

Joint Review of the Maternal and Child Survival Strategy in China



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Joint Review of Maternal and Child Survival Strategies in China



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Preface

The health of women and children has historically been a priority in China and the Government has made great progress in promoting the survival and development of women and children and in reducing maternal and child mortality. However, maternal and child health care services do not adequately meet the needs of women and children, and great disparities in maternal and child health still remain. China has a long way to go before achieving the Millennium Development Goals related to the reduction of maternal and child mortality.

In an effort to ensure that all women and children have access to basic comprehensive health care services, from pregnancy and prenatal care to delivery and throughout early childhood, society must make a concerted effort. In addition, the health of women and children needs to be prioritized in the holistic strategy for socio-economic development in China. This is both an objective and demonstration of the country's goal to build a harmonious society and a new socialist countryside.

Mothers and children are the hope of the family and the future of the nation, and all parents want their children to be healthy. It is important to work together to improve maternal and child health and to create a beautiful future for our children.

List of Acronyms

AIDS	Acquired Immunization Deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Infections
AWP	Annual Work Plan
BEmOC	Basic Emergency Obstetrical Care
BMI	Body Mass Index
BOC	Basic Obstetric Care
CAPM	Chinese Academy of Preventive Medicine
COC	Comprehensive Obstetric Care
CEmOC	Comprehensive Emergency Obstetric Care
CHC	Community Health Centres
EPI	Expanded Programme on Immunization
FP	Family Planning
GDP	Gross Domestic Product
HDI	Human Development Index
ICD	International Classification of Disease
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
INFH	Institute of Nutrition and Food Hygiene
LBW	Low Birth Weight
LW	Low Weight
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MFA	Medical Financial Assistance
MMR	Maternal Mortality Rate
MOCA	Ministry of Civil Affairs
MOF	Ministry of Finance
MOH	Ministry of Health
NHSS	National Health Service Survey
NMCHS	National Maternal and Child Health Surveillance
NNHS	National Nutrition and Health Survey
NWCCW	National Working Committee for Children and Women
ORT	Oral Rehydration Therapy
PMTCT	Prevention of Mother to Child Transmission of HIV/AIDS
PNC	Post Natal Care
PPS	Probability Proportional to Size

RDA	Recommended Daily Amount
RCMS	Rural Cooperative Medical Scheme
U5MR	Under-five Mortality Rate
UNICEF	United Nations Children's Fund
UNFPA	United Nations Fund for Population Activities
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

PART I Joint Review of the Maternal and Child Survival Strategy in China

Synopsis

I. Purpose and background

China has the largest population of women and children in the world with 630 million women and 260 million children aged 0 to 14 years. During the past two decades, China's achievements in reducing maternal and child mortality and improving maternal and child health have been impressive. However, the decline in maternal and child mortality slowed down during the 1990s. This created new challenges for China in achieving the Millennium Development Goals (MDGs) on maternal and child mortality. In response, the Ministry of Health in collaboration with UNICEF, WHO and UNFPA, has conducted a joint review of the maternal and child survival strategies in China. The review systematically analysed China's achievements in maternal and child health, identified problems and challenges, and provided policy recommendations to improve health and reduce mortality in women and children. This report is the summary of the policy and the technical analysis undertaken over a period of one year beginning in May 2005.

II. Methodology

Comprehensive analysis was done on the immediate and predisposing factors, as well as on the social and institutional factors, affecting maternal and child mortality. Technical analysis was based on quantitative and qualitative data. The quantitative data was obtained from the 1991 to 2004 National Maternal and Child Health Surveillance (NMCHS), the 2003 National Health Service Survey (NHSS), the 2002 National Nutrition and Health Survey (NNHS), and the 2004 National Immunization Survey. The qualitative data was obtained through field visits undertaken by local and international experts in selected provinces, and through consultations with national experts. The data was classified into six areas according to a composite development index to account for the different levels of development in China. These six areas are large cities, mid-sized and small cities, and rural area types I, II, III, and IV, where rural area I is the most developed and area IV the least developed. The data was also classified according to geographical locations in coastal, inland and remote areas, and

was weighted according to population size when necessary. The impact of the most effective comprehensive interventions on maternal and child mortality was assessed using simulated Lancet and British Medical Journal models. A comparative analysis of domestic and international maternal and child health policies, thorough investigations into the background and situation of maternal and child health and identification of the challenges China faces in these areas were also done. Based on these assessments, the team developed policy recommendations.

III. Main results

1. Main achievements in maternal and child health

China has made great achievements over the past two decades in reducing MMR and U5MR from 80 per 100,000 live births and 61 per 1000 live births respectively in 1991 to 48.3 per 100,000 live births and 25.0 per 1000 live births respectively in 2004. The status of maternal and child survival has improved remarkably and China appears to be on track to achieve the MDGs. A relatively complete policy and legal framework has been established, comprised of the *Law on Maternal and Infant Health Care* and the *Two National Programmes* on women and children's development as core components, along with a series of laws and regulations ranging from the *National Health Policy*, to the *Law on the Protection of Maternal and Child Health*. MCH Institutions were some of the first public health services established in China, and have been the main service providers of maternal and child healthcare, thus playing an important role in improving the health of the general population. Maternal and child health programmes, implemented by the Chinese government in collaboration with many international organizations, have also played an important role in promoting equitable access to basic maternal and child health services, reducing gaps between regions, and improving the management of services. These programmes have not only benefited project recipients, but also have provided demonstration models to other areas.

Maternal and child health has made a great contribution to China's social development. The reduction of U5MR contributed to a 24.7% increase in life expectancy in the population from 1990 to 2000. The improvement in maternal and child health has also contributed to effective family planning in China. Over one hundred thousand people benefit, either directly or indirectly, for every 1 per 1000 live births reduction in U5MR. The cost of social development has been reduced by enhancing access to neonatal health care and reducing cases of congenital malformation, disability and child injury. This enhances the health of the population in terms of human resources and is an invaluable contribution to the stability of

society and the happiness of families.

2. Problems and challenges

i. Government funding and the rate of funding increase for maternal and child health are inadequate. The improvement and development of maternal and child health care has lagged behind the country's economic development. Furthermore, the allocation of health resources is not equitable, with the majority concentrated in urban areas that have a smaller population compared to rural areas.

ii. Maternal and child mortality rates in China are at the global intermediate level and are far behind those in many developed and relatively developed countries. China is also behind some other developing countries that are at or below China's level of economic development. The decline of the infant mortality rate (IMR) is slowing down. Neonatal mortality, which accounts for 63.9% of the U5MR in China, has also been declining at a slower pace. Over 75% of maternal and child deaths are caused by preventable or curable causes, which suggests that the quality and accessibility of MCH services can be improved. If universal access to the most cost-effective interventions was provided to all target population groups, maternal and child deaths could be reduced by 52% and 34% respectively at the national level and by 67% and 44% respectively in remote areas.

iii. Great disparities in access to health services exist between urban and rural populations, and among different regions in China. The reduction in maternal and child mortality rates has now levelled off, and the rates in remote rural areas are 3 to 7 times higher than those in urban areas. Rural areas type II and III account for 70% of all maternal and child deaths in China. Marginalized and vulnerable population groups such as migrants and ethnic minorities are not covered effectively by MCH services.

iv. The market-oriented approach of providing MCH services conflicts with the public function of MCH services. The position and importance of maternal and child health services is changing due to the impact of the market economy. Given the low and inadequate financial support provided by the government, MCH services show a tendency to emphasize "treatment over prevention, and on paid over non-paid services." As a result, the credibility of maternal and child health services is declining. Large disparities exist between service provision and service demand. Health resources are concentrated on large and intermediate cities with high quality facilities, human resources and services. At the same time, access to essential healthcare for rural residents remains a problem. MCH service providers still face challenges in capacity building, as resources are required to enhance the skills and improve the

stability of MCH staff, all of which are required to increase the efficiency of the maternal and child health institutions.

v. Maternal and child survival and health are also deeply affected by socio-economic, cultural, legal and institutional factors. Lack of coordination between MCH policies and related social policies, inadequate funding, and systematic inefficiency all contribute to the challenges facing MCH. The present health reform has lacked proper attention on MCH as a public responsibility and the respective goals of MCH in society. There are many other related issues that have also suffered similar consequences from this systematic reform. Poverty and inequities, as demonstrated by a Gini coefficient of 0.46, illustrate disparities in access to basic social services, gender imbalances, and cultural practices that are all factors that have the potential to impact on the health of women and children.

3. Strategies and policy recommendations

i. Rationale for recommendations

- MCH indicators are not only indicators of the health of population groups; they are also comprehensive indicators for social and human development. A country cannot be considered successfully developed if it fails to improve maternal and child survival or meet the vulnerable group's essential survival needs in the process of its development.
- Investments in maternal and child health have the greatest impact on social development, and provide benefits across the entire lifecycle. Any improvement in maternal and child health services or policies will benefit over two-thirds of the total population and beyond. Improvement of maternal and child survival and health is of great importance for national socio-economic development.
- While maternal and child health in China has been continuously improving, it is lagging behind the economic development of the country. The decline of infant and child mortality is slowing down, and great disparities in maternal and child health exist between urban and rural populations, and among different regions in China. These are all immediate factors affecting human development and the harmony of society, as well as the achievement of the MDGs.
- Maternal and child health should be considered a priority of public social welfare contributing greatly to the overall public health status of the population. However, the current position of maternal and child health in China does not reflect its importance, and the scope of MCH as a public service is unclear. Furthermore, the government is failing to fulfil its fiscal and management responsibilities. There is very little

coordination amongst national policies for social development, and MCH does not receive the attention it deserves in social development.

- MCH services face unprecedented challenges in terms of MCH policies and systems, functions and mechanisms, and technology and human resources. The challenge in terms of the recognition of MCH is greater than that of service development; systems, policies and regulations are of greater importance than technology; and the overall strategy is more important than operational issues. The question is how to achieve the wellbeing of mothers and children as well as provide equitable access to MCH services.
- To coordinate the reduction of maternal and child mortality and improve the health and survival of women and children within the overall context of national development is important, and will contribute to the achievement of the MDGs. Such measures should fully consider the needs of women and children and be regarded as a strategy for building a new socialist countryside, empowering women, developing education, alleviating poverty, as well as delivering services in accordance with culture and tradition.

ii. Strategic directions

- Reaffirm the fundamental role of MCH in building a harmonious society. Give priority to MCH in social development and build a national strategy for MCH development that is integrated into the overall socio-economic development strategy.
- Further clarify the strategic direction of MCH in order to achieve the goals of establishing universal coverage and comprehensive MCH service. This requires focusing on healthcare and reproductive health issues at grassroots levels and preventive interventions in the general population, as well as increasing government leadership in the areas of policies and regulations, multi-sectoral cooperation, and participation of civil society.
- The government should play a leading role in maternal and child health development. MCH should be prioritized within public services provided by the government rather than being market driven. Funding needs to be greatly increased, and free essential MCH services need to be ensured through the development and modification of related policies. Vulnerable population groups need to be guaranteed access to essential services, including those specifically targeting MCH. The government should be responsible for planning, implementing and monitoring progress.
- Further clarify the direction of MCH, clearly define the scope and content of

MCH services, strengthen MCH services, and standardize MCH service provisions and management. Non-profit public institutions should be the main MCH service providers and should be provided with stable financial support from the government. Regulations and protocol for MCH services need to be reaffirmed. The introduction of certain market mechanisms in MCH services should not affect universal access and the provision of quality services.

- Further clarify the inherent link between MCH and national socio-economic, cultural and political development. Establish a mechanism to coordinate MCH policies and other social policies such as women's empowerment, education, family planning and poverty alleviation. Integrate MCH development into the overall national planning, policy making, implementation and monitoring.
- Further increase the allocation of resources for MCH. Give priority to townships and villages, with focus on type II rural area and urban poor populations. Reduce disparities between rural and urban areas and among regions. Combine MCH services with community health services in urban areas, and with medical and health services in rural areas to achieve coordination between these systems.
- Further clarify the urgent need to improve MCH service delivery, such as systematic perinatal care, and client centred services. Ensure an adequate supply of essential equipment at all levels. Train staff and provide technical supervision. Set up an efficient and effective referral system. Strengthen monitoring and supervision of service provisions, and address difficult issues in maternal and child health through ear-marked funding for pilot projects.

iii. Policy recommendations

- Provide an institutionalized guarantee for MCH. Enhance the legal supervision, management, development and implementation of laws and regulations associated with MCH. Integrate MCH indicators into the national planning for both women and children's development and socio-economic development and into the current indicator system used for assessing the achievements of the government at all levels.
- Establish an institutionalized funding mechanism for MCH. The government should provide funding for essential MCH services to ensure the coordination of maternal and child health development with socio-economic development. Increase funding for health services in poor areas targeting key population groups, and improve the efficiency and effectiveness of health expenditure.
- Establish an MCH service and management system, with a clear division of responsibilities that provides universal coverage of all essential services. Considered a

part of public social welfare, the administration of MCH services is the government's responsibility. Efforts should be made to set up an MCH system comprised of a lead agency handling all MCH services, including urban community health services as well as rural grassroots health services. The focus of the system should be on prevention and care at the township and village levels. Priority should be given to building and strengthening the three-tier MCH service network, particularly obstetric care in township hospitals. Establish and improve a referral system among various levels of MCH services.

- Enhance the quality and efficiency of the MCH service network, focusing on targeted regions and population groups. Provide comprehensive essential MCH services, focusing on type II, III and IV rural areas, and increase access for vulnerable and marginalized groups, such as poor and migrant populations. Gradually establish a medical assistance system within MCH services, to ensure universal access for women and children to an essential package of quality antenatal, obstetrical and neonatal care.
- Formulate an effective strategy to strengthen the capacity of MCH service providers, especially in human resource development. Make MCH a separate discipline in higher education to foster high-level MCH personnel. Develop a long-term human resource development plan for MCH professionals and give priority to the training of MCH service providers in rural areas to enhance their basic knowledge and skills.
- Further strengthen the MCH surveillance system and improve data collection methodology and analysis to establish an effective mechanism for policy development. Increase the number of surveillance sites and ensure the distribution of sites is appropriate so that the data is representative of the national situation. Improve the quality control of surveillance and the optimum utilization of the information.
- Address difficulties and issues in maternal and child health through pilot projects and improve MCH services by scaling up the project experience, thus increasing the quality of all levels of MCH services. These projects and priorities include reducing or remitting MCH service fees in poor rural areas, piloting interventions for congenital malformation, reducing MMR and eliminating neonatal tetanus, promoting safe motherhood skills, preventing and controlling common diseases in women, disseminating health education, preventing mother to child transmission of HIV, and training health personnel. Measures should be taken to ensure the establishment of an effective mechanism for monitoring and evaluation, including timely documentation. Efforts should be made to foster opportunities to share and replicate experiences that resulted in positive outcomes.

- Conduct in-depth research on the prevalence of diseases specific to women and children, injuries in children, and social problems such as gender-based violence.

PART II Joint Review of the Maternal and Child Survival Strategy in China

Policy Report

In every country and region around the world, women and children account for approximately two-thirds of the total population. They are not only the biggest population group, but also a prerequisite and basis for human survival and development, and as such receive increasing attention from national governments and the international community.

The development and progress of a country can be judged by the status of maternal and child survival. It has become an internationally accepted practice to represent the health, living standards, and civilization of the population of a particular country, and to test its social equity and modernization level with MCH indicators. Since the 1970s, almost all the UN assemblies and world summits related to development have placed great emphasis on maternal and child health, and without exception, regarded maternal and child survival as the most important indicators to measure the development of a particular country. MCH has become a priority for improving human progress in every country. For example, the key role of MCH in global sustainable development has been emphasized in various plans and conferences, i.e. “The 21st Century Agenda” issued at the 1992 UN Conference on Environment and Development, “The Program of Action for the International Population and Development” issued at the 1994 UN Conference on Population and Development, the plans to eliminate poverty, reduce unemployment and improve social solidarity developed at the 1995 World Summit on Social Development, the 1990 World Summit for Children, the 1993 World Human Rights Conference, and the 2002 Global Summit on Sustainable Development. From this, a series of concrete indicators have been developed to monitor the progress of MCH development in all countries of the world. In particular, at the UN Millennium Summit in September 2000, all national leaders, including China’s president, signed “The Millennium Declaration” making a commitment to attain the eight goals of poverty elimination, which include the development of education, promotion of equality, and improvement of the environment. Two of these Millennium Declaration Goals focused on MCH,

specifically on the reduction of infant mortality and the improvement of maternal health. The international community and countries around the world, regard MCH not only as basic health indicators, but also as comprehensive indicators to measure social development. Therefore, maternal and child survival reflects a country's development and progress, and influences its international image and status.

Chapter One Background

Since China reformed and opened its doors to the outside world, it has maintained a pattern of rapid and sustainable economic development. China's annual average GDP growth rate was 9.4%¹ from 1979 to 2004, making the GDP per capita in 2004 5 times that of 1979, and its rank in the world according to GDP rose from 10 in 1979 to 7 in 2004.² This exponential growth has contributed to an improvement in living standards. As the largest developing country with a population of 1.3 billion, China's rapid economic development is indeed a "miracle," and has led China to become regarded as "the world's engine" in economic growth by international organizations.³ In 2003, the Chinese government set the developmental goal of constructing a universal *xiaokang* society,⁴ aiming to increase its GDP by 4 times of that in 2000 by the year 2020 (per capita GDP \$3000 USD), and enable its people to enjoy a better life. Economists believe that China can maintain its rapid momentum in economic growth and that the Chinese government can achieve the goals as scheduled.

