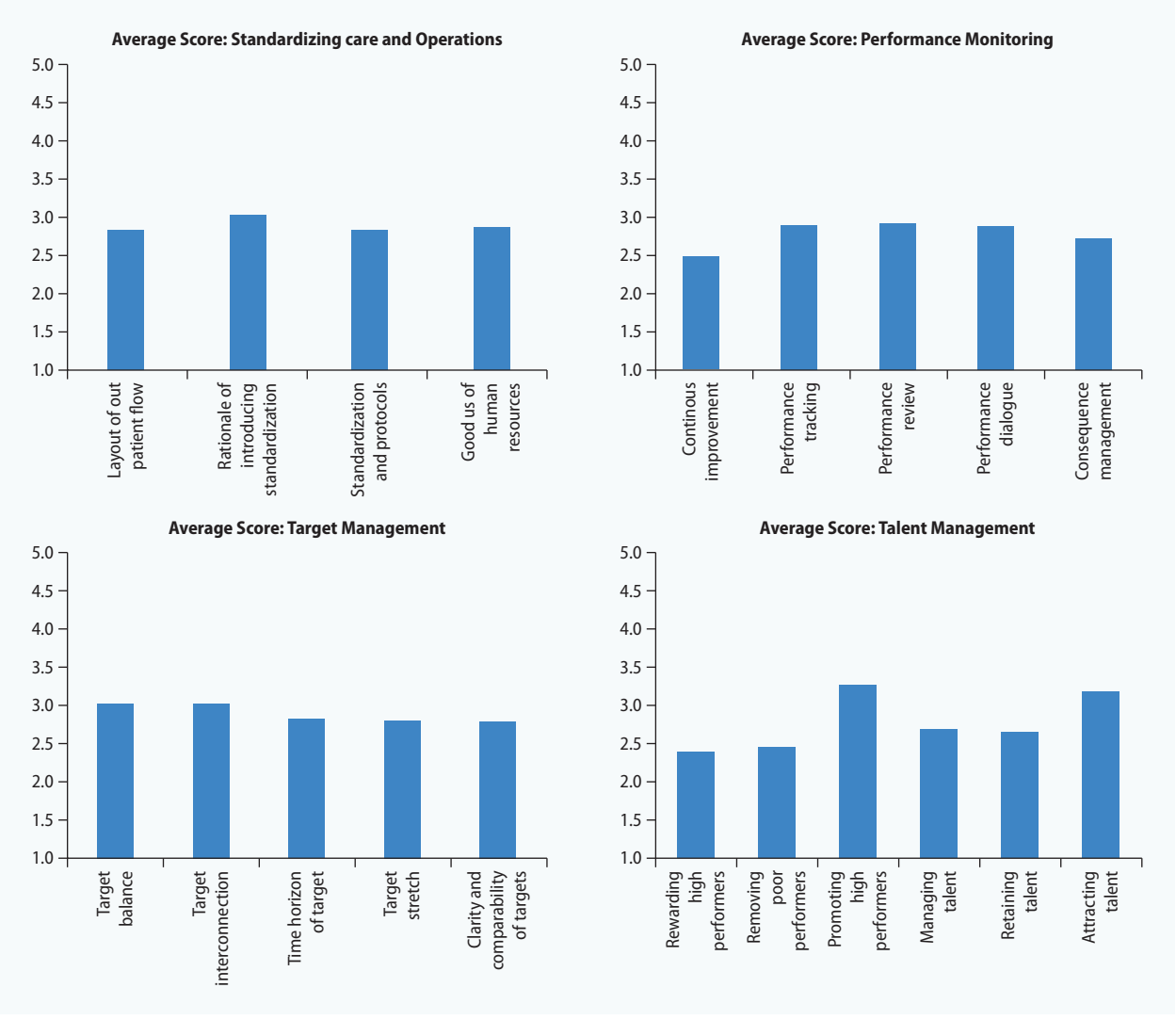
Little is known about management practices in Chinese hospitals. To address this gap, a survey was commissioned to measure management practices in a small sample of secondary (35) and tertiary (75) public hospitals across 27 provinces (Liu, 2015). Following a methodology tested and validated in several counties[8], practices were scored on a scale of 1 to 5 for each of the 20 practices across four domains. (See Box 5.1). The higher score indicated better performance.

**BOX 5.1 Management Practice Domains**

1. *Standardizing Care and Operations*
   - Hospital layout and patient flow
   - Patient pathway management
   - Standardization and clinical protocols
   - Good use of human resources
2. *Performance monitoring*
   - Continuous improvement
   - Performance tracking
   - Performance review
   - Performance dialogue
   - Consequence management
3. *Target Management*
   - Target balance
   - Target interaction
   - Clarity and comparability of targets
   - Time horizon of targets
   - Target stretch
4. *Talent Management*
   - Rewarding high performers
   - Removing poor performers
   - Promoting high performers
   - Managing talent
   - Retaining talent
   - Attracting talent

*Source:* Liu, 2015; Bloom and Van Reenen, 2007.

**FIGURE 5.1 Scores by Management Practice, China 2015 (n=110 hospitals)**




The weighted average management score was 2.68, with a highly dispersed distribution ranging from 1.85 to 3.35. Compared to OECD countries where the WMS has been applied, China is an average performer: scoring lower than the US (3.0) and UK (2.86) but higher than France (2.4) and Italy (2.48).[9] Figure 5.1 displays the average scores for each management practice across the four domains. Not surprisingly, secondary hospitals scored significantly lower (2.66) than tertiary facilities (2.90) and considerable variation of scores was observed across provinces. Hospitals scored the highest in use of human resources, promoting high performers, performance review and attracting talented staff, but scored lowest in standardization and protocols, continuous improvement, consequence management, rewarding high performers and removing poor performers.

The scores combined with findings from the interviews highlighted several managerial shortcomings: (i) management practices appear reactive in the sense that hospitals do not have systems to find and prevent potential problems or to continuously improve processes and services; (ii) due to lack of

autonomy in staffing and compensation, managers have little authority to reward high performers and dismiss low performers; talent management is not a high priority and there are few consequences for poor performance; (iii) hospitals do not systematically analyze performance data or use data to provide feedback for improvement; (iv) lack of care standardization may indicate deficient clinical management which can negatively impact quality and outcomes; and (v) performance management is mainly used to allocate staff bonuses not to improve individual or hospital performance. Interestingly, autonomy (decision-making authorities in human resource, asset and financial management) were associated with higher management scores.

Managerial performance may face other constraints. Public hospital executives are appointed by higher level party and government authorities and the process is not merit based. Even within hospitals, promotions are usually based on years of tenure, and are not determined competitively. Most hospital managers have received little formal training. Hospital presidents are generally responsible for all managerial, clinical and academic activities and tend to manage during their "spare time" or delegate managerial functions to junior staff. There are no standards or qualification system for hospital managers and most see managerial knowhow as something that requires investment by government authorities rather than by the hospitals themselves (World Bank, 2010). In China, as in many other countries, hospital management is not recognized as a profession and formation and training of managers is inadequate.

## Recommendations for moving forward with public hospital reform: Lessons from Chinese and international experience

International and Chinese experience suggests that there is no single path to public hospital reform, but emerging models have common elements: (i) putting in place (and enforcing) accountability mechanisms; (ii) crafting strong incentives to align behaviors with performance objectives and public priorities; (iii) developing sound organizational arrangements for governance; (iv) increasing decision rights of hospital managers; and (v) strengthening managerial capacities. This chapter recommends specific interventions in each of these domains drawing on the Chinese (Shanghai—Shenkang, Zhenjiang-Kangfu, Dongyang and Sanming) and international (Brazil, England and Spain)[10] case work, as well as the general literature. However, it is difficult to disentangle any one of the aspects from the others. For example, finding a workable balance between decision-making autonomy and accountability is no easy task. Indeed, no hospital, whether public or private, can act outside the interests of its owners.

Establishing robust accountabilities and powerful incentives to strengthen performance and align hospital behaviors with public objectives, core actions 1 and 2 respectively (see below), are critical elements of public hospital reform since they underbrace the remaining core actions related to putting in place effective organizational governance models (core action 3), strengthening autonomy (core action 4), and improving managerial practices (core action 5). In fact, without strong (and enforceable) accountabilities and appropriate incentives, it is unlikely that emerging organizational arrangements will represent the interests of government and patients, greater autonomy may stimulate deviant behaviors and greater distancing from public priorities, and there will be little demand for improved managerial practices. Planners must find a pragmatic formula for combining these elements while accounting for local context and capacities. Implementers must also display a willingness to make the invariable inflight adjustments.

### Core Action Area 1: Establish strong accountability mechanisms for autonomous public hospitals to strengthen performance

A fundamental component of hospital reform is putting in place sound accountability mechanisms to orient hospital behaviors toward improved performance, compliance

with social functions and alignment with government priorities. International experience suggests that the success of any public hospital reform involving greater autonomy, for example, depends on the effectiveness of accountability mechanisms. In China, many consider that granting public hospitals more autonomy, or similarly, freeing them from direct administrative control, will result in "chaos" since the "hospitals will be free to do whatever they want." However, experience in China and internationally suggests this is not the case if sound indirect accountability mechanisms are established and skillfully deployed.

Strengthening accountability consists of the following strategic activities: (i) specifying the rules, reporting requirements and other mechanisms to foster strong hospital accountability to government, including contracts, financial management, audits; patient safety processes, performance requirements, etc.; (ii) setting up institutional arrangement to support monitoring and oversight; and (iii) determining the information to be publicly disclosed.

"Arm's length" accountability mechanisms applied to autonomous public hospitals usually include rules and compliance monitoring for: board appointments and operation; accounting and financial reporting, including internal and external audits; safety processes; and participation in quality assurance programs. For example, in the English Foundation Trusts (FTs) citizen and government oversight focuses on Board performance and accountability is conveyed through three mechanisms. First, the Council of Governors (CoG) holds the board members both individually and collectively to account for performance, financial reporting, quality and other items. Second, government created two oversight agencies. One was a regulator, known as Monitor, which was given responsibility for licensing FTs, monitoring financial performance, assessing achievement of national targets (e.g., waiting times), complying with FT laws and gauging the quality of governance. Government also created the Care Quality Commission which is responsible for ensuring compliance with regulatory standards for quality and safety for all public and private providers (Edwards, 2011).[7] Finally, FTs are required to produce publically available annual reports on financial status, patient engagement activities and range of quality measures including adverse events, infection rates, mortality rates, patient feedback, staff views and performance against targets.

In China, many of these indirect accountability tools are evident but appear limited to a handful of hospitals. For example, the Director of Dongyang hospital signs a performance agreement with the board, which links his salary to performance. His position is also at risk for continued under-performance. Financial accounts are audited internally by the Board and externally by the Dongyang Audit Bureau. The board assesses the hospital's performance on a series of indicators reflecting cost containment, quality and efficiency. Internationally, these checks and balances are increasingly embodied in contracts between the board (as owner) and government (as the service purchaser). For example, contracts often are the instrument used to allocate resources, set performance requirements, assess compliance with government regulations and mandate care integration with lower level providers. Finally, some systems, such as in the state government of Sao Paulo, Brazil, have set up information systems in autonomous public hospitals to enable validated reporting of performance and costs. Finally, the effectiveness of accountability mechanisms depends on the provisions made for their enforcement.

## Core Action Area 2: Align Incentives with public objectives and accountabilities

The behavior of any hospital is very much driven by incentives, whether monetary or non-monetary. Incentives are usually embedded in how hospitals and staff are paid,[11] but also may respond to incentives that relate to the culture and behaviors of medical care organizations and broader delivery system. For example, some incentives are ingrained in the system culture such as the centrality of dedication to public service observed in the England's general tax funded National Health

Service (NHS). The NHS attaches considerable weight to the use of "Codes of Behavior" which in appearance are voluntary and self-policed. However, these are laid on top of many mandatory rules—for example on care quality—which do have the force of law. Clinical regulations are strong and enforced.

Specific strategies to support this core action entail: (i) gradually place hospitals at financial risk for budgetary overruns and low performance (e.g., quality, efficiency and patient satisfaction); (ii) install standardized cost accounting systems in hospitals and use the results in budget setting; and (iii) create the institutional capacity in government to monitor performance and enforce sanctions. The following are brief examples of these strategies drawing on Brazil's experience.

Sao Paulo's Social Health Organizations (OSSs) hospitals face powerful incentives to meet performance (and productivity) targets, improve quality, and align behaviors with the public priorities. Importantly, the OSSs are at financial risk for budgetary overruns and poor performance.[12] The state government established a global budget which is performance driven and sets targets in terms of volume, quality and efficiency. Hospitals have no incentive to over- or under-supply services. For example, if hospitals skimp on production they are financially sanctioned. If they exceed production targets, they are not financially compensated except under extenuating circumstances, such as in an epidemic. They are also not permitted to charge "public" patients. Ten percent of the budget is placed in a retention fund and paid in quarterly allotments against meeting efficiency and quality benchmarks (such as infection control, mortality rates, length of stay, readmissions, etc.). These measures are strictly enforced.

Oversight was facilitated by the installation of standardized cost accounting systems in each OSS hospital with a virtual link to the purchasing and contract management unit in the Secretariat of Health of the State Government of Sao Paulo, Brazil (SES). In addition to serving as a management tool for hospital managers to monitor costs of all inputs in each department, the SES's purchasing and contract management unit uses the data to compares cost across all facilities and services, analyze efficiency and productivity and negotiate global budgets. Availability of cost data shifted the nature (and transparency) of annual budget formulation away from more or less arbitrary setting of ceilings to a calculus based on volume and costs.

### Core Action Area 3: Develop sound organizational arrangements for public hospital governance

Strategic activities to support this core action include: (i) developing the organizational model or models for public hospital governance and corresponding legal framework; and (ii) setting the forms, roles and composition of governance entities such as boards.

Internationally, nearly all public hospital reforms are based on legislation. In some countries, such as Brazil (Sao Paulo) and England, framework laws were issued supporting a single governance modality which was applied to all hospitals participating in the reform. In other countries, such as Spain, different laws were enacted for different governance modalities. Still in others, such as Panama and India, facility-specific legislation was enacted. Governance models come with a variety of legal forms and corresponding nomenclatures (see Table 5.1). They vary considerably in terms of organizational structures (as well as the degree of independence granted to hospitals) established to replace hierarchical government administration. Most countries legislated some form of independent "board" that serves as the unit of responsibility between hospital management and government owners. In most cases, boards have members from government as well as non-government entities. In general, boards are expected to set overall policies and strategies, approve and oversee business plans and financial matters, monitor performance against objectives targets, appoint managers and safeguard the public interest of the hospitals.

However, boards can take on many roles, forms and compositions, and can be responsible for a single hospital, groups of hospitals and even regional networks of facilities. In England, the Board of Governors (BoG) for Foundation Trusts (FTs) consist of elected members and appointed officials. In Brazil,

**TABLE 5.1 Hospital Governance Models in Selected Countries**

| Country | Hospital governance model |
|---|---|
| Czech Republic | • Limited liability companies<br>• Joint-stock companies |
| Brazil | • Social Health Organizations (OSSs) |
| Estonia | • Joint-stock companies<br>• Foundations |
| Norway | • State enterprises |
| Portugal | • Public enterprise entity hospitals (PEEHs) |
| Spain | • Public healthcare companies<br>• Foundations<br>• Consortia<br>• Administrative concessions (to a private firm) |
| Sweden | • Public-stock corporations |
| United Kingdom | • Self-governing trusts<br>• Foundation trusts |

*Source:* Saltman et al., 2011, La Forgia and Couttolenc, 2008.

the Secretariat of Health of the State Government of Sao Paulo (SES) contracts nonprofit organizations (NFOs) to manage public hospitals. Each NFO is required to have a board as the entity legally accountable to government. Board members can be public officials, representatives of private entities and private citizens selected by the NFO. A similar mixed membership approach has been applied in China in Dongyang hospital board. However, most hospital boards established to date in China (such those for HMCs) consist exclusively of public officials. However, recent State Council policy directives (Guo Ban Fa, no. 38, 2015) require that governance boards or councils should consist of broader range of participants including representatives of government agencies, delegates of the People's Congress, members of the CPC and representatives of relevant stakeholders.

## Core Action Area 4: Gradually increase the delegation of decision rights to hospitals

Key strategic activities to implement greater decision making autonomy entail: (i) identifying the functions currently managed by government bureaus that are to be shifted to the hospitals; and (ii) setting a time table for their transferal.

While the new governance modalities for public hospitals have granted considerable decision rights to managers when compared to traditional, directly managed hospitals, few hospitals can be considered fully autonomous and comparable to independent private entities. Experience has shown that decision-making boundaries are a moving target and depend on shifting political and financial conditions. FTs in England and social organizations (OSSs) in Brazil are hospital governance models that enjoy considerable autonomy in hiring, firing and compensating staff, input management, opening and closing services, procurement and financial management. They can retain and invest surpluses and borrow commercially. However, OSSs are not permitted to sell shares, seek investors or charge fees to patients. Infrastructure expansion and purchases of expensive equipment requires government approval. FTs can set up joint ventures and subsidiary businesses but can't sell land and buildings since assets are locked to prevent privatization and cannot be sued to guarantee debt or sold to pay creditors. FTs have the right to vary nationally determined labor contracts and pay scales for medical professionals and unionized staff. None have done so. For service price-setting, FTs supposedly have more freedom, but in practice both groups are price-takers of the centrally determined tariffs and the other price structures used to reimburse care or ancillary services such as medical education.

In Spain, an administrative concession—a private joint venture company—probably has more autonomy than any other model in Europe with decision rights over all inputs including capital investments and expanding services but profit margins are capped at 7.5 percent by government. Staff were given to right to remain civil servants or become non-statutory staff. All new staff are non-statutory in which compensation and benefits are set by the private company awarded the concession. However, other public hospital governance modalities that emerged in Spain enjoy less autonomy. In all international

cases, managers' appointment is merit based, but sometimes subject to a consultative process with government. China's Dongyang Hospital manifests many of aforementioned features and holds full decision-making authority human resources and assets. Other and less autonomous hospital governance models have emerged in Zhenjiang, Shanghai and other cities.

## Core Action Area 5: Strengthen and professionalize managerial capacity

Hospitals in China face challenges to improve efficiency and quality`. At the time, China is moving forward with reforming hospital governance and separating hospital operations from government's administrative apparatus. It is unlikely that efficiency and quality gains or reforms will be successful without high quality hospital management (and leadership). Managers require strong skills in planning, setting organizational goals and annual and multi-year plans, allocating resources efficiently, monitoring performance, setting a functional command chain with corresponding accountabilities and ensuring effective systems for managerial functions related to financing, human resources, information and data flows, logistics and material management and quality assurance. Such a system needs well-prepared and professional managers. Professionalizing management can be achieved through a variety of short- and long-term measures, many of which can be implemented in parallel fashion.[13] The following are specific actions to professionalize management and improve managerial practices:

Short-term

i. Assess the skills of hospital managers and the quality of managerial practices and their impact on the quality and efficiency of hospital operations and services. The aforementioned WMS survey as well as other available instruments can be applied for this purpose. These surveys will provide valuable information to shape government commitment to managerial improvement and set the stage for corresponding strategies and actions.
ii. Study and adapt managerial practices implemented in leading public and private facilities. For example, case work commissioned for this study examined managerial practices in high-end private hospitals which introduced a variety of managerial practices to deliver high quality and efficient care.[14] Much can be learned from these innovations. Many of the same skills and practices used in private hospitals are appropriate for their public counterparts.
iii. Establish an executive management program for upgrading skills along several dimensions: (i) standardizing care (e.g., using checklists, handoff protocols, discharge protocols, etc.); (ii) refining target setting (e.g., scope of targets, linkages among targets, difficultly of achievement, etc.); (iii) measuring performance (e.g., monitoring of errors and adverse events, continuous performance improvement processes, etc.); and (iv) improving talent management (assessment of senior managers, internal recruitment, retention, dismissal and promotion policies, etc.). The development of capabilities applies to both clinical and non-clinical executive managers, both of whom need first-rate managerial and leadership skills.
iv. Support demonstration projects that address specific managerial challenges such as care standardization, infection control and materials management. Pilots can borrow industry tools such as Plan-Do-Study-Act cycle (PDSA), total quality management (TQM) and lean management to improve efficiency, raise quality and better patient satisfaction.

Long-term

v. Develop a career path for professional hospital managers and integrate managerial and leadership competencies into recruitment and promotion practices.
vi. Create a hospital management benchmarking system that periodically tracks indicators of management dimensions and links them to important performance indicators. The benchmarking systems should be used not to evaluate management but to proactively find problems,

improve management practices as means to improve hospital performance.

vii. Work with academic institutions to strengthen and expand degree programs in hospital management and ultimately establish centers of excellence in management and leadership development. This may entail revising and updating curricula, introducing internships and in-service training for recent graduates and developing competencies across recognized management and leadership domains.

## Notes

1. Other aspects of public hospital reform related to payment systems, human resources and capital planning are the subjects of Chapters 6, 7 and 9 respectively.
2. These draw on cases commissioned for this report: Shanghai-Shenkang, Zhenjiang-Kanfu and Dongyang. Sanming is based on Ying, 2014; Ma, 2014; and Sanming Prefecture, 2014.
3. Adapted from La Forgia, Harding and Hawkins (2013).
4. Given this situation, some local government officials consider that granting public hospitals more autonomy, or similarly, freeing them from the vestiges of hierarchical government control, will result in chaos (WHO/World Bank, 2015 – Technical Roundtable discussions).
5. The incentive structure facing providers is the subject of Chapter 6.
6. This arrangement was part of a special agreement made between city leaders and a Taiwanese businessman who made a substantial donation to rebuild the hospital in 1993.
7. A prefecture is an administrative unit common to all China's provinces and usually consisting of both urban and rural areas.
8. The survey was commissioned by the World Bank and the preliminary findings are reported here. Researchers applied a methodology, known as the World Management Survey (WMS), originally developed to measure managerial and organizational practices in manufacturing, but subsequently applied to and validated in hospitals in several countries (Bloom and Van Reenen, 2010, 2007; Bloom et al., 2010; McConnell, et al., 2013). The research team interviewed 291 department directors and head nurses.
9. Country comparisons should be taken with caution. 79% of the hospitals originally contacted in China refused to participate. This may have contributed to a sampling bias in which the surveyed hospitals were those with best management practices. The researchers did not examine the association between management scores and hospital performance indicators because validation of the latter was impossible.
10. Case studies on Spain and England were commissioned for this report. The Brazil case draws from La Forgia and Harding (2009) and La Forgia and Couttolenc (2008).
11. The Department of Health (and its Secretary of State) has overall and political responsibility for strategic direction. The FTs are also answerable to other regulatory bodies for financial management, medical education, fertility treatment, etc.
12. Payment systems is the subject of Chapter 6.
13. Similar to the OSSs, in Spain financial risk is also transferred to providers in the Concessions and Consortia models in part because of the participation of private partners.
14. Based on MSH, 2013, 2005; McConnell, et al, 2013; Lega et al., 2013; Frenk, et al., 2010 and case studies commissioned for this report.
15. The final report will contain an assessment of effective managerial practices in a subset of private hospitals in China.

# Part II

# Institutional and Financial Environment Levers

# 6

# Realigning Incentives in Purchasing and Provider Payment (Lever 5)

## Introduction

China's healthcare system has witnessed two profoundly dramatic inflexion points in the last three-and-a-half decades, both closely related to structural changes in the economy and both with huge implications for levels of health financing. In the decades following the establishment of the People's Republic of China in 1949, the healthcare system in China was built within the socialist planned economy structure and its main task was to address shortage of doctors and medicines. Public production and financing dominated the tightly controlled health sector, which succeeded in achieving extraordinary improvements in population health in a low budget environment. Following structural changes in the economy in the 1970s, which saw the transition from a planned to a market economy system, the health sector witnessed rapid decentralization and transfer of decision-making authority on financial matters to newly-autonomous public hospitals. Public funding for health declined rapidly during this phase, and internal competition for scarce resources left the sector financially weak. In the absence of government regulation and strict supervision, the transition to a market-based system was disorderly and uncoordinated. The state-run system could no longer protect the population from health shocks, and unable to adequately finance the production of healthcare, the government financing arrangements left hospitals with no options but to rely on user fees for survival. So profound was the shift from government subsidies to out-of-pocket payments by patients that the share of public funds in total hospital revenues fell quickly from around 60 percent in late 1970s to less than 10 percent in 1990s (Yip and Hsiao, 2008).

Two other policies, undoubtedly introduced with good intentions, met with unfortunate consequences. First, in order to motivate high performance levels, bonus schemes were introduced that linked physician incomes with generated revenues. And second, in order to improve access, basic medical services and pharmaceuticals were priced artificially low while expensive procedures and drugs were marked up with high profit margins. The consequences of these inappropriate pricing schemes and incentives are by now well-known: seeking to maximize incomes, physicians resorted to demand inducement to generate higher levels of revenue; and in order to maximize profits, hospitals began encouraging over-prescription of drugs and expensive diagnostic tests. These reinforcing actions led

to massive inefficiencies and further increased the financial burden on patients. These and related misaligned incentives became embedded in the health system, contributing to escalating costs, medical impoverishment and large-scale public discontent.

