

Country Health Systems Surveillance

CHINA¹

1 Background

The scale-up for better health is unprecedented in both potential resources and the number of initiatives involved. This includes both international and domestic resources. Such a scale-up requires a harmonized and strategic monitoring and evaluation effort that reinforces both country and global needs to demonstrate results, secures future funding, and enhances the evidence base for interventions. The Country Health Systems Surveillance platform (CHeSS) is a multi-partner effort led by WHO that aims to improve the availability, quality and use of the data needed to inform country health sector reviews and planning processes, and to monitor health-system performance.² The three dimensions of CHeSS are strengthening demand and use of information, improving supply of quality data and statistics for decision making, and enhancing institutional capacity for assessment and monitoring of performance.

China has made major progress in health, as demonstrated by the increase in life expectancy from 46 years in the 1950s to 73 years in 2005. It is also recognized that there are still major challenges in terms of, for instance, distribution between urban and rural populations, equity, financial risk protection and quality of services. The government has recognized these challenges and demonstrated its commitment to universal coverage of basic health care by 2020.

In April 2009, the State Council Health-Care Reform Leading Group announced the health reform blueprint to achieve universal coverage by 2020. The plan focuses on major structural change in five areas over the next three years: a) expanding the health security system, b) establishing the essential medicines system, c) strengthening the capacity of primary care facilities, d) reducing gaps in coverage of public health services, and e) reforming the financing mechanisms for public hospitals by reducing the hospital's dependence on drug revenues. The 2009-2011 implementation plan is backed by an investment of 850 billion yuan (USD 124 billion) from central and regional governments.

¹ Report prepared by WHO HQ (Ties Boerma), Regional Office (Gao Jun) and Country Office (Sarah Barber), based on discussions with Ministry of Health, CHIE, and development partners, May 6-12 2009, based on meetings with the Center for Health Statistics and Information, and Center for Disease Control and Prevention at the Ministry of Health, China Institute for Health Economics, World Bank, the Development Research Council of the State Council, UNAIDS, Global Fund, UNICEF, UNFPA and selected bilateral donors.

² Country Health Systems Surveillance. Report of a meeting in Bellagio, October 2008. WHO and Rockefeller Foundation.

Critical questions remain about how the health system is responding to both structural changes and the large influx of additional resources. Specifically, there is a need to know how the reform is progressing, and whether these efforts are achieving improved results in terms of access, quality, and outcomes across China. Some attention has been paid so far to systematic monitoring and evaluation of health reforms, and the systems required to effectively communicate information to all stakeholders, and inform and refine the policy-making processes.³

2 Demand and use of information

2.1 Country review processes and mechanisms

The Chinese government's 11th Five-Year Plan (2006-2011) forms the basis of social and economic policies. In health, all attention is now focused on the health reform plan implementation, monitoring and evaluation. In addition, the Ministry of Health is working on their Healthy China 2020 strategy, which includes disease- and condition-specific programs. Each year an internal review is conducted led by the Ministry of Health. It does not involve international partners. The Center for Health Statistics and Information (CHSI) of the Ministry of Health prepares and analysis of the current situation to inform the discussion. The Department of Policy and Legislation and MoH officials are the main user of the health statistics produced by CHSI. International health partners, Development Research Council (DRC, part of State Council which is supra ministerial), and the Ministry of Finance are also important users of health statistics.

There are also substantial resources going into disease specific plans such as HIV and TB, which are partly supported by international partners such as the Global Fund (\$1 bln in the coming years). For TB, these efforts are fully integrated with the national monitoring system; for HIV/AIDS, the system is fragmented and hampered by the complexity of the interventions and the large numbers of indicators.

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Health information resources are not well-aligned within ministries, between ministries, between international partners and between ministries and international partners. In the context of the health reforms, it will be important that all key actors are buying into one common framework for monitoring health systems progress and performance, including the disease programmes.

³ Several efforts are in process. For instance, the WHO Country Office has received several proposals related to assessment of changes related to health reform, from the Ministry of Health and China Health Economics Institute.