China's reform and open door policy has promoted social as well as economic development. However in contrast to the rapid economic growth, social development is lagging behind with social disparities becoming strikingly obvious. As China is now undergoing a transitional period of substantial change in socio-economic structure, many policy-related and social problems have emerged alongside the

¹ China Statistics Bureau, ed., *China Statistics Yearbook 2005*, China Statistics Press, 2005.

² Ibid.

³ Report by UN Agencies in China, *CCA 2004, Consorted Development, and the Construction of a Universal Harmonious Xiaokang Society*.

⁴ The vision of a *xiaokang* society is one in which most people are moderately well off and middle class, and in which economic prosperity is sufficient to move most of the population in mainland China into comfortable means, but in which economic advancement is not the sole focus of society. Explicitly incorporated into the concept of a *xiaokang* society is the idea that economic growth needs to be balanced with sometimes conflicting goals of social equality and environmental protection. (Wikipedia)

market-oriented reform. These problems are presenting challenges to China's social development. MCH in China is facing similar and even more complex challenges. When the People's Republic of China was founded, its MMR and IMR were 1500 per 100,000 live births and 200 per 1,000 live births⁵ respectively, higher than that of other developing countries such as Malaysia, Thailand, and the Philippines. However, after 1949, the Chinese government established an MCH system and issued a series of policies and regulations to improve maternal and child health. Together with socio-economic development and medical interventions, such efforts have substantially reduced MMR and IMR. The period from the 1950s to the 1970s, accordingly, witnessed the most rapid improvement in the health of China's population, which was praised by WHO and the World Bank as "the greatest benefit in health for the smallest investment" and was internationally recognized as a model for developing countries. Since the 1980s, however, the decline of IMR has slowed, and even stalled in recent years. Meanwhile, in other countries at similar economic development levels as China, such as Malaysia, Thailand and Vietnam, and even Sri Lanka, which is below China's level, IMR has continued to fall at a faster rate than in China. In terms of economic development, China has extensive potential for improvement in maternal and child health.

In order to further promote the achievement of the MDGs, UNICEF, WHO and other institutions co-sponsored a conference in London at the end of 2005 with the theme "Countdown to 2015, Tracking Progress in Child Survival." The purpose of the conference was to review the attainment of Goal 4 (child mortality rate) and Goal 5 (maternal mortality rate) in various countries. Priority was given to 60 countries and they were divided into three groups. The first group includes 7 countries that are expected to attain the MDGs: Bangladesh, Brazil, Egypt, Indonesia, Mexico, Nepal and the Philippines. The second group was comprised of 36 countries, including China, all of which need to take effective measures to achieve a remarkable reduction in these two areas, and thus reach their goals according to the prescribed schedule. The third group, including most African countries, need to make great effort to attain the goals. In order for China to achieve the MDGs on maternal and child mortality and survival, China must improve its efforts in maternal and child health. Otherwise, it may fail to achieve the MDGs by 2015.

China is now undergoing a transitional period of socio-economic and demographic transformation. The Chinese government recently proposed the integration of a human-centred concept in its scientific development, introduced the goals of

⁵ See *China Health Statistic Outline 2005*.

constructing a harmonious *xiaokang* society, and promoted substantial modernization in China, with the intention of embodying these objectives within every aspect of national development. This approach implies that China needs to not only maintain high economic growth, but also ensure its social development. It will need to stress the importance of sustainable development and equity so that all 1.3 billion citizens can benefit from the achievements of reform and progress. As women and children are a vulnerable group in society, it is very important to meet maternal and child health needs. The construction of a harmonious society relies on effective protection of maternal and child survival. MCH is a vital factor affecting China's long-term strategic social and human development, and is important to the construction of a socialist harmonious society, a universal *xiaokang* society, and to the realization of modernization. In short, to greatly improve maternal and child health means not only achieving the MDGs but also contributing to China's overall development.

China's MCH is entering an important period for strategic development. China once played a leading role among developing countries in MCH, however continuing to improve MCH means facing new and serious challenges in the first half of the 21st century. In response to the current situation, the Ministry of Health has invited UNICEF, WHO and UNFPA to jointly conduct a comprehensive review of China's maternal and child survival in order to provide appropriate policy recommendations for prioritizing maternal and child health in planning for social development. This will enable China to achieve the MDGs and its own national development goals as scheduled.

Chapter Two China's MCH: Context and Challenges

China has the largest population of women and children in the world. In 2005 the population of women in China was 630 million, and children, aged 0-14, reached 260 million. Since the founding of the People's Republic of China, maternal and child survival has greatly improved. Due to socio-economic, cultural and even physiological factors, like many countries in the world, China's maternal and child survival and health is relatively vulnerable when compared to other population groups. Therefore women and children need access to appropriate, affordable, quality health care, as the quality of service can greatly affect health outcomes.

In countries around the world, medical health services consist of public health services, essential medical services, and non-essential medical services.⁶ MCH

⁶ The project group of the Development & Research Centre under the State Council, 2005

should be considered an essential public social welfare service and funded by the government as part of the public health services that offer specialized care for women and children. In terms of social development, MCH services should cater to the health needs of the most vulnerable population groups, particularly to prevent neonatal and maternal death and disability. Therefore improvements in MCH contribute significantly to the overall health of the population, which in turn enhances people's ability to be actively involved in society, and provides balance in socio-economic development.

1. Situation and Achievements

1.1. IMR and MMR have been continually reducing and maternal and child survival has improved.

Since the founding of the People's Republic of China in 1949 and the subsequent increased attention on MCH, the IMR and MMR have fallen remarkably over the past 50 years. The national MMR was reduced from 1500 before 1949 to 48.3 per 100,000 live births in 2004 and the IMR from 200 before 1949 to 21.5 per thousand live births in 2004.⁷

The national health surveillance statistics show that since the 1990s, China's maternal and child mortality rates have declined. During the period of 1991-2004, MMR fell by 39.6% and U5MR by 59%, implying that maternal and child health in China has continuously improved.

China has also achieved remarkable progress in reducing congenital malformations, malnutrition, and low birth weight. During the past decade, the prevalence of stunting among children under five was reduced by 55.2%; the number of underweight children dropped from 18.0% in 1992 to 7.8% in 2002; the coverage of immunization maintained a rate of over 85% since the 1990s and the vaccination of infants and young children reached 88% (four vaccines); polio free status has been maintained since 1994; and systematic management of the health of children under 3 increased from 43% in 1992 to 74% in 2004.⁸

Women, especially those of childbearing age, have enjoyed access to medical services including safe motherhood programs, maternal mortality reduction interventions, technical support for family planning, reproductive health services, and prevention and control of STI/HIV/AIDS. This has contributed to significant improvements in

⁷ See *China Health Statistics Outline 2005*.

⁸ Data without detailed sources come from technical reports.

women's health. In rural areas, access to clean delivery, hospital delivery, and healthcare for high-risk pregnant women and newborns has been promoted for several decades. Progress has been made in the diagnosis and treatment of congenital malformations through interventions promoted by the National Birth Defects Surveillance System since 1986. The NHSS reveals that from 1992-2002, the nationwide hospital delivery rate increased from 39% to 68%, ANC coverage increased from 70% to 88% and, in the rural areas, women receiving early prenatal checkups increased from 24% to 55%.

1.2. The legal system, with the “Law on Maternal and Infant Healthcare” as a core component, has been steadily improved.

To ensure the promotion of MCH and support its development in China, policies for a favourable institutional environment have been developed through the promulgation of laws and the development of MCH related policies. China has established a relatively good policy and legal framework, the core component of which is the “One Law and Two Programs” (the *Law on Maternal and Infant Healthcare*, the *National Program for Children's Development in China* and the *National Program for Women's Development in China*.) These are accompanied by a series of laws and regulations covering various issues, from national health policy to protection of women and children.

In 1994, the Standing Committee of the National People's Congress issued the *Law on Maternal and Infant Healthcare in China*, which is the first law that aims to protect the health of women and children in China. It has clear regulations concerning pre-marriage healthcare, antenatal and neonatal healthcare, providing China's MCH a legal guarantee. Subsequently, the Ministry of Health developed a series of auxiliary regulations providing standards for MCH service delivery, administrative management, monitoring and supervision, technical criteria and staff qualifications. Basic national laws, such as the *Constitution*, the *Marriage Law*, the *Law on the Protection of Women's Rights & Interests*, the *Law on Population and Family Planning*, together with the *Law on Maternal & Infant Healthcare*, come under a larger and more comprehensive legal framework of social development for the protection of women's and children's rights and interests. These laws provide an institutional guarantee for maternal and child health, which will improve the health of the population, and further promote national economic prosperity, social progress and human development.

In order for the Chinese Government to more effectively fulfil the pledge made to the international community in the 1990s, the State Council successively issued the *National Program for Children's Development in China* and the *National Program for*

Women's Development in China, integrating women's healthcare, including reproductive health, into the overall strategic plans for socio-economic development. The Ministry of Health, under the coordination and support of the State Council's National Working Committee for Children and Women (NWCCW), developed plans to implement these two programs at all levels and in terms of fundamental MCH indicators.

In addition to creating a favourable policy environment for China's MCH development, the above-mentioned policies, regulations and laws provide the Chinese government with a legal basis to fulfil its commitments to the international community.

1.3. Good coverage of MCH services exist in most areas and pilot projects innovate improvement in management and services.

China has now established a fairly comprehensive health service system, including medical care, prevention, healthcare, rehabilitation, education and research. Based on the rural-urban dual structure, a three-tier medical and health service network has been established. It consists of municipal, district level hospitals and community clinics in urban areas, and county hospitals, township health centres and village clinics in rural areas. These have become the main providers of technical support in MCH services.

The MCH services were among the first public health institutions established following the founding of the P.R. China, and have since played a vital role in improving the overall health of the population. These services provide medical services and prevention activities to women and children. Since the 1950s, the MCH institutions have evolved gradually into a fairly complete three-tier service network that covers the vast rural and urban areas. With responsibilities clearly defined at each level, this grass-roots network is the most important MCH service in China, playing an indispensable role to promote equitable access to essential MCH services, particularly in rural areas.

By 2003 there were nearly 3000 MCH services in China with over 500,000 professionals engaged directly in MCH work.⁹ These services and specialists provide professional MCH services in cooperation with disease control institutions at each level, related divisions of clinics, urban community health centres, rural township

⁹ Ref. *China Statistical Yearbook 2005*, edited by the State Statistical Bureau, China Statistical Press, 2005 for the number of the maternal and infant institutions; the number of the professionals is provided by the Department of Maternal and Child Health/Community Health, MOH.

hospitals and village clinics.

Since the 1990s, the Chinese government has implemented a series of international programs for MCH interventions in cooperation with UNICEF, UNFPA, WHO, and the World Bank. *The Baby-friendly Hospital and Baby-friendly Initiative* was the largest international cooperative project between MOH and UNICEF since China's reform and achieved impressive outcomes. In addition, programs such as *Strengthening MCH/FP at the Grass-roots Level*, *Interventions for Acute Respiratory Infection in Children*, *Strengthening Essential Health Services in Poor Rural Areas*, *HIV/AIDS/STI Prevention and Control and Maternal and Child Healthcare*, *Safe Motherhood Initiatives* and other international programs have been implemented successfully and have achieved good outcomes. Since 2000, the MOH, NWCCW and the Ministry of Finance (MOF) have jointly implemented a program called *MMR Reduction and Neonatal Tetanus Elimination*, which has contributed to improvements in maternal and child survival, with special attention on protection and development in poor rural and minority areas. The Chinese government has also implemented a program on child injury prevention.

These programs have not only benefited project areas by reducing MMR and child mortality, they have also played an important role in improving MCH facilities at the grassroots level, strengthening human resource development, and raising efficiency and quality of MCH services. They also produced demonstration models providing guidance and evidence of effective interventions to benefit other areas. Program activities have explored ways to increase equitable access to essential MCH care, narrowing the disparities across regions, and improving the management of MCH services.

2. Important Contributions of MCH to China's Social Development

2.1. The reduction in infant and child mortality has contributed greatly to increasing life expectancy.

Reductions in mortality among different age groups contribute differently to increasing life expectancy in the population. International experiences demonstrate that for developing countries with high mortality rates, the reduction in infant and child mortality is very important to increasing the average life expectancy of the population. In addition, these countries have more opportunities to reduce infant and child mortality due to the fact that a large proportion of these deaths are caused by a lack of quality services in maternal and child health, as well as other factors that are caused by other humans and society.

In 2000, China's life expectancy at birth was 70.0 for males and 73.5 for females. In 1990-2000, the reduction of the U5MR contributed a 24.7% increase in China's life expectancy; this means that the average life span of China's population increased by 0.6 years. In underdeveloped regions, the contribution to the population's average life expectancy from the reduction in infant and child mortality was even greater. For example, in Guizhou Province, of the total 4.40 years increase in life expectancy in females during 1981-2000, 1.47 years (33.4%) came from the U5MR reduction; while for the males, the contribution from the U5MR reduction was 1.56 years (40.1%). Therefore, of the 20 five-year age groups that classify the country's population (0-4, 5-9, 10-14, etc.), investment of health initiatives in the 0-4 year age group is the most cost-effective.¹⁰

2.2. Improvements in maternal and child health play a positive role in promoting family planning in China

FP is one of China's fundamental national policies. MCH services are responsible for ensuring the implementation of this policy, and thus play an important role, especially through the provision of technical support and improving the health of the population.

Experiences in countries throughout the world demonstrate that IMR reduction is a prerequisite condition for reducing the fertility rate. China is the largest developing country and has the greatest population pressure. MCH institutions and professionals have played an indispensable role to improve MCH in China. Against a fairly backward socio-economic background, China has achieved a rapid transformation from a high fertility rate to a low one. Since 2000, the number of annual births has been around 16-17 million. From this, we can infer that 16,000 to 17,000 child deaths are reduced by every 1 per thousand reduction in IMR, immediately benefiting a like number of families and about 50,000 people. Taking into account the U5MR reduction, over 100,000 people would directly or indirectly benefit from every 1 per thousand live birth reduction. Since the 1980s, nearly 90 million single-child families have accumulated in China. Improved MCH services would better prevent these families from risks such as child disability or death. Improvements in maternal and child health including a reduction in infant and child mortality are important in improving the health of the population, and promoting family harmony. The MCH services play an important role in reducing MMR and IMR, which consequently contributes to a reduction in fertility rates.

¹⁰ Calculated according to data collected in China's fifth national census in 2000.

MCH institutions, in cooperation with family planning institutions, have provided technical support in family planning. Currently, throughout the country, there are over 60,000 general hospitals, MCH institutions, obstetric hospitals, community and township hospitals that provide family planning services. Of the total family planning operations, 60-70% is undertaken by medical services, and in urban areas the percentage is higher than 90%.¹¹

2.3. Improvement of maternal and child health reduces the cost of social development and increases the health of the country's human resources.

There are approximately 200,000-300,000 cases of congenital malformations annually in China, and it is estimated that the total number would rise to 0.8 to 1.2 million if children with a disability discovered several months or years after birth were also counted. The factors surrounding the survival and growth of disabled children not only affect the overall health of the population, but also place a heavy economic burden on both families and society. For example, the annual economic losses resulting from neural tube congenital malformations amount to RMB 200 million, 2 billion for the treatment of Down's syndrome and 12 billion for the treatment of congenital heart diseases. Additionally, the psychological pressure and distress caused by congenital malformations and child deaths cannot be calculated in terms of money.

At present, congenital malformations are the third cause of neonatal deaths in urban and developed rural areas of China, accounting for 10% of total deaths. Injury is also one of the major causes of child deaths in most areas of China. Although child nutrition has been greatly improved in recent years, the prevalence of stunting in rural areas among children under five is still as high as 17.3%, and underweight children account for 9.3%, which is 3 times the rate in urban areas. The prevalence rate of Vitamin A deficiency among children aged 3-12 years in the countryside is 11.2%, and stunting in type IV rural area is as high as 29%.

Children represent the future and hope of a nation. Disabilities in children, either congenital or acquired, affect the quality of their whole life and seriously limit their future prospects. Some cases are preventable, and prevention of child injury and malnutrition are cost-effective. In the contemporary world, where human talent and intelligence are regarded as the most important resources and health equates with wealth, disabilities may place children in unfavourable positions. For the society at large, avoiding congenital malformations and reducing or eliminating malnutrition and injury would not only decrease expenditures made by families and society, but also improve the health of the population. The benefit and guarantee of better health

¹¹ Data provided by the MCH and Community Health Department of the Ministry of Health.

from generation to generation will directly contribute to the country's overall development. As such, these efforts will have an everlasting impact on socio-economic development and the construction of a harmonious society.