Responding to the rapidly rising costs and demand for quality affordable healthcare from an increasingly conscious middle class, the Government of China launched one of the biggest health policy interventions in recent times in terms of size and scope. Targeted to reach 1.3 billion people, the reform invested over three trillion RMB into the health system between 2009 and 2014 to expand coverage of social insurance schemes, establish a national essential medicines system, advance public hospital reforms, improve the primary care system and increase the equality and availability of public health services. As highlighted in Chapter 1, the progress has been remarkable in many ways, especially in terms of raising insurance coverage and utilization and bringing down the share of out-of-pocket spending in total spending on health.

However, several challenges remain, and steps need to be taken to ensure that benefits of reforms are shared more equally. Overall utilization of health services has grown annually, but with lower rate for outpatient service than inpatient services. The average growth rate per annum of the total number of outpatient visits from 2009 to 2014 was 6.7 percent compared to 8.9 percent for inpatient admissions (NHFPC, 2014).[1] One contributing factor to this trend is the fact that the urban health insurance schemes and the NCMS only recently started to cover outpatient services in addition to inpatient care reimbursement. International evidence shows that benefit incidence of public expenditures in hospitals benefit disproportionately more the better-off whereas primary health care and outpatient services are more accessed by the less well off. Study in Ningxia and Shandong had reported similar findings (Yu et.al, 2010a). Therefore China should expand and deepen its health insurance coverage to primary health care and outpatient services, so as to ensure more equitable utilization of both outpatient and inpatient services.

Insurance payments now make up larger share in hospital revenues and the share of OOPs has declined that is in principle good news. But like many other countries, China also faces the issue of health expenditure escalation, including preventable increase as a result of overprovision of services. Moving forward, China needs to adopt comprehensive reform policies to effectively constrain the unnecessary increase.

This chapter examines issues related to these system-wide incentives and the adverse impact they continue to have on many aspects of healthcare production, delivery, quality, utilization, and affordability. Following a brief examination of the ongoing challenges posed by the underlying distortions in the incentive structure, it then draws upon experiences from China and other countries to propose actionable recommendations for realigning and correcting incentives in purchasing and provider payments in the health sector.

## Key Challenges in Purchasing Health Services and Paying Providers

Despite impressive gains in achieving near universal coverage in a very short time period, China still needs to do more corrections in the underlying incentive system governing provider behavior and influencing the nature and scope of health goods and services purchased. The emphasis in the 2009 (State Council, 2009) and 2012 (Ministry of Human Resources and Social Security, 2012) reform guidelines on the importance of leveraging strategic health purchasing and stimulating changes in provider behavior notwithstanding, fundamental issues with the incentive structure are yet to be addressed at the system level. Insurance agencies have built their capacity and efficiency to manage transactions but can and need to do more to use their purchasing power to purchase strategically on behalf of the consumer and monitor the mix and quality of services delivered. This is needed to transform scarce inputs optimally into affordable and effective health services, containing costs

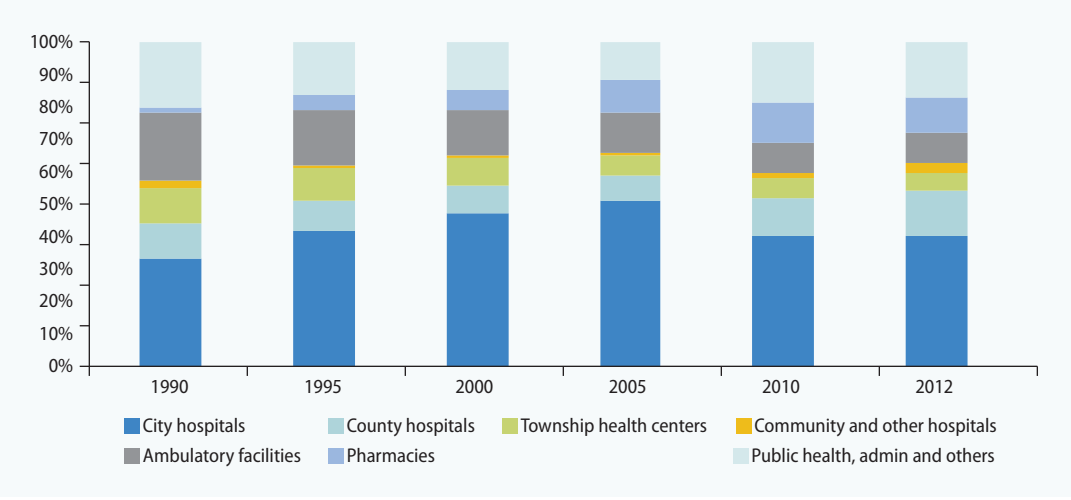
and ensuring financial protection—all to be afforded by universal health coverage. We discuss these issues in turn.

**Perverse supply-side incentives:** The large-scale reforms initiated in 2009 have not aggressively attempted to correct the misaligned supply side incentives that have carried over from the last three decades. Public hospitals in China have access to three main sources of financing: direct government subsidies, social insurance payments, and service fees including mark-ups on drug prices charged to patients. Direct government subsidies are small in volume (accounting for 14.6 percent of total hospital revenues in 2013, as reported in the China Health Statistics Yearbook, 2014) and earnings from social insurers and service fees constitute the lion's share of revenues. The China Government has subsidized heavily two of the three social insurance schemes (NCMS and URBMI), and out of pocket spending on aggregate has declined significantly but it is still high compared to OECD and many middle income countries, raising concerns about overall affordability and contributing to citizen discontent. Hospital behaviors responding to distorted incentives are a main driver of this situation. Given the lack of hard budget constraint on total (hospital) spending, absence of price controls on high tech and expensive procedures, and the dominant fee-for-service payment mechanism (which incentivizes more volume and supply of expensive procedures), hospitals seek to maximize revenues derived from insurers and patients which in turn motivates hospitals to over-supply services and extend their business into expensive intensive procedures (Li et al, 2012). Such procedures may be an important source of revenue but contribute little to patient outcomes. In doing so, hospitals seek help from physicians by offering them bonus schemes linking their performance with hospital revenues. The net result is that public hospitals focus on profit-making, which detracts them from pursuit of social welfare. Health sector resources get reallocated to profit centers for hospitals and away from patient-centered provision. Physicians get preoccupied with revenue generation, which becomes an important factor influencing their treatment choices.

The fee-pricing structure widely used by purchasing agencies prices some services, such as health promotion, prevention and consultations, below cost, and some services, such as expensive diagnostics, above costs. This motivates over-supply of services with higher price margins and steers public providers away from prioritizing public interest, pursuit of which would direct them to conserve public resources and focus on improving the health of patients with minimum use of resources. However, since the fee structure set by NDRC and used by purchasing agencies yields the lowest profit for providers of health prevention and promotion services, these services get neglected and physicians favor over-prescription of antibiotics and intravenous injections even for simple health problems, for which scientific evidence of effectiveness is totally lacking. Unsurprisingly, before the 2009 reforms, 75 percent of patients suffering from a common cold and 79 percent of all hospital patients in China are prescribed antibiotics, numbers that are more than twice the international average and which have contributed to growth in spending on health (Zhou, 2008). How the reforms affected this rates requires evaluation.

**Perverse incentives among public hospitals for capital-intensive investments:** In order to make and sustain profits from services, including tests and procedures, hospitals need to invest heavily in new technologies and medical devices and get a high initial stock of patients to defray the fixed costs before they can start making money (Sun, Yang, and Barnes, 2015). Public hospitals, as centers of considerable power and influence in their own right as well as emblematic of the position of the state, have always had strong incentives for capital-intensive investment (Yip et al., 2010). Reinforced by the profit motivation, higher level hospitals, which are at an advantage for capital investment, keep expanding and drawing in more and more physical, financial and human resources. Lower level hospitals are unable to compete at that level of technology base (He and Meng, 2015). The net result is a resource-rich tertiary hospital base that

**FIGURE 6.1 Composition of Total Health Expenditure in China, by facility or provider (percent)**




*Source:* Ministry of Health, 2013.

stands together with poorly-resourced lower level facilities, a situation that adversely affects the ability of lower level hospitals to provide quality medical services and motivates doctors to seek employment in tertiary facilities where their income prospects are brighter. Patients get directed to higher level facilities, resulting in an inefficient situation in which congested higher level facilities co-exist with idle resources in lower-level hospitals. Unsurprisingly, while the share of hospitals in total health spending in China went up from 56 percent in 1990 to 63 percent in 2012, the share of township hospitals fell from 11 percent to 6 percent and the share of ambulatory health facilities fell from 21 percent to 9 percent during this period (Figure 6.1).

**Perverse demand-side incentives:** In the absence of a strong primary care system and an effective referral system, patients themselves choose the level of hospital from which to seek treatment. Reimbursement rates are differentiated across levels with lower reimbursement at lower levels (i.e., secondary lower than tertiary for the same procedure), but the difference is not sufficient to deter patients from bypassing to tertiary levels, which are perceived to provide higher quality care. And finally, since higher level facilities typically attract more specialists and are better equipped with high-technology devices, patients show a stronger preference for seeking even basic care at these high-level facilities. The net result of this choice process is congestion, long waiting times, higher marginal cost of production, shorter physician time, more high-tech diagnostics, and related inefficiency- and cost-enhancing outcomes.

## Recommendations for Realigning Incentives in the Health System in China

Financial incentives offered by payers to health care providers are a key mechanism of lowering costs, improving quality of care and directing the production and delivery of health services to priority areas determined by the principals taking such decisions. Designing effective incentive programs that can align the varying objectives of the different stakeholders in health as well as predict performance of the health system as a whole, however, poses a complex challenge. It is not surprising, therefore, that even though the fundamental issues with the underlying incentives in the healthcare system in China are well recognized and

documented, policy makers and administrators have struggled with making the necessary corrections. At the same time, there have been many local experiments in different parts of China in recent years, which merit study and evaluation for possible replication. A selection of these is collected and presented in the recommendations suggested below.

### Core Action Area 1: Switch from fee-for-service as a dominant method of paying providers to capitation, case-mix, including DRGs, and global budgets

Provider payment reforms in China started over 15 years ago when, in a policy issued in 1999, the former Ministry of Labor and Social Security (MOLSS) promoted global budgets, fee-for-service and per diem payment methods for EBMI (MOLSS, 1999). A few years later, the Ministry of Health introduced case-based payment in 7 pilot provinces in 2004 (Ministry of Health, 2004). But it was only in 2009 when the Communist Party of China Central Committee issued an opinion on deepening health reforms and encouraged payment mechanisms reform started in earnest (State Council, 2009). In 2011, MOHRSS issued specific policy guidelines on provider payment reform, clarifying the roadmap for achieving a series of national requirements: (a) expenditure control, based on revenue and expenditure projection of the fund; (b) global budget prepayment for specific providers, considering institutional characteristics and service volume; (c) capitation for outpatient services; (d) case-based payment for inpatient and catastrophic outpatient services, or per diem payments for inpatient bed-days in areas where case-based payment or capitation for outpatient care could not be implemented; and (e) negotiation mechanism between insurance funds and providers to decide the payment rate (MOHRSS, 2011a, 2011b). The regulations encouraged establishment of reference payment rates for new payment mechanisms, based on historical fees, fund affordability and current payment policies, and suggested adjustment of the rate based on social economic development, provider service capacity, suitable technology application, Consumer Price Index and price change of medical materials. The regulations also suggested a global cap on all payment arrangements for different providers. In 2012, MOHRSS, NHFPC and MOF issued a policy on global cap of the providers by the basic medical insurances, determined on the basis of a number of factors, including premium collection, fund risk considerations, price level, and historical utilization of health care (MOHRSS, 2012). In that same year, State Council policy directives mandated that facilities implement payment reforms involving global budgets, case-based payments or per diem payments (NHFPC, Wei Nong Wei Fa no.28, 2012).

Issued over the years, these directives have spawned a number of local experiments involving a switch from fee-for-service to global budgeting, capitation, case-based payment, per diem payment or pay for performance (Box 6.1). The impact of these experiments has been variable, but needs to be systematically evaluated. According to the Ministry of Human Resources and Social Security, the overall direction in China is towards Prospective Payment Systems (PPS).[2] Health providers in China receive payments from three sources: out-of-pocket payments by patients, who pay on a fee-for-service basis; health insurance payments, gradually moving to PPS; and, direct government funding linked to public health goods and input-based subsidies. Having a common provider payment mechanism determining the volume of the first two of these revenue streams would give much more power to the positive incentivizing effect of prospective payment methods. Further, prospective payments will incentivize providers to save and be efficient, especially if they are allowed to retain the savings. According to government policies, providers are allowed to keep the balance, especially for NCMS and URBMI schemes, for which it pays the premiums, provided they can establish reasonable and proper mechanisms for future expenditures from these savings (Ren She Bu, No. 70, 2015). Key actions to scale up prospective payments to the country level include: (i) evaluate ongoing reform experiments with prospective payments and replicate successful efforts in all

provinces and cities in a systematic manner; (ii) switch from fee-for-service to prospective payments for the portion of expenditure that is borne directly by patients; (iii) allow providers to retain savings resulting from the switch to prospective payment mechanisms; and (iv)put in place mechanisms for concurrent evaluation of ongoing and new provider payment reforms. One should note that the switch from fee-for-service to prospective and more comprehensive provider payment system would also provide an opportunity to solve the problem of pricing distortions from under and over-priced services as economic incentives shift from losing or profiting from production of individual service items to efficient resource use to deliver a patient treatment outcome.

Several issues need to be considered when pricing the new provider payment methods. These often are based on average cost, actual costs of individual cases or people may be lower or higher but according to the laws of big numbers should average out. Often the pricing is relative to a standard unit cost and relative weights could be drawn on actual cost-accounting in sentinel sites, or using at least initially weights from similar provider payment systems from other countries with overall similar disease burden and socio-economic status. Particular challenge in China is about how to count for continuing partial supply side subsidies and how to level the playing field between public and non-government health service providers. Choosing most context appropriate approaches to pricing would require the following systematically through decision trees and examples will be provided in the main report.

### Core Action Area 2: Correct and realign incentives within a single, uniform and network-wide design in support of population health, quality and cost containment

Horizontal and vertical consistency and coherence, within and across a facility alliance or network, increase the likelihood of payment mechanisms achieving the desired changes in provider behavior. Provider payment mechanisms work best when they are defined and applied consistently across the full continuum of health care production and delivery, from primary care to tertiary interventions, and are compatible in the sense that all providers, including hospitals, physicians, and town, community and village health centers face similar types of incentives. There are different strategies for reorienting incentives, some of which are being tested in China (Box 6.1). Key action points required to achieve this vision are: (i) analyze incentive mechanisms across different insurance schemes within each province to understand areas of consonance and dissonance; (ii) based on the results of the analysis, develop a strategy for vertical and horizontal consolidation as necessary; and (iii) establish a designated unit at central and provincial levels to oversee implementation and concurrent evaluation.

Within the proposed organized networks or alliances for PCIC implementation at the county and district levels, for example, networks can receive a prospective global budget based on capitation and involve all revenues, including copayments. The global budget will necessarily entail a hard budget constraint along with measures to avoid cost shifting by providers to patients. The global budget may be set initially on the basis of current spending levels, but have a focus on controlling future spending growth across the entire network. The global budget can include a "withhold" of a predefined percent of funding, which can be paid upon compliance with indicators related to PCIC such as quality improvement, integrated care, reducing unnecessary care and shifting inappropriate care out of the hospital. This would require that the network redefine hospital and primary provider roles and establish formal linkages. Network management would need to channel incentives to hospitals and primary care providers through, for example, risk-adjusted facility-specific global budgets. A certain percent of these global budget can be withheld and paid upon compliance with quality and integration indicators. This would be especially important to align incentives of hospitals with primary care providers to work together to implement patient centered integrated care.

## BOX 6.1 Examples of provider payment reforms in China

*Global Caps*

- Shanghai EBMI switched from fee-for-service to global caps in 2003, and introduced mixed methods, including fee for service, per day payment for mental diseases and case-based payment for diseases or treatment procedures, to make settlements. Global budget prepayment was adopted for all providers in 2009.
- Hangzhou determines the global budget of single hospital based on its historical fee claim data, institutional level and service characteristic with adjustment by inflation and policy consideration. The profit and loss of the prepaid budget are shared between EBMI and providers.

*Capitation*

- In Zhenjiang (Jiangsu province), capitation is set under the budget cap, and is based on yearly treatment costs, including medicines and tests. An incentive rule is set up for primary care providers and full payment is made only when the fee for chronic treatment reaches 70 percent of the chronic capitation.
- Changde city in the Hunan province uses capitation for inpatient services even in tertiary hospitals. URBMI uses 87 percent of the fund as the capitation to providers, and the balance is kept as reserve and risk adjustment fund. An evaluation carried out between 2008 and 2010 finds that this payment reform reduced inpatient out-of-pocket cost by 19.7 percent, out-of-pocket ratio by 9.5 percent, and length of stay by 17.7 percent. However, total inpatient cost, drug cost ratio, treatment effect, and patient satisfaction showed little difference between fee-for-service and capitation models.

*Case-based payment*

- In Shanghai, the insurance agency pays the provider a fixed case rate regardless of actual expenses. An evaluation of the Shanghai experiment shows that in order to safeguard profits, hospitals engaged in several opportunistic behaviors, including reducing length of stay of patients. Hospitals also engaged in cost-shifting tactics by raising outlays on uninsured patients to compensate for reduced revenues from insured patients.
- Beijing UEBMI pioneered the first DRG system in China in 6 hospitals in 2011, covering 108 groups. An evaluation using hospital discharge data from the 6 pilot hospitals and 8 other hospitals, which continued to use fee-for-service and served as controls, found that DRG payment led to reductions of 6.2 percent and 10.5 percent, respectively, in health expenditures and out-of-pocket payments by patients per hospital admission. However, hospitals continued to use FFS payments for patients who were older and had more complications.

*Per diem payment*

- Shenzhen (Guangdong Province) pays for inpatient services by per diem payment. The total payment is determined by rate per inpatient day and adjusted inpatient volume calculated as real inpatient volume multiplied by inpatient-outpatient ratio. The gap between payment rate and real fee (based on fee schedule) is shared.
- In Changshu (Jiangsu Province), URBMI has set up specific per diem rate based on disease severity, treatment period and institutional level. In the case of surgeries, the rate varies among pre-surgical hospitalization, surgical procedure and post-surgical care, and decreases when inpatient day increases.

*Pay for Performance*

- Guizhou Province introduced a salary-plus-bonus payment method for village doctors in lieu of fee for service and removed the incentives for over-prescribing medications. An evaluation showed that both outpatient costs and drug spending fell, but doctors increased non-drug services such as injections and gained more incentives to refer patients to hospital care, which in turn increased total health care costs.
- In Ningxia Province, an intervention targeted at primary care providers combined capitation with pay-for-performance incentives. An evaluation showed that both antibiotic prescriptions and total outpatient spending declined without major adverse effects on other aspects of care.

*Source:* Liang Hong et al, 2013; Xiang, 2011; Feng et al, 2014; Liu et al, 2012; Zhang et al, 2014; Gao et al, 2014; Hong, 2011; Zhang, 2010; Jiang et al, 2011; Zhen Jie, 2009; Yip et al. 2015; Wang et al, 2013; Zhang et al, 2013; Wang et al, 2011; Yip et al. 2014; Jian et al, 2014.

Another option could be to consider incentive payments outside of the global budget (e.g., additional funding) that would need to be earned. Hospital performance indicators can focus on patient safety, quality and efficiency improvements. Measures of this sort would promote the integration of services across the health system, and would also incentivize the network to direct the flow of patients to the appropriate levels of care. Any savings generated by the network could be shared by hospitals and primary care providers within that network.

The Alternative Quality Care Contract in Massachusetts, USA and CareFirst Patient Centered Medical Home program in Maryland, USA have successfully implemented payment schemes among networks of providers to improve quality, reduce waste and unnecessary utilization. In January 2009 Blue Cross Blue Shield of Massachusetts launched a new payment arrangement called the Alternative Quality Contract.

The contract stipulates a modified global payment (fixed payments for the care of a patient during a specified time period) arrangement. The model differs from past models of fixed payments or capitation because it explicitly connects payments to achieving quality goals and defines the rate of increase for each contract group's budget over a five-year period, unlike typical annual contracts. All groups participating in the Alternative Quality Contract earned significant quality bonuses in the first year. CareFirst's Patient-Centered Medical Home Program (PCMH) began in 2011, and within three years over 80 percent of all primary care providers in the CareFirst service area—including parts of Northern Virginia, the District of Columbia and Maryland—began to participate in the program. Since the program began, CareFirst has seen the overall rate of increase in medical care spending for its members slow from an average of 7.5 percent per year, in the five years preceding the program's launch, to 3.5 percent in 2013. In addition, CareFirst members under the care of participating PCMH physicians fare well when measured on key quality indicators. Both these programs offer useful lessons for China.

### Core Action Area 3: Correct and realign incentives to reverse the current irrational distribution of service by level of facilities

For services that are covered by the social health insurance system, China may like to consider setting up reimbursement rates for specific services according to the cost of producing and delivering those services at the agreed and designated level of care. In other words, if a certain service is deemed best delivered at the district hospital level, and the district hospitals have the capacity to deliver, case-mix adjusted per case rates estimated for that level could be applied universally across the hospital system. If, however, only the highest tertiary level hospital has the capacity to deliver that service, then a prospectively determined case-mix adjusted rate is set and paid to that hospital but under an agreed ceiling determined by the global budget. For services not covered by health insurance, the payment methods would need to be revised to have a much closer relationship with costs. This is consistent with the policy directive of the government issued in May 2015 that requires health insurance to cover most of the medical expenditure, and sets the target for out-of-pocket payments paid by each patient at below 30 percent by 2017.

Key actions required to achieve this vision are: (i) determine, standardize and list procedures at their commensurate level of care (community, township, county and level 2 and 3 city hospitals); (ii) reassess copayments across different levels and set significantly higher deductibles and out-of-pocket payments for basic procedures that are being demanded at the tertiary level; (iii) strengthen capacity at identified levels; and (iv) develop a communication strategy to inform patients of the new pricing mechanism

### Core Action Area 4: Consolidate and strengthen the capacity of insurance agencies so as to equip them to become strategic purchasers

Integration of the fragmented insurance system of China could equalize entitlements for all citizens and allow a powerful single

purchaser to control the behavior of providers. While the pursuit of this vision will at some stage require bold decisions about the overall organizational design of the BMI, local pilots suggests that much progress can be made immediately. Several provinces have successfully merged two or more schemes, most importantly, the URBMI and NCMS. Some localities have implemented integration of insurance fund services. For example, in Jiulongpo District, a single entity manages both EBMI and NCMS (urban-rural resident BMI), with harmonized benefits and using the same provider monitoring system. Inpatient services are reimbursed on the basis of a global budget, which accounts for 70 percent of total expenditure of the fund. Case-based payment and fee-for-service payments are used for outpatient services, and account for 10 percent and 20 percent of total expenditure of the fund respectively. At the beginning of each year, the insurance fund signs a contract with each health institution, with details related to the settlement method and standard of performance indicators. The global budget of each health facility is settled and paid monthly. The insurance agency conducts performance assessment and annual settlement within the first quarter of the following year based on the performance indicators constructed for the previous year. These pilots, which suggest the possibility of de-facto merging of insurance schemes and provide a possible pathway for bottom-up reforms, warrant further review.

Further, strengthening managerial capacity of insurance funds would help them become more strategic purchasers of health services. Strengthening standardized cost accounting systems will help insurance funds collect accurate cost information which will facilitate budget planning, benchmarking within and across health care institutions, and monitoring the delivery of services.

## Notes

1. Preliminary data from NHFPC.
2. PPS is a term used to refer to several payment methodologies for which means of determining insurance reimbursement is based on a predetermined payment regardless of the intensity of the actual service provided. Common PPS methods include: capitation and DRG.

# 7

# Strengthening Health Workforce for People-Centered Integrated Care (Lever 6)

## Introduction

The labor market for health workers in China has changed profoundly in recent years.[1] The supply of health workers has increased dramatically in the last 15 years, crossing the 7 million mark in 2013. That was due to a drastic reform in the health-care professional education system, with a massive expansion of training slots. For example, the number of medical school graduates doubled between 2003 and 2013, with huge increases especially in nursing staff (108 percent) and licensed physicians (41 percent).

Recent progress in the expansion of medical and nurse workforce notwithstanding, China faces a host of human resources issues related to shortage of qualified staff, unequal distribution between urban and rural areas as well as between primary health care and hospitals, unbalanced skill mix, low compensation, perverse financial incentives, high workload, and a persistent mismatch between educational investments and labor market demand. At the root of many of these problems is perhaps the level and manner in which health workers are paid. Additionally, low salaries discourage doctors from practicing at the primary care level and in rural areas, where the possibilities of augmenting income from the sale of prescription drugs and diagnostic tests are limited. This is further compounded by the headcount quota system that is widely used in the country to manage public employees, including health workers in public institutions. By introducing rigidities and inefficiencies in the recruitment and management of health workers and limiting the mobility of health professionals, such a system distorts the labor market and compromises its ability to deliver quality healthcare services.

An adequate and well-functioning health workforce is critical for the implementation and operation of the People-Centered Integrated Care (PCIC) model. As described in Chapter 2, most of the common features of this model—such as the central role of primary care, focus on continuum of care, risk stratification and prioritization of population needs, emphasis on prevention and health management, use of multidisciplinary teams and the link to community-based and social care—require rethinking the traditional ways of producing, deploying and managing the health workforce. International experiences suggest that such a transformation encompasses a redefinition of the scope of practice and functions of different categories of health workers, new team compositions, balanced

distribution of workforce between different levels of care, improved performance management system, appropriated incentive structures and transformation of pre-service and in-service training.