Based on the five areas outlined in the health reform blueprint and three-year implementation plan, specific indicators are being identified to measure progress. Understandably, the initial focus has been on process evaluation to identify whether the basic structures outlined in the health reform (pharmaceutical, service delivery, public health, and social security systems) have been effectively implemented, particularly in pilot areas. However, it is important to maintain an emphasis on whether such structural inputs and policy changes are having an impact on better health outcomes and risk protection. Identifying a small set of impact indicators can inform more about progress compared with long lists of process indicators, if contextual factors can be taken into account. The government is keen on short term concrete results of the health care reforms, which will predominantly occur in process indicators, such as access to health services, waiting time in hospitals, and affordability of services. It regards quality of services and equity as major issues.

2.2 Framework and Indicators

In 2002, China released the Guidelines for the Development of National Health Information & Planning, 2003-2010. The guidelines outline a series of objectives for the establishment of a comprehensive health information system. In 2006, the Ministry of Health was supported by the Health Metrics Network (HMN) to conduct a self assessment of progress towards establishing a health information system, using the HMN standard assessment tool (see Box).

Health Metrics Network self-assessment Ministry of Health, China, 2006 of the health information system: conclusions

Strengths:

- Established administrative and organization al framework;
- Comprehensive data collection methods and indicators;
- Improved health statistical legal and regulatory framework;

Weaknesses:

- Unbalanced HIS development across the country, especially poor infrastructure in west areas;
- Lack of adequate and skilled human resource leading to poor quality of data;
- Overlap among different subsystems resulting in over burden in information providers;
- Lack of adequate integration among subsystems.

Opportunity for future development:

- Health reform and SARS outbreak bringing more attention to health information and HIS development;

Threat future development:

- Inadequate financial resources
- Fragmented administrative system

The goals and targets for Healthy China 2020 are also under development. Fourteen action plans have been defined. The China Health Economics Institute (CHEI) is developing a draft for the M&E plan and has established six expert groups with the China Academy of Sciences. The link between the M&E component of Healthy China 2020 and the health reform has not (yet) been developed.

The Center for Health Statistics and Informatics (CHSI) of the Ministry of Health is developing a set of indicators to monitor the health reform. Those indicators been selected mainly based on the proposed interventions mentioned in the health reform document. At present, there is no single framework to guide the selection of the indicators. In 2007, the Department for Policy and Legislation, however, has developed a framework based on those used in Australia and Malaysia.

The World Bank, in collaboration with DFID, provides supports to the new rural health project, which can be considered a pilot for the health reform. It uses 22 indicators for monitoring changes in 40 project counties of the \$50 million project, of which approximately \$ 5 million is dedicated to monitoring and evaluation. WHO has a MoU with the World Bank to provide technical advisory support to this project. The World Bank is also planning to provide resourcers for a impact evaluation training in China.

The Global Fund round 8 grant is large (\$500 million) and discussions are ongoing on the development of a M&E component, which conceivably could use 5-10% of the total grant. The Global Fund M&E systems assessment tool will be used in 2009 as a pre-condition for the grant.

In the context of the "xiaokang" (harmonious society) process indicators have been selected to monitor the performance of the government and central and subnational levels with special reference to equity and provided to the National Development Research Council. The 20 health indicators cover the main areas of the health systems framework and build upon the core set of indicators and metadata of the WHO Health Statistics.

3 Supply of data and statistics

3.1 Data sources

Vital events

- Census: conducted in 1982, 1990, 2000, includes child mortality questions; intercensus surveys (1% sample): 1995 and 2005; mortality questions. The next census is in 2010.
- Vital registration system covers about 8% of China's population, but is biased towards urban populations and those living in the eastern part of the country. It is maintained by the Ministry of Health; there are plans to expand the number of vital registration sites to 260-300 to make it more representative for monitoring the health reforms (20% of China's population).
- The Demographic Surveillance Points (DSP) system, run by CDC, is conducted in a random sample of 161 counties across China - population about 70 million people and provides data on births, death and causes of death. The most recent data received by WHO concern 2004, when the lower mortality rates were a cause for concerns about the quality of the DSP. The system changed in 2001-03 and data quality has been of a concern of CDC as well. A web-based reporting system for deaths was initiated in 2008 and is expected to lead to improvement in reporting and possibly data quality.
- The vital registration and DSP systems are running independently. A rapid scaling up of vital registration may be feasible.
- Maternal & Child Health Care Surveillance System: collects annual information on maternal & child mortality from 336 counties (the number was doubled in 2007) and includes community data collected by primary health care workers; this system is run by the

Department of Maternal and Child Health and also provides estimates of infant and child mortality. There is a data quality control component. For maternal mortality and even larger number of counties is used to collect data.