3. Constraints and Challenges

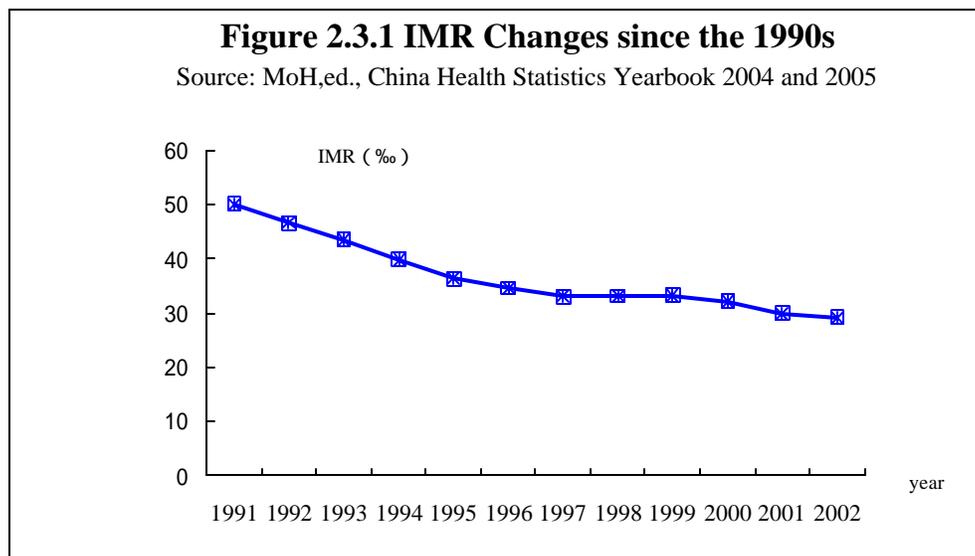
3.1. Infant and child mortality in China is at the intermediate level globally and improvements are slowing down.

IMR and MMR of China are at the intermediate level globally. According to *the 2005 World Health Report: Making Every Mother and Child Count* issued by WHO, great disparities exist in U5MR in countries around the world. In 2003, the lowest U5MR was 3 to 5 per thousand live births in developed countries such as Belgium, Denmark, France, Germany and Japan, and also in relatively developed countries like Korea, Monaco and Singapore, accounting for 10% of the total countries in the world. Meanwhile, in some countries, mainly located in Africa and Asia, the U5MR is as high as 200 per thousand live births. In the same report, the U5MR in China was estimated at 37 per thousand live births, 106th amongst the 192 countries and areas covered by this report.

China's U5MR therefore is not only much higher than those in many developed countries, but also higher than those in some developing countries. In 2003, China's U5MR was still much higher than that of Malaysia (7 per thousand live births), Kuwait (12 per thousand live births), Sri Lanka (15 per thousand live births), Mauritius (17 per thousand live births), Vietnam (23 per thousand live births), and Thailand (26 per thousand live births), some of which are at similar or lower levels of China's economic development (Figure 2.3.4).¹²

According to the annual reports of the World Bank and UNFPA, over the past two decades the rank of China's IMR in the world has declined, while at the same time China has had an average annual GDP growth rate of 9.4% which has been praised as an economic "miracle." Since the mid-1990s, China's IMR reduction began to slow down. According to China's official statistics in 1997 the IMR was 33.1 per thousand live births, while in 1998-1999, the rate was slightly higher, and only in 2002 did it decline to 29.2 per thousand live births (Figure 2.3.1). In short, there is an obvious discrepancy between China's MCH improvement and socio-economic development.

¹² WHO ed., translated by Tian Xusheng, *World Health Report 2005, Making Every Mother and Child Count*, Beijing, People's Health Press, 2005. Even by the statistics provided by the national MCH surveillance, China's U5MR in 2004 was still 25.5‰, much higher than those of Malaysia, Kuwait, Sri Lanka, Mauritius, Vietnam, etc.



While China's IMR reduction has stalled during the 1990's, some medium-income countries and high-income countries with an already fairly low or very low IMR continued to decline, even at a faster rate than countries with medium or high IMR. For example, according to the UNFPA annual reports in 1997 and 2005, in countries with very low IMR (4-6 per thousand live births) such as Japan, France, Singapore and Korea, the rate continued to decline during the period of 1997-2005. During the same period, in some developing countries with a relative ly low IMR, like Mauritius, Thailand, and Vietnam, the rate also continued to fall considerably (Figure 2.3.2).

Figure 2.3.2 Relationship between Per Capita GNI & MMR in Countries around the World

Source: UNFPA, State of World Population 2005

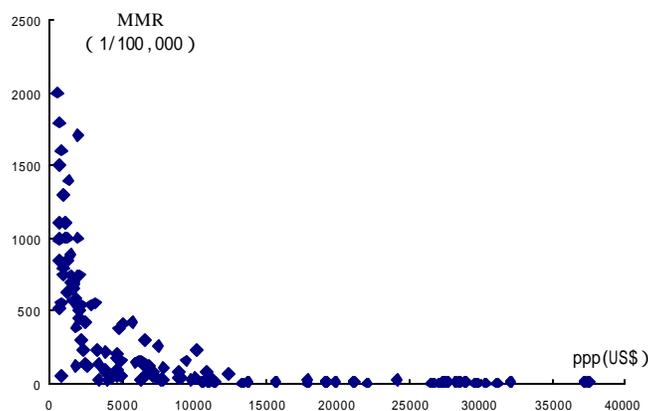


Figure 2.3.3 Relationship between Per Capita GNI & U5MR in Countries around the World

Source: State of World Population 2005 & The World Health Report 2005

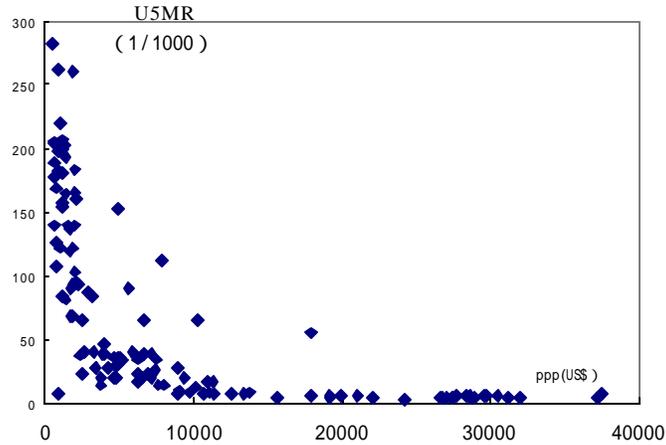
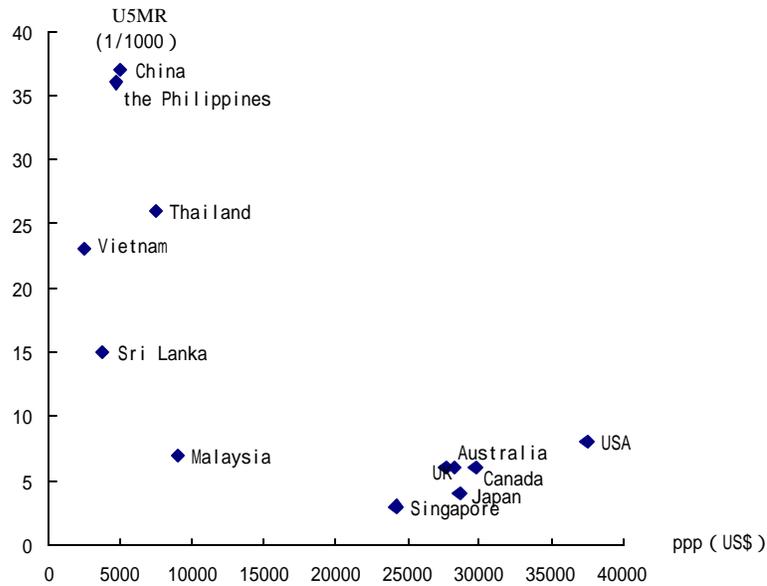


Figure 2.3.4 The Relationship between Per Capita GNI (PPP) & U5MR in Countries in selected countries

Source: State of World Population 2005 & The World Health Report 2005



As shown in Figure 2.3.2 and Figure 2.3.3 a close relationship exists between a country's economic development and its MMR and U5MR. The MCH indicators, however, could surpass the level of economic development. Experiences from both developed countries and moderately developed countries suggest that China's IMR reduction has not reached its lowest point, and there are still extensive opportunities

for further reduction. In fact, the slowing down of the IMR reduction in China is abnormal compared to other developing countries with better MCH indicators than China, and suggests that MCH improvement could move ahead of socio-economic development. These achievements however require commitment to MCH as a priority issue and appropriate resource allocation from the government (Figure. 2.3.4).

3.2. Government inputs are inadequate and there are great disparities across urban and rural areas, regions, and population groups.

Public MCH services are provided to continuously improve maternal and child survival and health further enhancing the health of the entire population. As such, MCH services should not be profit-oriented; instead services should prioritize public social welfare, focusing on public and equitable access to services, and provide non-exclusive and non-competitive public social welfare services. This position differentiates MCH services substantially from general medical services in terms of service targets, means of service provision, contents of service, financing channels, and operational mechanisms. It requires the government to play a greater role in public health service provision to transform China's MCH policies into concrete, operable, and sustainable services.

Insufficient government support is a major factor constraining MCH development. The financial growth in maternal and child health has lagged behind the overall health sector due to limited government input with a slow rate of increase in funding. The total government funding for MCH increased from RMB 1.18 billion in 2000 to 1.68 billion in 2003. While this is an annual growth rate of 13.26%, the overall health funding in the same period, increased only slightly from 4.3% to 4.5%, with per capita MCH expenditure increasing from RMB 0.94 to 1.31. Even when inputs from other health sectors are included, the situation of insufficient funding and slow growth remains. Currently, the global estimate of per capita expenditure in MCH is around US\$10-14, much higher than China's.

An additional problem is the disparity in government funding across regions. Central areas received less government funding compared with coastal and western regions. In 2003, the per capita MCH expenditures in the central areas were only 50.5% of that in western areas and this area accounts for a majority of maternal and infant deaths. 80% of China's health resources are currently concentrated in urban areas, while most of the maternal and child deaths occur in rural areas, especially the relatively impoverished and remote areas. The insufficient MCH funding in rural areas has affected MCH development. Without changing the present allocation of health resources, including addressing the inadequate MCH funding in certain areas, the central area and the underdeveloped rural areas will certainly create a bottleneck in

the realization of China's maternal and child survival strategies and the MDGs.

Since China reformed and opened its doors to the outside world, its achievements in MCH have been impressive, but disparities still exist between urban and rural areas and across regions and population groups and these are becoming more prominent. In 2004, MMR in rural areas was 3.2 times that in urban areas; MMR in inland and remote areas, were respectively 4.1 times and 7.7 times of those in coastal areas; and among the different types of rural areas, type IV has the highest MMR, 96 per 100,000 live births.

In addition to disparities in MMR, the reduction in MMR also varied greatly across regions. The rural MMR is several times higher than the urban MMR, and the gap between the two is increasing, from 2.7 times in 1996 to 32 times in 2004. From 1996-2004 the MMR reduced more in coastal, than remote and further inland areas; there was more improvement in small cities compared to large cities; and type I and IV rural areas improved remarkably while the type II and III areas remained nearly unchanged. Therefore, although the nationwide MMR was declining during the period of 1996-2004, there was disparity between urban and rural areas in terms of the rate in reduction across regions. Also deserving attention is the increasing rate of MMR in urban areas in recent years suggesting there may be an issue with maternal healthcare for the migrant population. Meanwhile, in the type II and III rural areas, which have the slowest MMR reduction rate, the maternal deaths over the past five years accounted for 75% of the total deaths nationwide.

Although the rural U5MR reduction (46.8%) was greater than the urban reduction (22.8%) during 1996-2004, great disparities in infant and child mortality still exist between rural and urban areas. Disparities also exist across different types of rural areas and the gap has become wider. For example, during 1996-2004, the IMR in type I, II and III rural areas dropped respectively by about 50%, while in type IV rural area, which has the lowest socio-economic development, the IMR reduced by only 15.7%. The remote areas showed the smallest reduction (30.3%) compared to coastal areas (48.0%) and inland areas (49.8%). Striking disparities in levels and rates of neonatal mortality reduction also exist across regions, similar to trends in U5MR. Overall, since the 1990s, the declining rate in neonatal mortality in coastal and inland areas is greater than that in remote poor areas, and the decrease is larger in the first three rural area classifications than in the fourth.

Disparities in child mortality exist not only across regions, but also in the number of deaths. According to statistics, during 2000-2004, type II and III rural areas accounted for 69.7% of the total U5MR, and type IV rural area accounted for merely 9.9%. Moreover, the type II, III and IV rural areas accounted for only 69% of the national

total live births, but the U5MR in these three areas accounted for 79.6% of the national total.

3.3. The MCH system is still unable to effectively cover marginal and vulnerable populations.

Despite a largely complete MCH network, universal access to the services has not been achieved as marginal and vulnerable groups remain largely uncovered by the MCH network.

In recent years, the migrant population has rapidly grown. The total number of China's migrant population is now 150 million, many of whom are women and children aged 0 to 14.¹³ With inadequate education, lack of awareness of self care practices and low capacity to afford paid medical and health services, the migrant population's need for healthcare services are often neglected by the service network. What compounds the issue is a lack of complete, systematic and exact information concerning the MCH status of this floating population. According to surveys in cities, such as Beijing, Wuhan and Shenzhen, the rate of antenatal checkups in the migrant population is only 50-70% and hospital delivery is approximately 50%. The healthcare behaviour of migrant women is characterized by fewer antenatal checkups, low rate of hospital deliveries, low rate of postnatal visits and a high rate of home deliveries. The child mortality rate in migrant populations is also much higher than that of the population living in their registered permanent residences.

HIV infection among women in China is increasing, as is mother to child transmission, which brings about new challenges to the mode and content of MCH services.

Experts' evaluation reveals that the coverage of MCH services is comparatively low in China. The utilization of health services was found to be in direct proportion to the development level. This was demonstrated by fundamental evidence that a large portion of the maternal and child deaths in rural areas take place at home. In rural areas type III and IV, respectively 37% and 38% of maternal mortality occur at home, and even in the most developed rural area, type I, the rate is still as high as 20%. The child mortality statistics are even worse. Of the total child deaths in type I rural area, 40% occur at home. Although these deaths are closely related to the financial and transport difficulties of families, the fact that the current MCH network is unable to effectively cover marginal and vulnerable groups is a major factor affecting the equitable access to MCH services.

¹³ The 1% sampling census in 2005 suggested that the number of floating population is 147.35 million. See "The Bulletin of Major Indexes of the 2005 National 1% Sampling census", July 19, 2006, China Population Website.

According to the experts' analysis based on averages in 2000-2004, the use of the most effective MCH interventions could reduce China's MMR by 52% and child deaths by 34%, with underdeveloped areas benefiting the most. Effectively increasing equitable access to MCH services is not only of vital importance to the realization of China's 11th Five-year plan and the MDGs, but will also have a long term impact on China's progress towards building a universal *xiaokang* and harmonious society.

In developed countries, for example Finland, the MCH service facilities and institutions are located within the residential communities. Midwives and public health nurses visit the families regularly. The service is easily accessed and free of charge. While the use of maternal service facilities is voluntary in Finland, regardless of a family's economic situation, almost 100% of the families utilize MCH services. In Malaysia, a developing country, access to MCH services and MMR reduction in vulnerable groups has been successful and provided a valuable contribution to national MMR reduction. Quality services with skilled birth attendants and supplemental financial support account partly for successful outcomes.

In conclusion, to effectively reduce maternal and child mortality in China the MCH network in rural areas needs to be strengthened, as does the capacity of services, obstetric service conditions at township hospitals, the emergency and referral system for rural women, and access to MCH services in poor areas.

3.4. Maternal and child health is facing severe challenges regarding universal access due to the current mode of service delivery.

The market-oriented reform in China's medical and health service industry has resulted in serious challenges to MCH services. Additional changes have also been made to the organizational mechanism of MCH institutions based on the increase in self-determined operational rights. This has resulted in a model of service delivery characterized increasingly by commercialization and market-orientation, which has effectively reduced the equity and accessibility of MCH services.

Influenced by market orientation, the position of MCH services as a part of public social welfare has become weakened For the sound development of MCH, the government needs to bring MCH under public service management, clearly define MCH's position, and improve financial policies. Government funding is the most essential factor to guarantee the development of the MCH system. Prior to the 1980s, China's MCH and disease control were all under public institutions that the government provided with operational funds. However, since China's reform, MCH institutions have been forced to be increasingly profit-oriented due to inadequate government funding and support. Institutions have therefore begun to charge a fee for

some healthcare services and extend the scope of their services using the revenue generated to cover non-paid essential MCH services and staff salaries. In this context, business returns have become a major source of financing, resulting in MCH institutions placing emphasis on treatment over prevention, and on paid over non-paid services, which greatly affects the provision of preventive healthcare and maternal and child health. The combination of inadequate government funding and client fees for MCH services have negatively impacted the utilization and access of low-income population groups to MCH services, leading to a reduced capacity for women and children to be safeguarded against risks and not ensuring their basic health rights. The contradiction between the priorities of public social welfare and the market-oriented MCH service delivery is becoming increasingly obvious.

The current central government financial system and the allocated MCH budget negatively affect local government's recognition of and investment in MCH.

Disparities exist between service provisions and service needs. Similar to the rapid economic development, MCH resources are concentrated in large and intermediate cities and are invested in high quality facilities and their human resources and services. However, access of rural residents to basic essential healthcare is still a problem. According to the Third NHHS, the rate of hospital delivery during 1992-2000 increased from 39% to 68%, of which the rate in the urban areas increased from 87% to 93%, and the rate in rural areas rose from 22% to 62%. Despite the rapid increase in hospital delivery, nearly 40% of rural deliveries still took place outside of hospitals.

In rural areas, township hospitals are the major MCH service providers which offer medical treatment, prevention, maternal healthcare, hospital delivery, reproductive health checkups and treatment, vaccinations and paediatric services. However township hospitals have limited facilities and low capacity, and the quality of service is in need of significant improvement. Many township hospitals in the western and poor areas do not have the resources to provide essential obstetric care, weakening the vital role of hospital delivery in reducing MMR. Similar problems exist in the quality of neonatal and child healthcare services, which have limited coverage of effective interventions. In addition, some important neonatal interventions, especially those targeted at the early neonates (within one week), such as low birth weight management, have not been implemented across the country. Other important interventions, like the supplementation of folic acid, Vitamins A and Zinc, the *Kangaroo Mother Program* and the guidelines for early childhood development, also have not been effectively implemented. Over-treatment and untimely referrals are also major factors affecting service quality.