This chapter examines issues related to human resource management in China and proposes a way forward to align the human resource system to the needs of PCIC. It first examines the challenges in human resource management in China. Drawing upon experiences from within China and OECD countries, it then offers a series of actionable recommendations for strengthening human resources for a patient centered integrated care delivery model.

## Key Challenges in the Human Resource Management in China

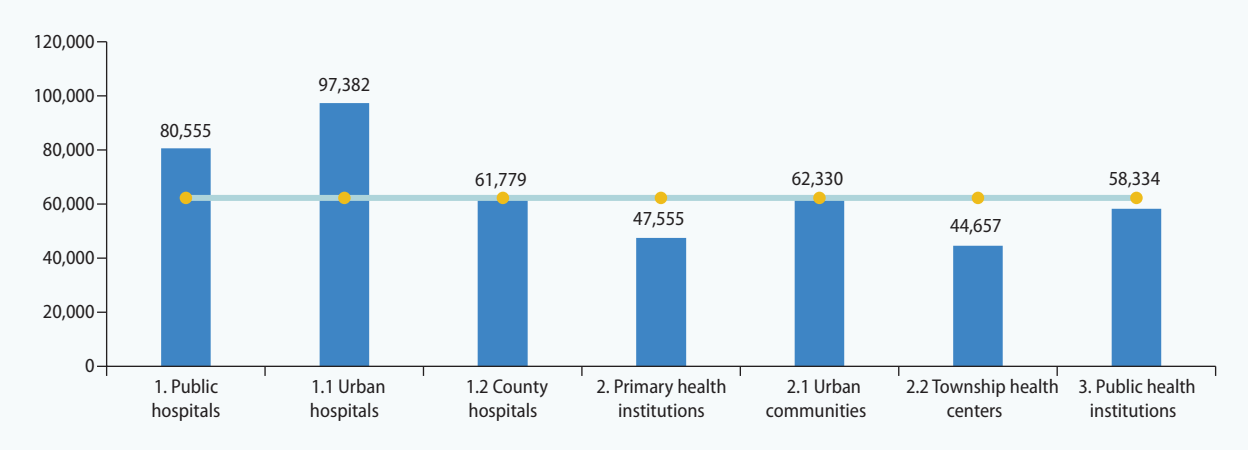
Health workforce challenges are a major obstacle in China's bid to strengthen its public and primary health care services (Yip et al., 2012). Specialists outnumber general practitioners, and there are very few doctors at the primary health care level. Compensation levels are unattractive, and the underlying incentives in physician contracts with hospitals are perverse. The governance structure of the health workforce is characterized by the headcount quota system, and physician licensing is linked with facilities, introducing rigidities and limiting mobility. Managerial autonomy in hiring health workers at the facility level is low, resulting in a mismatch between staffing needs and available skills. We discuss these issues in detail.

**Imbalances in workforce composition:** Despite the remarkable increase in the total supply of health workers, many challenges remain in the composition of the health workforce. First, less than 36 percent of all health professionals in 2013 (only 21 percent of nurses) work in primary health, including township health centers in rural areas and community health centers in urban areas. Second, despite the doubling in total numbers, there is a huge shortage of nursing staff across the country. Compared to the OECD average of 2.8 nurses per one physician, the ratio in China is 1:1. Third, there is a critical shortage in several key specialties, especially general practitioners (5.2 percent of all physicians), pediatricians (3.9 percent), and psychiatrists (0.9 percent). And fourth, despite an increase in recent years in the number of health workers practicing in rural areas, health professionals are still heavily located in cities, the urban-rural doctor ratio has widened from 2.05:1 in 2003 to 2:29:1 in 2013 (3.18:1 to 3.3:1 for nurses) per thousand population.[2] Higher quality health workers are still concentrated in urban areas. For example, only 6 percent of health workers in rural areas have a bachelor's degree.[3]

These imbalances adversely affect the primary health care workforce, especially since primary care facilities and poor rural areas have difficulties in recruiting and retaining qualified health professionals. The proportion of primary health workers has declined from more than 40 percent of the total workforce in 2009 to 36 percent in 2013. In addition, the majority of primary health workers in CHC and THC have received only post-high school and secondary school training, respectively. Lack of qualified health professionals at the level of primary health care, especially in the rural areas, is a major reason why patients bypass primary health services and seek care directly at higher level facilities.

**Unattractive compensation levels and perverse financial incentives:** A possible explanation for the persistent shortcomings in the primary health workforce in China is that compensation is not very attractive. Earnings in the health sector—which typically include a basic salary, performance bonus and hardship allowance show significant variation with primary health care workers earning least (Figure 7.1). According to China Labor Statistics Yearbooks, the average yearly earnings of urban health professionals were RMB 63,757 and the earnings of health professionals in other types of organizations (outside of SOE and collective economy) were RMB 55,138 in year 2014.[4] As discussed in Chapter 6, health care workers, especially doctors, then seek additional income from other activities, including bonuses based on hospitals'

**FIGURE 7.1 Health Workers Compensation AcrossLevels of Care and Providers, China 2013**




*Source:* Zhang, 2015.
Blue line: sector average.

overall revenue from services provided (medical procedures, admissions, etc.); commissions for prescribing drugs and ordering tests; informal payments from patients (red envelops); and private practice (moonlighting) (Yip et al., 2010; Woodhead, 2014). In responding to these perverse incentives, physicians generate demand for their services and over-prescribe diagnostic tests and expensive branded drugs.

This system of incentives, which is a significant source of cost escalation and poor quality of care, has profound implications for the health workforce. Poor public perception (a third of doctors have experienced conflicts),[5] high workload, professional risk and low salaries may have taken away the attraction of the medical profession. Perverse payment incentives also discourage doctors from practicing in primary health care and in rural areas, where the possibilities of increasing earnings through prescribing drugs and diagnostic tests are limited.[6]

Quality of medical education has also been affected. Medical schools face difficulties in attracting students with high scores in the national university entrance exam (*gaokao*) and often attract those who did not choose medicine as first career choice. The massive increase in the number of admissions has resulted in a considerably high student-teacher ratio (20 to 1 in 2008, Xu et al., 2010) and a shortage in the number of clinical internship positions (Daermmich, 2013). Additionally, medical training has come under criticism due to its focus on clinical biomedicine and hospital practice, with little exposure to community care or rural practice.

There are large variations in compensation levels across levels of care and type of providers (Fig 7.1). The compensation structure favors those working in public hospitals, more specifically those in urban, tertiary-level public hospitals, as opposed to those in primary care settings and in rural areas. The average compensation for urban public hospitals is 1.6 times the sector average, while those working in primary health care institutions and township health centers earn 76 and 72 percent respectively of average health workers' compensation (Zhang, 2015).

**Restrictive headcount quota system:** The health workforce management policy framework in China follows the governance structure for all public service units, and is centered on the headcount quota system.[7] The headcount quota system, which defines the total number of personnel assigned for a certain public service unit, is a special human resources management arrangement for civil servants and public institutions. Formulated by the government's Post Establishment Office, the quota is an important element

defining budgeting and allocations to public sector units, including to healthcare providers (e.g., hospitals). Only units with quotas approved by the Post Establishment Office receive funding from the Finance Bureau. The headcount quota system also serves as the basis for the Bureau of Human Resources and Social Security to allocate employment social security benefits, such as pensions.

The headcount quota system has become an important factor that restricts the efficient allocation of the health workforce in China. First, quotas create rigidities in the recruitment and management of health workers and leaves little autonomy to the health facility managers to manage their own workforce. The quota system defines the composition of the workforce in a facility in terms of posts, grades and professional titles. All posts are defined by BHRSS, and the health facility manager has no influence on the recruitment and deployment of the new staff. Second, the quota system restrains the mobility of the health workforce. It entitles permanent staff with affiliated social security benefits (such as housing funds, mal-practice insurance, and pensions), which are not transferable. It, therefore, establishes a tight employment relationship between the health facilities and the health workers. Third, budgeting and allocation of government subsidy to the health facility is based on the quota system and is not linked to results or performance of the facility.

Health facilities needing to hire workers beyond the quota system do so under their own responsibility, which creates additional incentives for the facilities to generate revenue to meet the additional labor costs. A recent survey of health facilities in 10 provinces, conducted by the Health Human Resources Development Center and the Shandong University, found that 15 percent of employees in community health centers institutions, 11 percent in MCH institutions and 8 percent in THCs are not quota based. In Yunnan province, for example, the PHC facilities have employed a large number of temporary health workers due outside of the quota system. In 2013, out of the total of 43,595 health workers in primary health facilities, 13,502 (31 percent) were not quota based.

**Limited mobility, especially of medical practitioners:** According to Chinese Law for Licensed Medical Practitioners, the practice license explicitly specifies the name of the medical facility, category of practice (such as clinical medicine, traditional Chinese medicine, dentist, and public health) and specialty, and health professionals are only allowed to practice according to details specified in the license. This regulation places strict restrictions on the mobility of the doctors. To address this constraint, the government launched a pilot multi-practice program in 2009, which allows physicians to register for practice in up to three hospitals/clinics on conditions that none of the facilities has any objections, the local health administration authority approves and the physician enters into a legal agreement with all health facilities with regard to malpractice disputes and litigation.[8] The main reasons for low participation in this multi-practice program are that physicians do not have time to spare for additional practices; physicians themselves bear the risk in the event of a medical accident and disputes; and physicians feel constrained by the current quota based HR management system

**Lack of managerial and decision-making autonomy in hiring health workers:** All technical professionals, managerial staff and logistic supporting staff in health facilities are recruited at the government level (local and provincial) and managed by the local Bureau of Human Resources and Social Security (BHRSS), after which the receiving health institutions establish the employment relationship through a contract that specifies the responsibilities, rights and benefit of both parties. The majority of health workers in China are employed in public hospitals, where contracts are strictly regulated by the government. The management of health facilities has little or no input into this process, and is unable to definitively match job requirements with candidate skills.[9] Further, the recruitment thresholds set by BHRSS are often unrealistic—requiring, for instance, at least three qualified applicants, or three years of college for rural facilities and many recruitments end up aborted.

## Recommendations for Moving Forward with Human Resources Reform: Lessons from Chinese and International Experience

Human resources for health are a key component of health systems and play a central role in delivering quality care at affordable prices to the population. Issues related to availability, distribution and performance of health workers pose big challenges, and the extant literature is rich in country experiences with different ways of addressing these concerns. Several OECD and middle income countries have made significant progress in this regard, and their experiences offer important lessons for China.

**Core Action Area 1: Build a strong enabling environment for the development of primary health care workforce to implement People-Centered Integrated Care.** Key actions required to achieve this vision include: (i) establish general practice as a specialty (such as Family Medicine), with equivalent status to other medical specialties so as to improve the status of primary health care workforce; (ii) introduce a gate-keeping mechanism to direct patients to primary care providers as first point of contact, and mandate this arrangement once the PCIC system is well established; (iii) introduce career development prospects to develop and incentivize primary health workforce, including separate career pathways for GPs, nurses, mid-level workers and community health workers so as to enable career progression within primary health care; and (iv) raise compensation of primary health care workers to levels commensurate to other prestige specialties in order to increase recruitment, retention and motivation of primary health care workers.

PCIC service delivery requires a workforce of individual practitioners and teams that share its values and have the appropriate competencies, which raises the question of the desirable composition of the health workforce to deliver PCIC in China. At the center of this effort is the importance of raising the status of primary care and according general practice status equivalent to other medical providers. This will require building a consensus and shared understanding among government, health providers and general public of the centrally important role of primary care, together with hospitals, in providing continuum of care to the citizens. Many countries have adapted their health workforce in an effort to strengthen primary health care, and offer useful lessons that can be applied in the Chinese context.

Efforts commonly observed across countries that have taken steps to strengthen primary care include expansion of production capacity (more schools) and improvements in the skill-mix and implementation of multidisciplinary teams.[10] In England, for instance, primary care is provided by general practitioners, who work in multi-partner practice teams typically consisting of 5 or more physicians, nurses and administrative staff. Some teams also include district nurses, health visitors, midwives, community psychiatric nurses, and allied health professionals and social workers. All people are required to register with a general practitioner, which offers them the first point of care. This system accords a primacy to the general practitioners, who direct patients to specialists and hospitals. In addition, general practitioners get financial incentives for continuous monitoring of patients with chronic conditions (Roland et al, 2012).

In 2003, Canada also adopted measures to constitute multidisciplinary primary health care teams, and significantly increased federal and provincial public investments in primary care. Each province designed its own model, in all cases targeting access to primary care for at least 50 percent of its population 24 hours 7 days a week by 2011 (Marchildon, 2013). In Brazil, expansion of primary care has been driven by the rapid deployment of the Estrategia de Saude da Familia (ESF), which typically has a multiprofessional health team and is organized by geographic region to provide primary care to about 1,000 families, which includes full time employed community health workers, and which are responsible for a range of primary health care services (including chronic disease management, triage, and child development) and public health efforts (including

screenings and immunizations). As a result of these efforts, the number of family health teams multiplied seven-fold, reaching out to more than 60 percent of the country's population (Gragnolati et al., 2013).

**Core Action Area 2: Improve workforce composition and competency for PHC service delivery.** Key actions required to achieve this vision include: (i) scale up the standardized training for resident doctors and GPs; (ii) accelerate ongoing successful efforts to increase supply of general practitioners and nurses; (iii) reform the curriculum reform to upgrade medical training and build new skills and competencies required for PCIC; (iv) improve on-the-job training programs to support competency improvement in current workforce and build new PHC competences; and (v) set up alternative cadres of health workers (such clinical assistants, assistant doctors, clinical officers and community health workers) to strengthen primary health care delivery.

One trend that is seen across several high-income countries (England, Australia, U.S., Netherlands, Canada and Germany) is that of delivering team-based primary health care through the inclusion of more nurse practitioners, registered nurses and other health staff to work alongside physicians (Freund et al., 2015). In England, strategies to improve accessibility and quality of primary health services have included the expansion of the scope of practice of nurses and in the year 2000, NHS introduced the concept of "new working practices", a major step towards advanced level of nursing practices. The debate on the expansion of the functions of nurses went on for more than a decade, and in April 2012 a new legislation came into effect allowing over 20,000 nurses, who have undertaken a specialist degree level course and hold a separate registered qualification, to prescribe from the same list of medicines as doctors within their specialty and competence. The NHS Health and Social Care Act 2012 promotes integrated, personalized and proactive care by coordinating better hospital and community-based health services, including primary and social care. Several countries—notably Brazil and South Africa—have been successful in the production and integration of new and alternative cadres of health workers, especially non-clinicians physicians, clinical assistants, assistant doctors, clinical officers, and community health workers. International experiences demonstrate these cadres can be as efficient as traditional cadres. China may like to accelerate the ongoing efforts to recruit nurses, as the current shortage is significant. In addition, China may like to explore the possibility of producing and integrating alternative cadres of health workers, especially community health workers.

**Core Action Area 3: Reform the compensation system to provide strong incentives for good performance.** In general, the official pay of health workers in China is not very attractive, in particular at the grassroots level and in the rural areas. The health workers income relies heavily on the revenues they can generate for the hospital as reflected in their salary structure. According to the National Annual Financial Report of the Health Sector 2012, the basic salary accounted on average for 22.9% of the total compensation, while allowances and performance accounted for 20.5% and 56.6% respectively. The structure is more skewed when it comes to urban hospitals. A national salary survey done by NHFPC on the salary of secondary and tertiary urban hospitals reveals that the basic salary accounts for only 13–14% of the total salary of health workers in public hospitals. Allowances and subsidies account for 14 percent and performance-based pay and bonuses, which are linked to hospital service income, account for a whopping 74 percent. Although a combination of fixed payment with variable performance-based payments is desirable, China may like to revise its compensation system to reduce reliance on service revenue-based bonuses and increase base salary and hardship allowances. Key action steps necessary to realize this objective include: (i) increase basic wage level of health workers and the definition of the exact level of increase needs to be linked to general labor market trends in China to keep the health profession attractive; (ii) increase the percentage of basic salary

vis-à-vis performance bonuses in the total income package of the physician; (iii) increase subsidy for rural and remote health workers; (iv)introduce/increase non-financial incentives to attract and retain health workers to rural and remote areas; and (v) revise the system of incentives through linking the income with performance assessment which built on comprehensive performance indicators rather than revenue generation.

Recent years have seen remuneration systems becoming very complex globally, especially as countries experiment with innovative payment methods to find new ways of incentivizing health workers. As a result of this continuous trial process, countries typically adopt a combination of payment methods, including salary, fee-for-service, capitation, performance bonuses and so on. For example, in countries where the compensation method was primarily fee-for-service, elements such as salaries (Canada), capitation fee (Belgium, France), performance (France) and integrated fees (Belgium and Denmark) are being introduced as additional payments. In countries where general practitioners were traditionally salaried, capitation and fee-for-service are being added (Sweden, Finland).

Countries like Australia, Canada and the UK are including incentives within reimbursement schemes for general practices to encourage them to employ nurses to deliver primary care. Another trend seen in many countries in Europe is that of contracting general practitioners as entrepreneurs, with remuneration topped up through various pay-for-performance incentives (Kringos et al., 2013). This has resulted in a surge of practices run as partnerships of several physicians or by private companies. Similar experiments are being carried out in Australia where, due to inherent weaknesses in the fee-for-service payment scheme for general practice, the government introduced a "Practice Incentives Payment" program in 1998. This pay-for-performance scheme provides incentives around three areas: quality of care, capacity strengthening, and support in rural areas. The quality of care component provides incentive payments for diabetes care, cervical screening, asthma care, and for indigenous health (Cashin et al, 2014).

Fee-for-service has traditionally been the predominant mode of remuneration for most physicians in Canada, but alternate remuneration methods have been introduced over the last 10 years. In 2013, the largest category of physician remuneration was a mixed method of payment, and the proportion of physicians being paid predominantly fee-for-service has fallen from 51 percent in 2004 to 38 percent in 2013. Family physicians have a higher rate of blended payments (46 percent) than specialists (37 percent) (National Physician Survey, 2013). Wranik and Durier-Copp (2010) reports that blended payments in Canada have been associated with some positive effects on preventive care, collaboration and recruitment and retention in provinces with low population density. At the same time, the new payment methods are raising costs and putting pressures on the financial capacity of the country's health system. Physician incomes in Canada have increased substantially in the last decade (to four and a half times that of an average salary in Canada), aided by the collective bargaining model that has put pressure on provinces to continually increase compensation. Public support has guided the relative strength of the different parties in the collective bargaining process in Canada over the years (Ontario, for example, has been able to freeze remuneration for doctors due to the shift in public support), but doctors have generally been able to successfully negotiate higher wages at times when the public felt that doctor shortages created long waiting times.

**Core Action Area 4: Reform the headcount quota system so as to enable a more flexible health labor market and efficient health workforce management.** The headcount quota system leads to inefficiencies in the management of the Chinese health workforce, and should be replaced with different HR management policies that are consistent with broad health sector reform trends including increasing hospital autonomy, increasing health labor market mobility and performance/results based financing policy. Chinese government is aware of this issue and is taking action to reform the system. The reform would require at least four sets

of related actions. First, health facility managers would need to be given the necessary autonomy on human resources issues and be left to manage their staff on the basis of the post rather than quota. The distinction between staff occupying a quota or a non-quota position would need to be done away with. Every staff could be defined by a standardized labor contract with the health facility, which describes the responsibility, the scope and the accountability of the post. China may consider giving facility managers greater authority and responsibility for post-based recruitment, post-based deployment, post-based evaluation, post-based salary setting and post-based training. Second, in order to increase the mobility of health workers, China may like to consider delinking licenses from health facilities. The dual practice policy has already paved the way for this transition. In Guangdong province, for instance, the dual practice policy does not restrain the number of many facilities with which physicians can work, as long as they can reach agreements with different facilities. However, this is not the practice for the whole country, and is only applied to physicians at middle level and beyond. Third, China may like to delink employment benefits of health workers from the quota as well as from health facilities, a process that has already started with the delinking of pensions as part of recent reforms. Likewise, China may like to consider offering housing funds and mal-practice insurance to all contracted health workers. Finally, the government should adopt different approaches to providing subsidies to health facilities, moving away from quota based budgeting to output or outcome based budgeting, linking government financial subsidy with performance targets and priority activities set by the government for the health facilities. Only to take a series of reforms mentioned above, can the healthcare system to ensure stable development, and then cancel of the obstacle quota system in the end.

## Notes

1. Following WHO (2006), the category of health workers, or health human resources, include physicians, nurses, midwives, dentists, allied health professions, community health workers, social health workers and other health care providers, as well as health management and support personnel who may not deliver services directly but are essential to effective health system functioning, including health services managers, medical records and health information technicians, health economists, health supply chain managers, medical secretaries, and others.
2. China Health Statistics Yearbook 2004 and 2014.
3. Overall, only 28.6 percent of all health professionals in China have university or higher degree (more than 5 years medical education). The largest share (38.8 percent) has only three years' junior college education.
4. Table 3-1 employment and income of urban sectors, and Table 6-1 employment and income of other types of organizations, 2015, China Labor Statistics Yearbook, China Statistics Press.
5. There were 17,243 incidents of violence against medical staff in 2010.
6. In addition, based on 'China Health Workforce Development Report', from year 2006 to 2010, there are totally 3.9 million medical graduates, and the total recruitment in health sector is 2.3 million, roughly 60%.
7. The headcount quota system was created in 1956, when the working committee of headcount of the State Council and the Ministry of Health jointly issued a policy directive "Principles of Headcount management for Hospitals and Outpatient clinics".
8. Notification on Pilot of Physician's Dual Practice. MoH 2009 (No. 86).
9. Hospital autonomy is taken up in more detail in Chapter 5.
10. As mentioned in Chapter 2, functioning multidisciplinary teams is a core design element of PCIC.

# 8

# Strengthening Private Sector Engagement in Production and Delivery of Health Services (Lever 7)

## Introduction

The healthcare system in China has moved from an exclusively state-run system to one that is decentralized and open to private sector investment and service provision. While the foundations for private participation in the production, financing and delivery of health goods and services were undoubtedly laid during the early days of liberalization of the economy in the 1970s, it was not until 1990s, following an explicit statement from the Ministry of Health relaxing the rules for investment in healthcare industry, that private players began looking at the health sector seriously. What followed was a period of restrained experimentation, as both the private sector as well as the government began exploring the evolving landscape, including ways of nudging it closer to their interpretation of the future of healthcare in China. The year 2000 marked another step in this direction, with the government allowing up to 70 percent foreign holding in private healthcare investments in the country. Since the onset of the 2009 reforms, policy directives affirming the role of private capital in developing healthcare firmly sealed the place and position of private participation in healthcare, following which the pace and scope of private investment in the health sector began increasing dramatically. State Council policy directives issued in 2015 (Guo Ban Fa, Nos. 14, 33, 45) further encourages private participation in the health sector in terms of providing diagnostic, general and specialized health services, fostering "fair" competition with public facilities such as relaxing entry barriers, and facilitating investments in hospitals and other facilities. Directives also encouraged investment in and formation of non-profit health care organizations.