Population-based surveys

- National Household Health Services Survey: CHSI of the Ministry of Health conducts a health interview survey, which collects information on health status, access to care, satisfaction, demands and utilization, expenditure, and risk behavior such as smoking and alcohol, every 5 years. The most recent survey was conducted in 2008 and included 46,400 households in 94 counties in all provinces (about 137,000 respondents). The results are expected in July 2009. It is also intended to function as a baseline survey for the health reforms, including new topics related to the reform and cooperative medical scheme (CMS).
- Cancer epidemiology surveys, which collect cause of death information for all causes, the first for the period 1973-75, the nineties, the third in 2004-05 (CDC). The surveys include hospital data and verbal autopsy in the DSP.
- Adult chronic diseases risk factor surveillance survey (CDC): sample based on the DSP in 145 counties, nation-wide with 33,000 households, including anthropometry and blood pressure: 2004, 2007. The analytical report for the 2007 survey has not yet been published by May 2009.
- TB prevalence survey: last survey was conducted in 2000, implemented by China CDC. The planned 2010 survey will have a sample size of 1,700,000 (850 clusters of 2,000 persons each). The aim is to get national and provincial prevalence data. A national drug resistance survey was conducted in 2008.
- Health and nutrition surveys (CDC): 1982, 1992, 2002, each about 10,000 households
- The China Bureau of Statistics is responsible for economic surveys and the 1% sample demographic surveys in inter-censal period. The economic surveys are an important source of information for catastrophic expenses related indicators.
- Ministry of Human Resources and Social Security (MoHRSS), Institute of Social Insurance, collects data from 17 cities about the roll-out of the urban health insurance program. The China Health Economic Institute has instituted a reporting system to collect data about the implementation of the rural health insurance program.
- Longitudinal studies which could inform health progress and performance. These include:
 - Longitudinal longevity survey: 15,000 persons 65 years and over in 22 provinces: 1998, 2000, 2002, 2005
 - Health and nutrition longitudinal survey: 18,000 urban and 9,000 rural residents with biomarkers in 9 provinces, done with University of North Carolina at Chapel Hill: 1989, 1991, 1993, 1997, 2000, 2004, 2006
 - Study on Aging and Health (WHO): 2008 sample follow up of World Health Survey sample in 2003, in five provinces and expanded.

Facility data

- Routine Health Statistic Information System or Health Management Information System (HMIS), which is annually collecting information and data on health facilities, human resources, equipment & services provided to outpatients and in-patients ;
 - Led by the CHSI of the Ministry of Health.
 - The frequency of reporting is being increased from annual to quarterly and even monthly for some indicators; the reporting system is increasingly web based.

- There is a major effort to introduce electronic health records (individual based) and electronic medical records (based on interactions with health care facilities); standards have been developed and open source software is being pilot tested in several parts of China. The EHR/EMR records should contain a set of standard information that will be in the public domain and is stored in 44 data bases (e.g. vaccination, birth and delivery, maternal, child growth and development).
- The system includes financial and human resource information
- Data quality is of concern, especially from rural facilities (and private facilities, especially financial data); the web-based system is expected to improve data quality
- In 2007, an assessment was conducted in two provinces and observed adequate accuracy and completeness of the recording and reporting systems.
- China Information System for Disease Control and Prevention: a web-based reporting system on more than 30 infectious diseases, including TB, AIDS and measles. All major facilities report directly and electronically to the Ministry of Health.
- Health Supervision Information System: collects annual information on food, public facilities, and schools as well as on environmental change.

Facility assessments

- The National Health Services survey also includes a facility survey. Otherwise, there is no system of independent facility assessments of the availability and quality of services and records: most information is generated through the routine reporting system.

Administrative data

- Financial data: there is a national system of tracking budgets and expenditures, but no private sector. The national system cannot adequately track budgets and expenditures by the subnational /district level. NHA provides little information on health expenditure by major diseases and subnational information. The China National Health Economics Institute publishes a China National Health Account report every year. This report has just been published with 2008 data (in Chinese with tables in English).
- Human resources: HR database kept by the CHSI of the Ministry of Health, with provincial and county level data. The records mainly refer to the public sector workers but efforts are made to include the private sector. The Health Human resource book published in 2006 provided a synthesis of all available information, using the annual organization based surveys, the three yearly individual based surveys and annual village clinic surveys.⁴
- Drugs: antibiotic use (173 general and tertiary hospitals) and antibiotic resistance monitoring (128 tertiary hospitals) systems are in place. The former includes drug prices.