Inequitable access to MCH services and the disparity between service delivery and

service needs have deviated from the basic principle that public service should protect the vulnerable groups of society, and health services should prioritize meeting the essential health and medical needs of the entire population. This situation has seriously affected social development in China.

A direct correlation lies between the causes of maternal and child mortality and the quality of MCH services. Neonatal deaths account for over 60% of the total child deaths in China, and 79% of the neonatal deaths in 2004 occurred within 7 days of delivery. Of the direct causes of neonatal, infant and child death, neonatal diseases are the most serious cause of death (63.9%). Neonatal asphyxia and trauma, preterm delivery, low birth weight (LBW), hypothermia, severe infection, and congenital malformation account for 89% of all neonatal deaths. In type II, III and IV rural areas, severe infections are prominent in newborns.

Postpartum haemorrhage is the leading cause of maternal mortality, followed by pregnancy-induced hypertension, embolism, ante partum haemorrhage and puerperal sepsis. In rural areas, postpartum haemorrhage accounts for one third of all deaths, and in type IV rural area, the rate is 12.7 times higher than urban areas. To a large extent, these main causes of maternal, child and neonatal deaths are closely related to the accessibility and quality of MCH services. According to an experts' review, with effective improvement of essential obstetric service, 75% of all deaths could have been avoided. Improved standards and quality services are the key to reducing maternal and child mortality. Interventions, such as providing skilled birth attendants, are very effective in reducing maternal deaths caused by post partum haemorrhage and pregnancy-induced hypertension, possibly by 10-95%. Therefore, although maternal and child mortality has continued to fall, many infant, child and maternal deaths occur because of poor quality MCH services, which are, in turn, closely linked to the inadequate financing mechanism, institutional guarantee, infrastructure, and capacity of medical staff. At present, most of the postnatal visits in rural areas are undertaken by village MCH workers or village doctors, who, without specialized professional knowledge and skills, necessary facilities, or a basic income from the government for their livelihood, are faced with many difficulties in terms of capacity and scope of service delivery.

Experiences from Malaysia have shown that the introduction of systematic management, such as legislation, registration of birth attendants, training, licensing, and MCH supervision, can do much to improve service quality. Experiences from other countries, such as Japan, indicate that the service quality provided by public nurses and birth attendants is of vital importance, and well-trained doctors and nurses play an important role in improving MCH healthcare. Moreover, community

mother-baby healthcare centres, in connection with other community activities, and in cooperation with various medical and health institutions, combined with a two way township/county referral system, are conducive to maternal and infant health.

Capacity building of service providers remains deficient. With China's reform and development in health structure, the number and quality of health professionals has increased remarkably. The *Regulations on Nurses Management in China* and the *Law on Practitioners in China* have played a positive role in strengthening and standardizing the management of health teams. However people with more extensive health needs within the population require higher quality service and the capacity of MCH service providers to deliver such service remains deficient. Furthermore, few opportunities are provided to staff to build their capacity, which affects the MCH staff turn over rates and is reflected in the lack of efficiency in maternal and child health services.

3.5. China lacks an effective coordinating mechanism between MCH policies and related social policies.

China has established a legal policy framework conducive to the promotion of MCH services, and has made related plans for implementation. However, because of the nature of the MCH service targets, most marginalized children are excluded from the social insurance scheme due to financial limitations, and therefore are unable to access medical and health services. Their medical and health needs are difficult to guarantee institutionally and therefore their health risks have to be managed by their family. MCH service is a typical example of a "market failure" public service and as such, is sensitive to the social environment and developmental conditions. Therefore, further improvement of the legal environment for MCH service depends not only on the perfection of MCH policies and regulations, but also on the support from and coordination with related social policies such as rural development, education, poverty alleviation, women's empowerment and family planning.

International experience shows that government involvement, commitment and effective MCH policies are critical factors for enhancing maternal and child health and reducing MMR. Economic development is not the only decisive factor for MCH. Important factors leading to high quality MCH services include the development of and priority given to MCH policies, and providing political and financial support. Experiences in Malaysia and Sri Lanka prove that these measures can promote equitable access to MCH services and improve cost-effectiveness if integrated with rural development, educational promotion, poverty alleviation, women's empowerment, family planning, and reduction of disparities across regions and population groups.

As an important and indispensable part of primary healthcare, MCH services should cover two thirds of a country's essential health services. It is common practice in countries around the world to prioritize cost-effective public health and essential medical services. Part of MCH service delivery falls under essential clinical services which include delivery of healthcare services during the prenatal period (prenatal healthcare, obstetrical emergency treatment, and referral), and treatment of some infant diseases (diarrhoea, acute respiratory infection, measles, malnutrition, etc). These cost effective basic services aim to treat common diseases whose patterns of occurrence are well known, as are the curative methods.

As health reform is in line with the overall national economic reform, it has, to some degree, neglected the social responsibilities of maternal and child health, resulting in limited service delivery in some areas. The government needs to reaffirm the public health position of MCH services, focusing on preventive interventions and enhancing the health of target groups.

Internationally, the most prominent characteristic of public health is government responsibility, including countries of market economy where the responsibility for public health is not left to the market. This is determined by the characteristics of public health services, in that population health directly correlates to the public's best interest and affects national and social security. Therefore, even in countries with a very high level market-orientation, the governments play a lead role in health financing, resource allocation, service goal identification and service network construction. *Decisions of the Central Committee of the Communist Party of China on Strengthening the Rural Health Work* has clearly defined the public health positioning of MCH services. Governments at all levels should carry out this decision, and fully regard MCH as their basic social responsibility, giving support and priority to MCH services. This is not a matter of whether or not they take responsibility, but rather a matter of how the responsibilities are fulfilled.

Chapter Three Strategic Direction and Policy

Recommendations

China is endeavouring to construct a universal *xiaokang* and harmonious society. This implies not only socio-economic development, which includes sustainable development of the population, resources and the environment, but also a balanced development of urban and rural areas, across regions and population groups. This

balanced approach to the development and progress of all China's people so that the entire population of 1.3 billion can benefit from China's reform and development.

Health is a basic human right, and also an important source of wealth to a country. The survival and health of the population needs to greatly improve in order to promote social development and pursue social equality. While women and children are important members of the population, they are vulnerable in terms of social development. Thus, in the process of promoting social development and social equality, it is imperative to give priority to maternal and child survival and health.

1. Rationale for the recommendations

1.1. MCH is an important indicator to measure social and human development.

Internationally, MCH is not merely the most fundamental indicator for medical and population health, more importantly, it is regarded as a comprehensive indicator to measure social and human development. Without improving maternal and child survival, and without meeting the vulnerable groups' essential needs of survival and development, the progress in any country (or territory) cannot be regarded as successful. Therefore maternal and child survival is an important criterion for social development, which reflects a country's (or territory's) development level, image and stature.

1.2. MCH makes an indispensable contribution to national social development.

Maternal and child health is the field in the health sector that has the largest and widest social benefits. Any improvements in MCH policy and services would directly benefit more than two thirds of the total population. Improvement in maternal and child survival and health would have positive, multi-dimensional impacts on national socio-economic development. Since the 1990s, reduction in child mortality in China has contributed to a quarter of the increase in life expectancy. Maternal and child health has played a positive role in promoting family planning by providing technical support and reducing child death. Enhanced MCH services have also reduced or prevented congenital malformations, child disability and injury, directly reducing the associated costs in social development and enhancing health in terms of human resources. The reduction of illnesses, injuries and disabilities resulting from MCH healthcare and medical treatment have not only alleviated the burden of families, but also brought about incalculable mental wellbeing.

1.3. While maternal and child health in China has been continuously improved, it has lagged behind economic development.

Since China's reform, maternal and child health and survival has continuously improved. However, in contrast to the rapid economic development and the improvement of people's living standards, MCH progress and the upgrading of MCH indicators has comparatively lagged behind. Reduction in infant and child mortality has slowed, and there are great disparities in maternal and child health between rural and urban areas, within and across regions, and across population groups. There is not only a great gap in MMR and U5MR between China and developed countries, but also a considerable gap between China and some developing countries with similar or even lower levels of economic development. The inadequate advancement of MCH directly affects China's human development, social harmony and the attainment of the MDGs.

1.4. China's high MCH status does not match its inadequate government funding, and MCH has not received due recognition in the social development domain.

As an important dimension of the public health sector, MCH should be a prioritized publicly funded service. China's market-oriented reform has further highlighted the government's responsibility in maternal and child health. Improved maternal and child survival and health should play a fundamental role in achieving the goals of a universal *xiaokang* and harmonious society in China. However, the status of maternal and child health in transitional China is not optimal for a number of reasons, including overwhelming focus on income generating activities, governmental failure in taking corresponding responsibilities, lack of coordination among national policy-making agencies and policies for social development, unclear MCH position in public services and neglect of MCH in overall social development.

1.5. MCH services face all-round challenges.

Through efforts over the past several decades, China has established a relatively comprehensive, multi-tier service network and system in MCH. However with the reform of MCH services occurring in a period of socio-economic transition, the MCH service system is faced with unprecedented challenges. Some challenges are related to social policies and economic structure, others relate to implementing policies, and still others pertain to the quantity and quality of technology and staff. Among all the challenges, the first and foremost is the importance placed on MCH itself. More broadly, the health systems, the policies and the mechanisms implementing those policies are also important challenges. Additionally, attention should be paid to the availability, accessibility and affordability of MCH services, as well as the feasibility of MCH policies and their operation. The key goal is for MCH to be recognized and invested in as part of the public social welfare system and to achieve equitable access for all segments of the population to MCH services.

1.6. Socio-economic, cultural and political factors all play important roles in improving maternal and child survival.

Maternal and child survival and health are predominantly influenced by the development level of a country and therefore are not only determined by the quality of MCH services, but also by socio-economic, cultural and political factors. Evidence suggests that the major factors leading to maternal and child mortality are closely linked to the accessibility and quality of services. Presently, to improve maternal and child survival and health, what is most needed is not a service network or technical skills, but rather, quality accessible MCH services supported by government funding, policy and regulations. Therefore, it is imperative that the reduction of maternal and child mortality and the improvement of maternal and child survival is synchronized with national development. Such efforts will not only help achieve the MDGs in China, but are also key components of building a new socialist countryside, strengthening women's empowerment and education for girls, alleviating poverty, and sustaining services in accordance with cultural tradition.

2. Strategic directions

2.1 Reaffirm the significant role that MCH assumes in building a harmonious society.

Clearly define the basic function of MCH as one that falls within the public social welfare system in improving economic construction, promoting social development, carrying out population policies and improving the quality of the population. Taking into account the important influence of MCH on China's international stature and image, give priority to MCH services in public health. Develop and integrate a national strategy for MCH development into the overall strategies for socio-economic development.

2.2 Further clarify the direction and strategic goals for MCH development

Work to achieve a complete network with multiple functions to meet the basic needs of MCH, with healthcare at the core, aiming to guarantee reproductive health at grassroots levels, and focusing on preventive interventions in general population groups. Further reduce the mortality rate of neonates, infants and children under five through ensuring safe delivery. Reduce congenital malformations, disabilities and injuries to improve the health of the population. Continuously improve reproductive health. Enhance child nutrition so as to strengthen overall health. Strengthen the MCH institutions and enhance MCH monitoring and supervision in order to fulfil China's international commitments and to achieve the MCH goals in the MDGs, according to

or ahead of schedule.

2.3 Further clarify that the government should take the lead in maternal and child health development.

MCH services cannot be market oriented. Instead, MCH should be prioritized public services provided by the government. Clarify that the government has the social responsibility to promote equitable access to MCH services. These responsibilities require a great increase in financial support for MCH, prioritization of MCH funding in public finance and development, and the adjustment of related policies. These commitments will guarantee MCH is prioritized within public social welfare, improve equitable access to MCH services ensuring vulnerable and marginal groups obtain essential services, and establish multi-sectoral coordinating and cooperative mechanisms to strengthen the development and implementation of the plan.

2.4 Further clarify MCH systems, development direction and function.

Clarify the direction for MCH development, its function, service scope and service items in an effort to broaden the standardized construction of MCH institutions. Non-profit public institutions should be the major MCH service providers with systematic and stable financial support provided by the government. These institutions should place emphasis on prevention in population groups, continuously improve the legal framework of MCH services, and provide women and children with healthcare services in compliance with their health needs. The construction and improvement of the MCH system should include: reasonably distributing the service network so as to ensure the timeliness and convenience of services; paying more attention to the tier structure and to resource distribution; strengthening the construction of the primary service networks so as to meet the essential health needs of the great majority of the population; focusing on preventive interventions and primary healthcare; and controlling the service quality through policy response mechanisms and information monitoring.

2.5 Further clarify the close relationship of MCH with the nation's economic, social, cultural and political development, and clearly define the imperative needs of maternal and child health for all-round, balanced and sustainable development.

The development of and the improvement in maternal and child survival depends not merely upon the MCH system, or even the medical and health system; rather, they depend upon the larger environment of the nation's socio-economic development, upon the increase in the educational level of the population, the improvement of the status of women, poverty alleviation, and improvement in the public financing system.

Integration of MCH policies with wider social policies can effectively promote the implementation of MCH policies. To this end, it is necessary to build effective coordination mechanisms within the MCH system, and with other relevant government agencies at all levels. It is also necessary to integrate MCH into the national decision-making processes, planning and implementation. Meanwhile, it is necessary to further integrate health resources with the strategy of focusing on target areas, reducing disparities between rural and urban areas and across regions. Decentralize management and services with the goal of integrating MCH services into community health service in urban areas and into primary health services in rural areas.

2.6 Further clarify the importance of improving the model of MCH service delivery.

MCH, in terms of service philosophy and service targets, is fundamentally different from other medical and health work. As such, MCH services and the model of service delivery should cater to the characteristics and needs of the service targets, focusing on grassroots, population based preventive healthcare with a systematic array of services. It is critical to recognize that the emphasis on facilities, training and technical support is the key to the improvement of MCH technical capacity and service quality. Systematic and standardized service management is the effective means to improve the efficiency of the MCH service network. A standard, timely and effective referral system is an important mechanism to improve MCH services and to reduce maternal and child mortality risks. Strengthening of the monitoring and supervision of the services is necessary to improve the capacity of the system's response and improve service performance. Scale up best practices from the lessons learned in project implementation. Maternal and child health should focus on the key problems, such as interventions for congenital malformations, reduction of child malnutrition and injuries, delivery safety, prevention and treatment of common women's diseases and HIV/AIDS prevention and control.

3. Policy recommendations

3.1 Provide an institutional guarantee for the development of maternal and child health.

Strengthen supervision, and expand and implement laws and regulations associated with maternal and child health. Integrate MCH into the plan for women and children's development, the national plan for socio-economic development and the indicator system for assessing the achievements of government at all levels.

3.2 Establish a mechanism for systematic funding for maternal and child health, with progressive increases.

The government should provide earmarked funding for essential MCH services to ensure synchronized development of maternal and child health with socio-economic development. Increase government spending on healthcare, through larger fiscal transfers, in poor areas and for key population groups. Establish a mechanism for government funding for essential MCH services.

3.3 Establish the MCH service and management system with universal coverage of all population groups, multiple functions and rational responsibilities.

Reaffirm the public health positioning of the MCH service, which is undertaking the government's responsibility to supply essential public social welfare services. Using professional MCH institutions as leaders, based on urban community health service and rural primary health service, and focusing on preventive interventions and healthcare services, decentralize the MCH services to the township and village levels. Give priority to the building of the three-tier MCH service network, in particular obstetric services at township hospitals. Establish and complete a mechanism of an effective two way referral system between various levels of MCH services.

3.4 Enhance the quality and efficiency of the MCH service network, and focus on targeted regions and population groups.

Provide an essential package of MCH services, such as breastfeeding support, skilled birth attendants, and EOC focusing on type II, III and IV rural areas and increase access to services for vulnerable and marginalized groups, such as poor and migrant populations. Gradually establish a medical assistance system within the MCH field, to ensure universal access for women and children to an essential package of quality antenatal, obstetrical and neonatal care.

3.5 Strengthen capacity building of MCH service providers and foster the development of specialized MCH professionals through building specialized MCH teaching institutions that place greater emphasis on disciplinary development.

It is also necessary to strengthen the training of professionals working in rural areas or at grassroots level to improve their basic technical skills. Finally, paying MCH workers at township and village levels is required to stabilize the workforce.

3.6 Further intensify the collection and surveillance of maternal and child health data to establish an effective mechanism for policy response.

The existing national MCH surveillance network has become a necessary tool for government administration and policy-making as it provides important information for assessing maternal and child survival and health status in China. This network needs to be further intensified and extended. More surveillance sites are needed to collect more representative statistical data, and the data needs to be enriched in light of common international practices so as to reflect more scientifically accurate trends and causes of maternal and child mortality. MCH data collection and surveillance should be extended to cover marginalized groups and populations.

3.7 Solve major and difficult problems in maternal and child health, and further improve the level and quality of MCH services through project implementation, and through the replication of projects.