Today there are over ten thousand private hospitals in China, which together account for 42 percent of all hospitals in the country, up from 17 percent in 2005 and 3 percent in 1990s (Figure 8.1). Significantly, private primary care facilities have grown considerably in recent years and represent nearly half of all such unit in 2012 (Figure 8.2). However, most private hospitals are small (96 percent have less than 100 beds) and in 2012 private beds accounted for about 14 percent of total beds. While admissions are increasing, they represented only 11 percent of total

**FIGURE 8.1 Growth in Hospitals by Ownership**

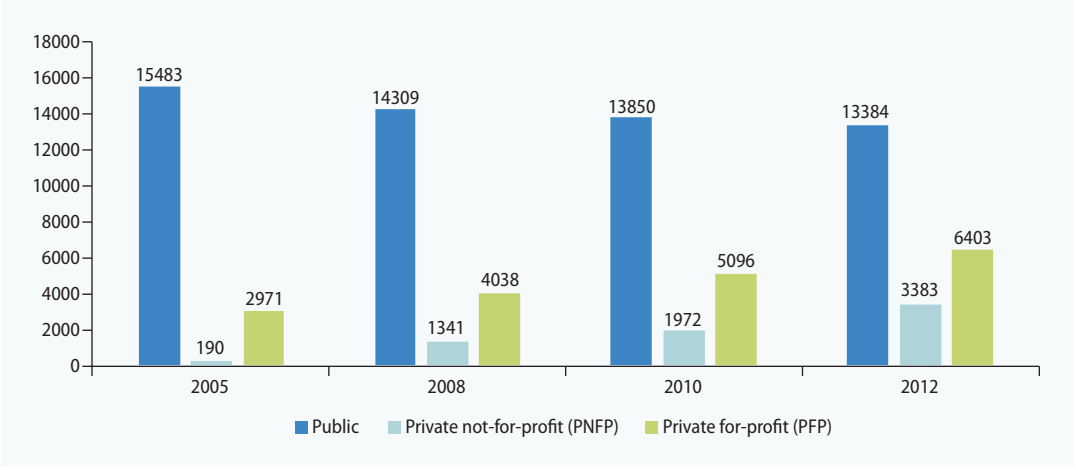



**FIGURE 8.2 Growth in PHC Facilities by Ownership (2005–2012)**

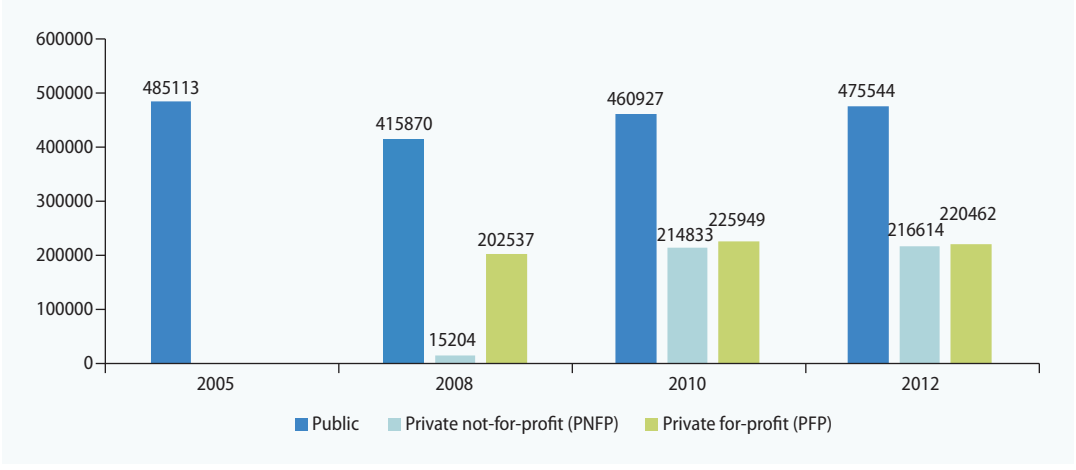



**FIGURE 8.3 Growth of Hospital Admissions by Ownership, 2005–2012 (in 10,000)**

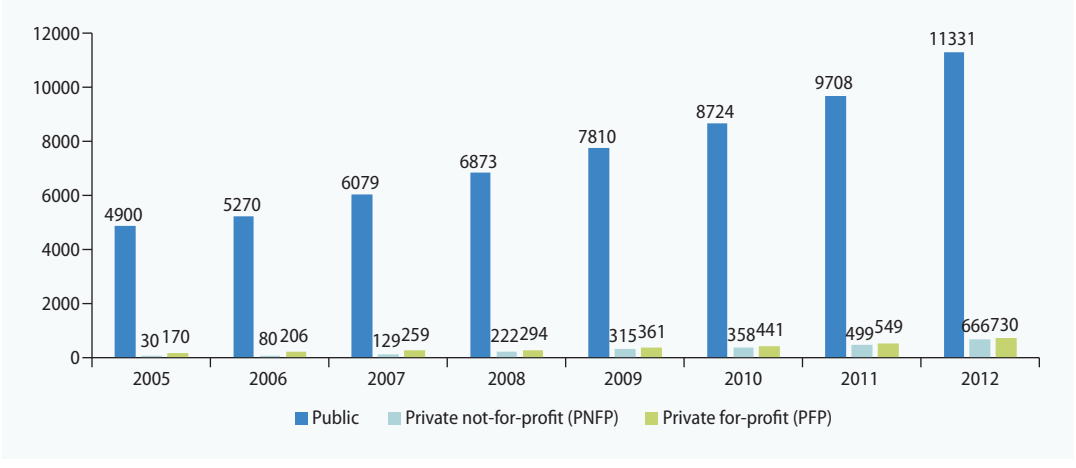
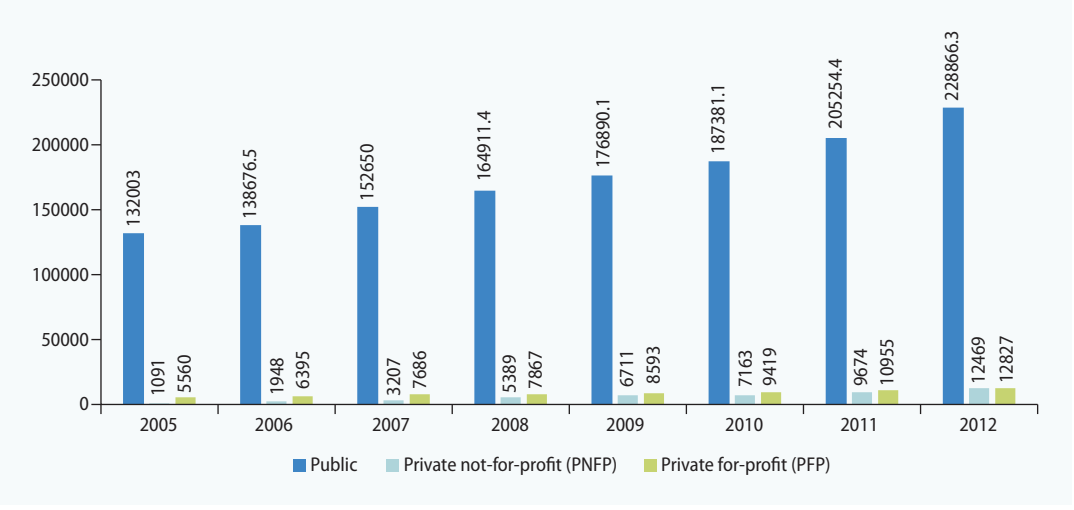


**FIGURE 8.4** **Growth of Outpatients Visits by Ownership, 2005–2012 (in 10,000)**




admissions in 2012 (Figure 8.3) and 10 percent of outpatient visits (Figure 8.4).

The rapid rise of the private sector in healthcare poses many opportunities and challenges for the government, investors and the people of China. Limited in size but rapidly growing in market share, private investment is set to transform the health market in China. Occupying a space created by the over-worked and crowded public system, the private sector offers alternatives to those seeking more and better medical products and services. However, despite central policies encouraging greater collaboration between public and private sectors, many local governments continue to focus their service planning and public financing on public service providers, effectively segmenting the market for the private sector for services targeting the wealthy and specialty facilities mostly offering elective services. At the same time, the development of a healthcare delivery system linked to profit-making enterprises is raising ethical, legal, economic, and political issues. Whether guided by concerns about restraining unorthodox practitioners or influenced by debates appropriate financial arrangements, the continuing development of private healthcare enterprise in China is being watched very closely by all stakeholders.

This chapter examines issues related to private investment in the health sector in China, and proposes a way forward to strengthen private engagement in healthcare production and delivery. It first assesses the challenges that the country faces in dealing with private enterprise in healthcare. Drawing upon experiences from within China and OECD countries, it then offers a series of actionable recommendations for strengthening private sector participation and engagement in healthcare.

## Key Challenges

Even though laws and regulations in China encourage private capital investment in the health sector, private providers still face many challenges entering the health market at the local level. Despite the acceleration in recent years in the pace and scope of policies promoting private healthcare production and delivery, there continues to be no unified vision for the role of private providers in improving service delivery or contributing to national health objectives, and consensus has yet to be formed across government agencies on whether the private sector should be complementary, supplementary or integral to the public delivery system. Given the decentralized nature of regulation, licensing a private facility varies

significantly, and in many localities remains cumbersome, unpredictable and costly, and criteria governing eligibility for social health insurance are vague. Quantity targets have spurred private sector growth in ways not consistent with national health objectives. Using private sector expansion to address key health sector priorities needs to be strengthened, such as greater access to healthcare in poorer regions, or complement government efforts in priority areas like rehabilitation, elderly care, and integrated management of non-communicable diseases. Provinces seek to attract private capital to remote rural areas or new peri-urban areas not already well-served by government providers, whereas private capital demonstrates an inclination to stay in cities where medical resources are already plentiful. We discuss these issues in detail.

**Developing a shared vision of the private sector role:** The central government has enacted a rich set of national policies regarding private sector engagement, yet there are differing interpretations of these policies by provincial and municipal governments, among government agencies and between the public and private health sectors on the role of the private sector in contributing to national health objectives. From an implementation perspective the policy direction is unclear. The focus of the private sector's contribution to health has multiple interpretations; it is unclear whether the private sector should be an integral part of the health sector, offering primary and secondary services alike, or confined only to high-end hospital services. Another area of ambiguity relates to target areas that could be best served by the private sector, which favors urban settings over the under-served rural and remote areas to which they are directed by provincial governments.

As suggested above, provinces exercise a very broad and flexible range of options to promote (or constrain) private investment. Regulations and guidelines are in place at the national level, but implementation varies from one health authority to the next (Brixi, H et al., 2013). For example, some places such as Kunming encourage ownership conversion without necessarily having strong mechanisms in place to prevent loss of state assets. Similar varied interpretations have been made in public purchasing of health services from private providers, where reimbursement rates are selectively tied to the class of the medical institution (as in Yunnan) and budget caps are adopted, implicitly favoring incumbent market participants, usually public hospitals, over newer entrants. Another area where differences are observed across regions relates to tax obligations of not-for-profit healthcare providers. Despite a spate of preferential policies encouraging the development of the private sector, both Yunnan and Hunan collect enterprise income taxes from non-profit medical institutions, while the local governments of Beijing, Shanghai and Guangdong do not.

**Shortcomings in the regulatory framework overseeing private sector development:** The private sector requires a well-functioning governmental stewardship mechanism in order to grow, one that has the capacity of monitoring (and shutting down, as necessary) facilities seen to be endangering patient safety or defrauding social health insurance. Regulatory frameworks for accountability and quality assurance, however, exhibit wide local variations and are not uniformly strong. It is widely believed that private providers are more likely than their public counterparts to engage in false advertising, over-treatment, or fraudulent billing practices, and unsurprisingly, the private health sector in China does not have a good reputation with health consumers. Even though some private sector providers have overcome this perception and have established a reputation of higher quality than public hospitals (such as UFH in Beijing and Shanghai), and some have achieved high operational efficiency (such as Aier Eye and Wuhan Asia Heart hospitals), this impression is not likely to change very soon, given the limited capacity within the government of monitoring and sanctioning low-quality or unqualified providers.

Further, there is limited capacity in China to engage the private sector in policy discussions and there are almost no direct interactions between policy makers and private providers. It is not in the NHFPC's experience and training to involve the private sector to design policies that will directly influence

them or to design regulations and procedures that will facilitate the private sector (Brixi, H et al, 2013). Relationships between public and private providers are still marked by legacies of the old regime, with vestiges of mistrust of the private sector (Gu, 2006).

**Difficult market entry:** Private sector growth in health sector still faces constraints in China, in particular compared to other sectors. It is difficult to recruit qualified healthcare professionals (Gu and Zhang, 2006) because implicit public sector monopoly on health professionals. It is not an easy task in many localities to open up a private facility. Private providers have to deal with multiple agencies, file several reports and make multiple payments in order to become fully licensed with all the different authorities. Opening a new facility, especially if foreign investors are involved, requires approval from local health authority and NHFPC for facility license; from the Ministry of Commerce, the National Development and Reform Commission, the State General Bureau of Industry and Commerce for business license, and registration with the State General Bureau of Tax (Glucksman and Lipson, 2010). There are few incentives for health entrepreneurs to expand their operations, whether in the same city or in a different geographic location (Ramesh, Wu et al., 2014). Focus groups with private owners conducted by the joint study suggested these situations.

**Inconsistent tax policies.** Policy objective of increased private health sector participation requires consistent and transparent tax policies. It would be important to clarify whether the private health sector should enjoy the same preferential tax treatment as other industrial sectors; whether there is a contradiction between health listed as an essential service and tax policies similar to other commercial industries; how to tax not-for-profit and for-profit private health sector providers; be clear whether to tax service inputs or outputs to avoid duplication (e.g. private has to pay 17 percent VAT on importation of health equipment and may be taxed the second time for the serviced provided with the same equipment as well. There is also prohibition for consolidation of finances across affiliates, allowing the private business to offset tax liability.

**Uneven implementation of latest reforms aimed at allowing doctors to practice at multiple facilities:** Government policies and practices tend to put the private healthcare industry at a disadvantage relative to the public sector and affect their ability to compete fairly in the marketplace. One huge problem until recently was access to human resources, with physicians responding to the requirement of registering and working in only one facility by opting to work in public hospitals, which offered them a known and stable career track. Professional recognition, career development, salary compensation and pension benefits were all linked to the physician's employment contract with a specific (usually public) health facility. Out-of-date professional and malpractice liability is another factor constraining labor movement between the sectors. Few private insurance companies offer limited liability insurance. Physicians and other health workers are therefore reluctant to move the private sector where there is no safety net against malpractice (Table 8.1).

But the latest reforms allowing doctors to practice at multiple facilities, including private hospitals, are making the best doctors more mobile and easier to recruit. Provincial governments have already begun to experiment with multi-site license policies, but implementation varies. Guangdong and Fujian, for example, have adopted a pioneering set of reforms, while Qinghai, a poorer province in Western Chinawith low population density, has yet to implement the new multi-site practice policy and its private healthcare industry continues to face human resource shortages.

**Uneven implementation of latest reforms lifting restrictions on reimbursements of social health insurance to private hospitals:** Private hospitals face reimbursement restrictions from social health insurance, which gives preferential treatment to public facilities. In many cities, private enterprises are just not eligible to join the hospital networks covered by public health insurance, and in cities where it can, the reimbursement rates

**TABLE 8.1 Percent of Health Workers in Private Facilities by Type**

| Health Cadre | Total Number (Unit 10,000) | % Private |
|---|---|---|
| Physician | 261.6 | 18.5 |
| Nurse | 249.7 | 13.7 |
| Pharmacist | 37.7 | 13.6 |
| Technician | 36.4 | 11.8 |
| Other | 81.5 | 12.0 |
| Village Physician | 109.4 | 37.3 |
| Other Technicians | 31.9 | 11.7 |
| Administrative | 37.3 | 15.0 |
| Logistics | 65.4 | 15.4 |
| **Total** | **910.9** | **17.8** |

are below what is awarded to public hospitals. The limited insurance funds are first directed toward public facilities, and private enterprises are included only if there is money left over. The latest reforms are also changing this practice, as more and more private hospitals are now being considered for inclusion in public health insurance networks on the same terms as public hospitals.

## Recommendations for Strengthening Private Sector Engagement in Production and Delivery of Health Services: Lessons from Chinese and International Experience

China's healthcare sector is moving rapidly to keep pace with increasing demand for health goods and services spurred on by rising incomes and population aging. Non-public healthcare is being encouraged and conditions for private capital investments are being eased. Reforms started in 1997 have been accorded an urgency in the 12th Five Year Plan, which in 2012 proposed a significant role for the private sector in healthcare. China can draw many lessons during this process of reform from the experience of OECD countries that have gone through similar phases of reconciling expectations, policies, ideologies and actions.

### Core Action Area 1: Develop a clear and shared vision on the private sector's potential contribution to health system goals

Specific strategies to secure this vision include: (i) identify areas where the private sector can contribute most effectively; (ii) in keeping with the focus on quality development as against quantity growth, move away from quantity targets for private sector market share and instead employ a combination of supportive policies and regulatory structures that level the playing field with government-owned providers and assure alignment with health system goals; (iii) endorse the shared vision and articulation publicly and communicate widely; and (iv) formalize the engagement process by drafting guidelines for Provincial Leadership Groups to implement according to local conditions.

A clear articulation of the role and position of private enterprise in the health care system in China is critical, both to send an unambiguous message to the industry as well as to allay any ethical or ideological concerns that may be lingering in any section of the government or society. This vision should be widely communicated to all stakeholders and publicly endorsed. Central to this articulation are clear enunciations of preferred forms of commercial organization (for-profit versus not-for-profit) and the areas where private

participation is most sought (outpatient versus inpatient care).

In most OECD countries, the government plays a larger role in health care financing (averaging 75 percent) than in service delivery (averaging 35 percent as measured by share of inpatient beds and licensed medical professionals). Yet, these countries offer a rich tapestry of examples of different commercial organizational forms of private enterprise in the health sector. In many countries with relatively large private hospital sectors (Belgium, France, Germany, Netherlands and the United States), private-not-for-profit hospitals dominate. In Germany, for example, 48 percent of inpatient beds in 2013 were public, 34 percent private not-for-profit and 18 private for profit (OECD Health Statistics, 2014). Some countries, such as Canada and the Netherlands, only permit not-for-profit hospitals in the private sector. These different proportions of not-for-profit and for-profit hospitals arise in part from differing historical trajectories and in part from a perceived policy trade-off between capital mobilization (easiest with corporate for-profit entry) and incentive alignment (since corporate for-profit entities' incentives may predispose them to more frequent opportunistic behavior unless a rigorous regulation framework is in place and enforced). It is worth noting that no OECD country has used quantitative targets to expand the private sector, but has rather employed a combination of supportive policies and regulatory structures that level the playing field with government-owned providers and assure alignment with health system goals.

Likewise, OECD countries also offer a lot of examples that can be used to inform the preferred sub-sector concentration of private providers in health. In most OECD countries, private service provision plays a strong role in healthcare delivery—more so in certain subsectors, such as primary care, than in other sub-sectors, such as hospital services. Private providers deliver a large share of services in outpatient care, where services are delivered by independently licensed physicians who contract with the government or the social insurance system. This sub-sector (and others such as retail pharmacies, laboratory services, etc.) is characterized by well-established quality criteria, which makes it readily contractible and open to competition. These characteristics do not apply to all inpatient services and accordingly the share of private provision is comparatively lower in this subsector in OECD countries. Outpatient specialist services tend to fall in-between, with more public ownership compared to primary care services, and with policies deployed which constrain operation more than primary care, but less than hospitals.

It is important that China decides and states its preferences for select forms and subsectors in the health sector where it would like private enterprise to focus. This clarity will help the capital markets as well as subnational governments, both of which can then develop appropriate supervisory and regulatory mechanisms to guide the private sector in ways that best complement the existing public system of health production and delivery.

### Core Action Area 2: Strengthen key regulations and enforcement capacity to steer the production and delivery of health services toward social goals

While private provision is widespread in OECD health systems, providers do not operate in totally free markets. Instead, governments use a range of policy tools to create governance regimes to influence service providers to achieve critical goals related to health care delivery, such as access, financial protection, efficiency, and cost containment. China may also consider introducing strong and effective regulatory mechanisms to oversee the provision of health services in the country, whether delivered by the public sector or by private enterprises.

Strategies to strengthen key regulations and enforcement capacity include: (i) conduct a systematic review of existing regulations to harmonize and eliminate out of date and inconsistent regulations; (ii) review the current institutional framework and empower with skills and resources needed to govern a mixed health system with both public and private participants; (iii) based on these reviews, adopt policies and regulatory measures to

guide private sector engagement and minimize risks associated with growth of poor quality private providers; (iii) implement guidelines for key regulatory functions; and (iv) strengthen regulatory capacity at different levels of the government through training provincial and municipal governments in indirect management of mixed (public and private) health systems, tools of government, and the new regulations and implementation guidelines; and allocate sufficient resources for enforcement.

Regulating hospital services poses a set of challenges quite different from regulating outpatient services. In contrast with primary care, where the entrepreneurial element of primary care provision is well-accepted across many countries, profit-orientation among hospitals remains the subject of considerable analysis and debate because hospital services are inherently harder to measure, and therefore harder to purchase wisely and regulate (Preker et al, 2000). Moreover, corporate ownership, which is much more common among hospitals than primary care practices, intensifies the profit-focus. Undoubtedly, these concerns contribute to the relatively limited private ownership in hospitals in OECD countries relative to primary care. In addition, in countries with significant private hospital activity, non-profit organizations dominate. Nevertheless, only a relatively small number of countries (e.g., Iceland, New Zealand and Denmark) limit the core hospital network to government-owned hospitals (OECD, 2014).

OECD countries offer examples of different kinds of diverse ownerships and organizational structures, which offer useful illustrations for China. In Canada and Netherlands, for example, the core hospital network consists of non-profit and public hospitals, and any for-profit hospital activity is outside that network and subject to a distinct governance regime. This arrangement uses ownership restrictions to constrain the intensity of hospitals' focus on generating revenue, implicitly relying on a degree of alignment between hospital management's objectives and those of public officials. For-profit private hospitals that operate in these countries are excluded from social insurance reimbursement. The policy tools used to guide the core network are designed and implemented to guide the behavior of non-profit organizations (both public and private); this is sometimes referred to as a form of trust-based governance. For-profit hospital services are only lightly regulated, since they do not have contractual relationships with funding bodies and are therefore exempt from the regulatory provisions ensuring equal distribution, access and financial sustainability (Busse et al. 2004).

In France, Germany and Switzerland, on the other hand, the core provider network consists of public, non-profit, and for-profit hospitals, all of which operate under the same governance regime. Hospitals are relatively independent, and corporate (for profit) hospitals may deliver a substantial share of services. The governance regime reflects the need to guide and constrain entrepreneurial behavior, and uses a mechanism for managing capacity development (services and infrastructure) that works with providers of all ownership types (Ettelt et al. 2008). This allows health agencies to ensure equitable access, and gives private hospitals a degree of certainty over expected volume of demand. Such systems also have well-established institutional contracting processes that provide the core platform for specifying providers' obligations and resolving compliance issues.

In New South Wales in Australia, the Ministry of Health is the regulatory authority for privately owned and operated private health facilities across the state. Guided by the *Private Health Facilities Act* of 2007, the regulation focuses on maintaining appropriate and consistent standards of health care and professional practice in private health facilities, and planning for and providing comprehensive, balanced and coordinated health services throughout the state. The legislation also sets requirements for licensing including the minimum standards for the provision of safe, appropriate and quality health care for patients in private health facilities. Standards are also prescribed with respect to safety, care or quality of life of patients at private health facilities.

Outpatient care in countries such as Chile, Finland, Hungary, Iceland, Israel, Mexico, Portugal, Slovenia, Spain, and Turkey, is provided mainly through public clinics. In these countries, salaried health personnel work

in public clinics organized as multispecialty polyclinics that typically deliver primary care services. Health care policy goals in such settings are pursued through the management of the public network—also referred to as the direct delivery policy tool.

In Denmark, primary care practitioners must obtain a license to practice from the Health and Medicines Authority, which is part of the MOH. There are also a number of social regulations at play that influence the how professionals practice care. All practitioners belong to the General Practitioners' Association, which along with the College of General Practice continuously develops and updates guidelines and distributes them to all primary care practitioners. The Quality Unit of General Practice, a joint body between the Association of Regions and the General Practitioners' Association, coordinates quality development activities and establish practice quality standards, which members must follow. Members, in turn, must submit quality data to the Quality Unit of General Practice, as well as conduct standardized user surveys and submit the resulting data.

OECD countries have encountered challenges in constructing an effective policy and regulatory structure governing a mixed-ownership health service delivery system. Early initiatives experimenting with ownership conversions sometimes led to less-than-satisfactory results. The establishment of an effective governance regime for a particular sub-sector is a long-term process that requires constant monitoring and tinkering of reforms. Policy initiatives that expand private activity in OECD countries invariably involve considerable effort to build and strengthen policies and processes for "indirectly" governing health care service provision.

### Core Action Area 3: Establish a level playing field across public and private providers so as to promote active private sector engagement

Leveling the playing field across public and private providers of health services entails the following specific action items: (i) issue clear guidance on private sector planning, entry requirements, justification for tax exempt status, surplus use, and other community service requirements; (ii) identify and remove access barriers related to health professionals, land use, equipment purchasing and professional title appraisal; and (iii) introduce equal contracting standards and payment principles for both public and private providers.

Licensing a private health facility in China remains variable and costly compared with public facilities, and to a large extent depends on the whims and will of local government officials. China may consider providing clearer guidance to provincial governments on private sector planning, entry requirements, justification for tax exempt status, surplus use, and other community service requirements should be provided, and strictly monitoring its enforcement. Additionally, China may like to continuously reform policies and regulations to ensure the private sector of treatment similar to public institutions in such aspects as land use, equipment purchasing, and professional title appraisal.

Further, China may consider lifting the remaining restrictions, in policy and practice, on allowing doctors to practice at multiple facilities so that they are mobile and the labor market works. There are many examples from within China that could be elaborated, especially from provinces such as Guangdong and Fujian, which have been pioneers in this field.

And finally, China may wish to ensure fair and even implementation across all regions of the recent reforms lifting restrictions on reimbursing private facilities from social health insurance, so that they can participate in the same space as public facilities and provide health services to the same clientele. Equal contracting standards and payment principles for both public and private providers are necessary to establish a level playing field, one in which both public and private sector health providers can grow.

# 9

# Modernizing Health Service Planning to Guide Investment (Lever 8)

## Introduction

The health sector in China is growing rapidly. Industry analysts predict it will exceed US$ 1 trillion and constitute over 7 percent of the country's GDP by 2020, which would triple 2010 levels and make it the second largest healthcare market in the world, behind the United States (Le Deu Franck et al., 2012; EIU, 2015). Annual capital investment in the health sector will potentially reach $50 billion within the same time frame. The question of value-for-money with these resources—important even at existing levels—will become fundamental, especially as the country progresses towards its commitment of affordable, equitable and effective health care for all by 2020.

Within the health sector in China, over half of the first contacts with the health care delivery system for an illness occur in hospitals, which consume over 70 percent of the country's health spending according to the *China Health Statistical Yearbook*, 2013. Unsurprisingly, the hospital industry has developed rapidly in recent years, with the number of inpatient discharges growing 12 percent per annum (Guo Ban Fa, No. 14, 2015). In keeping with this trend, hospital revenue has grown at an annual rate of 23.6 percent in 2011–2013, and is expected to exceed RMB 4 trillion in 2017. Fueling this growth are the huge capital investments in the hospital sector, which have made the system increasingly top heavy and have contributed to further escalating costs. As mentioned in Chapter 1, patients tend to go directly to hospitals even for outpatient care (around 53 percent of patients have their first contact with the system at a hospital), and there is no gatekeeping at lower levels. Since 2005, bed-per-population ratios have increased by 56 percent and admission rates have more than doubled, to levels that are higher than most middle-income countries and approaching OECD averages. This trend toward more hospital beds and admissions in China is exactly opposite to global directions, which are stimulating greater outpatient care delivered at the primary health care level. A key aim of service delivery reform will be to ensure that capital investments reinforce the development of PCIC and that the population can obtain access to affordable health care at the right place and at the right time.