3.2 Data quality control mechanisms

At present, there is no system of assessing data quality and making adjustments. For instance, there are no data on completeness, timeliness and accuracy of reporting, or adjustments made to health facility based coverage estimates based on population-based surveys.

The following assessments have taken place in recent years:

⁴ Anand S et al. China's human resources for health: quantity, quality and distribution. Lancet 2008, 372, 1774-81.

- 2005 Mortality surveillance: assessment of completeness and quality of vital registration and DSP systems⁵
- 2006 HMN self assessment of health information system
- 2008 Facility information system (HMIS) in two provinces by MEASURE Evaluation-JSI
- 2009 Global Fund M&E self assessment (MESS), required for grants.

3.3 Access, analysis and dissemination

Statistics - publications

- The Chinese Health Statistical Digest has a wealth of information generated by the health facilities and various surveillance systems. Electronic versions are up on the China MoH website (though not accessible at the time of this assessment). The publication has many indicators and tables and almost all have trend data. There are no graphics in the report. <http://www.moh.gov.cn/publicfiles//business/htmlfiles/zwgkzt/pwstj/index.htm>
- China Health Statistical Yearbook: annual, in Chinese; includes more information on specific diseases.
- CDC produces a range of summary reports on specific risk factors (such as tobacco use), infectious diseases (annual including HIV and TB, mortality and morbidity for notifiable diseases). It also produces short publications with many graphs for policy makers such as the report on chronic diseases in China (2006).
- International reports: for instance the annual MDG report and the UNGASS HIV/AIDS 2008 report.
- There is a plan to develop a national health statistics dictionary.

Databases

- There are publicly accessible summary data in Chinese on the Ministry of Health websites including CDC and CHSI, only health fact sheets with multiple years. MOH does keep databases: health facilities, professionals, equipment and admissions & discharges. The goal is to have an integrated warehouse.
- The National Bureau of Statistics China provides annual tabulations for key indicators in static table formats for different sectors on its website, including tables on 13 health indicators (<http://www.stats.gov.cn/eNgliSH/statisticaldata/yearlydata/>).

Synthesis and analysis

- Recent series in international journals have provided extensive syntheses of the available information, including the Lancet (2008) and Health Affairs (2008)⁶.
- Several papers have described the health situation and reform, especially the financial risks for households. One paper in the Lancet provides the most comprehensive assessment of subnational (provincial) health systems performance to-date⁷.

4 Institutional capacity

⁵ Rao C et al. Evaluating national cause of death statistics: principles and application to the case of China. Bull WHO 2005, 83: 618-625. Yang G. et al. Mortality registration and surveillance in China: history, current situation and challenges. Pop Health Metrics 2005, 3: 3.

⁶ Health reform in China. Series in the Lancet vol 372, 2008.

⁷ Liu Y, Rao K, Wu J, Gakidou E. China's health Systems performance. Lancet 2008, 372: 1914-23.

At the central government, the Ministry of Health is responsible for the health information system. The *Center for Health Statistics & Information* is responsible for collecting data from health facilities and summarizing data from other departments. It includes a division of statistics and a division of surveys and evaluation.

The Department of Disease Control of the Ministry of Health leads the National *Center for Disease Control & Prevention (CDC)*, which collects related data on infectious diseases from CDC in provinces, cities and counties. CDC is also involved in surveillance of non-communicable diseases, injuries and hygiene. CDC has 2320 staff in Beijing and a network down to the county level. Its budget was 1.15 bln yuan in 2006 (\$1.2 bln) of which about 0.5 bln came from international sources, led by the Global Fund. The *Department of Maternal & Child Health* collects data about maternal and child health from related health care facilities and from community health workers in its surveillance system in 262 counties. Department of *Health Inspection & Supervision* collects data from centers of Health Inspection & Supervision in provinces, cities and counties. Department of *Planning and Financing* is responsible for budgeting. The Department of Health Policy and Regulation is a major user of the data.