Priorities should include: reducing or remitting fees for hospital delivery in poor rural areas, partially providing free essential MCH services, and strengthening the health infrastructure in rural areas so as to reduce the disparities between urban and rural areas and across regions. Carry out the three-tier preventive measures laid down in the *Action Plan for Improving Population Health and Reducing Birth Defects and Disabilities*. Implement prevention and treatment programs on reproductive diseases among women and focus on rural areas and western China in particular, through health education, staff training, provision of basic equipment, and scaling-up best practice. Conduct HIV/AIDS education and prevention of mother to child transmission in order to reduce its threats to the health of women and children.

PART III Joint Review of the Maternal and Child Survival Strategy in China

Analytical Report

Chapter One Background

The health of women and children has historically been one of China's top priorities and the Government has regarded the reduction of maternal and child mortality as an issue of prime importance which requires constant attention. As a result, a series of legislation, regulations and policies have been developed and implemented to safeguard the survival and development of women and children. The National People's Congress passed the *Law on Maternal and Infant care (MCH) of the People's Republic of China* on 27th October 1994, constituting a solid legal foundation for the wellbeing of women and children. The State Council promulgated *the National Program on Children's Development (2001-2010)* and *the National Program on Women's Development (2001-2010)* (hereafter referred to as *the two Programmes*) in 2001, integrating key indicators for MCH into social and economic development planning. China has primarily established an MCH policy and legal assurance system with the "one Law and two Programmes" at the core, along with a series of laws and regulations such as *China's Constitution, Marriage Law, the Law on the Protection of the Rights and Interests of Women, the Law on the Protection of Minors and Population and Family Planning Law*.

In order to achieve the MDGs related to the reduction of child mortality (MDG4) and improvement of maternal health (MDG5),¹⁴ the Government of China designed a series of targeted policies and interventions and obtained impressive results. In 2001, the *two Programmes* were launched by the State Council, aiming respectively to reduce by 2010 the child mortality rate (i.e. under-five mortality) by one fifth and maternal mortality by one quarter of the 2000 levels. From 2000, the Ministry of Health (MOH), the National Working Committee for Children and Women (NWCCW) and the Ministry of Finance (MOF) jointly launched the Programme to Reduce

¹⁴ <http://www.unfpa.org/mdg/basics.shtml>

Maternal Mortality and Eliminate Neonatal Tetanus (the ‘Maternal Mortality Reduction’ programme). Initially the programme covered 378 poor counties in 12 central and western provinces. In 2005, the programme was expanded to cover 1,000 counties in 22 provinces and autonomous regions benefiting over 300 million people. The programme has significantly contributed to increasing the rate of hospital deliveries in rural areas, improving maternal health and screening, referral and emergency care capacity of high-risk pregnant women, enhancing health education, fostering favourable environments to support safe motherhood initiatives, playing an important role in reducing maternal and child mortality, and improving the health of women and children in rural areas, especially poor and ethnic minority areas. The 11th Five Year Plan also sets targets for infant mortality (i.e. 17 per thousand live births) and for maternal mortality (i.e. 40 per 100,000 live births) by 2010. Immunization as a means to improve children’s health has also been a priority in China. Since 1990, the national coverage of BCG, polio, DPT and measles vaccine has remained at over 85%. The country has remained polio-free since 1994 and the incidence of vaccination-targeted diseases such as measles and diphtheria has significantly declined. Currently the EPI also includes the Hepatitis B vaccine. The 11th Five Year Plan stipulates that the vaccination rate of EPI vaccines should reach higher than 90% by 2010.

However, the country still faces many challenges with regard to MCH. It has been estimated that China was ranked third in number of deaths of children under five years of age in the year 2000, accounting for 7.3% of the total number of under-five deaths worldwide.¹⁵ Since the mid 1980s, the infant and under-five mortality rates in China have continued to fall but the rate of decline has slowed considerably since the mid-1990s. Regional disparities result in significant discrepancy in maternal and child mortality rates; vulnerable migrant, remote and rural poor populations do not appear to be adequately covered by MCH services. The quality of MCH services also needs to be improved.

In an effort to review the current MCH status, analyze factors affecting death and survival of women and children, share state-of-the-art international methodology and interventions, and bring forward strategies and interventions fitting China’s situations, the MOH, UNICEF, WHO and UNFPA agreed to jointly carry out a review of national strategies for maternal and child survival. The overarching goal of this review is to develop a universally accessible, equitable and affordable essential package of maternal and child healthcare and relevant implementing strategies for

¹⁵ The Lancet; Child Survival, Vol 361, June 28, 2003; page 3

China aiming at further reducing maternal, neonatal and child mortality and ensuring achievement of the MDGs.

A Steering Committee chaired by the MOH with representation from UNICEF, WHO and UNFPA coordinated the review. A working team consisting of national and international experts and researchers in maternal health, neonatal care, child survival, epidemiology, health economics and policy analysis undertook data analysis and report drafting, and the Peking University Health Science Centre coordinated the analysis of the data. The work has been completed over a period of 20 months commencing in May 2005.

The present section of this document is the result of an in-depth analysis of different sets of quantitative and qualitative data and a series of technical consultations with national and international experts. Chapter 1 of the report outlines the research background. Chapter 2 describes the conceptual framework and the methodology used to perform the analysis. The in-depth analysis of trends, disparities and immediate factors of maternal and child mortality over a period of 9 years (1996-2004) is presented in Chapter 3. Chapter 4 describes predisposing factors to maternal and child mortality. It includes a simulation, using the internationally accepted models published in the Lancet and the British Medical Journal¹⁶ of the potential impact on the maternal and child mortality of access to the most cost-effective interventions. Chapter 5 analyses the socio-economic and systemic factors underlying maternal and child mortality in China. Recommendations on effective interventions, potential delivery mechanisms, and assurance measures to reduce maternal and child mortality in China are outlined in Chapter 6.

¹⁶ The Lancet; Child Survival, Vol 361, June 28, 2003 & Neonatal Survival, March 2005, and British Medical Journal; 12 November, 2005; <http://bmj.com/cgi/content/full/331/7525/1107>

Chapter Two Methodology

1. Theoretical framework

The overall theoretical framework is derived from the model used in the Joint WHO-UNICEF regional strategy of Child Survival¹⁷ By analyzing the immediate factors that affect maternal and child mortality as well as the predisposing and the socio-economic and systemic factors (Table 2.1), it reveals that mortality is not only determined by health related factors, such as complications during pregnancy and delivery and healthcare service, but also by a broader set of factors such as socio-economic, institutional and the legal environment. Therefore while institutional measures specifically related to health services have an important impact on child and maternal mortality, policies from areas outside the health domain such as family planning, water and sanitation, education, poverty and income disparities also impact on MCH and need to be addressed to improve MCH.

Table 3.2.1 Immediate, predisposing and socio-economic and systemic factors that underpin maternal and child mortality

Immediate Factors	Predisposing Factors	Socio-economic and systemic Factors
Direct causes Complications of pregnancy and delivery Perinatal and neonatal conditions Acute Respiratory Infections Diarrhoea Vaccine-preventable diseases Unintentional Injuries	Lack of access to and quality of health services Inappropriate infant and child feeding and caring practices Maternal feeding practices Lack of access to safe water, sanitation and hygiene Fertility, contraceptive use, and birth interval	Socio – Economic Factors Poverty and inequities Education (girls and women) Gender and women’s status Transportation and distance Migration and culture Public Policies Financing and resource utilization Human resource constraints
Indirect causes of deaths Malnutrition of children and micronutrient deficiency	Other: Communicable diseases place potential threat to women and children Maternal nutrition status	

¹⁷ WHO/UNICEF (2005), WHO/UNICEF Regional Child Survival Strategy– Accelerated and Sustained Action Towards MDG 4, Regional Office for the Western Pacific, Document No. WPR/RC56/8 (28 July 2005).

2. Data sources

Both quantitative and qualitative data are used in this review. The quantitative data was obtained from secondary sources namely the National Maternal and Child Surveillance (MCHS) (1996 – 2004), the 2003 National Health Service Survey (NHSS), the 2002 National Nutrition and Health Survey (NNHS), and the 2004 Comprehensive National Immunization Survey. The qualitative data was collected in August 2005 by members of the working team during field assessment missions to three provinces, namely Shaanxi, Shanxi and Guizhou. The quantitative data include disease and mortality burden, utilization of health services and constraints in access, coverage, and efficiency of critical child and maternal survival interventions. The aim of the qualitative assessment was to confirm the preliminary conclusions reached through the analysis of quantitative data.

The National MCH Surveillance system covers 116 sites (37 urban districts and 79 rural counties) of 31 provinces (autonomous regions and municipal cities). According to a development index which includes ten indicators,¹⁸ surveillance sites are classified as large and medium/small cities and rural areas by type I, II, III and IV (IV being the least developed); and as coastal, inland and remote areas by geographical locations. Maternal mortality surveillance data is collected in all townships, while data related to child mortality surveillance is collected in only two sample townships.

The 2003 NHSS is the third national public health survey conducted by the MOH. The Survey selected 95 counties (cities and districts) by multistage stratified cluster random sampling method of which: 28 were urban districts (11 from large cities and 17 from medium/small cities) and 67 were rural counties (16 from type I, 20 from type II, 23 from type III and 8 from type IV). The survey covered 57,023 households. The sample size was 193,689 including 39,437 married women of childbearing age (i.e. 15-49 years old) and 9,297 children under five.

The 2002 NNHS aimed at assessing the impact of the rapid social and economic developments of the last decade on nutrition and health. The survey covered 132 counties/districts selected by multistage stratified cluster random sampling method

¹⁸ The Composite is based on the following ten indicators: Rate of employment first industry; percent of population under 14 years of age; illiteracy rate; crude birth rate; crude death rate; infant mortality rate; GDP per capita; rate of employment in second industry; percent of population educated up to middle school level; percentage of population above 65 years of age.

and classified according to the composite development index in large and medium/small cities and rural areas by type I, II, III and IV. The sample included 71,971 households (24,034 urban households and 47,937 rural) with a population of 243,479 (68,656 urban and 174,823 rural dwellers), about 30,000 children (under 12) and pregnant women.

The 2004 Comprehensive National Immunization Survey is a nationwide survey carried out by the MOH to evaluate EPI. The probability proportional to size (PPS) method is used as the sampling technique in this survey, and 10% (273 counties) of all counties were selected. In total about 2.5 million households were visited during the survey and 171,521 children under 5 years old were surveyed. As opposed to the previous surveys this sample was not classified according to the development index.

The qualitative study was conducted in 2005 by the working team in three provinces, namely Guizhou, Shanxi and Shaanxi. In each province besides the provincial capital, one prefecture was visited and within those prefectures observations were gathered in five districts/counties, in six townships and in six villages. During the visits quantitative information for critical indicators from the local routine MCH annual reporting system was collected to confirm the levels and trends reported in the epidemiological analysis. The experts made qualitative observations of the quality of care, the organization of services, the efficiency in the use of resources, and the financing mechanisms. Key informants from the different levels of the health system were interviewed to obtain information on disease burden, on service utilization, and on the constraints and problems that they face. Household members were also interviewed to assess their major health problems, their knowledge and attitudes about health care services, their access to health services and their perceptions about the quality of services and constraints to using these services.

3. Data analysis

The epidemiological analysis was done using the Stata software package. The indicators measuring immediate and predisposing variables were selected on the basis of the conceptual framework presented above. Due to small number of observations per type of area and the large number of causes of maternal and child deaths, averages for two specific periods of time (1996-1999 and 2000–2004) were generated for analyzing maternal and child mortality and malnutrition.

Moreover, maternal classification of causes of death used in the maternal surveillance system were in general on the basis of ICD 10, however, some exceptional classification of causes of death is different from the international classification. In

order to make comparisons with similar international studies, the joint review report adopted the international classification approach. The results therefore may slightly differ from officially reported data.

Since data was collected from samples, which were not selected strictly in accordance with the proportion of the population in the different areas (e.g. type I, II, III, and IV), weights were used to correct for possible bias in the results. Thus, the maternal and child mortality rate were adjusted using weights calculated based on the fourth population census and correcting underreporting.

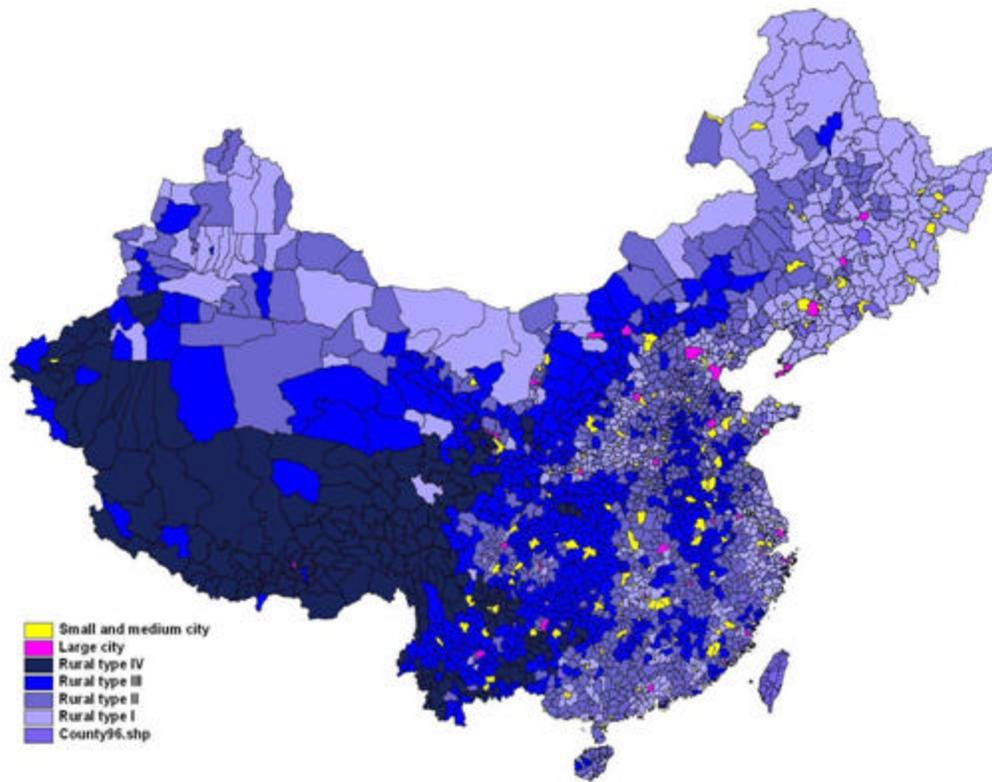
The simulations undertaken to assess the effectiveness of the coverage of the essential package of interventions is based on a model outlined in a series of articles published in *The Lancet Journal* and the *British Medical Journal* for the analysis of survival indicators, nutrition status indicators and health service coverage indicators for women and children. This model integrates qualitative and quantitative assessments in the definition of the essential package of interventions. Weighted data as well as the averages for 2000 to 2004 were used when using the ‘Lancet Model’ for the simulations of maternal and child mortality. Therefore as mentioned above these results might be different from those published in other official sources and hence should not be quoted instead of official data.

4. Principle for geographical classification

This review attempts to analyze regional disparities amongst the coastal, inland and remote areas in maternal and child mortality rates and the coverage of health services. Urban-rural disparities were also reviewed with disaggregated data. Urban areas were divided into large and medium/small cities according to population size. A further level of analysis was conducted based on the classification used in the NHSS using a development index for rural areas. Areas were classified into four types (type I, II, III and IV), with type I representing the most developed and type IV representing the least developed of all rural areas.¹⁹ The classification of coastal (i.e. Beijing, Tianjin, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong and Guangdong), inland (i.e. Hebei, Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan, Guangxi, Hainan, Chongqing, eastern part of Sichuan, Shaanxi), and remote (i.e. Inner Mongolia, western part of Sichuan, Guizhou, Yunnan, Tibet, Gansu, Qinghai, Ningxia and Xinjiang) areas, which is also used in this review, was first used when the MCH National Surveillance system a nationwide epidemiological monitoring programme was launched (1986).

¹⁹ Refer to footnote 2

Figure 3.2.1: Counties and Cities Classified according to Development Index



5. Limitations of the review

The review was not able to assess the status of MCH amongst China's poor migrant population and ethnic minorities because there is no data precisely covering these two groups. Nevertheless, some smaller studies suggest that maternal and child mortality rates amongst these two groups are relatively high. Thus, a better surveillance and analysis on maternal and child mortality amongst the migrant population and ethnic minorities is essential to find out the disparities and to reduce maternal and child mortality.

There are also limitations to the generalization of data generated by the MCH surveillance system that currently covers only 116 sites (i.e. 37 urban districts and 79 rural counties) and does not apply the same weights method to account for under-reporting and the different proportion of live births in the different populations. The Chinese system of classification of causes of death also has some discrepancies

with the ICD 10 classification, making international comparisons difficult. It should also be noted that the "Lancet model" and "British Medical Journal (BMJ) model" impact of individual interventions on reducing mortality is only as reliable and accurate as the data inputted in the model.

6. Key findings

1. The surveillance system covers only 116 sites (i.e. 37 urban districts and 79 rural counties) and needs greater geographical representation and surveillance coverage. The surveillance system also needs to be strengthened by properly weighing for under-reporting and proportion of live births in the different populations.
2. It is extremely useful to classify data according to type of county rather than just by the broader classification of coastal, inland and western provinces or by rural and urban areas since this approach can help better understand the gaps in achieving the MDGs and help formulate targeted policies and programmes for those areas.
3. The current MCH surveillance system uses China's classification of causes of death, although most of which are comparable with the ICD 10 classification, there are still some discrepancies. In order to facilitate international comparison, it is also essential to adopt only ICD mode to assess the adequacy of the causes of death data as per China's classification.