This chapter examines capital planning strategies in China and in selected OECD countries, and proposes a framework to introduce modern service planning techniques in the capital investment planning

**BOX 9.1 Distinguishing Features of an Effective Service Planning Approach**

- Needs based planning linked to specific health challenges
- Long-term perspective by using demographic, epidemiological and urban development plans
- Balance in real demand and supply
- Integrated networks delivering services required by catchment populations
- Capital Expenditure (CAPEX) allocations to provinces correct for equity and level of deprivation
- Increased proportion of outpatient care, including PHC, day surgeries and day hospitals
- Increase in general hospitals with fewer mono-profile facilities
- Use of spatial analysis with GIS to ensure access;
- Integrated perspectives in terms of buildings, people and technology
- Use of private sector as partner in reaching health goals

*Source:* Authors' own elaborations.

process. It first examines the challenges in the current capital investment planning practice in China. Drawing upon experiences from within China and OECD countries, it then offers a series of actionable recommendations for moving toward an investment model that is more closely aligned with the service needs of the population served by the health system.

## Key Capital Investment Challenges in the Health Sector in China

Two key problems that characterize China's current capital investment planning (CIP) model are: first, lack of investment planning, which contributes to super scaling of investments particularly at the hospital level; and second, within this expenditure, the focus on construction related to the expansion of the capacity in the network rather than deepening the capacity of the existing infrastructure to better meet the population's health needs. With disproportionate expansion of hospital infrastructure in urban areas, the net result is a hospital-centric system characterized by large, well-endowed urban hospitals and relatively few or poorly endowed rural ambulatory facilities.

Capital expenditures in the health sector in different provinces in China account for between 5 and 10 percent of total public spending on health, which does not compare unfavorably with the OECD average of 7 percent (OECD 2015) but is higher than the European average of 2–6 percent (Rechel et al, 2010). However, each yuan invested in capital also determines future recurrent expenditure allocations, which further exacerbates the fact that already more than 65 percent of total public spending is directed to hospitals. In comparison, OECD levels are predominantly below 50 percent. Furthermore, the ratio of beds to population has already exceeded the OECD rate in most provinces. In the last decade, the number of hospitals increased by 50 percent and the number of beds nationwide doubled. While these levels of investments in hospitals may have been necessary to meet unmet demand and growing population needs, continued expansion can have seriious fiscal implcations for the health sector in the near furure.

Addressing these problems calls for a shift in ways in which capital investment is planned in the health sector in China. The traditional input-based planning system, in which decisions are not based on actual demand but are driven by high-level macro standards, has to give way to an approach that considers the changing epidemiological and demographic profiles and emphasizes effective regionalization and integration of care with new technologies (Box 9.1). In this people-centered service planning approach, in which production and delivery of services are based on population needs, public investments are prioritized according to the burden of disease, where

people live, the kind of care people need on a daily basis, wellness, etc. Capital investment planning in this approach identifies and exploits all funding opportunities (including insurance and direct public budgetary funding) to guide the development of facilities of the future and ensure that excess capacity is not created to further exacerbate inefficiency and capital misallocation. It offers the opportunity to remake the health provider network—its design, culture and practices—to better meet the needs of patients and families and the aspirations of those that provide them health care. The consideration of the role of the private sector in meeting the population's service needs is also critical to reducing the capital requirements for the public sector and optimizing utilization of existing capacity.

The need to develop a capital investment planning model driven by service planning based on population needs is well understood in China, and several efforts have been undertaken to improve resource allocation and investment planning. Since the 1990s, regional health planning has been conducted as part of health policy reforms to improve performance of the health sector. In 1997, the National Development and Reform Commission, Ministry of Health and Ministry of Finance jointly issued *Guidance of Implementation of Regional Health Planning*, which provides details on the concepts, contents, methods, procedures and implementation of regional health planning, and demonstrates recognition of the need for capital planning to be driven by population health needs. Local governments were expected to plan and project health care delivery according to these guidelines. However, despite the efforts of the national government agencies, regional and local level health planning has still not adopted an efficient and integrated service approach, and capital planning strategies continue to favor larger hospitals. A significant share of all hospital investments is funded from debt financing, off-balance sheet operations or land-swaps, which also compromise the government's efforts to reduce the pressure on prices. Further, the high level of fragmentation and lack of transparency and accountability limit the effectiveness of these subsidies as policy instruments. To this extent, therefore, public subsidies for capital investments are not being fully used as a top-down mechanism to develop a rational, patient-centered network capable of responding to the population's changing health needs while delivering value-for-money.

A key challenge, therefore, relates to coordination and compliance with the national guidelines and standards at the provincial level to ensure that capital investments are used to shape a people-centered provider network that delivers the right care, at the right place, and at the right time. While NHFPC leads on setting broad planning goals and NDRC examines and approves the project, as suggested above, much of the investment is made based on bottom-up goals from the provinces and cities and do not consider the service needs or the existing installed (public and private) capacity before approvals are issued. An initial step in right direction was the issuing of policy guidelines in 2015 which aim to rationalize capital investments, specifying functions and roles of health facilities, staffing standards, vertical integration across tiers and horizontal integration across types of care (Guo Ban Fa, 2015, no. 14). However capital investment needs to be further integrated into regional service planning and ensure that private sector capacity is considered within the targets for 2020.

An analysis of capital investment decisions in three provincial administrative regions Sichuan province, Hubei province, and the Tianjin Municipality, which vary across demographic, economic development, public resources and health indicators, reveal many fundamental challenges in the investment models being employed in the health sector in China. The remainder of this section summarizes the challenges emerging from these three cases.

**Limited knowledge of capital investment planning techniques:** Having a sound and in-depth understanding of service-based health planning is an essential pre-requisite for those tasked with making investment decisions. While officials in the three provinces studied understood the importance and necessity of needs-driven investment planning, the measures they use do not fully

reflect population health needs. For example, in Sichuan province, population size and providers' service radius are the primary measures to define health care needs. In the Tianjin municipality, on the other hand, disease pattern and incidence and services utilization (e.g., number of visits, types of services, medical expenses, etc.) are used as the main measures of health care needs. In either case, however, only population density is documented as the key factor of consideration for capital investments, and beds per population are used as the key indicator for configuring health sources. Both these are the traditional standards for capital investment planning, and bear little or no relation to service needs. Further, facility planning standards in these three provinces are not compliant with national standards. Thus, while medical facilities with over 1,000 beds are not encouraged in national guidelines, provinces are still planning for facilities with over 1,000 beds. This seems to be a country-wide problem in China, and regional and local facilities often deviate from national level standards and capital investment decisions. Use of specific local data should be incorporated into the regional and city planning framework.

**Absence of clear procedures to assess value-for-money of investments:** Financing is a crucial part of capital investment planning. Without proper financial management and planning, capital investment projects tend to lack direction and have a high probability of failure. All three provinces studied demonstrated an absence of clear management and economic principles to assess the potential profitability and sustainability of long-term investments or to determine the value-for-money of competing investment projects. While the government is moving to establish three year budgeting, the NDRC investment approval process does not yet evaluate the sustainability of the investments based on projected cash flow and operating expenditure or value-for-money in terms of efficiency and affordability.

**Mismatch in procedures for administrative reporting and planning clearances:** In China, the principle of administrative-affiliated management is employed in the planning process, and hospitals (including provincial-, city-, community-, and county-level) are administratively linked with their corresponding level of government. Each level of the government develops its own capital investment plan, while the provincial government makes the final decision in the overall planning. For example, Tianjin Medical University General Hospital is directly affiliated to the Ministry of Education, as opposed to the Tianjin municipal government; however, this level 3 hospital develops its capital investment plan under the administration of the Finance Department of Tianjin. This creates confusion, especially as common information is not shared across different types and levels of governments involved, and project identification and evaluation suffer in this process.

Excessive capital investment in hospitals, particularly in urban areas, continues in Sichuan, Hubei and Tianjin. Unless there are principles to guide the development of facilities of the future, there is a real danger that capital investment planning will simply perpetuate the status quo of today, or worse yet, create excess capacity that will exacerbate the existing inefficiencies and capital misallocations. Planning clearances should consider the private sector capacity and planned investments in each province to ensure that the overall targets are achieved based on service planning needs and population based needs.

## Recommendations for Moving Forward with Service Planning Reform: Lessons from Chinese and International Experience

China is not alone in its efforts to modify its capital investment strategy from one that is driven by macro standards to one that is determined by service planning based on real population needs. OECD countries, although diverse, face a number of common challenges when it comes to capital investment for health: demographic and epidemiological transitions associated with an ageing population, advances in medical technologies and pharmaceuticals, rising public expectations,

persistent health inequalities, etc. The challenge for these countries, as well as for China, is to reconcile health needs and expectations with available resources. Several OECD countries have made or are making this transition, and their experiences offer important lessons for China.

### Core Action Area 1: Move away from the traditional input-based planning towards capital investments based upon region-specific epidemiological and demographic profiles

China is a very large country and has a diverse demographic profile. An investment planning method that is based on specific population needs at the regional level instead of country-level averages will better meet the health objectives of the population. Specific actions to secure this vision include: (i) develop a regulatory framework in which capital investment in health is focused on improvement and value; (ii) adopt the service planning approach to capital investments and require all future investments to be guided by an assessment of population needs; (iii) develop a capacity planning tool that estimates financial and physical resource needs for the country's hospital system by province, medical specialty, and level; (iv) prepare provincial level Strategic Plans that include 5–10 year perspectives on investment needs for infrastructure, equipment, technology and human resource development; (v) integrate capital planning into a medium-term expenditure framework and bring together planning and budgeting including consideration of private sector capacity (existing and planned); and (vi) create an enabling legal framework to support the new planning and governance arrangements and support enforcement and compliance arrangements to ensure execution. These actions will help reverse the current planning logic and will allow population needs to determine service planning.

The Horizon method employed in Netherlands uses this approach for elderly care, and is worth exploring (Box 9.2). Capital investment planning for elderly care in the Netherlands has traditionally used a demand-based method, which calculates demand using the percentage of citizens above the age of 75. By 1998, it had become obvious that the approach was proving to be insufficient, and Netherlands moved to a needs-based approach. Called Horizon, this approach

**BOX 9.2 Horizon's Three Step Model**

In step one, questionnaires and surveys are issued in order to capture personal health status, physical abilities, well-being and ability to cope with daily routines. Information about care issues is gathered from multiple sources, and patterns are distinguished using latent class analysis. Care profiles developed from the analyses indicate prevalent health concerns for the elderly. A random population survey is then carried out to check if the profile is reflective of the entire population. This survey is carried out yearly, ensuring that the data is updated and reflects the most current health needs of the elderly population. The number of persons belonging to a certain profile for a set geographical area is predicted using demographics and predictions about future demographic trends.

The second step in the process is to determine the care needed for each profile, as each care profile states a general condition of a surveyed group. This step is relatively short, as the profiles are broken down and pre-categorized.

The third step involves ascertaining the most appropriate setting of care, given the type of care needed. This step assesses the needs of each profile and examines the best option for the setting of care. The analysis conducted in this step is crucial for capital investment planning (CIP), as it informs the plan of the care needs of the elderly population.

*Source:* Nauta, J., Perenboom, R. & Garre Galindo, F. (2009) Conference.

uses measures of actual physical and mental disabilities to help plan capital investment projects (Nauta et al, 2009). Following this approach, Dutch health officials transitioned from linear, demand-based estimations to the Horizon method, and the resulting more accurate estimations of population needs are allowing for more efficient investments.

Horizon has proven to be a good model in the Netherlands for long-term, needs-based capital investments for elderly care. China is faced with an aging population as well, and may like to explore using a similar model to make its investment process more efficient.

### Core Action Area 2: Engage with all relevant stakeholders and local communities in the planning process

Involving all relevant stakeholders, especially the target population and the private sector, in the planning process allows for capital investment decisions to be made in ways that simultaneously meet health needs as well as policy requirements. Key action steps include: (i) identify different stakeholder groups and prominent community and private sector leaders and formulate an engagement strategy for each stakeholder type; (ii) conduct consultation sessions as per strategy; (iii) require rigorous evaluation and public disclosure of all capital projects, including self-funded capital projects, financed through philanthropy or other in-kind contributions; and (iv) publish benchmark spending per bed by level of care and average bed size across provinces to ensure that standards are met.

New South Wales (NSW), a state on the east coast of Australia, has begun to implement a new capital investment method in order to better meet the needs of its disabled population. Known as the Sector Planning Framework, it offers a flexible approach that can be modified to fit any population subgroup. One of the key features of NSW's new approach is that it places local communities, including people with disabilities, their families and caretakers at the center of the planning process, and as joint parties in the planning process. It helps the state deliver on its commitments to local communities in ways that best suit the community. It recognizes that each community has unique health needs, and that capital investments cannot be made in a "one size fits all" manner if all the disparate health needs have to be met.

This approach allows for open dialogue among all different levels of planning. Robust research and strong community involvement allow for investment plans to incorporate projects that best fit the health needs of any given population. Further, it helps tailor capital investments to the unique needs of individual communities, contributing to the development of service-based investment decisions. NSW has recognized that this method of planning is not limited to capital planning for the disabled population only; it is an approach that can be modified for any given population.

NSW's Sector Planning Framework offers many attractive options for China. It offers a way for China to incorporate each planning level into the investment planning process, allowing for capital investment decisions that meet health needs and policy requirements. The Sector Planning Framework is designed to achieve coordination and alignment in the priorities among governments, agencies, provider providers and communities, and builds cross-agency and public-private partnerships to enable easy integration into future systems. China may like to employ the flexibility of this approach to address a variety of different health concerns, while not having to reinvent the process every time.

### Core Action Area 3: Empower and enable regions and provinces to develop their own capital investment plans

Empowering subnational levels in China to develop their own capital investment plans require the following key actions: (i) establish provincial commissions on health investment and capital development; (ii) prepare provincial level Strategic Plans (Master Plan) that include 5–10 year perspectives on investment needs for infrastructure, equipment, technology and human resource development to ensure consistency with the population's evolving health needs; and (iii) include private capital investment in the establishment

of regional health accounts that include total capital expenditures public and private. The *Planning Layout of National Medical and Health Services System (2015–2020)" (Guo Ban Fa [2015] No.14)* provides an incipient framework for this planning and ensuring implementation will be a step in the right direction. China may like to further study successful global examples as it modifies its own capital investment process.

One such example is the capital investment framework in France, where the health sector investment planning is based on population needs and is executed through Regional Strategic Health Plans (*Schéma Régional d'Organisation Sanitaire,* or SROS). SROSs set the overall strategic goals for health care delivery, define priorities, objectives and targets and determine quantitative targets and the distribution of health care facilities within a region. SROS are developed by regional health agencies (ARS) in consultation with stakeholders, including the Ministry of Health, health insurance funds, hospital federations, health care professionals, and patient representatives (European Observatory on Health Systems and Policies, n.d.; Ettelt et al, 2008). The Ministry of Health plays a coordinating role, and generates a catalogue of health services, based on an assessment of needs at national level and on national priorities, which the regions incorporate in their own plans (Ettelt et al, 2008).

The regional health agencies are generally responsible for planning services and for authorizing hospitals to deliver services within the social health insurance system. They also oversee changes to the existing hospital infrastructure, including restructuring and mergers. The only exceptions are new hospital developments (both private and public) and comprehensive emergency centers, which have to be authorized by the Ministry of Health. Strategic planning requires regional agencies to assess population health care needs on the basis of regional health care utilization data and relevant demographic data (such as on mortality and morbidity). Data for each region are analyzed and compared with those for other regions in order to identify demand and supply. Expert estimates of future trends in demand and technological change—largely based on epidemiological data and trends observed in other countries (mainly the United States)—are taken into consideration for these assessments (Ettelt et al, 2008).

The SROS is the most important tool in regional capital investment and health care delivery planning. It focuses on hospital planning and on expensive treatment and technology provided in hospital settings. Since its implementation in 2003, in each region the SROS has taken the place of the "national medical map," which was the quantitative planning tool used by the Ministry of Health to divide each region into health care sectors and defined norms for bed/population ratios for major disciplines within a geographical area (European Observatory on Health Systems and Policies, n.d.; Ettelt et al, 2008). In contrast to previous national planning practices, the purpose of the SROS is to better tailor health care delivery to the needs of the local population.

Related to capital investment planning, SROS determine capacity by specifying the number of facilities in each region and subregion for each area of care (including general medicine, surgery, maternity care, accident and emergency care, neonatal care, radiotherapy, cardiologic intensive care and psychiatric care, as well as expensive technical equipment such as magnetic resonance imaging scanners). They also define the volumes for certain types of service, and benchmark them for purposes of comparison. Service volumes refer to units such as numbers of patients, sites, days (length of stay), procedures performed and admissions, and are expressed in numbers of services or rates and show changes relative to previous volumes. The objective of planning on the basis of service volumes rather than on bed/population ratios is to limit oversupply, which is a persistent problem in some cities (Paris) and regions (south of France) (Ettelt et al, 2008).

### Core Action Area 4: Introduce a Certificate of Need program to evaluate and approve new capital investments in the health sector

China already has a system of requiring feasibility reports for all capital investments.

However, these feasibility reports use norms set according to macro standards governing the size and scope of the intended service. The key transition step in this context is to require the feasibility studies to be based on population health needs and to demonstrate that the proposed capital investment is necessary to meet the identified and targeted need, considering the public and private supply in each region.

The Certificate of Need (CON) program is used extensively in the US to evaluate and approve new capital investment projects. In 1974, the federal Health Planning Resources Development Act mandated that all 50 states evaluate Certificates of Need before allowing the continuation of any health capital investment projects, such as building expansions, and ordering new high-technology devices. The goal was to restrain facility costs and allow for a more coordinated planning of health services and construction. Many states established CON programs in order to receive federal funding. Even though the Health Planning Resources Development Act, along with its funding, was cut in 1987, 36 states still maintain some form of a CON program, while the remaining 14 states, that do not have CON programs, have mechanisms in place to regulate costs and duplication of services.

Each state in the US has developed its own unique approach to the program. Many states have recognized the importance of population health needs in capital investment planning and rely on the analysis of population health needs to implement capital investment projects. In the state of Maine, for instance, applicants for CON must prove that their proposed capital investment is geared toward meeting a defined public need. This helps reduce duplication of services, and helps direct capital investment to areas that need it most. Public hearings are an important feature of this process, and give the citizens the ability to voice their needs and opinions regarding potential capital investments. It also increases communication between health officials and the public, further strengthening the people-centered aspect of this investment planning. Like Maine, China may like to consider developing a process that relies on actual population health data to make informed decisions on capital investment.

Another example from the United States that may be relevant for China is from Michigan, which realized early on that an investment program based solely on costs could have a distorting effect on health care and adversely affect both quality and access. The CON program in the health sector in Michigan has evolved over the years to include more services and move away from a hospital-centric system. Michigan also introduced requirements to ensure compliance of capital projects with standards, which has proved to be a challenge in China.

The Certificate of Need program as practiced in the US holds a lot of promise for China, where facility needs are often paramount in determining hospital expansion. A close look at the feasibility study of possible relocation and expansion of the County Hospital in Renshou County in Meishan City, Sichuan Province, for instance, reveals that construction planning and selection of location for the Renshou Hospital were determined according to facility needs rather than population needs. A program akin to the Certificate of Need program presents a possible solution to this.

### Core Action Area 5: Prioritize community health projects

Key actions to realize this vision include: (i) earmark a percentage of provincial and city capital budget for community projects; and (ii) identify priority communities and formulate multiyear community capital investment plans within the context of the new three budgetary frameworks.

As in China, capital investment in Northern Ireland was once hospital-centric and was largely focused on the acute sector. Beginning 2007, Northern Ireland started to redirect its capital investments toward community level facilities. The new model sought to create an integrated continuum of facilities, from home care through to primary, community, subacute/step-down and acute facilities, all supported by structured networks. The underlying strategy had two main components: enhanced services within the community,

and concentration of complex services. With regards to the first component, Northern Ireland carried out a comprehensive region-wide planning exercise and decided to develop 42 new community health centers located at population centers throughout the country (Box 9.3). Meeting the second component required greater centralization—from local general hospitals to acute centers or to regional centers of excellence—of those services that, due to their complexity, required specialized skills and expertise that could not easily or affordably be replicated in local hospitals. A key criterion in the process of determining the final locations of those hospitals to be designated as "acute" was that patients should have a maximum travel time of one hour from anywhere in Northern Ireland to an acute facility, with full accident and emergency services.

A primary objective of this new model of care is to improve accessibility of the public to high-quality and timely services. The specific location of individual facilities was determined by a number of key factors, including the core principles within the Regional Health Strategy, urban or rural setting, size of the local population, epidemiology, travel times and distances, critical mass for staff, critical mass for specialist equipment, state and location of current facilities, improved accessibility, reduced waiting times and reduced hospital admissions, and affordability.

Additionally, Northern Ireland has attempted to incorporate flexible design principles into its new configuration. This included phased construction to transition from existing to new facilities; insertion of "soft" spaces (for example, office space or educational accommodation that can be relatively easily relocated) beside complex areas, such as those for critical care or imaging, that are likely to expand in the future and would be very expensive to move; and standardization (Rechel et al, 2009b).

The example of Northern Ireland shows that it is possible for a health system to undergo such a physical transition and move away from a hospital-centric system. Citizens of Northern Ireland now have greater access to both community facilities and acute facilities, both of which have been designed to improve population health. The focus on specific geographic needs offers an important lesson for China, which could greatly benefit from investing more in community health capital projects and increasing access to quality care. Further, Northern Ireland has dedicated some capital investment towards creating flexible facilities, which increases efficiency in the long-term and enables the health system to better respond to future population health needs without needing to

## BOX 9.3 Physical Redesign of Northern Ireland's Health System Model

Five elements defined the physical redesign of the health system in Northern Ireland:

1. Reduction of Health and Social Care Trusts (service provider organizations) from 17 to 5, according to geographic need, each providing a full continuum of health and social care services to their local population
2. Designation or development of regional centers as the sole providers of a range of tertiary services that will benefit from centralization
3. Reduction in the number of general hospitals providing the full range of acute services from 18 to 10
4. Redevelopment of seven of the remaining nine hospitals as new non-acute step-down facilities with a focus on their local communities and the ability to provide a wider range of intermediate care services
5. Creation of 42 new one-stop community health centers (without bed accommodation) with the key objective of preventing unnecessary hospitalization.

*Source:* Rechel, B., Erskine, J., Dowdeswell, B., Wright, S. & McKee, M. (2009).

invest in new capital or completely redesign facilities to meet unforeseen needs. China may like to explore this flexible design.

## Notes

1. Data from National Accounts provides an idea of the type of assets and capital spending. While capital spending can fluctuate from year to year, overall OECD countries there is an even split between spending on construction (i.e. building of hospitals and other health care facilities) and spending on equipment (medical machinery, ambulances, as well as ICT equipment). Together they account for 85% of capital expenditure. The remaining 15% is accounted for by intellectual property products – the result of research, development or innovation. Capital investment refers to the acquisition of *capital assets* or *fixed assets* such as land, clinics, hospitals or equipment that is expected to be productive over many years. (*http://www.investopedia.com/terms/c/capital-investment.asp#ixzz3yIZ8rrWm*).

# Part 3

# Moving Forward with Implementation

# 10

# Strengthening Implementation of Service Delivery Reform

## Introduction

The next phase of development of the Chinese health care system will center on comprehensive improvement in the value of care across all levels of the system. Previous chapters have detailed the core actions regarding *what* must be changed for each of the eight reform levers. Drawing on lessons from national and international cases, specific strategies were also provided to guide implementation for a number of design elements. This chapter addresses the central challenge of *how* to implement these important changes with the focus on creating an enabling organizational environment to operationalize and sustain the core actions and strategies specified in the previous chapters. Putting in place this environment is a key precondition for effective implementation and represent the critical first steps in the sequencing of reforms. Without it, progress may be elusive.

This chapter first reviews barriers to implementation in the institutional and organizational environment in China. The main body of the chapter centers on the specifics of the implementation model for spreading and scaling up the recommended reforms described in earlier chapters. First, an operational implementation framework is presented that focuses on four "implementation" systems: (i) macro implementation and influence, (ii) coordination and support, (iii) service delivery and learning, and (iv) monitoring and evaluation. Specific and China relevant strategies for each of these systems are then reviewed. The organizational platforms for front line service delivery improvement and learning are particularly important. For example, it is unlikely that low performing organizations can transform themselves solely given changes in payment incentives (Cutler, 2014). Improvement will also require a support system that builds capacity and creates a facilitative climate to foster organizational (and individual) change.[1] The chapter concludes with recommendations on sequencing and reaching full scale. With an ambitious vision, unified leadership, and implementation knowhow, China can build on its impressive progress. It can reach a new stage in which care is reliable, scientifically appropriate, person-centered, and effective while restoring public trust.