Other ministries are also involved. The Ministry of Labor and Social Security is responsible for health insurance related data. The Ministry of Civil Affairs is responsible for the Medical financial assistance fund and its related data. The integration and communication between ministry of Health and other ministries is sometimes difficult.

The China National Bureau of Statistics (CSA) is responsible for census and household surveys, mostly economic. There are many academic institutions in China with considerable capacity in the field of health statistics. The *China Health Economics Institute (CHEI)* plays an important role in supporting the Ministry of Health. This institute with over 100 scientists is linked to the University of Beijing and is expanding. One of its missions is to conduct policy research on health development and reform and provide policy recommendations for policy makers. There are several centres in CHEI, such as the Center for Community Health Services. CHEI intends to set up a Center for Health Policy and Evaluation. There is a need to build capacity for this kind of research and also for provincial level knowledge and skills.

5 Conclusions

Monitoring and evaluation of progress and performance are key elements of the context of the current health reforms in China. Much work is ongoing to define indicators and measure the effects of pilot reforms, primarily focusing on process indicators. A large number of existing data generation activities can be used to establish trends for key indicators for the health reform and there are also several operational research projects to provide additional information on progress and performance.

Critical questions remain about how the health system is responding to both structural changes and the large influx of additional resources. Specifically, there is a need to know how the reform is progressing, and whether these efforts are achieving improved results in terms of access, quality, and outcomes across China. Such a scale-up and re-orientation of the health system requires a harmonized and strategic effort to monitor and evaluate progress and performance. It also requires that global reporting systems and international support efforts are well aligned with the one national plan.

The current health information system in China provides many essential data and statistics, but the alignment and collaboration within ministries, between ministries, between international partners and between ministries and international partners has scope for improvement to allow better monitoring of progress. In addition, there are several activities, projects and proposals that aim to study various aspects of the health sector reforms, but as of now there is no overall framework that puts all aspects together and guides the overall assessment of progress and performance.

It is considered important that China develops a coherent and systematic approach to monitor and evaluate progress and performance in China in the context of the reforms. Such an approach should inform the major decision makers in the government to what extent the health reform achieving its main goals for China citizens:

- Are health outcomes for major diseases improved especially for the rural and poorest?
- Are the people enjoying financial risk protection and is catastrophic spending on health reduced?
- Is the health services responsiveness to the people's needs? Do people have better access, quality and coverage of affordable health services?
- How efficient is the health system in achieving its goals?

To answer these key questions a national *framework* for monitoring and evaluation of the progress and performance of health systems and health sector reform should be developed. This should build upon international efforts such as the WHO Health Systems Performance Framework 2007 and existing frameworks in China. Such a framework includes a clear *architecture* of the roles and responsibilities of national, subnational and international stakeholders in China. This includes different ministries, divisions within ministries, academic institutions, and international partners, and provides clarity about data generation and sharing.

The key areas identified in the framework form the basis for a core set of *indicators with targets, data generation and analysis* strategies, with data quality control mechanisms. Finally, the framework provides the basis for a solid operational research agenda which supplements the wealth of trend data generated through the monitoring system.

The framework should be the basis for measuring progress towards short to mid term goals including the five structural areas of the health sector reform. It should also form the basis for a monitoring system to assess progress towards long term goals, especially health impact, between now and 2020. And finally, it should be clear about alignment of health and disease specific information investments of global partners.

These efforts would align well with the Country Health Systems Surveillance platform (CHeSS) developed by WHO, HMN and partners provides a good basis to collaborate with China on developing a common national M&E framework and system. It will be important to involve key partners in M&E such as the World Bank and disease-specific efforts such as those supported by the Global Fund.

In addition, it is proposed to work with China to strengthen the analysis and synthesis of current evidence from different data sources to assess progress and performance in the context of the health reform. This would include a burden of disease and comparative risk factor analysis,

projections, and performance assessment, as well as effective communication of results through for instance dashboards. This should be a collaborative of WHO, HMN and the Centre for Health Statistics and Information, and could also involve key analysts from CDC, the China Health Economics Institute and other organizations.

In summary, WHO's support to China could include collaboration on:

- The development of a M&E framework: inputs into the process of developing a single monitoring and evaluation of progress and performance framework.
- Analysis and synthesis of existing data: sharing of global methods and tools to assess burden of disease and risk factors, health projections, performance assessment, with effective communication tools (dashboard).

Persons met

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