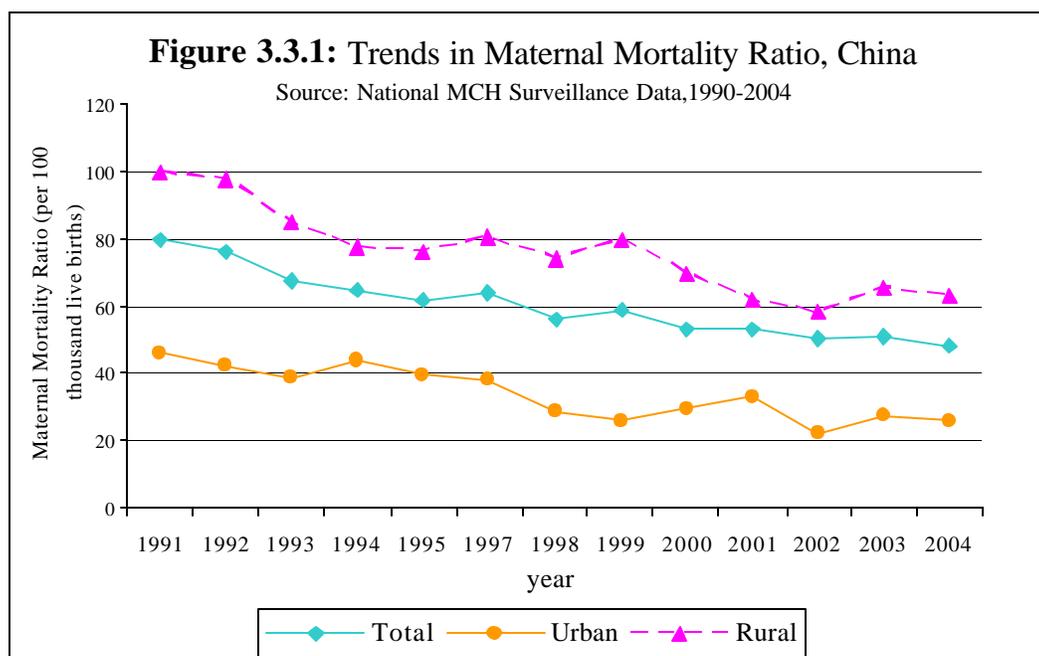
Chapter Three Trends in Maternal and Child Mortality and Immediate Factors

This chapter analyzes trends in maternal and child mortality and immediate factors. First, the overall national levels and trends of maternal and child mortality are reported. The MCH Surveillance figures show an overall reduction in both maternal and child mortality rates since 1990. However, progress in China has been uneven, with great disparities in maternal and child mortality rates tied closely to levels of economic development. After reporting on the overall trends, the chapter addresses the regional disparities, using the classification by development index, and then presents a detailed analysis of direct causes of maternal and child mortality.

1. Steady decline in maternal and child mortality

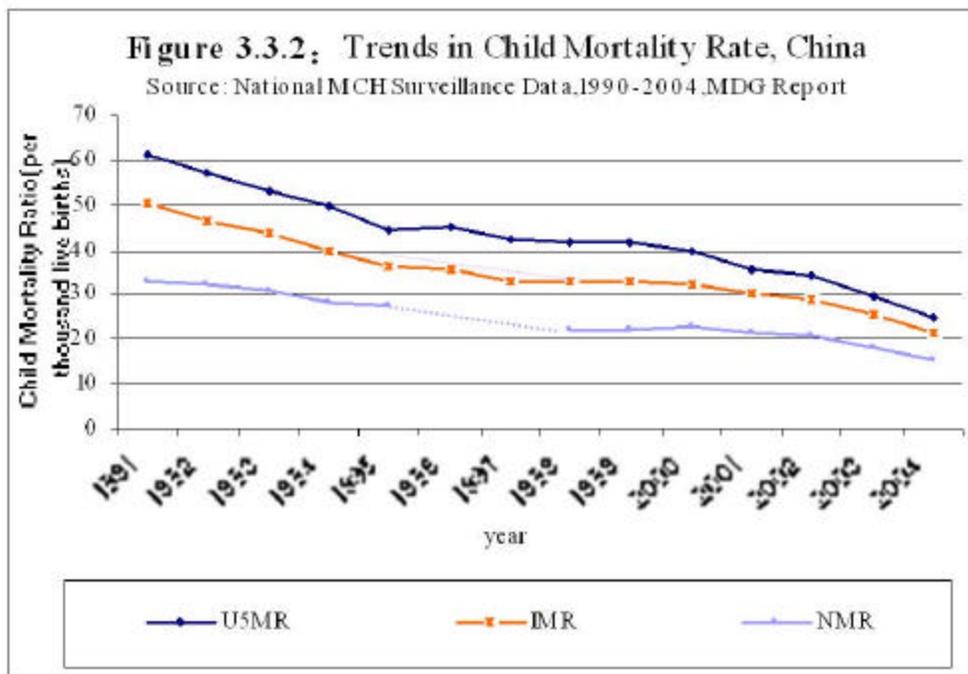
1.1 The national maternal mortality ratio dropped by 39.6% during 1991-2004

Since 1991 the national maternal mortality ratio (MMR) has been declining. The MMR dropped from 80.0 in 1991 to 48.3 in 2004 per 100,000 live births (Figure 3.3.1). While the results show that China is on track to achieve the MDG goals, the current rate of reduction indicates that further and arduous efforts are required to ensure realization of the MDG goals.



1.2 Significant decline in national U5MR of 59% between 1991 and 2004

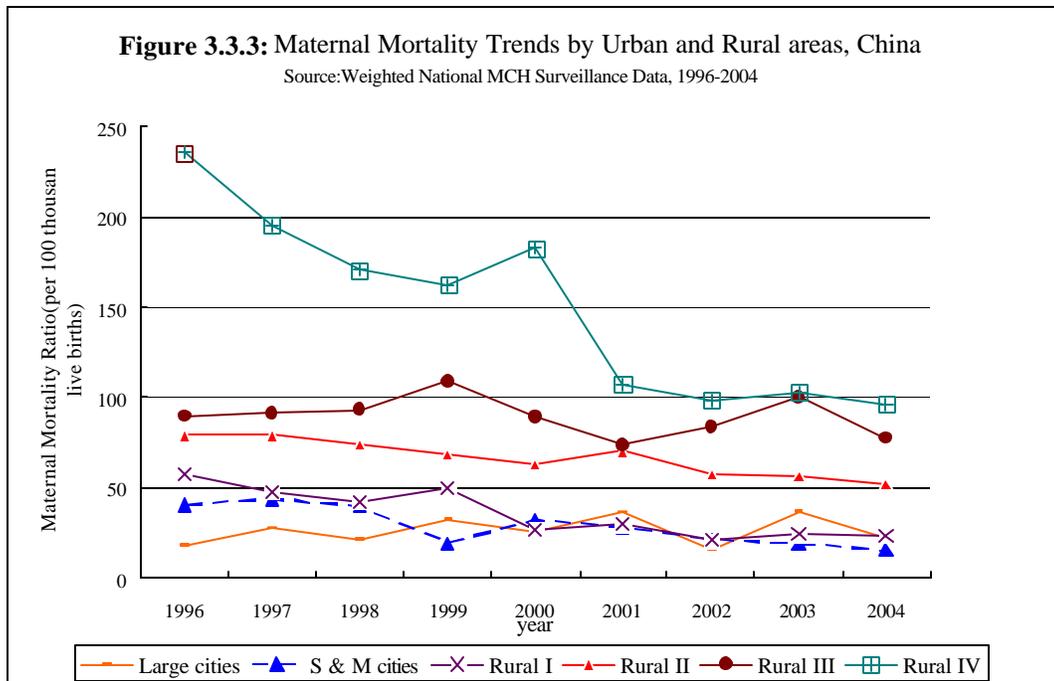
As shown in Figure 3.3.2, since 1991 there has also been a significant decline in national U5MR. It dropped from 61 per thousand live births in 1991 to 25.0 per thousand live births in 2004. China also seems to be on track to reach the MDG on child mortality. It should be noted that neonatal mortality now accounts for 63.9% of total U5MR. However, the national neonatal mortality rate has declined albeit at a slower rate.



2. Regional disparities in maternal and child mortality

2.1 Significant regional disparities exist for maternal mortality

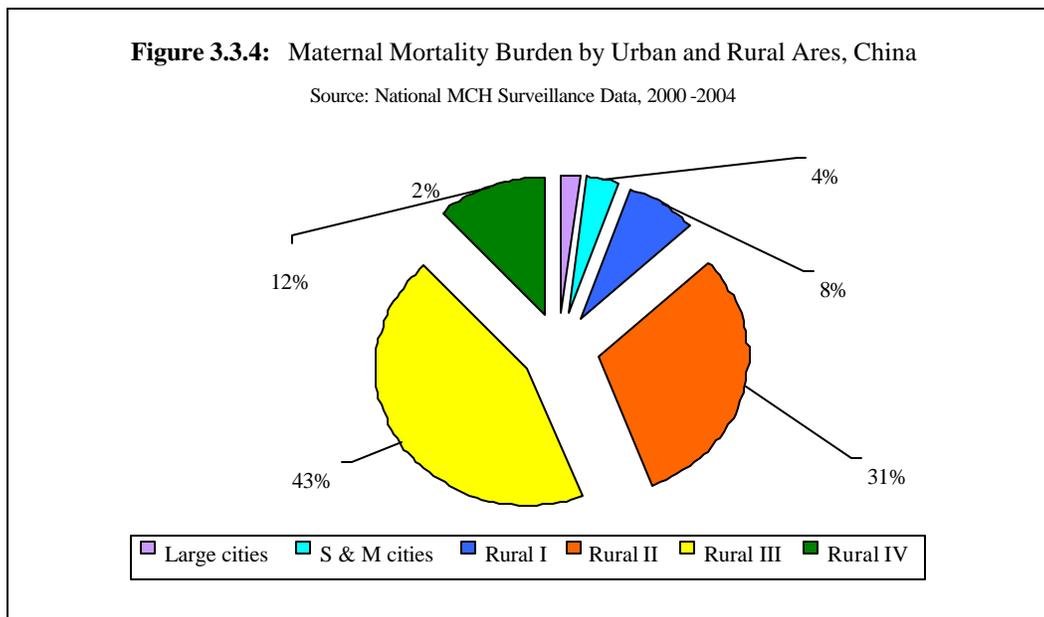
Further analysis on data since 1996 shows the national maternal mortality rate has decreased significantly but great disparities exist regarding the level and the rate of reduction within and between urban and rural areas (Figure 3.3.3). MMR in rural areas is 3.2 times higher than that in urban areas, and the gap has widened since 1996 from 2.7 to reach 3.2 in 2004. In 2004, MMR in inland and remote areas is 4.1 and 7.7 times higher than coastal areas respectively, and rural type II, III and IV areas showed the highest rates of MMR exceeding those prevalent in urban areas by 2.9, 4.4 and 5.3 times respectively.



Thus it can be seen that MMR and regional disparities are closely related to economic development. Research data indicate MMR is the lowest in urban areas. Amongst rural areas MMR is highest in rural type IV areas (96/100,000 live births in 2004) and lowest in rural type I, however it is still 30% higher than the MMR level in urban areas (See Fig 3.3.3). Despite this gap, MMR in urban and rural areas has declined during the period 1996-2004 from 57.9 to 23.9 per 100 thousand in rural type I, a drop of 58.7% and from 236 to 96 per 100 thousand in rural type IV areas, a drop of 59.3%. There was also a decline in MMR in rural type II and III areas, although at slower rates (34.1% and 13.5% respectively). Nevertheless, progress seems to have stalled since 2001 in rural type I, II and III areas. The MMR has declined the most in coastal areas (55.0%), followed by remote areas (33.3%) and then by inland areas with a decline of 29%. In urban areas, the decline has been greatest in small and medium cities, from 40.7 in 1996 to 15.3 deaths per 100 thousand in 2004. However, MMR is on the increase in urban areas in recent years, indicating maternal health care for migrant populations in urban areas has become a great challenge.

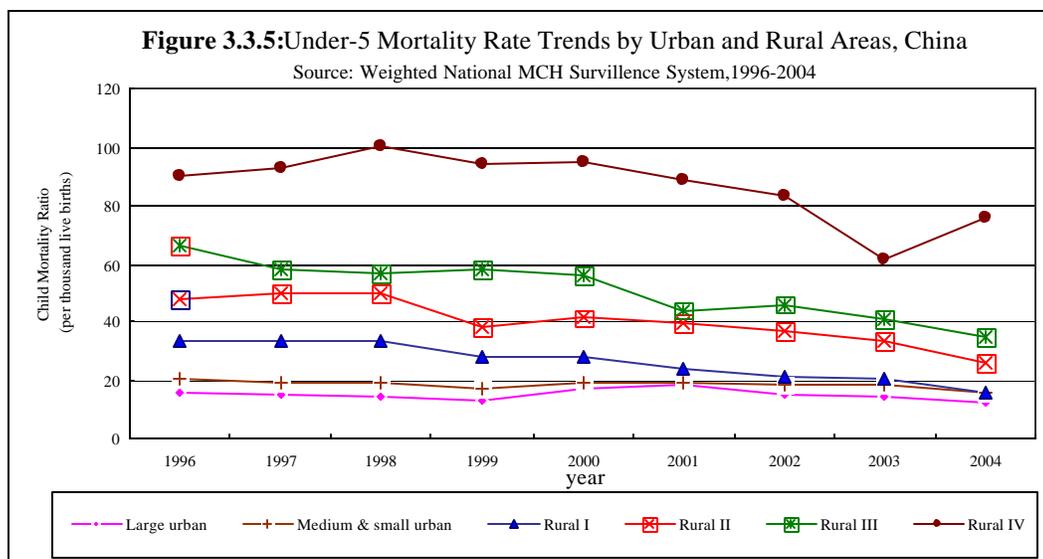
The regional distribution of maternal deaths, calculated on the basis of the 2000-2004 averages suggests that the rural type II and III areas have the largest number of maternal deaths, together accounting for 74.9% of total maternal deaths, while rural type IV areas account for 11.9% of the total. Large cities account for only 2.0% of total maternal deaths (Figure 3.3.4). The higher proportion of live births in rural areas partly explains this skewed distribution. Rural type II, III and IV areas represent

about 69% of total live births in China (31.4%, 31.7% and 5.9% respectively), but they account for 86.8% of the total number of deaths. In contrast, large cities represent 4.4% of total live births but they only account for 2.0% of total burden of deaths.



2.2 Regional imbalances in the reduction of U5 mortality rate

As in the case of MMR, even though there has been a significant decrease in child mortality rates great disparities remain both with regard to the level and the rate of decline within and between urban and rural areas (Figure 3.3.5). During the period from 1996 to 2004, U5MR dropped by 22.8% in urban and 46.8% in rural areas. In rural type I, II, III areas there was almost a 50% decline while in rural type IV areas the decline was only 15.7%. These results again indicate that U5MR is closely related to the level of economic and social development. Moreover, improvement in the U5MR has been faster in coastal and inland areas than in remote areas, with U5MR dropping by 48.0% in coastal areas, by 49.8% in inland areas, and by 30.3% in remote areas.



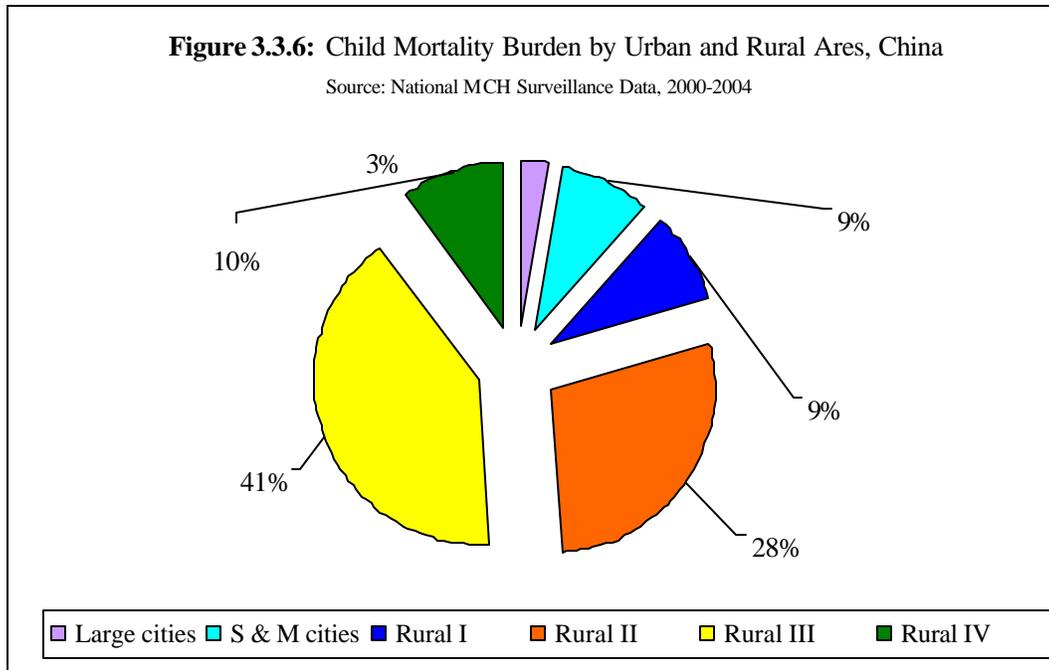
Neonatal mortality has also declined since 1996 but at a slower rate, and regional indicators also show obvious disparities. The decline in neonatal mortality has been more significant in rural type I (50.0%), II (33.5%), and III (41.8%) areas than in rural type IV areas where there has been decline of only about 4.5%. Also, the decline in neonatal mortality is greater in coastal (39.4%) and inland areas (42.6%), than in remote areas, with only 19.1%.