## Implementation Challenges

While there is consensus that China has sufficiently robust health sector reform policies, most observers acknowledge that the country has had difficulty translating these policies into scalable and sustained actions required to further improve service delivery. Typical of the development strategy in other sectors, China has promoted reform implementation mainly through pilot projects. Although

experimentalism through small-scale pilots operated by local governments has been effective in promoting and expanding economic reforms (Heilman, 2008), it has been less successful in expanding reforms (Guo Ban fa, 2015, No 70; State Council, 2015 a). This has become particularly evident in efforts to address deep-rooted and complex issues related to provider incentives, private sector engagement, public hospital reform and rebalancing service delivery. Part of the problem rests in the difficulty of shifting from a command-and-control governance approach to an arm's length approach, typical of mixed delivery systems, in which the health system is steered or indirectly managed through incentives, regulation and other checks and balances (Meessen and Bloom, 2007). However, institutional fragmentation, diffuse leadership and vested interests make this transition even more challenging. Under these conditions, even effective pilots cannot be maintained or scaled-up. Moving forward with implementing the recommendations related to the eight reform levers will depend on careful management of implementation impediments at three system levels: central government, provincial/local government and front line service providers. Each is taken up in turn.

**Central government: Dispersed oversight and monitoring of reform implementation.** Typical of China's governance style, central government policy directives consist of principles and general guidelines in part to stimulate local innovation and to allow for flexibility in applying them to local conditions. Innovations are usually supported through pilot activities which tend to be sanctioned by the central government. As observed in a number of cases studies reviewed in this report, successful innovations have indeed occurred. However, scaling up these initiatives has been challenging. Some policy makers suggest that innovations and reform implementation tend to be "personalized," responding to the preferences of local leaders, and therefore difficult to replicate. This may relate to the lack of evidence-based analysis and feedback on reform progress and problems. Few innovations have been evaluated using rigorous methods.

While the State Council's Health Reform Office is responsible for policy formation and oversight, various central government agencies monitor how these policies *are implemented* with each agency focusing on specific aspects of reform (e.g., pricing, insurance, drug standards, human resources, medical services, etc.) aligned with their respective mandates. Supervisory reports tend to be based on short "fact gathering" site visits often conducted separately by representatives of different agencies. Furthermore, "fact gathering" are sometimes used to seek out underperformers for discipline and punishment rather than identifying the high performers for celebration and reward. In addition, the independence of any assessment can be questioned since central level departments are not totally separate from their decentralized counterparts at provincial and local governments. China has yet to systematically put in place independent mechanisms for gathering information and assessing reforms. These conditions suggest that central government may consider providing implementation–oriented guidance, consolidating and strengthening implementation oversight and introducing systems to aggressively monitor and validate progress and assess implementation from a more "big picture" and system perspective.

**Provincial and local governments: Fragmented coordination and leadership.** Given the dispersion of roles over a large array of institutions and low priority attributed to health reform at the local level, reform ownership and leadership is diffuse. Resilient mechanisms for holding local government leaders accountable for health reform implementation have yet to be put in place. Incentives faced by local officials to plan and implement health reforms are generally weak when compared, for example, to incentives to promote economic growth and development (Ramesh, Wu and He, 2013; Ratigan, 2015). Local leaders' performance is generally not judged by, and their career paths are generally not dependent on, how well they progress on health reform. Under these conditions, for example, local officials are justifiably reluctant to take on complex issues, such as the profit-making interests of public hospitals. Putting in place new models of service delivery will require strengthening and stabilizing broader system coordination particularly in

terms of overcoming institutional fragmentation—both horizontal (across many government departments) and vertical (across multiple governmental levels: municipal, county, and district). Sustainable and scalable reform implementation is compromised under the current situation in which each department and agency has the tendency to act to defend its own interest. Decisions on complex issues are often made through interagency bargaining, which in turn weakens accountability for reform implementation (Qian, 2015). Patchwork administrative actions negotiated among diverse government departments (with divergent interests) to address elements of the reform may be effective in the short-term but are not sustainable unless government builds and institutionalizes its coordination capacity and creates the organizational arrangements to make them operational (He, 2011). In sum, effective, scalable and sustainable implementation will require putting in place the incentives and accountability mechanisms that will drive local leaders and government departments to coordinate and enforce health reforms.

**Front line service delivery: Lack of organizational mechanisms for leadership and shared learning about healthcare system reform and improvement by health care providers.** Healthcare improvement occurs on the front lines, whether in households, village clinics, community or townships health centers or hospital wards. Transformational value is seldom created by a single clinician or facility; it is more often generated by a group of providers cooperating with each other and collectively responsible for patient care. Reliable implementation of policy reform, at the facility-level, does not happen by accident or by chance. Deliberate and focused plans to ensure implementation must be created and then executed. This has been amply demonstrated internationally such as the UK's Primary Care Collaborative, the US Veteran's Health Administration, and Centers for Medicare and Medicaid's recent Partnership for Patients and many others. International experience demonstrates that the proposed shift in organizational goals from treatment delivery to outcomes improvement will require fundamental changes in organizational culture. "Naming and blaming" to motivate changes in provider service practices is insufficient to encourage creation of value-oriented delivery system. The evidence supports the application of health systems improvement methods, including the use of performance reporting, data transparency, and systematic application of specific learning models that allow institutions to make changes and learn from their impact (Greene, Ried and Larson, 2012; Schouten, et al., 2008; Garside, 1998). Facilitated collaboration approaches that allow peer institutions to learn from one another's successes and failures in a fear-free environment can rapidly accelerate implementation of policy reforms.

## An Actionable Implementation Framework

Implementation consists of the set of activities, processes and interventions used to put policies, ideas, and reforms into practice. There is growing evidence that implementation influences outcomes (Meyers, et al., 2012b; Dulak and Dupre, 2008; Aarons et al., 2009; Wilson, et al., 2003). High quality implementation is associated with obtaining desired impacts. Drawing on a large body of literature, the science supporting implementation has advanced considerably during the last two decades to the extent that a number of *actionable* frameworks have emerged to assist planners, implementers and communities in their implementation efforts (Meyers et al., 2012, a, b; Wandersman, Chien and Katz, 2012; Wandersman et al.; 2000; Durlak and Dupre, 2008; Damschroder, et al., 2009; Fixsen, et al., 2005). These frameworks provide evidence-based guidance on the critical phases, steps, and components that contribute to effective implementation, and ultimately, sustained institutionalization of successful practices. Despite the strong evidence base supporting these frameworks, some caution is warranted. For example, the frameworks are not roadmaps to be simply followed. Some components benefit from stronger empirical support than others. Also, implementation is inherently intertwined with the contexts where it occurs. One size fits all solutions don't exist. Invariably, adaptations tailored to local contexts will take

place. The proposed implementation steps and organizational platforms (see below) along with their sequencing and timing will vary by local capacity, the supporting environment and other starting conditions.

Bridging the gap between policies and practice requires capacity, resources, accountability and a commitment to collaboration, evaluation and learning. Drawing on the above-mentioned implementation guidelines, the chapter follows a simplified but actionable implementation framework consisting of four systems adapted broadly to the Chinese context. However, further adaptations will be probably be required for specific situations. Finally, it is important to note that overlap exists among these systems.

**1. Macro implementation and influence system:** This system involves establishing the external "influence factors" that would create a facilitative climate for effective and sustained implementation (Fixsen, et al., 2005:59). Greater attention to implementation practices by senior policy makers and leaders is critical to the process of service delivery reform. Research shows that a facilitating macro climate is associated with better outcomes and the f*idelity* of implementation—the degree to which implementation is aligned with intended expectations, design and plans (Myers, et al., 2012a, b; Fixsen, et al., 2005). Specific considerations include: creating clear accountabilities for implementation performance, demonstrating leaders' commitment to the implementation process, specifying expected implementation milestones and outcomes, building a monitoring and feedback system to learn from implementation experiences to adjust policies and guidelines, mobilizing resources to support implementation processes, and arranging for independent evaluations. One strategy to foster an enabling macro context (described below) is strengthening the central government's oversight and monitoring role in reform implementation.

**2. Coordination and support system:** The coordination and support system aims to create capacity and an enabling environment for effective reform implementation. This system is considered one location where implementation takes place since it interacts closely with the main implementation location, the delivery and learning system (see below). While also linked to the macro implementation climate, key functions for the support system include: coordinating and ensuring buy in of key stakeholders, arranging to training and technical assistance, developing and adapting implementation plans and timelines, communicating reform activities and expectations to communities, health care organizations and health workers, making front line providers accountable for implementation progress and results, ensuring that reform has adequate administrative support, and conducting on-site monitoring of implementation activities, including documenting adaptations to original plans and designs. The coordination and support system requires an organizational structure proximate to front line implementation to carry out these functions and oversee the implementation process. As described below, China may consider establishing a leading group or steering committee at the provincial or local governmental levels to perform the above functions.

**3. Delivery and learning system:** This is where the rubber hits the road—the main location of implementation and where many service delivery reforms and care improvement solutions are designed and executed. It occurs on the front lines of service delivery: health care organizations (for example, hospitals, THCs, CHCs), networked groups of health care organizations, and communities. It involves individual behavioral and broader organizational change but also making the "culture of the organization" open to change. (Garside, 1998; S8). Ostensibly, this system is about putting evidence into practice but also entails learning from experience. Operationally, it involves creating an organizational arrangement for problem solving, practitioner-to-practitioner coaching and collaboration, and shared and continuous learning. As described below, Technical Learning Collaboratives (TLCs) are proposed as the organizational building block for a delivery and learning system in China.

**4. Monitoring and Evaluation system:** Monitoring and evaluating the effectiveness of implementation and reform impact is a critical but often overlooked component of the

implementation process. Evidence needs to be gathered to learn from implementation and contribute to evidence-based adjustments and future policy making. Careful monitoring can detect whether implementation is aligned with stated objectives, on track (or going off track) or the implemented reforms match the intended reforms. But careful monitoring requires careful measurement which in turn responds to the information needs of the various stakeholders. In addition, it is highly recommended that implementation is accompanied by impact evaluations. Impact evaluation measures intended and unintended effects and outcomes. Though more methodologically demanding than monitoring, impact evaluations can provide valuable information on attributing causation between the reform and its effects. One additional focus which combines both monitoring and impact evaluation is understanding why implementation was successful or not (Berwick, 2008). In China, putting in place a robust monitoring and evaluation system to accompany reform implementation will require the close attention of central government in coordination with provincial and local governments.

## Moving Forward: Spreading Effective and Sustainable Implementation at the Local Level

Numerous health reforms experiments are under way in China to operationalize the reform policies, but for the reforms to be successful and brought to scale, they need to be deep, comprehensive, and implemented in a coordinated and deliberate manner. In building a better health care delivery system for China, a major challenge is reaching full scale: to test and spread reforms to health care delivery systems in every municipality, county, township, and village.

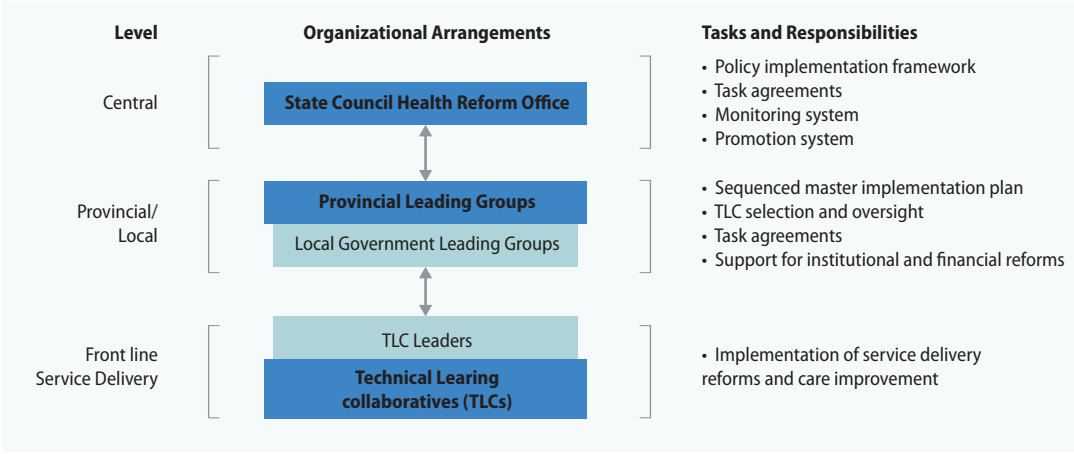
Following the framework presented in the previous section, this section describes four strategies that China can consider to facilitate robust reform implementation: (a) macro implementation and influence system: *establishing strong central government oversight linked to a national policy implementation and monitoring guidelines*: (b) coordination and support system: *instituting coordination and leadership mechanisms that at the provincial and local governments that build capacity and foster accountability for effective reform implementation*; (c) delivery and learning system: *developing local Transformation Learning Collaborative (TLC) models to foster front line reform implementation and care improvement*; and (d) monitoring and evaluation system: *ensuring strong and independent monitoring and impact evaluation*. These strategies represent the critical elements for planning, prioritizing and sequencing interventions necessary to build a modern 21st-century health system. All will need strong and persistent central government support to make them work.

The proposed oversight, coordination and management arrangements related to the four strategies is illustrated in Figure 10.1. In this model, which is described in detail below, central authorities develop a policy implementation monitoring framework to guide implementation (such as specifying aims for better care and lower cost, key implementation benchmarks, and uniform outcome metrics) together with accountability mechanisms and independent evaluation of progress and results. National and provincial officials establish the coordination and support arrangements at the provincial and local government levels to manage decision-making, provide technical assistance and training, oversee implementation (in line with central government's policy implementation framework) and make providers accountable for implementation progress. Provincial and local authorities can consider organizing learning collaboratives consisting of groups of front-line service delivery units that will implement reform actions, but customize them to the specific context of the locale.

### A. Macro implementation and influence system: Establishing strong central government oversight linked to national policy implementation and monitoring guidelines

The central government may consider taking on a more "hands-on" lead in guiding and

**FIGURE 10.1 Proposed Oversight, Coordination and Management for Service delivery Reform Implementation and Scale-Up**




monitoring implementation of the reforms, including the eight levers. China can consider assigning this mandate to the State Council, which would mean expanding the roles and functions of the State Council Health Reform Office (SCHRO) currently responsible for health reform policy making. One instrument would be preparing policy *implementation and monitoring guidelines* to orient reform planning and execution by provincial and local governments. These guidelines can provide verifiable (and measureable) tasks or intermediate outcomes relate to reform implementation, which would foster greater reform implementation integrity at local levels. They are not an implementation plan or one-size-fits all blueprint. But the guidelines will need to be operational in nature, specifying categorically "what to do." In turn, provincial and local governments should have full authority to decide on "how to do it"—developing, executing and sequencing implementation plans based on local conditions. Drawing on the core action areas presented in Chapters 2 to 9, Table 10.1 provides examples of the activities that can be included in the guidelines. SCHRO should also consider establishing strong accountability mechanisms to enforce reform implementation at provincial and local levels. For example, the aforementioned activities can be placed in "task agreements" with provincial and local governments (Figure 10.1).

Finally, given the large number of government institutions involved in the health sector, the decentralized nature of implementation and the well-known difficulties in aligning institutional positions, China may want to consider assigning an official with a rank higher than Minister to head the SCHRO. The higher rank than Minister level is necessary to influence institutional stakeholders as well as provincial governors. While controversial, China may also consider granting SCHRO sufficient authority and institutional independence to influence how resources allocated and provincial and local leaders are assessed in terms of reform implementation. Given the proposed expanded role of the SCHRO, staffing will need to be strengthened.

## B. Coordination and Support System: Establishing coordination and organizational mechanisms that make provincial and local governments accountable for results and support front line reform implementation

Strengthening accountability arrangements, particularly at the provincial and local levels, is another essential ingredient to facilitate effective implementation. Any accountability arrangement should be sufficiently powerful to align institutional standpoints and to leverage government interests when dealing with providers and vested interests. One option is

**TABLE 10.1 Examples of Policy Implementation Monitoring Guidelines for China's Value-Driven Future**

| Component | Description of Key Elements |
|---|---|
| **Service Delivery System** | |
| **Shaping a tiered delivery system based on PCIC (Lever 1)** | • Strengthened primary care is first point of contact and gatekeeper for patient navigation of delivery system and responsible for providing continuous and comprehensive care;<br>  • Involves mHealth outreach to communities, social services and homes through use of community health workers virtually connected to GPs and specialists;<br>• Networks are formed and operated by a TLC leadership team that is separate from hospital management;<br>• Within the network, well-organized multi-disciplinary teams, consisting of clinical and non-clinical personnel provide full cycle of care to patients;<br>  • People enroll with care teams and stratified for risks and conditions;<br>  • Teams assume joint accountability for treatment, prevention and patient engagement;<br>• Horizontal integration of individual preventive and curative care services at primary care level<br>• CDC units emphasize public health; individual preventive care transferred to primary care;<br>• Vertical integration of care provided at hospitals, primary care and communities through establishing multi-disciplinary teams, evidence-based integrated clinical pathways and referral systems (e.g., post discharge care), individualized care plans for patients with chronic conditions.<br>• Use of information and communication technologies to support provider-to-provider integration and empower front-line health workers. |
| **Quality of care and patient engagement (Levers 2, 3)** | • National authority assesses, regulates and oversees quality of care in all institutions<br>• Patient self-management of chronic conditions is part of care plans<br>• Quality information on providers publicly disclosed<br>• Evidence-based health literacy campaigns encouraging healthy behaviors is underway |
| **Hospital reform and service integration (Levers 1, 4)** | • Public hospitals granted more independence in management, but within a strong regulatory and accountability framework that ensures accountability for supporting care integration, reducing costs and unnecessary care and shifting low complexity care to lower levels.<br>• Tertiary hospitals focus on providing highly complex care while supporting secondary hospitals and primary care with technical assistance, research and workforce development;<br>• Secondary hospitals provide essential specialty care and are closely linked to primary care, providing technical support, supervision and training. Professional medical staff shared with primary care through formation of multidisciplinary care teams;<br>• Hospital management professionalization plan in place; |
| **Financial and Institutional Environment** | |
| **Purchasing and Provider payments (Lever 5)** | • Strategic purchasing of health services based on quality and efficiency criteria<br>• Health providers' income delinked from service volume;<br>• Provide payment systems gradually shift from paying individual facilities to paying integrated care networks (e.g., capitation) and paying for a package of services (e.g., bundled payments) for treating groups of patients with certain conditions; |
| **Human resources (Lever 6)** | • Standardized scientific professional development and education for all healthcare professionals including physicians, nurses and pharmacists.<br>• Professional standing and sufficient income for primary health care providers ensured;<br>• Physician compensation and hospital-based quota systems reformed;<br>• Production and integration of new and alternative cadres of workers in health workforce; |
| **Private sector engagement (Lever 7)** | • Regulations in support of high quality private providers delivering cost-effective services who compete on a "level playing field" with the public sector,<br>• Public purchasing by social insurers of health services from private providers for services for which they are licensed and meet quality standards |
| **Service/capital planning (Lever 8)** | • New planning model based on population health needs and demographic profile;<br>• Integration of all public financial resources in capital investment planning<br>• Planning process incorporate private providers |

to scale up the use of empowered "leading groups" or steering committees at the provincial level led by government leaders (i.e., governors or party chiefs). Such groups already exist in China and can be enabled to oversee reform implementation and support front line execution. Leading groups can also be formed at local governmental levels (county, municipality, and prefecture) depending on the context. The leading groups will require strong, active leadership by high level officials and broad political support, and be fully empowered (and accountable) to implement reform within their jurisdictions. The proposed leading groups can consist of representatives from the various government agencies involved in the health sector, but should also have representatives from the private sector and community leaders.

An advantage of the proposed leading group arrangement is that it is a well-known inter-agency coordination mechanism, and has been applied successfully within the current institutional framework. Nevertheless, the "leading group" scheme can be considered an interim organizational arrangement in part to mitigate the potential adverse effects of institutional fragmentation on reform implementation. It does not institutionalize inter-agency coordination. A longer term solution would involve institutional consolidation which would be part of a much broader reform to streamline the government's administration systems and organizational structures (see Box 10.1).

Sanming's experience is instructive. As mentioned in Chapter 5, concerted and coordinated actions led by a Leading Group at the Prefecture level and buttressed by exceptionally strong political support enabled a successful series of deep reforms. However, the leading group arrangement, as currently practiced in China, may be too single-task oriented, short-term, and unstable (i.e., personnel turnover) to sustain implementation of health reform over the long term (Qian, 2015). While the Sanming experience suggests that the leading group arrangement can effectively coordinate decision making across multiple government departments to plan and implement complex reforms at least in the short term, reformers have yet to put in place an institutionalized platform for coordination among stakeholders that would formalize accountability mechanisms and incentives for sustained reform implementation. International (and Chinese) experience suggests that implementing health reform is a long-term endeavor, is technically and politically complex, and requires numerous inflight adjustments. Desired outcomes may take time to materialize due to many intervening factors, and unintended negative consequences can occur. In a country as large as China, flexibility is also required to allow for the wide variation in starting conditions and local contexts.

How can the leading group arrangement be strengthened to support longer term implementation? First, the proposed provincial leading groups, can stand accountable to central government through inter-government performance or "task agreements" signed with the State Council Health Reform Office (see above) that specify implementation benchmarks, and anticipated results of the reforms, and ultimately, population health indicators. These can be assessed and revised on an annual or biannual basis. The SCHRO can consider rewards and sanctions related to performance. Second, a subset of these implementation performance measures should also be incorporated into the career promotion system for provincial and local leaders. Third, and as suggested above, performance on agreed reforms should be vigorously monitored by the SCHRO and independently verified by the same in partnership with academic institutions. National and regional workshops can be held to review and compare performance across provinces. This will result in some higher performers, whose efforts could be more carefully examined to learn the contextually relevant ingredients for success that may be replicable by others.

### C. Create "Transformation Learning Collaboratives" (TLCs) at the network and facility levels as the fundamental building block to implement, sustain and scale up reforms on the front line.[2]

The shift to focus on improving outcomes, rather than just delivering treatments—that

## BOX 10.1 Government Administrative Reforms and International Experience

Organizational restructuring has been a major feature of China's administrative reforms for several decades (Xue and Liou, 2012). Policies have called for streamlining administrative functions in order to promote coordination and reduce overlapping authorities and responsibilities. More recently, these reforms are seen as part of a broader process to transform government functions to enable deepening of economic, social and other sectoral reforms, strengthening regulations, and delegating government power (Li Keqiang, May 12, 2015). Making government agencies more effective through streamlining functions and "building a unified supervision platform" (p. 9) is also considered critical to improving reform oversight and implementation. Whether these reforms will lead to institutional consolidation or creation of an institutionalized platform for inter-agency coordination in the health sector remains an open question.

China may consider examining organizational structures, distribution of responsibilities, and coordination of functions across agencies in the OECD for health system governance. Most countries have an array of agencies, including central line ministries, self-governing bodies and professional associations, affiliated institutes, independent commissions and regional health authorities, which constitute the governance configuration of the health sector.[a] Institutional configurations depend on: (i) type of system (i.e., tax-financed national health system or social insurance systems): (ii) the extent of decentralization; and (iii) degree of state involvement in three core health system functions: regulation, financing and service delivery (Bohm et al., 2013; Jabukowski, Saltman and Duran, 2013; Mossialos and Wenzl, 2015). Over the last two decades, China is migrating from a tax-funded national health service with a dominant role of the state in regulation, financing and service delivery to a social insurance system in which state retains regulatory functions but delegates financing to social insurance agencies and service delivery to public (and increasingly) private providers. China may want to explore the institutional governance arrangements of health systems based on social insurance financing such as Germany, Austria, Netherlands and Korea.

In the OECD all agencies involved in health system governance are generally under the jurisdiction of a single governing institution responsible for policy making, strategies and regulations. Over the last two decades, OECD countries have enacted governance reforms which have added national agencies (i.e., for quality oversight, assessment and improvement; for performance and regulatory monitoring) while at the same time consolidating overlapping functions and responsibilities across different levels of government, including the consolidation of social insurance funds (Jabukowski, Saltman and Duran, 2013). These reforms aimed to exert greater central influence. Similarly, in part to address coordination, cost containment and equity concerns national governments have strengthened the decision making power of the national government and corresponding lead health organization, including the recentralization of functions. The centralizing trends have been noted in different systems including those based n taxed funded National Health Service (i.e., England) and social insurance (i.e., Germany). However, in countries with strongly decentralized systems, greater central level authority does not always result in greater policy or policy implementation integrity. Moreover, international experience suggests that stronger government authority should not mean, for example, government interference in operating social insurance systems. Clear division of roles and authorities between government health institutions and social insurance agencies combined with well-defined accountabilities to align the latter with government health policies and priorities are critical to coherent decision making structures (Savedoff and Gottret, 2008).

[a] Institutional configurations of the health sectors in OECD countries are detailed in the WHO/Europe's Health in Transition Series: http://www.euro.who.int/en/about-us/partners/observatory/publications/health-system-reviews-hits/; and Mossialos and Wenzl, 2015. For Asian countries see: http://www.wpro.who.int/asia_pacific_observatory/hits/series/chn/en/.

is, on value rather than procedures—will require fundamental changes in organizational culture. Health care organizations—whether networks, hospitals, CHCs or THCs—would greatly benefit from adopting continuous learning and problem-solving approaches to hasten the successful implementation of reforms. To do this will require local customization of policy implementation guidance from national and

provincial officials to meet specific needs at the front-lines of service delivery. The service delivery reforms recommended in earlier chapters include a number of important changes at sites of care throughout China: using evidence-based care protocols, extending eHealth innovations, integrating care, following clear guidelines for referral to specialists and hospitals, measuring and tracking outcomes, and more. Although these changes can and should be driven from national and provincial leadership, implementing them at local sites will require assistance for local learning, problem solving, and adaptation.