U5MR in rural areas is almost twice that prevailing in urban areas but, in contrast with MMR, the gap between urban and rural areas is declining; U5MR in rural areas was 2.8 times higher than in urban areas in 1996 and 1.9 times in 2004. U5MR in inland and remote areas exceed U5MR in coastal areas by 1.8 and 3.5 times respectively; these gaps are smaller than those of MMR. However, U5MR in rural type II, III and IV areas exceed that of urban areas by 2.9, 4.3 and 5.3 times respectively, similar to the differences shown for MMR. In general neonatal rates show similar trends to that of MMR and U5MR, but with slightly smaller variations amongst the different regions than those shown by the MMR and U5MR.

The regional distribution of U5 deaths, calculated on the basis of the 2000-2004 averages (Figure 3.3.6), suggests that the rural type II and III together account for 69.7 % of total U5 deaths, whereas rural type IV accounts for only 9.9% of the burden. Similar to maternal deaths and live births mentioned previously, regional disparity between U5 deaths and live births also exist, rural type II, III and IV areas represent only 69% of total live births in China, while these three areas together account for 79.6% of total U5 deaths. In contrast large cities represent 3.9% of total live births, and only account for 2.9% of total deaths.

Figure 3.3.6: Child Mortality Burden by Urban and Rural Ares, China

Source: National MCH Surveillance Data, 2000-2004



3. Immediate causes affecting maternal and child mortality

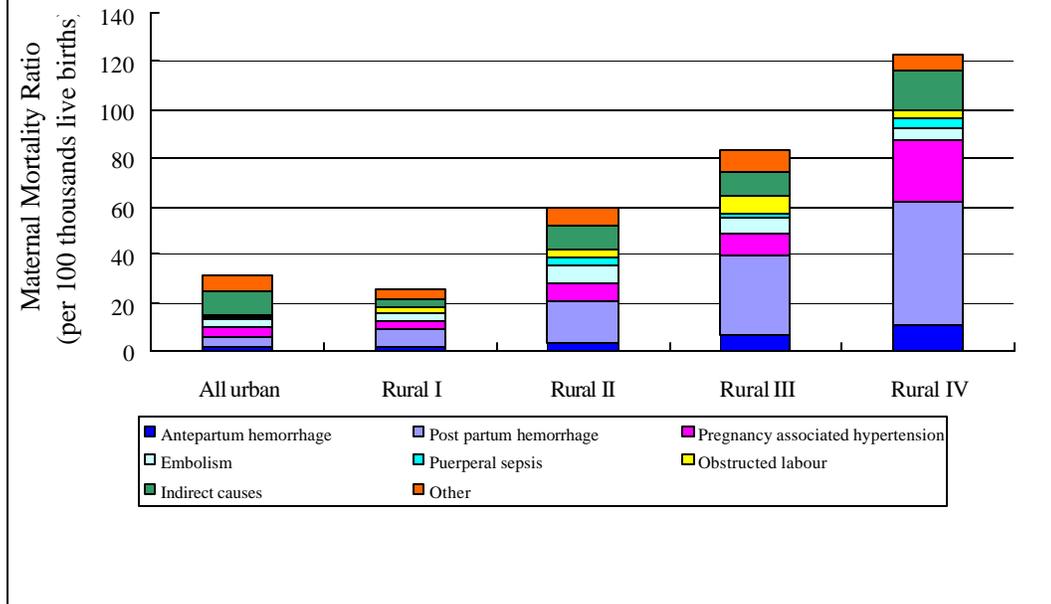
3.1 Direct causes affecting maternal mortality

Post partum haemorrhage is the leading cause of maternal deaths in China, followed by hypertensive disorder complicating pregnancy, embolism, ante partum haemorrhage and puerperal sepsis (Figure 3.3.7).²⁰ In rural areas, post partum haemorrhage accounts for 28% of all maternal deaths; the rates are 2.4 times higher than in urban areas for the 2000-2004 period. In rural type IV areas, mortality caused by post partum haemorrhage stands at 64.8/100,000 live births, accounting for 27.6% of total maternal deaths; this is 3.1 times higher than in urban areas. The second most important cause of mortality is pregnancy induced hypertension particularly in rural areas. Indirect causes, which include mainly pregnancy-associated heart disease, hepatitis, anaemia, deep vein thrombosis, and other infections, induce only 14.3% of all maternal deaths in China. The maternal mortality data show that over 75% of all maternal deaths in China are caused by factors that can either be prevented or averted successfully through the provision of essential obstetrical care.

²⁰ These results are based on the weighted averages for the 2000-2004 period.

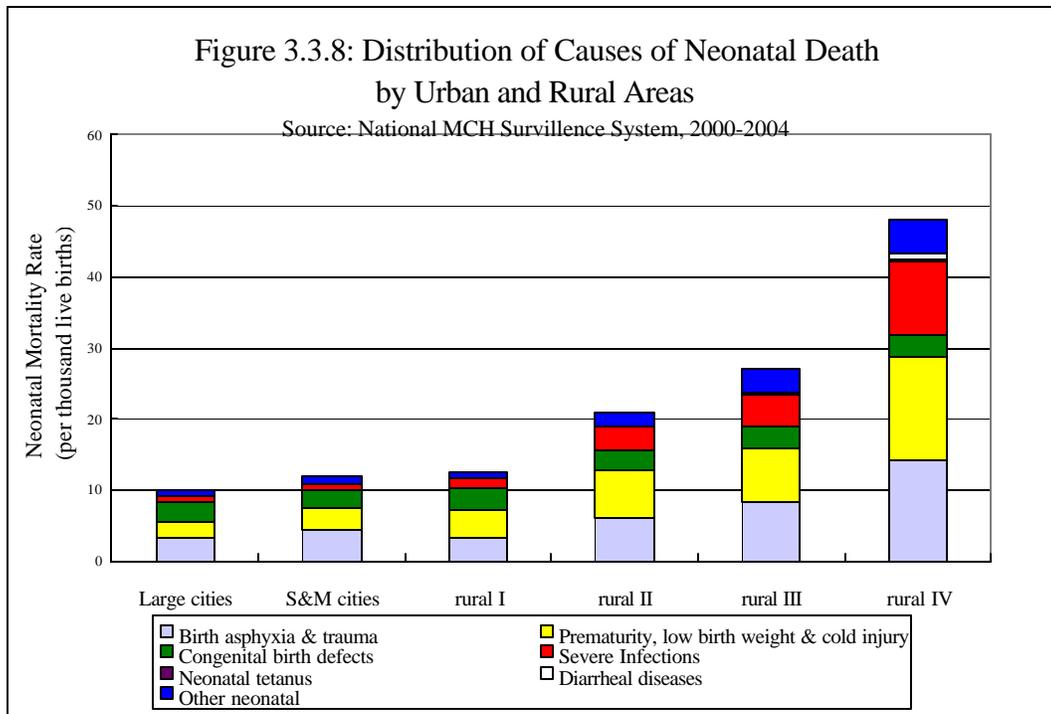
Figure 3.3.7: Causes of Maternal Deaths by Urban and Rural Areas, China

Source: National MCH Surveillance System, Weighed Average for 2000-2004

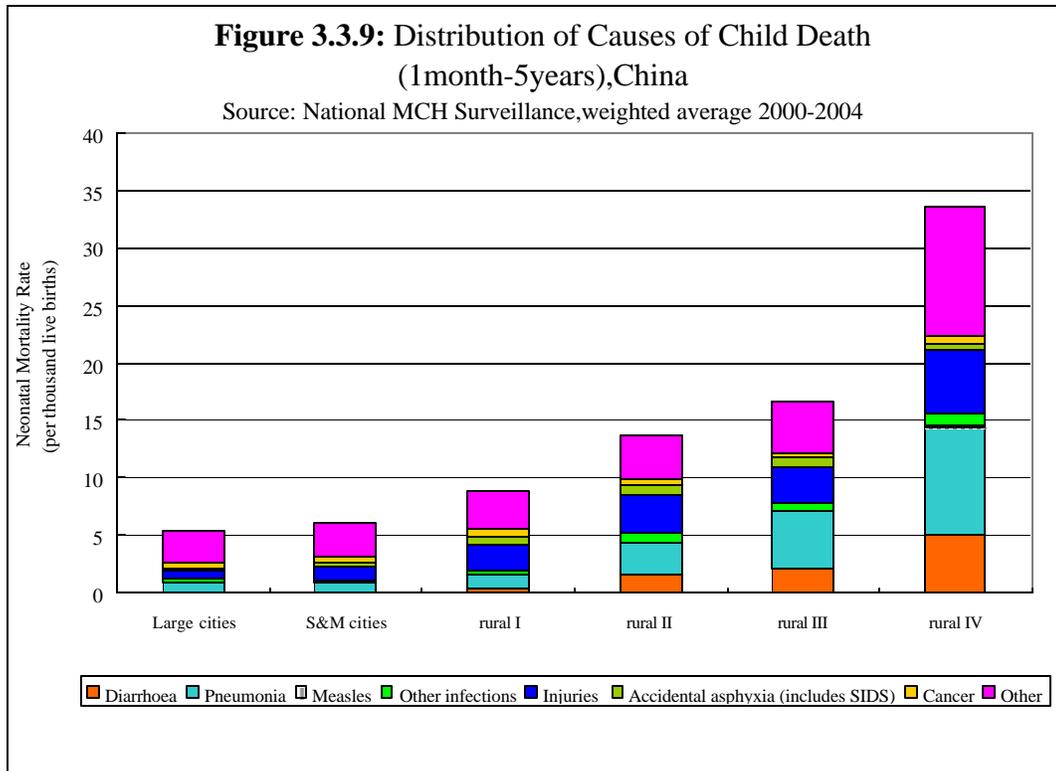


3.2 Direct causes affecting neonatal, infant and U5 mortality

In 2004, 63.9% of all child deaths were caused by neonatal conditions; the major cause of death in both urban (67%) and rural (63.7%) China. The four leading causes of death, neonatal asphyxia and trauma (4.9 per thousand live births), preterm delivery, low birth weight (LBW), and hypothermia (5.4 per thousand live births), severe infection (2.3 per thousand live births), and congenital malformation (2.5 per thousand live births), explain 89% of all neonatal deaths (Figure 3.3.8). Amongst these factors asphyxia and trauma, preterm delivery, LBW and hypothermia are the leading causes of neonatal deaths in all areas explaining up to 38.7% of U5 deaths, while severe infection is the third leading cause of neonatal mortality in rural type II, III and IV areas explaining 16.7% of all deaths. The third cause of neonatal death in urban and rural type I counties is congenital malformation, accounting for around 10% of all deaths in those areas. Finally, most neonatal deaths (79% of total neonatal mortality) occurred within 7 days after delivery. This means that most interventions targeting neonatal and U5 mortality should be closely linked with strategies to reduce maternal mortality including the type of staff used to care for the pregnancy, intrapartum and postnatal care.



As shown in Figure 3.3.9, pneumonia represents the leading cause of post neonatal mortality in rural type III and IV areas. In all other areas, injury is the leading cause of post-neonatal deaths. Diarrhoea, which has historically been a leading cause of death has become less important across China and accounts for very low proportion in wealthier regions (i.e. urban and rural type I areas). However, it is still the third leading cause of death for children aged 1 month to 5 year in poorer areas (i.e. rural type II, III, and IV areas) where there still may be a lack of sanitation.



3.3 Indirect causes affecting maternal and child mortality

3.3.1 Indirect causes of death: Maternal vitamin and mineral deficiencies and nutrition status

Research shows that maternal nutrition status in China is unsatisfactory, and micronutrient/vitamin deficiency may induce a number of pregnancy-associated complications and increase the risk of maternal mortality. The 2002 NNHS reveals that there is a high prevalence of maternal anaemia (Hb<110g/L) among women aged 18-44, with an average of 28.9% (25.3% in urban areas, and 30.4% rural areas). Despite these figures, testing of maternal anaemia and iron supplementation during pregnancy has not yet been integrated into the routine maternal healthcare services. The NNHS also shows that the percentage of under nutrition (BMI<18.5) among women aged 18-44 stands at 7.7%.²¹

Another significant problem is the insufficient intake of calcium, which could be linked to eclampsia and pregnancy induced hypertension. As shown in the NNHS 2002, the average daily intake of calcium is 438.6mg in urban areas, and 369.6mg in

²¹ Wang Longde (2005). National Nutrition & Health Survey. People's Health Publishing House.

rural areas, which is equivalent to only 54.8% and 46.2% respectively of the daily calcium intake recommended by the Nutrition Society (800 mg).²²

Vitamin/micronutrient deficiency during pregnancy still exists in China which can adversely effect maternal and child health. A study in 1996²³ indicated severe deficiency of vitamin A, E, B1, B2 and C during late term pregnancy reached 56.2%, 15.7%, 49.8%, 24.1% and 20.1% respectively. Insufficient folic acid intake will seriously affect normal fetal growth and development. Regional research revealed folic acid deficiency is prevalent in northern China.

3.3.2 Indirect causes of child mortality

Significant improvements in child nutrition have been made in China, but regional disparities still exist and vitamin and mineral deficiencies are still widely prevalent.

Over the last decade child nutrition status has been significantly improved in China. The national stunting rate among under five children dropped from 31.9% in 1992 to 14.3% in 2002, a drop of 55.2%. In urban areas prevalence decreased from 19.1% to 4.9%, and in rural areas from 35.0% to 17.3%, a decline of 74.5% and 50.6% respectively. The national average low weight rate of children also declined during 1992-2002 by 56.7% (i.e. from 18.0% in 1992 to 7.8% in 2002). LW incidence in urban areas decreased from 10.1% to 3.1%, and in rural areas from 20.0% to 9.3%, a decline of 69.3% and 53.5% respectively. Despite the overall improvement in nutrition levels, stunting and LW rates are three times higher in rural areas than in urban areas. Child anaemia incidence varies from 10.6% to 38.3% according to their age. Vitamin and mineral deficiencies are still prevalent in the whole of China with significant regional disparities. For example, the proportion of children aged 3-12 suffering from vitamin A deficiency in rural areas is 11.2%, 3.7 times higher than that of urban areas (3%).

²² Yuan Fengshan (2005), “ Public Calcium Status of China” , *Practical Journal of Rural Doctor*, 2005, 12 (4): 1.

²³ Shao Yufen, et. al. (1996), “ A Study on Vitamin Status of Pregnant Women” , *Public Health Study*, 1996, 25 (6): 354-357.

4. Key findings

1. There has been a significant reduction in maternal and U5 mortality in China. On current trends, it appears that China is on track to meet the MDGs in regard to MMR and U5MR.
2. Great disparities exist with regards to maternal and child mortality between urban and rural areas, between and within different regions in China, with rural type IV and rural type III areas experiencing 2 to 5 times higher levels than urban areas.
3. Rural type II and III areas account for over 70% of all maternal and child deaths in China. Thus, to ensure a successful and sustainable reduction of maternal, neonatal and U5 mortality, as well as to increase equity in access to services, it is necessary to implement a strategy that specifically targets rural type II and III areas, and continue focusing on rural type IV areas.
4. Over 75% of the maternal and child mortality throughout China is caused by a small number of preventable or curable causes. The leading causes of maternal mortality are postpartum haemorrhage, pregnancy induced hypertension, embolism and sepsis. Neonatal asphyxia and trauma, preterm delivery, low birth weight, and injury and pneumonia are the major causes of child mortality.
5. Neonatal mortality accounts for 63.9% of under-five mortality. Among all neonatal deaths, more than 79% occur in the first seven days after birth and could be addressed through strategies closely linked with those aiming to reduce maternal deaths.
6. Injury represents the leading cause of post-neonatal deaths in China, except in rural type III and IV areas. Pneumonia is the second leading cause of child mortality, while diarrhoea has become a less important factor in determining deaths. In urban and rural type I areas, congenital malformation is the third leading cause of neonatal death.
7. Maternal and child mortality amongst poor migrants is increasing and therefore requires more attention.
8. There has been an overall improvement in under-nutrition but it remains a significant problem in rural areas. Vitamin and mineral deficiencies affect a large proportion of children and women of reproductive age, throughout the country.

Chapter Four Predisposing Factors Affecting Maternal and Child Mortality

This chapter analyzes the predisposing factors affecting maternal and child mortality. Access and quality of maternal and child healthcare have other predisposing factors such as feeding and caring practices, and fertility and birth spacing. The Lancet model will be used to simulate the effect of increasing the coverage and quality of the most cost-effective interventions on reducing maternal and child mortality. The Lancet results demonstrate that if coverage of most cost-effective interventions were to be expanded to 99%, the total number of maternal and child deaths could potentially be reduced by more than 52% and 34% respectively nationwide, enabling China to reach the targets set both in the MDGs and the 11th Five Year Plan with regard to maternal and child mortality. International experience shows that returns on investing in health services are usually high, and are a prerequisite to achieving comprehensive, harmonious and sustainable economic development.