To achieve better outcomes at lower costs, providers in China need to learn new ways to deliver care. To support this learning process, public and private providers can come together to form associations committed to implementing the PCIC approach and corresponding reforms in the financial and institutional environment. If these associations are properly organized and led, participating providers will benefit from not having to reinvent their care alone and separately; they can learn together. Associations or groups of providers can be organized in either urban or rural settings and be made accountable for on-the-ground implementation of reforms under the oversight of the provincial leading group and aligned with the policy implementation framework developed by the SCHRO. These associations would help move the care systems more quickly toward that new culture of coordinated, cooperative, outcome-oriented care.

What model, drawing from international experience, might be available for structuring the activities of these associations to support rapid change? We propose that "Transformation Learning Collaboratives" (TLCs)—partnerships of groups of facilities within a county, district, or municipality (CDM)—should be established to implement, manage, and sustain reforms on the front lines. The driving vision behind the TLC concept is to assist and guide local care sites (e.g., village clinics, THCS, CHCs, county and district hospitals) to implement and scale-up the reformed service delivery model and close the gap between "knowing" and "doing." Provincial (and local) leading groups can select the facility alliances or networks, hospitals and primary care facilities to participate in TLCs. This approach for sharing learning amongst all parties in a geographic area has been tried and tested all over the world including Sweden, Scotland, England, the US, Chile, Brazil, Portugal, Germany, and Singapore. The reminder of this subsection details how to structure and operationalize TLCs, including: (i) basic principles, structure, and managerial philosophy underlying TLCs; (ii) tiered management system to support TLCs; (iii) processes that TLCs use to help their members make improvements; and (iv) proposed sequencing of interventions within a TLC.

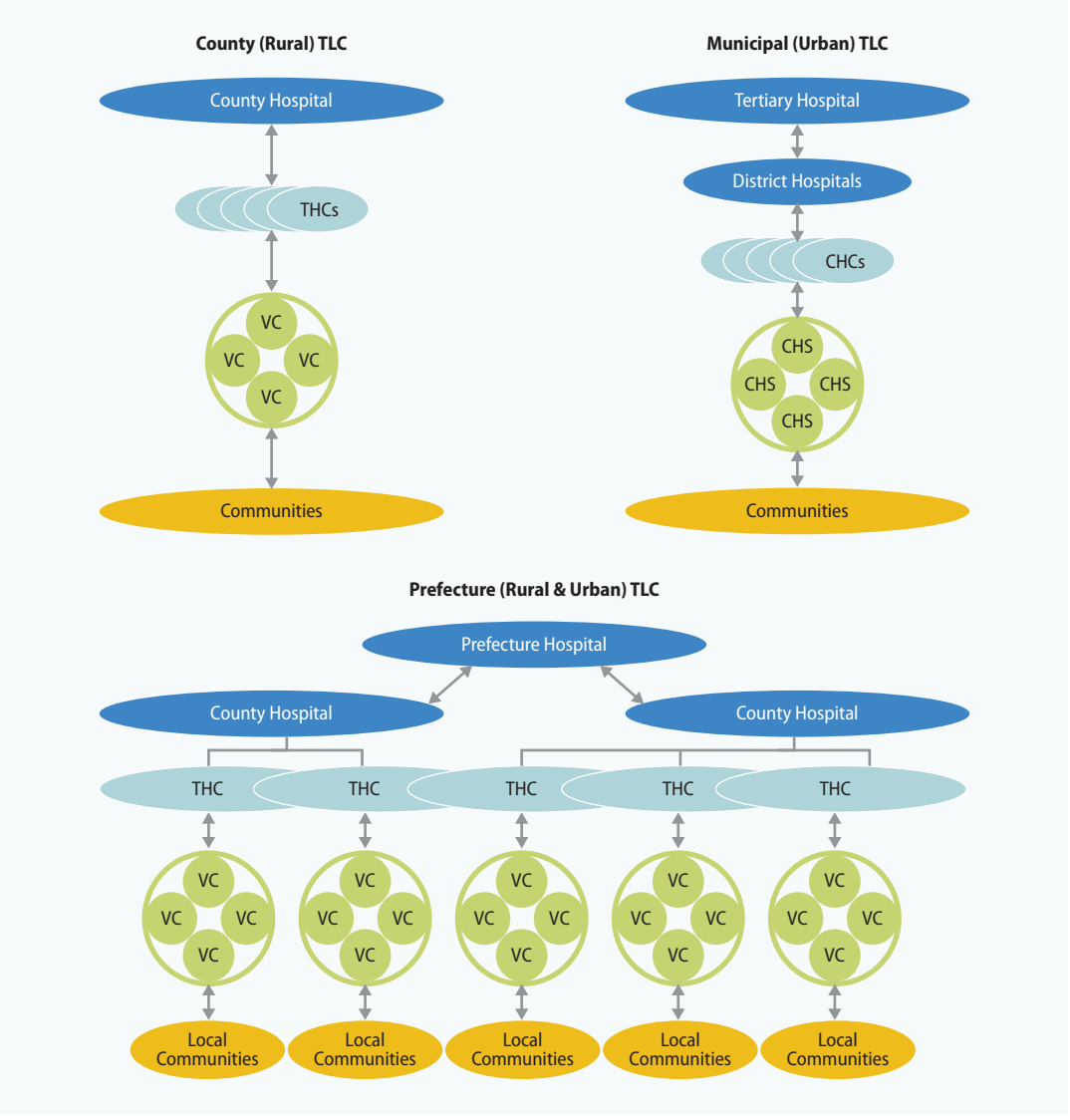
### *(i) Principles, Structures, and Managerial Philosophy of Transformation Learning Collaboratives*

A Transformation Learning Collaborative is a program that supports shared learning and rapid change among a group of providers or organizations. Instead of trying to achieve results alone and separately, the participants in a TLC have the opportunity to try together, to exchange ideas and lessons learned, and to share information on measurements and results to encourage that exchange. A TLC capitalizes on the idea not only that "two heads are better than one," but that "many heads are better than a few." The approach moves away from routine solicitation of performance indicators, identification of underperformers, and public "naming and shaming." This latter approach generates a culture of fear of reprisal—a situation that leads to incomplete and distorted data, corrodes the spirit of innovation, and undermines the will to improve. In the TLC model, continuous improvement for everyone is the goal, and everyone is recognized as having the capacity to improve (even the best performers). Facility-level teams are encouraged to test and improve new systems without fear of failure. Data is scrutinized, but not so much to identify the underperformers, but rather to highlight, celebrate, and learn from those that have outperformed the rest. Recognition and celebration of performance, not fear, is the currency of the TLCs and drives all parties to higher levels of performance.

Who will participate in TLCs in China? The TLC model is a structure for rapidly

disseminating better practices to all facilities in a geographic region, whether in a rural county or urban municipality. At the outset of service delivery reform implementation, each participating province will select the most natural administrative level for the TLC—county, district, municipal, or prefecture. While TLCs will be formed and rolled out over time, all health care organizations within the province—whether public or private—will be expected to join a TLC at some point. In most provinces, some combination of TLC-types will be needed. For example, in a rural setting a TLC can consist of a county hospital, THCs, VCs, and private providers. Urban TLCs can consist of tertiary hospitals, district hospitals, CHCs, community health stations, and private providers. Other combination of facilities are also possible. Figure 10.2 displays three examples of TLC partnering arrangements: county rural level, municipal urban level and prefecture rural and urban level.

**FIGURE 10.2** **The Transformation Learning Collaborative (TLC) model in three different arrangements**



*(ii) TLC management system*

Depending on local conditions, THCs can be formed and overseen by provincial leading groups (PLGs) or by local leading groups (LLGs). PLGs/LLGs will define the number of participating facilities and geographical scope of the TLCs, appoint leaders, invite facilities and teams to participate, and host its activities. TLC leaders can comprise trusted local hospital and clinic leaders, assisted by a systems improvement advisor and program management staff from the participating hospitals. Given the operational nature of TLCs, PLGs should consider that TLC management be separate from government administrative leadership. PLGs should also ensure active participation of multiple providers and avoid hospital capture of TLC leadership. PLGs/LLGs can sign task agreements with TLC leadership.

It is important to note that PLGs work on macro-level changes and improvements (i.e. those at provincial level) across the multiple TLCs to remove specific barriers that impede progress within the TLCs. For example, as TLC participants seek to spread the changes needed to produce better care at lower cost, they will encounter barriers that make such reforms difficult. Removing those barriers requires actions on the part of senior leaders and groups above the level of the TLC participants. Examples of issues that may not sort out within the TLC itself can include, for example, adjusting human resources policies, supply chain problems, reorienting incentives, capital planning and investment, and promotion of engagement with the private sector. International experience demonstrates that a critical function of senior leadership (in this case provincial leadership) is to remain in touch with the TLC members and focus on solving "upstream" problems to allow the TLCs to progress.

Critical to the success of any individual TLC is establishing the appropriate managerial capacities to guide, support, and operate TLC activities. These will include building the capability and technical skills of TLC members in how to manage scientific improvement of systems. To acquire these skills, TLCs should consider forming technical partnerships with leading Chinese academic institutions that will contribute technical knowhow and confer some of their reputational strength to the TLC. International partners and technical assistance may be conveyed through the Chinese academic institutions as needed as well.

*(iii) How does a TLC Work?*

Each TLC is organized as a short-term (18- to 24-month) learning system. Prior to the launch of the TLC, PLGs/LLGs agree to the specific set of reform initiatives that will be implemented as well as a set of measures to track implementation progress of all participating facilities (and institutions). For example, one reform initiative could involve the transition to team-based care, which would facilitate care for chronic diseases such as diabetes. All participating facilities could track their progress in terms of "process measures" (proportion of front-line staff that are part of clinical care teams; proportion of patients who are assigned to a clinical care team; numbers of annual visits by patients assigned to a care team; and numbers of medicines prescribed) as well as "outcome measures" (e.g. percentage of diabetic patients with glycosylated hemoglobin of less than 8).

Organizations participating in the TLC would send facility-level teams to the TLC meetings. Such facility-level teams would consist of three to five people from each facility, including operational leadership and key clinical staff. TLC teams from all participating facilities will meet face-to-face in "learning sessions" every four to six months to discuss successes, barriers, and challenges, share better practices, and describe lessons learned. In between these face-to-face TLC meetings are "action periods," when facility-based teams will test and implement interventions in their local settings—and collect and report data to measure the impact. Teams will use a methodology known as the Plan-Do-Study-Act (PDSA) cycles to iteratively test ideas for improving how the system performs over time.[2] During an action period, for example, teams would test different ways of implementing team-based care. Teams might try different approaches to structuring their teams or different communication strategies including a daily morning "huddle" to review all assigned patients; scheduling might take

**TABLE 10.2 Examples of monitoring indicators by reform goal**

| Action area | Indicator |
|---|---|
| **Goal 1: Achieve better care for Individuals** | • Admission rates for complications for diabetes, hypertension and chronic lung disease in secondary and tertiary hospitals and aim for 20% reduction in 2 years;<br>• Number of patients whose first contact for an illness episode occurs in primary care and aim for a 20% increase in 2 years; and<br>• Antibiotics prescriptions at primary care facilities and outpatient clinics and aim for a 25% reduction in 2 years. |
| **Goal 2: Achieve better Health for Populations** | • % of population 18–75 with hypertension and whose blood pressure was adequately controlled (<140/90) and aim for 20% improvement in 2 years;<br>• % patients with diabetes with Hemoglobin A1c <8% with aim of 20% improvement in 2 years;<br>• (% of women ages 16–64 who received one more Pap tests to screen for cervical cancer with aim of 20% improvement in 2 years). |
| **Goal 3: Achieve affordable costs** | • Inpatient admissions per/1000 population with aim of 15% reduction in two years;<br>• Length of stay with aim of 20% reduction in secondary and tertiary hospitals in two years;<br>• Quarterly reports on total spending per insured issued by social insurance agencies indicate that health cost inflation similar to consumer price inflation. |

various forms; others might test an innovative technology for grouping patients according to various characteristics and conditions in order to perceive revealing patterns. Teams will submit monthly progress reports on the agreed upon measures to a web-based data collection portal. For example, as mentioned earlier, examples of measures might include the percentage of diabetic patients with glycosylated hemoglobin <8 or with blood pressure under control. These data will be available to the entire TLC community for all to see and review.

### *(iv) Reform sequencing and measurement within a TLC*

As the roll-out of TLCs begins in the selected reform provinces, it will be important to think about the sequence of implementation. Implementation pathways or guidelines for each of the key technical reform levers will be included in the final report. TLCs may elect to focus on one or more of the eight reform areas. It is difficult to predict *a priori* which reforms each TLC will select as the details of their circumstances will likely determine which reforms are most important to TLC leaders. A full menu of the reforms should be made available to the TLC leaders at the outset, and the leaders should devise a master 'Reform Pathway' in consultation with representatives from the participating health care facilities as a first order of business.

## D. Monitoring and evaluation system: Ensuring strong and independent monitoring and impact evaluation

The State Council may consider establishing a strong monitoring and evaluation system capable of independently assessing and verifying implementation progress and reform impacts. This can be achieved in partnership with academic institutions. Based on the proposed implementation guidelines and existing monitoring systems, SCHRO can develop implementation benchmarks and other metrics to track reform implementation. Table 10.2 contains examples of value-oriented indicators categorized by the three overarching goals of the reform effort (better care, better health and lower cost).

Regardless of the specific 'path' taken through the available reform priorities, each reform ought to have a clear, universal measurement framework to help guide TLC leaders and the provincial leadership groups to understand the progress on the front lines. As a particular reform matures within facilities, this progress should be measured and understood so that TLC leaders and provincial leadership groups can encourage the TLCs to move on to new areas of reform. More operationally, the provincial leadership groups could track progress of "learning collaboratives" (see Table 10.3) and together with the central government monitor data on selected

**TABLE 10.3 Scoring System for Transformation Learning Collaboratives**

| | | |
|---|---|---|
| 1 | Forming | TLC has been formed |
| | | Aim for implementation has been set and baseline measurement begun. |
| 2 | Activity | TLC is meeting regularly |
| | | Participating teams are beginning local implementation activities |
| 3 | Testing | Changes are being tested, but no improvements seen yet. |
| | | Data on measures is being consistently reported |
| 4 | Process Improvement | Improvements recorded in processes identified as critical to achieving Collaborative aim |
| 5 | Outcome Improvement | Improvements recorded in outcomes related to the Collaborative aim |

*Legend:* Each TLC is graded 1–5 on this scale based on how the TLC is progressing. These data can be averaged at whatever level of aggregation is desired for performance review by provincial and national authorities.

utilization, cost, quality and outcome indicators. However, tracking progress should be complemented impact evaluations that use methodologies to measure impact and allow comparison across sites implementing similar reforms.

## Toward a sequential reform implementation plan for reaching full scale in China

Over the next five to seven years, the recommended unit of focus for spread will be the province. A well-designed and detailed plan is needed for scaling-up across a province—that is, ensuring that all facilities in a province participate in a TLC and implement the reforms. This section presents description of the "waved" sequence that can achieve province-wide spread of the eight reforms.

TLCs can be rolled out gradually in phases to all counties and districts. Depending on local context and starting conditions, there may be more than one TLC per jurisdiction (such as a large municipality or county). Four phases are required to spread TLCs throughout a province:[3] 1) *Set-up,* including the provincial and local preparatory steps for implementation of reforms, 2) *Develop the Scalable Unit,* which is a prototyping phase, 3) *Test of Scale-up,* which expands the core knowledge in a variety of settings that are likely to represent different contexts that will be encountered at full scale; and 4) *Go to Full Scale,* which unfolds rapidly to enable a larger number of sites or divisions to adopt and/or replicate the intervention. Table 10.4 displays the sequencing of TLC rollout across CDMs in a hypothetical province with about 60 counties and districts.

**Set-up:** In the set-up period, provincial leaders will begin to build the "how" of implementation starting first with examining the administrative structures of the provinces to identify where the TLCs ought to be created. Decisions will need to be made on how many urban and rural TLCs will be needed, which specific facilities will join specific TLCs, and which TLCs will launch first and which in subsequent years.

Provincial leaders will also examine the full menu of reforms and the implementation to derive a master "Reform Pathway" particular to their local circumstances. The specific implementation pathways provide detailed specifications for what needs to be done in the corresponding thematic area (patient centered/integrated care model implementation, private sector regulation, service and capital planning, human resource reform, realigning incentives, quality improvement). They provide clear objectives, overall milestones, measurable outputs and specific activities to achieve them. Based on contextual requirement, each province would choose its own path through these activities. A master "Pathway" would be carefully sequenced, taking into account

**TABLE 10.4 TLC Provincial Roll Out by Phase, Time Interval and Jurisdiction**

| Phase | Time Interval | TLC roll out in counties/districts (C&Ds) |
|---|---|---|
| 1. Set up | Month 0 | 0 counties |
| 2. Developing scalable unit | Month 3 | 1–2 "initial" C&Ds |
| 3. Testing of scale-up | Month 12 | Wave 1: 10 C&Ds |
| 4. Full scale roll-out | Month 24 | Wave 2: 10 additional C&Ds |
| | Month 36 | Wave 3: 10 additional C&Ds |
| | Month 48 | Wave 4: 10 additional C&Ds |
| | Month 60 | Wave 5: 10 additional C&Ds |
| | Month 72 | Wave 6: 10 additional C&Ds |

workforce development and infrastructural changes to payment and information systems and team configuration that would need to precede certain clinical process changes. No master "Pathway" will be perfect and therefore this process should be flexible and iterative, allowing provincial leaders to work with TLC leaders to amend the master reform pathway over time. This phase could be accomplished quickly, within 3 months.

**Develop the Scalable Unit:** In the initial phase, the "scalable unit" is the smallest representative facsimile of the system targeted for full-scale implementation. Within the province, the county, district or municipality would be the ideal scalable unit. This is where the action happens for implementation and this is where the TLC will be operationalized.

In each target geographical area in a province at least one and preferably more than one "initial" TLCs will be set up in the first year. The purpose of these initial TLCs is to intensively test local ideas for best practice implementation. An important outcome of this work will be a set of well-documented context-sensitive strategies to aid implementation of specific reforms that can be further tested and refined.[4]

The choice of facility participants for this initial phase of implementation is of the utmost importance. Research on change management and the diffusion of innovation suggests identifying the front-runner innovators who have the will and motivation to make a change. Further, experience in China and internationally has shown that strong political commitment is needed to overcome entrenched interests in the health sector, make the difficult choices involved, and bring about the relentless focus on execution that is needed for results. This phase will last approximately nine months.

**Test of Scale-up:** This phase involves testing the set of interventions to be taken to scale. The successful strategies that aided implementation in the "initial" TLCs need to be tested in a broader range of settings before going to full scale. International experience suggests that testing should take place in 10 *additional* TLCs in each of the selected reform provinces starting in year 2 of the reform period. During this phase, all necessary infrastructure required to support full-scale implementation will be documented, understood and adjusted as needed, including workforce development (e.g., leadership, managerial, and front-line capacity), information systems management, and the supply chain. This phase is an important opportunity to build the confidence and will of leaders and front-line staff to support the changes. As the work proceeds, new insights from the reform implementation will lead to a more nuanced and mature set of context-specific strategies and ideas for change that can be used for full-scale implementation

throughout the province. This phase would last one year.

**Go to Full Scale:** This is a rapid deployment phase in which a tested set of reforms within each province, now supported by a reliable data feedback system, can be rapidly adopted by front-line staff throughout the province. While some adaptation of the intervention to local environments may still be required, there is less emphasis on contextual adaptation during this phase. Significant will, knowledge, experience, and infrastructural support and capacity need to be in place before moving to this phase of scale-up. At this point, a series of waves of TLCs will be launched within each of the selected reform provinces. Each wave of scale-up will be informed by the knowledge gained from the previous wave. Best performer TLC participants from early waves may coach new TLC teams in subsequent waves. This developmental step will need to be explicitly described in early stages so that TLCs can be prepared to take on these new mentoring roles to subsequent TLC participants. In this way, successes are multiplied across the province and transformation is greatly accelerated.

As shown in Table 10.4 above, the suggested plan for achieving province-wide implementation is to spread the reforms in successive annual waves of 10 counties and districts until the full province is covered. After the first year in which 1–2 initial TLCs are established in each province, the second year would see TLCs launched in the next wave of jurisdictions (counties, districts and municipalities) test of scale-up. A year after that, the next round of 10 counties and districts would be launched and so on until the full province is covered.

## Notes

1. Such an environment will also be needed to execute the implementation pathways which will be included in the final report.
2. This subsection draws on the following evidence: Institute for Health Care Improvement, 2003; Hulscher and Schouten, 2009; Schouten, and Grol, 2009; Jones and Piterman, 2008; Franco and Marquez, 2011; Kritchevsky et al., 2008; Brush et al., 2009.
3. The Plan-Do-Study-Act (PDSA) cycle guides individuals and organizations to systematically test ideas for change to determine if the change can generate a viable improvement. PDSA cycles have emerged from a long tradition of hypothesis testing and change management in both science and industry. Briefly, the cycle works as follows. Teams thoroughly plan to test the change, taking into account cultural and organizational characteristics. They do the work to make the change in their standard procedures, tracking their progress using quantitative measures. They closely study the results of their work for insight on how to do better. They then act to make the successful changes permanent or to adjust the changes that need more work. This process continues serially over time and refinement is added with each cycle.
4. Similar efforts to scale reforms using the same approach have been executed in England, for example, with great success, leading to major improvements in waiting times, cardiovascular care, and patient satisfaction.
5. For example, in a project seeking to reduce cesarean sections in Brazil, teams tested various approaches to reduce financial incentives to perform C-sections. Ultimately, one of the most successful practices was to salary physicians rather than pay based on the volume of procedures performed. This had an immediate impact on C-section rates and became a key strategy that other organizations sought to implement.

# Annexes

## ANNEX 1 Levers and Recommended Core Actions

| NO. | Levers (strategic directions) | Core Action Areas |
|---|---|---|
| 1 | **Shaping Tiered Health Care Delivery System in Accordance with People-Centered Integrated Care Model** | 1: Primary health care is the first point of contact;<br>2: Functioning multidisciplinary teams;<br>3: Vertical Integration including new roles for hospitals;<br>4: Horizontal Integration;<br>5: Advanced information and communication technology (eHealth)<br>6: Integrated clinical pathways and functional dual referral systems;<br>7: Measurement, standards and feedback;<br>8: Certification. |
| 2 | **Improving Quality of Care in Support of People-Centered Integrated Care** | 1: Promote an organizational structure that can lead creation of an information base and development of strategies for quality improvement;<br>2: Systematically measure data on quality of care, and use it continuously to support quality improvements;<br>3: Transform management practice to improve quality of care in health facilities. |
| 3 | **Engaging Citizens in Support of the People-Centered Integrated Care Model** | 1: Building Health literacy;<br>2: Strengthening self-management practices to help patients manage their conditions;<br>3: Improving shared Decision-making. |
| 4 | **Reforming Public Hospitals and Improving their Performance** | 1: Develop sound organizational arrangements for public hospital governance;<br>2: Gradually increase the delegation of decision rights to hospitals;<br>3: Establish strong accountability mechanisms for autonomous public hospitals to strengthen performance ;<br>4: Align Incentives with public objectives and accountabilities;<br>5: Strengthen and professionalize managerial capacity. |
| 5 | **Realigning Incentives in Purchasing and Provider Payment** | 1: Switch from fee-for-service as a dominant method of paying providers to capitation, case-mix, and global budgets<br>2: Correct and realign incentives within a single, uniform and network-wide design in support of population health, quality and cost containment;<br>3: Correct and realign incentives to reverse the current irrational distribution of service by level of facilities;<br>4: Consolidate and strengthen the capacity of insurance agencies so as to equip them to become strategic purchasers |
| 6 | **Strengthening Health Workforce for PCIC** | 1: Build a strong enabling environment for the development of primary health care workforce to implement the PCIC mode;<br>2: Reform the compensation system to provide strong incentives for good performance;<br>3: Reform the headcount quota system so as to enable a vibrant labor market and efficient health workforce management. |
| 7 | **Strengthening Private Sector Engagement in Production and Delivery of Health Services** | 1: Develop a clear and shared vision on the private sector's potential contribution to health system goals;<br>2: Strengthen key regulations and enforcement capacity to steer the production and delivery of health services toward social goals;<br>3: Establish a level playing field across public and private providers so as to promote active private sector. |

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**ANNEX 1 Levers and Recommended Core Actions** (*continued*)

| NO. | Levers (strategic directions) | Core Action Areas |
|---|---|---|
| 8 | **Modernizing Health Service Planning to Guide Investment** | 1: Move away from the traditional input-based planning towards capital investments based upon region-specific epidemiological and demographic profiles |
| | | 2: Engage with all relevant stakeholders and local communities in the planning process; |
| | | 3: Empower and enable regions and provinces to develop their own capital investment plans; |
| | | 4: Introduce a Certificate of Need program to evaluate and approve new capital investments in the health sector; |
| | | 5: Prioritize community health projects. |

## ANNEX 2 Government Policies In Support of the Eight Levers

| Levers | Inventory of Government policy statement in support of each lever | Reference |
|---|---|---|
| **1. Shaping a tiered health care delivery system in accordance with the People-Centered Integrated Care Model** | • Adhere to the people-first principle and attach primary importance to safeguarding the rights and interests of the people's health.<br>• Adhere to the tenet of serving the people's health with health care undertakings; regard safeguarding the people's health as the center, and take the entitlement of basic health care services to everyone as the fundamental aim and outcome.<br>• Emphasize the combination of prevention, treatment and rehabilitation. Strengthen the prevention of chronic diseases.<br>• Make the community health to be the "gate-keeper". Strengthen the three tiered health service net in rural area. Improve the health service system based on the TCH.<br>• Promote the construction of health care information system. Take advantage of the network information technology to promote the cooperation between urban hospitals and community health service institutions.<br>• Establish a coordinated service system, and on the basis of enhancing grassroots service, optimize allocation of resources with the application of legal, social, administrative and market tools to improve the quality of medical care and guide reasonable medical treatment.<br>• Establish the multi-level diagnosis and treatment model characterized by initial diagnosis by grassroots institutions, two-way referral system, separate treatments for urgent and chronic disease and close cooperation between hospitals at different levels.<br>• Focusing on the cultivation of general practitioners, establish the system of basic medical and health personnel training. | • Opinions of the CPC Central Committee and the State Council on Deepening the Health Care System Reform( ZHONG FA[2009] No.6)<br>• The Notification on Health Sector "Twelfth Five-Year Plan"( GUO FA[2012] NO.57)<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development<br>• Guidance of the General Office of the State Council on Overall Pilot Reform of Urban Public Hospitals( Guo Ban Fa[2015] No.38)<br>• The state council general office opinions on the fully implementation of comprehensive reform in the county level public hospital (Guo Ban Fa[2015] No.33)<br>• Planning Layout of National Medical and Health Services System (2015–2020)" (Guo Ban Fa [2015] No.14)<br>• Construction planning of grassroots health professionals focusing on the general practitioners( FA GAI SHE HUI[2010]NO.561)<br>• Guidance of the General Office of the State Council on promoting multi-level diagnosis and treatment system (Guo Ban Fa [2015] No. 70)<br>• The Guiding Opinions on Further Regulating Community Health Service Management and Improving Health Service Quality(GUO WEI JI CENG FA[2015] NO.93) |
| **2. Improving technical quality and personal experience of care** | • Strengthen the regulation on health care service behavior and quality, improve the health care service standards and quality evaluation system, regulate the management system and work flows, quicken the formulation of the treatment protocols, and complete the health care service quality surveillance networks.<br>• Enhance the management and control of medical quality. Clinical examination, diagnosis, treatment, drug use and the use of implant medical apparatus should be regulated. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development |

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**ANNEX 2 Government Policies In Support of the Eight Levers** (*continued*)

| Levers | Inventory of Government policy statement in support of each lever | Reference |
|---|---|---|
| **3. Engaging citizens in support of PCIC** | • Strengthen health promotion and education. Carry out health education, strengthen the dissemination of medical and health knowledge, advocate healthy and civilized lifestyle, promote rational nutrition among the public, and enhance the health awareness and self-care ability of the people.<br>• Build sound and harmonious relations between health care workers and patients.<br>• Investigate timely to irrational use of drugs, material, examination, and repetitive examinations for economic benefit.<br>• Promote the transparency of hospital information and establish a regular display system, including financial situation, performance assessment, quality safety, price and inpatient cost and etc. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Guo Ban Fa [2015] No.14<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development<br>• GUO WEI JI CENG FA[2015] NO.93 |
| **4. Reforming public hospitals and improving their performance** | • Transform government functions, promote separation of functions of government agencies and public institutions, and separation of administration and business operations.<br>• Perfect the management mechanism of public hospitals, and complete corporate legal person management system.<br>• Promote the innovation in modern hospital management, and promote the professional specialization of dean team, improve the level of public hospital management. Implement the autonomous right of the public hospitals, such as personnel management, internal distribution and operations management. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development |
| **5. Realigning incentives in purchasing and provider payment** | • Along with economic and social development, efforts should be made to uplift the fund raising and pooling levels step by step, narrow the gap between different insurance schemes, and eventually achieve the fundamental unity of those schemes.<br>• Explore the establishment of an integrated urban and rural health insurance scheme.<br>• Implement the reform of the mode of health insurance payment.<br>• Utilize the fundamental function of health insurance, strengthen the budget for revenues and expenditures of medical insurance fund, and establish various payment methods, in which payment according to the type of disease is the major form and other forms like payment by person, payment by service unit may also be used. Promote the diagnosis related group system (DRGS).<br>• Establish effective, open and fair negotiation mechanism and risk sharing mechanism between the insurance agencies and designated medical institutions.<br>• Establish the restriction mechanism of medial expense growth, control the unreasonable growth.<br>• Implement the basic health insurance settlement directly, and cost accounting and control. The various health insurances should regulate, control, supervise and restrict the behavior of medical service and medical price, effectively control medical cost, and regulate the medical service behavior of the working staff. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Opinions on implementing the control of total medical insurance payment (REN SHE BU FA[2012]No.70)<br>• Notification of pilot of DRGs reform ( FA GAI JIA GE[2011] No.674)<br>• Opinions on further improving the reform of health insurance payment( REN SHE BU FA[2011]No.63)<br>• Guo Ban Fa [2015] No. 70<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development |

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**ANNEX 2 Government Policies In Support of the Eight Levers** (*continued*)

| Levers | Inventory of Government policy statement in support of each lever | Reference |
|---|---|---|
| **6. Developing a qualified and motivated health workforce at all levels of care** | • Promote the medical talent system and innovation of mechanism.<br>• Establish the reasonable incentives of income distributions, and improve the treatment of medical staff. Establish a personnel system and salary system suitable for the medical industry. The salary of the medical staff should not be linked with the profit.<br>• Implement the system of comprehensive performance evaluation and post-performance based salary in line with service quality and workload, and effectively mobilize the initiatives of health care workers.<br>• Deepen the reform of headcount quota system. In terms of headcount setting, income distribution, professional title evaluation, management and deployment, personnel inside or outside the authorized size should be considered as a whole, and the reform of endowment insurance system should be carried out according to national regulation.<br>• Adopt the employment system and post management system, establish a flexible employment mechanism. Ensure the autonomous right of the public hospitals in recruiting people.<br>• Promote registered physicians multi-sited practice. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Guo Ban Fa [2015] No.14<br>• Several opinions on promoting and regulating doctors multi-sited practice(GUO WEI YI FA[2014]No.86)<br>• Guo Ban Fa [2015] No. 70<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development<br>• GUO WEI JI CENG FA[2015] NO.93 |
| **7. Strengthening private sector engagement in production and delivery of health services** | • Encourage and guide social capital to sponsor health care undertakings.<br>• Promote the development of non-public health care institutions, and form a health care system with multiple categories of investors and diversified investment modes. Encourage social forces to invest in medical industry through funding new construction or participating restructuring.<br>• Encourage and promote the incentives of non-public hospitals.<br>• Further easing entry requirements.<br>• Carry out the tax policy of non-public hospitals.<br>• Carry out the same policies with the public hospitals when the non-public hospitals is a designated medical institution.<br>• Improve classification management of medical institutions, introduce the regulation of nonprofit hospitals, such as the nature of business, the usage of surplus. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Guo Ban Fa [2015] No.14<br>• Several policy measures to accelerate the development of medical institutions sponsored by social force .(Guo Ban Fa[2015]No.45)<br>• Notification on launching the pilot of establishing wholly foreign-owned hospitals( GUO WEI YI HAN[2014] No.244)<br>• The state council general office opinions on further encourage and guide the social capital to hold a medical institution ( Guo Ban Fa[2010] No.58)<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development<br>• GUO WEI JI CENG FA[2015] NO.93 |

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**ANNEX 2 Government Policies In Support of the Eight Levers** (*continued*)

| Levers | Inventory of Government policy statement in support of each lever | Reference |
|---|---|---|
| **8. Modernizing health service planning to guide investment** | • Strengthen regional health planning<br>• Optimize medical resources allocation.<br>• Plan resources in a differentiated manner at different levels. At city level and below, basic medical services and public health resources will be planned according to size of population and service radius; at provincial level and above, resources will be planned according to needs and priorities in different regions.<br>• Instruct the health facilities to procure equipment in a rational manner according to their functions, skill competency, disciplinary development and health needs of the general public and in the spirit of resource sharing.<br>• The planning's implementation condition should be taken as the basis of the hospital construction, financial investment, performance assessment, medical insurance payment, personnel allocation and beds arrangement. The constraint of planning should be enhanced and the execution condition of the planning should be made public regularly. | • ZHONG FA[2009] No.6<br>• GUO FA[2012] NO.57<br>• Guo Ban Fa[2015] No.38<br>• Guo Ban Fa[2015] No.33<br>• Guo Ban Fa[2015]No.45<br>• Guo Ban Fa [2015] No.14<br>• Guo Ban Fa [2015] No. 70<br>• Suggestions of the CPC Committee on the 13th Five-Year Plan for National Economic and Social Development |

**ANNEX 3 New Policy Guidelines on Tiered Service Delivery (Guo Ban Fa [2015] NO.70) and Recommended Core Actions**

| NO. | Policy Guideline | Levers Supporting the Policy Guideline | Specific Core Actions Supporting Policy Guideline |
|---|---|---|---|
| 1 | First diagnosis at the grassroots | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Primary health care is the first point of contact; |
| 2 | Dual referral | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Integrated clinical pathways and functional dual referral systems; |
| 3 | Interaction between the upper and grassroots | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Vertical Integration, including new roles for hospitals; |
| 4 | Specify diagnosis and treatment functions of medical institutions of different grades and categories. | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Vertical Integration, including new roles for hospitals; |
| 5 | Enhance capability building of the grassroots health care team | Strengthening Health Workforce for PCIC (Lever 6) | Build a strong enabling environment for the development;<br>Reform the compensation system to provide strong; |
| 6 | Enhance grassroots capability in health care | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1);<br>Realigning Incentives in Purchasing and Provider Payment (Lever 5);<br>Strengthening Private Sector Engagement in Production and Delivery of Health Services(Lever 7); | Vertical Integration, including new roles for hospitals;<br>Correct and realign incentives to reverse the current irrational distribution of service by level of facilities;<br>Develop a clear and shared vision on the private sector's potential contribution to health system goals; |
| 7 | Consolidate sharing of regional medical resources | Realigning Incentives in Purchasing and Provider Payment | Correct and realign incentives to reverse the current irrational distribution of service by level of facilities; |
| 8 | Speed up health care informationization | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Advanced information and communication technology (eHealth); |
| 9 | Improve medical resources reasonable allocation mechanism | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Vertical Integration, including new roles for hospitals; |
| | | Realigning Incentives in Purchasing and Provider Payment(Lever 5) | Correct and realign incentives to reverse the current irrational distribution of service by level of facilities; |
| 10 | Improve medical insurance payment system reform | Realigning Incentives in Purchasing and Provider Payment(Lever 5) | Correct and realign incentives within a single, uniform and network-wide design in support of population health, quality and cost containment;<br>Correct and realign incentives to reverse the current irrational distribution of service by level of facilities; |

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**ANNEX 3 New Policy Guidelines on Tiered Service Delivery (Guo Ban Fa [2015] NO.70) and Recommended Core Actions** (*continued*)

| NO. | Policy Guideline | Levers Supporting the Policy Guideline | Specific Core Actions Supporting Policy Guideline |
|---|---|---|---|
| 11 | Establish and improve profit distribution mechanism | Realigning Incentives in Purchasing and Provider Payment(Lever 5) | Consolidate and strengthen the capacity of insurance agencies so as to equip them to become strategic purchasers; |
| 12 | Structure a division of labor and coordination mechanism for medical institutions | Shaping health care delivery in accordance with the People-Centered Integrated Care Model (Lever1) | Vertical Integration, including new roles for hospitals; |

*Note:* New policy refers to the "Guidance of the General Office of the State Council on Promoting Multi-level Diagnosis and Treatment System ( Guo Ban Fa [2015]NO.70)".

## ANNEX 4 Nomenclature and Summaries of 22 PCIC Performance Improvement Initiatives

| PCIC Performance Improvement Initiative | Description |
|---|---|
| **Chinese Case Studies** | |
| Jiangsu, Zhenjiang – Great Health (GH)<br>In text reference:<br>***Zhenjiang, GH*** | Zhenjiang city, situated on the Yangtze River in eastern China, implemented the Great Health initiative in 2011 to service its two main districts. Through this initiative, two healthcare groups, Rehabilitation Healthcare Group and Jiangbin Healthcare Group, were created that focused on vertical and horizontal integration with new 3+X family health teams managing the care of all contracted residents. |
| Shanghai – Family Doctor System (FDS)<br>In text reference:<br>***Shanghai, FDS*** | Huangpu and Pudong, two neighboring districts within coastal Shanghai, China, implemented the family doctor system (FDS) in April 2011; this case study focused on five community health centers within these districts. The FDS centered on strengthening the relationship between the general practitioner and contracted resident by using empanelment and improved frontline service delivery to establish a continuous healthcare relationship with a particular focus on the management of chronic diseases. |
| Qinghai, Huangzhong – Health Care Alliance (HCA)<br>In text reference:<br>***Huangzhong, HCA*** | Located in the northwest part of China, Huangzhong County of Qinghai Province implemented a health care alliance (HCA) system in 2013 with the plan to vertically integrate county, township, and village health centers. By focusing on creating a unified administration, integration of human resources, tight dual referral arrangement, interconnection health information systems (HIS), and shared medical resources, an integrated "county-township-village" health system emerged. |
| Zhejiang, Hangzhou – Twelfth Five Year (TFY)<br>In text reference:<br>***Hangzhou, TFY*** | Hangzhou, the capital of Zhejiang province in China, is home to over eight million individuals, and has traditionally struggled with providing equal and sufficient health care to its citizens. In an effort to curb such obstacles, the 12th Five Year Plan was implemented in 2011, and key aspects included integrated e-consultation services, non-communicable disease joint centers, and collaborative services for medical and living support and nursing care. |
| Anhui, Feixi – Strengthening the Capacity of Primary Health Care (SCPHC)<br>In text reference:<br>***Feixi, SCPHC*** | Feixi County of Anhui Province is located in the eastern part of China with a population of roughly 850,000 citizens. In 2009, Feixi became the pilot site for the initiative, "Strengthening the Primary Health Care Capacity" as set forth by the government, which focused on strengthening four sectors: 1) human resources, 2) network building, 3) organization and management, and 4) working conditions. |
| Henan, Xi – Integrated Care (IC)<br>In text reference:<br>***Xi, IC*** | The Integrated Care (IC) Reform in Xi, China addressed low quality of care for non-communicable diseases and disjointed health systems by implementing contracts between county hospitals, township health centers, and village clinics in 2012. The initiative focused on building a strong referral mechanism, providing technical assistance to lower-level facilities, and altering the payment system to support cost sharing, all of which has had considerable success even in its early stages. |
| Beijing – Beijing Chaoyang Hospital Alliance (CHA), Four Cases<br>In text reference:<br>***Beijing, CHA*** | The Beijing Chaoyang Hospital Alliance, started in late 2012, aimed to attract patients to utilize community health centers more frequently for minor ailments and strengthen the collaboration between upper- and lower-level facilities. The CHA was composed of a core hospital, a second tertiary hospital, a secondary hospital, and a number of community health centers, which coordinated care for patients; as a result of this structure, the growth rate of participating facilities rose from 2012 to 2013. |

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**ANNEX 4 Nomenclature and Summaries of 22 PCIC Performance Improvement Initiatives** (*continued*)

| PCIC Performance Improvement Initiative | Description |
|---|---|
| Beijing – Peking University-Renmin Hospital Integrated Delivery System (PKU IDS), Four cases<br>In text reference:<br>***Beijing, PKU IDS*** | Started in 2007, the PKU-Renmin Hospital IDS in Beijing targeted increased technical assistance between health facilities and improved communication between providers through an information technology system. Through this system, providers were able to engage in tele-discussions and specialist education and training thus supplementing available advanced studies for all providers in the IDS. |
| Shanghai – Shanghai Ruijin-Luwan Hospital Groups (RLG), Four Cases<br>In text reference:<br>***Shanghai, RLG*** | In 2011, the Shanghai Reuijin-Luwan Groups was established, consisting of Shanghai Jiaotong University as its core hospital, two secondary hospitals, and four community health centers, which serviced people in the immediate area. This healthcare group created a shared imaging and testing center that increased access for residents, provided "specialist-GP joint outpatient" visits for patients in community health centers, and strengthened its previously-existing primary care provider training base. |
| Jiangsu, Zhenjiang – Jiangsu Zhenjiang Kangfu Hospital Groups (ZKG), Four cases<br>In text reference:<br>***Zhenjiang, ZKG*** | Jiangsu Zhenjiang Kangfu Hospital Groups began in late 2009 in Zhenjiang, China. This initiative integrated imaging, chemical laboratory, and pathological test departments and required primary health care facilities to take more responsibility for chronic disease outpatient services. Additionally, the hospital group established 3+X health teams and supported more frequent information exchange. |
| **International Case Studies** | |
| Denmark – The integrated effort for people living with chronic diseases (SIKS)<br>In text reference:<br>***Denmark, SIKS*** | Denmark piloted its chronic disease rehabilitation programs in Copenhagen with four centers, called SIKS rehabilitation centers. Due to the success of the SIKS centers, Denmark embarked on a national Disease Management Program, which provides integrated comprehensive chronic disease care. |
| England, James Cook University Hospital (JCUH) – Ambulatory Emergency Care (AEC)<br>In text reference:<br>***JCUH, AEC*** | The James Cook University Hospital is located in northern England. Hospitals are public, but semi-autonomous. In the early 2000s, it developed an Ambulatory Emergency Care Center where patients could receive same-day care using pre-determined clinical guidelines for certain conditions instead of being hospitalized. Simultaneously, they developed patient care pathways and explicitly strengthened the interface between primary care physicians and the hospitals. |
| Germany, Kinzigtal – Gesundes Kinzigtal (GK)<br>In text reference:<br>***Kinzigtal, GK*** | Gesundes Kinzigtal, located in the Black Forest area, of Germany, launched in 2005 a unification of a non-profit, physician-run organization, MQNK, and OptiMedis, a health science management and investment company. The integrated organizational model focused on improving the health of the population as well as patient experience while considering a fair business plan that appropriately incentivized patients and providers to join. |
| Netherlands – Maastricht Diabetes Care (DTC)<br>In text reference:<br>***Netherlands, DTC*** | The Maastricht region in the south of the Netherlands developed an integrated framework for diabetes care where the insurers negotiate with the primary care physicians a price for a complete package of care for a specific disease. Based on its success, the Netherlands expanded this program nationwide in 2010. |
| New Zealand, Canterbury – Health Services Plan (HSP)<br>In text reference:<br>***Canterbury, HSP*** | Canterbury, a district in the central part of New Zealand developed its Health Services Plan in 2007. The plan included initiatives like the Acute Demand Management Services, HealthPathways standardizing care for hundreds of conditions, and the Community Rehabilitation and Enablement Support Team. Concurrent enabling initiatives including electronic medical record system, electronic referral system, clinical continuing education programs, and formal alliance between healthcare facilities supported their mission of developing people-centered, coordinated, and integrated healthcare. |

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**ANNEX 4 Nomenclature and Summaries of 22 PCIC Performance Improvement Initiatives** (*continued*)

| PCIC Performance Improvement Initiative | Description |
|---|---|
| Norway, Fosen – District Medical Center (DMC)<br>In text reference:<br>***Fosen, DMC*** | Fosen, Norway, a municipality in fjords of Northern Norway, developed a comprehensive District Medical Center model. The DMC provides integrated, coordinated, acute medical care to people in their community in order to avoid hospital stays. In 2012, Norway modeled its national health care initiative off of Fosen's successful DMC model. |
| Portugal – Local Health Unit (ULS)<br>In text reference:<br>***Portugal, ULS*** | In 1999, a small province in the Northwest of Portugal created a Local Health Unit (ULS) that provides integrated primary and secondary care to a defined geographic area (Matosinhos) with centralized management and coordinated services. 2007 onwards, 7 more ULS have been established and now serve 10 percent of the Portuguese population. |
| Singapore – Regional Health Systems (RHS)<br>In text reference:<br>***Singapore, RHS*** | Singapore reorganized its health care system by developing six Regional Health Systems, which aim to provide horizontally and vertically integrated healthcare ecosystems. RHSs each innovated and developed interventions to provide integrated coordinated care. Some examples of these interventions include Aged Care Transition, Ageing in Place, Post-Acute Care at Home, Community Health Assist Schemes, Family Medicine Centers, and Integrated Care Pathways. |
| Turkey – Health Transition Plan (HTP)<br>In text reference:<br>***Turkey, HTP*** | Turkey's 2003 National Health Transformation Program focused on the establishment of high quality, family medicine centers accountable for individual and population health in every district of the country. Restructuring of hospitals, physician payment, data management and national health insurance facilitated this transformation. |
| United States, Maryland – CareFirst Patient Centered Medical Home<br>In text reference:<br>***Maryland, CareFirst*** | This case study describes the Patient-Centered Medical Home payment model created by the health insurance company CareFirst of Maryland. Support from the insurance company and a new financial incentive structure supported improvement of frontline delivery services across the state, resulting in improved quality and lower utilization of hospital and specialty care services. |
| United States – Program for All-Inclusive Care for the Elderly (PACE)<br>In text reference:<br>***US, PACE*** | PACE Centers across the country provide coordinated, integrated, holistic care for frail nursing home eligible patients in their own homes. Funded by capitation payments from Medicare and Medicaid, PACE centers each care for around 300 patients. The PACE model originated in California and has now spread to 30 states in the US. |
| United States, Veterans Health Administration – Patient-Aligned Care Teams (PACT)<br>In text reference:<br>***VHA, PACT*** | Across the United States the Patient Centered Medical Home (PCMH) model has been used to integrate and improve primary care. The Veterans Health Administration drew on the PCMH model and created the Patient-Aligned Care Team (PACT) model to reorganize the way they provide primary care and integrate vertically with the rest of the system. VHA primary care is now based entirely on multidisciplinary team-based model, with early evidence of success. |

## ANNEX 5 Impact Frequency of Studies on PCIC Initiatives (no. of studies)

| Model | Impact | Hospitalizations and Emergency Department (ED) use | Processes of care | Intermediate health outcomes and mortality | Patient experience | Costs | Citation |
|---|---|---|---|---|---|---|---|
| General PCIC (52 studies) | Improvement | 17 | 7 | 21 | 9 | 22 | Nolte and Pitchforth (2014); Hildebrandt et al, (2015); Schulte et al. (2014); World Bank (2015); Guanais & Macinko (2009); Macinko et al (2011) |
| | No change or worsened | 5 | 4 | 10 | 1 | 2 | |
| | Insufficient/Inconclusive evidence, or not measured | 30 | 41 | 21 | 42 | 28 | |
| PCMH (14 interventions) | Improvement | 12 | 7 | 4 | 2 | 6 | Reid et al (2010); Reid et al (2013); Gilfillan et al (2010); van Hasselt et al (2015); Rosenthal et al (2013); Nelson et al (2014); Werner et al (2014); Hebert et al (2014); Bitton (2015); DeVries et al (2012); Fifield et al (2013); Friedberg et al (2014); Wang et al (2014); Friedberg et al (2015); World Bank (2015) |
| | No change or worsened | 2 | 1 | 1 | 0 | 2 | |
| | Insufficient/Inconclusive evidence, or not measured | 0 | 6 | 9 | 12 | | |
| PACE (16 studies) | Improvement | 9 | 0 | 7 | 1 | 0 | Beauchamp et al. (2008); Chatterji et al. (1998); Weaver et al. (2008); Mukamel, Bajorska, & Temkin-Greener (2002); Temkin-Greener, Bajorska, & Mukamel (2008); Kane et al. (2006b); Kane et al. (2006a); Meret-Hanke (2011); Wieland et al. (2000); Division of Health Care Finance & Policy (2005); Kane, Homyak, & Bershadsky (2002); Mukamel et al. (2006); Mukamel et al. (2007); Wieland et al. (2010); Mancuso, Yamashiro, & Felver (2005); Mukamel, Temkin-Greener, & Clark (1998) |
| | No change or worsened | 1 | 0 | 1 | 3 | 0 | |
| | Insufficient/Inconclusive evidence, or not measured | 6 | 16 | 8 | 12 | 16 | |
| Disease/Case management (257 studies) | Improvement | 82 | 22 | 64 | 28 | 34 | Nolte and Pitchforth (2014); Runz-Jørgensen and Frølich (2015), Frølich et al (2015); Vadstrup et al (2011); Elissen et al (2012); Elissen et al (2015); Struijs et al (2012); Struijs et al (2012b) |
| | No change or worsened | 29 | 6 | 25 | 8 | 37 | |
| | Insufficient/Inconclusive evidence | 17 | 0 | 14 | 10 | 9 | |
| | Not measured | 129 | 229 | 154 | 211 | 178 | |
| China (6 case studies) | Improvement | 1 | 6 | 1 | 1 | 2 | World Bank (2015) |
| | No change or worsened | 0 | 0 | 0 | 0 | 0 | |
| | Insufficient/Inconclusive evidence | 5 | 0 | 5 | 5 | 4 | |

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