1. Predisposing factors affecting maternal mortality

1.1 Utilization of maternal healthcare services

According to the third NHSS, during 1992-2002, the percentage of hospital deliveries increased from 39% to 68%; from 22% to 62% in rural areas and from 87% to 93% in urban areas. The percentage of pregnant women receiving prenatal care at least once during pregnancy increased from 70% to 88%. It should be highlighted that this increase took place mainly in rural areas (60% to 86%), while care levels remained at 96% in urban area. In rural areas, the percentage of women receiving prenatal care 5 times or more increased from 11% to 33%, and in urban areas the percentage of women receiving prenatal care 8 times or more during pregnancy increased from 49% to 57%. The percentage of women receiving prenatal check ups in early pregnancy also increased from 24% to 55% in rural areas and from 64% to 70% in urban areas. The data reveal that in the past 10 years, noticeable progress has been made in the rate of utilization of maternal healthcare services.

1.2 Main constraints of maternal healthcare services

1.2.1 Insufficient coverage of maternal healthcare services

Even though significant progress has been made in the utilization of maternal health care services in China, significant regional disparities still exist in the provision of

services. The review assessed the coverage of the 9 most cost-effective interventions recommended by WHO and brought forward by the British Medical Journal. In order to more closely align China's situation the six most effective interventions were selected. When no data was available, Delphi technique was adopted to estimate the coverage. Findings showed that most interventions do not have a high coverage in rural China, especially not in rural type III and IV areas. For example, coverage of skilled birth attendance is only 52% in rural type IV areas, and the coverage of the other 5 interventions varied substantially from 4% -56% in rural type III and IV areas (Table 3.4.1).

Table 3.4.1 Current coverage of main cost-effective MCH interventions in China

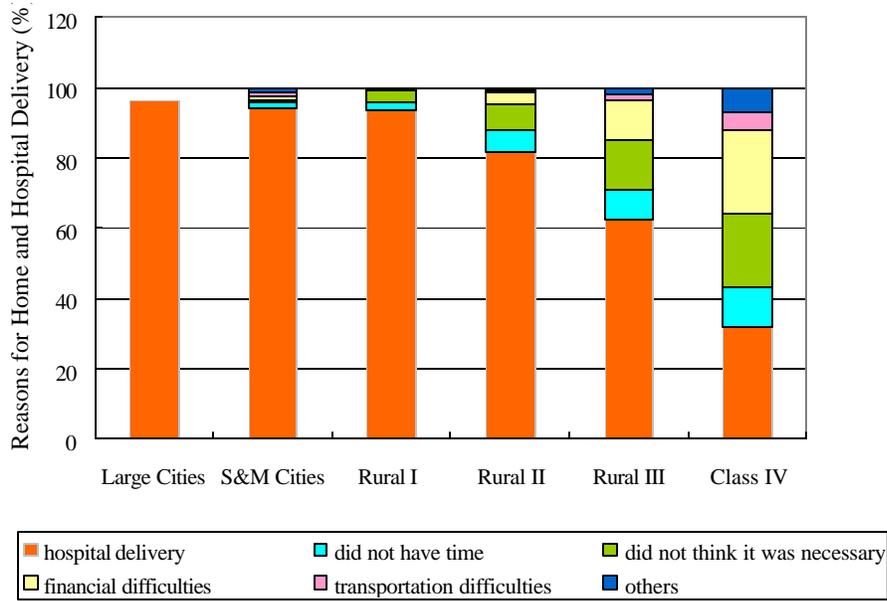
Intervention	Coverage(%)					
	Large cities	M&S cities	Rural I	Rural II	Rural III	Rural IV
Skilled birth attendance ¹	95.0	97.0	98.0	94.0	89.0	52.0
Identification of pre-eclampsia ²	90.0	71.0	59.0	41.0	32.0	13.0
Identification and treatment of asymptomatic bacteria infection ²	57.0	52.0	15.0	11.0	9.0	4.0
Active management of 3 rd stage of labor ²	95.0	86.0	82.0	70.0	56.0	28.0
Preliminary treatment of postpartum haemorrhage, treatment of severe pre-eclampsia and eclampsia and treatment of puerperal infections ²	95.0	86.0	68.0	54.0	42.0	21.0
Management of obstructed labour (e.g. breech) and referral of severe postpartum hemorrhage ²	91.0	83.0	62.0	45.0	35.0	17.0

Data sources: ¹.NHSS (2003)

². Hospital delivery rates weighted by Delphi technique

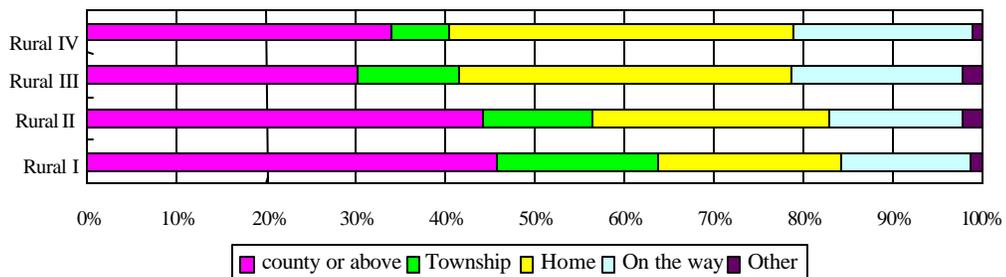
In addition, the proportion of maternal healthcare services usage decreases in accordance with the region's level of economic development, thus the use of services remains lowest in rural type IV areas. The percentage of women in rural type IV areas receiving prenatal care 5 or more times is only 13%, a level that is only a quarter or one fifth of that in rural type I areas, and the hospital delivery rate in those areas is 32% compared to 94% in rural type I areas (Fig. 3.4.1). The major reasons for not delivering in a hospital in China are financial difficulties, followed by lack of transportation or information.

Figure 3.4.1: Reasons for Home and Hospital Delivery by Area
 Source: National Health Service Survey, 2003



According to the analysis of places of maternal deaths, it can be seen that a large percentage of maternal deaths occur at home, with rural type III and type IV areas accounting for the highest proportion of deaths due to home deliveries, followed by rural type II areas (Fig. 3.4.2). Even in the more affluent rural type I areas, 20% of maternal deaths still occur at home. In addition, a significant proportion of maternal deaths in rural areas occur on the way to the hospital (accounting for 15%-20% of total deaths). This could be attributed to poor transportation and to the lack of facilities at township level.

Figure 3.4.2: Place of Maternal Death by Type of Rural Counties (%)
 Source: National MCH Surveillance Data, 2004



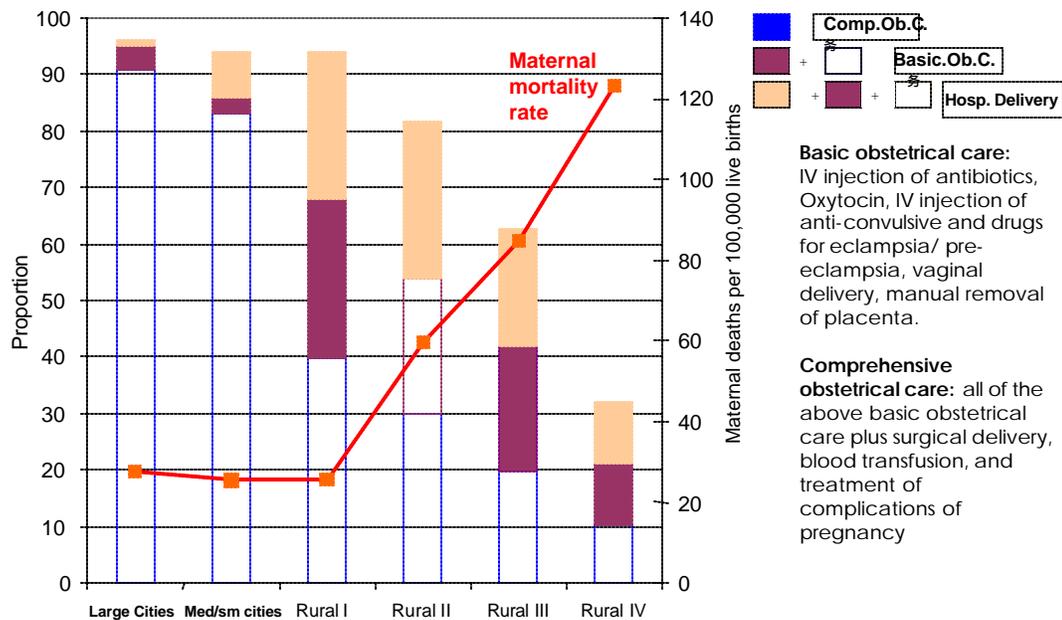
1.2.2 The quality of maternal healthcare services needs to be further improved

Further study revealed that, in addition to the general shortage of maternal health services, there are also a deficient number of quality clinical maternal health services in China's rural areas. An assessment of the use of "hospital deliveries" and the availability of Essential Obstetrical Care (EOC) in hospitals in the different areas, shows that only 20% to 50% of women in rural type II, III and IV areas have access to basic emergency obstetric care (BEOC) (not including surgical delivery and blood transfusion) (Fig. 3.4.3).²⁴ Moreover, access to Comprehensive Emergency Obstetrical Care (CEOOC) is available only to 10% - 30% of women in rural type II, III, and IV areas, and to only 40% in type I areas because CEOOC is provided mainly in county hospitals and above. This situation calls for improvement in the quality of obstetrical services at grassroots medical institutions. Figure 4.3 shows that as the level of hospital deliveries and the access to BEOC and CEOOC decreases to levels below 50% there is a substantial increase in maternal mortality rates. This is in line with international experience which shows that access to EOC (including the 9 most effective interventions) is critical to ensure survival of women. Moreover, as shown in Chapter 3, 75% of maternal deaths are caused by a number of factors that could be prevented through the provision of quality BEOC.

²⁴ Basic Emergency Obstetrical Care (BEOC) comprises IV injection of antibiotics, Oxytocin, IV injection of anti-convulsive and drugs for eclampsia/pre-eclampsia, vaginal delivery, and manual removal of placenta. Comprehensive Obstetrical Care comprises all the interventions included in basic obstetrical care plus surgical delivery, blood transfusion, and treatment of complications of pregnancy.

Figure 3.4.3 : Hospital delivery and quality of obstetrical care

Data in figure are estimates by national experts



Qualitative data collected during the field visits in three provinces, also revealed several shortcomings with the quality of maternal healthcare services. First, prenatal checkups are not comprehensive and some basic laboratory tests are not performed, which may lead to a failure to identify an obstetrical complication in a timely manner. Second, technology is not fully utilized at the time of delivery. For instance, some medical workers are unable to use a partogram to monitor delivery progress, a lack of use of Oxytocin during the third stage of labour to prevent haemorrhage, a lack of or inadequate use of vaginal delivery techniques leading to excessive use of Caesarean Section, and a lack of close monitoring of the fourth stage of labour (within 24 hours). Third, the quality of postnatal follow-ups cannot be ensured either. Currently, most of the postnatal follow-ups are performed by village MCH workers and village doctors, who lack the technical knowledge, skills and adequate equipment, and most of whom work on a voluntary basis. Hence, it is difficult to ensure that they perform quality postnatal follow-ups with the required frequency, and as a result many maternal and neonatal problems are undiagnosed or misdiagnosed.

The above results suggest that the maternal health strategy should not only focus on promoting and improving access to hospital delivery, but also on improving the quality of maternal care, particularly below county level, including prenatal care,

obstetrical techniques and postnatal follow-up.

1.3 Other predisposing factors of maternal mortality

In recent years the total fertility rate of women in China has been approximately 1.8 and the birth interval is relatively large. As a result, it appears that total fertility rate and the birth interval are not key factors affecting maternal mortality in China.

A number of communicable diseases also impact on MCH to some extent. China is one of the 22 countries facing the heaviest burden of Tuberculosis (TB). 70% of people with TB oscillate between the age of 15 and 45 years, which may impact on fertility and health of children. China also has a high incidence of Hepatitis B, and according to the serology analysis of NNHS, the positive rate of HBsAg among population aged 3 and above is 7.5%. The positive rate among those aged 20-30 (at highest fertility age) is as high as 9%-10%.²⁵ Similarly, although HIV prevalence in China is very low, recent trends reveal that the number of women infected with HIV is increasing.

1.4. Impact of improving access to effective interventions on maternal mortality reduction in China

The Lancet model was used to simulate the impact of extending the use of the nine most effective maternal interventions listed in Table 3.4.1 to cover some 99% of the population. It showed that this would result in a 52% decline of the 2000-2004 maternal mortality rate to reach 28.8/100,000 (Table 3.4.2). This means that China could meet the MMR targets stipulated in the 11th Five Year (40 per 100, 000) and would also be well on track to reach the MDG target of 24 per 100, 000).

Table 3.4.2 also shows that the percentage of maternal deaths averted due to the interventions would be the highest (67%) in rural type IV areas, followed by rural type III and type II areas, with a decline of 58% and 47% respectively. In terms of the number of deaths averted, rural type III areas show the greatest impact, followed by rural type II and IV areas particularly at township level.

²⁵ Liang Xiaofeng, et. al. (2005), "A Sero-epidemiologic Study on Hepatitis B Infection among population aged 3+", *Chinese Journal of Epidemiology*, 2005, 26 (9): 655-658.

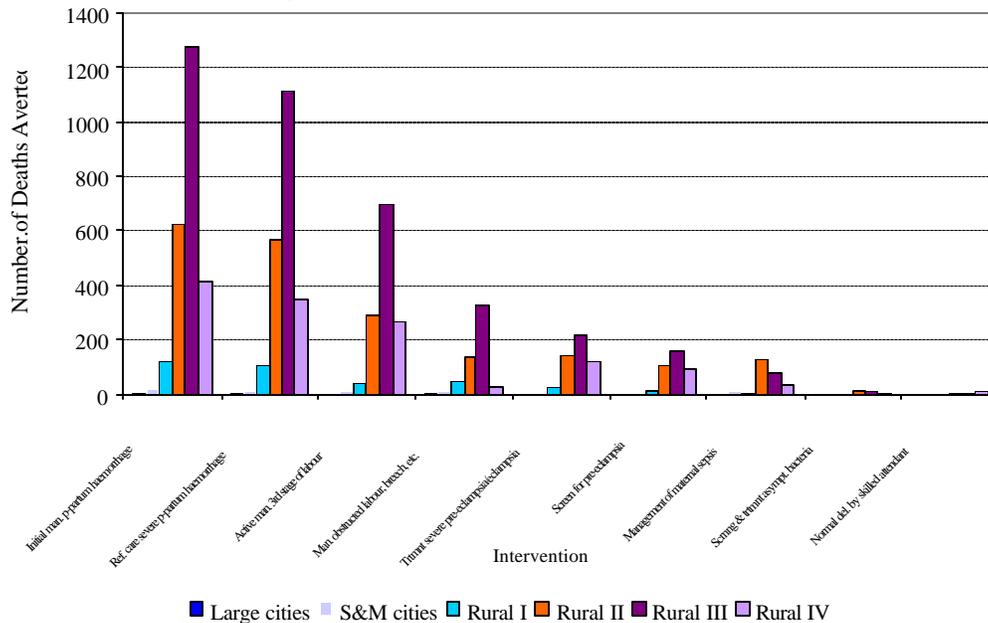
Table 3.4.2 Potential reduction in maternal mortality in different types of areas in China (%)

Area	MMR 2000 – 2004 (1/100,000)	Proportion of maternal deaths /Year (2000-2004) (%)	Proportion of maternal deaths averted (%)	% Maternal mortality reduced
Large cities	28	2	0	8
Med/small cities	25	4	1	21
Rural type I	26	8	6	38
Rural type II	60	31	28	47
Rural type III	85	44	50	58
Rural type IV	123	12	15	67
Total		100	100	52

Different interventions would have different impact on reducing maternal mortality. The most effective interventions, which would prevent 75% of all maternal deaths, are: management and referral of post partum haemorrhage, active management of third stage labour and of obstructed labour, and screening and treatment of eclampsia (Fig. 3.4.4). However, the full provision of these interventions would imply that patients must have access to EOC, which means it is particularly important to improve the quality of obstetric care while promoting hospital delivery. To achieve major reductions in maternal mortality access and quality of these interventions needs to be ensured in type II, III and IV rural areas.

Figure 3.4.4: Number of Maternal Deaths Averted by Single Interventions

Source: British Medical Journal Estimated



2. Predisposing factors of child mortality

2.1 Current conditions of child healthcare services

There has been much progress in the provision of child healthcare services since 1992. “Systematic management” rate (i.e. quality child health care rate) for children under 3 increased from 43% in 1992 to 74% in 2004. The child immunization programme has significantly improved with the immunization rate of the four routine vaccines reaching 88% .

2.2 Main constraints of child healthcare services

2.2.1 Insufficient coverage of child healthcare services

Despite the remarkable progress, regional disparities in the provision of child healthcare services and imbalanced regional development contribute to the existing disparities in child mortality rates. For example, the 2004 National Immunization Survey found that full immunization rate of the four routine vaccines is 56% in rural type III and IV areas, significantly lower than in rural type I (94.1%) and II (88.8%) areas. The immunization rate of the four routine vaccines is also low in large cities

among children of migrants.²⁶

The review adopts 25 most effective interventions recommended by the Lancet Model and selects six most effective interventions estimating the coverage by Delphi technique. Table 3.4.3 shows that the overall coverage of the six interventions is low and there are substantial disparities in the provision of the six interventions; low coverage exists especially in rural type III and IV areas. For instance, the use of antenatal steroids to prevent preterm delivery in rural type III and type IV areas is only 13% and 7% respectively. Coverage of care for preterm/LBW babies and of emergency paediatric care is also low in rural type IV area; 27% and 15% respectively.

Table 3.4.3 Coverage rate of main interventions to reduce under-five mortality (%)

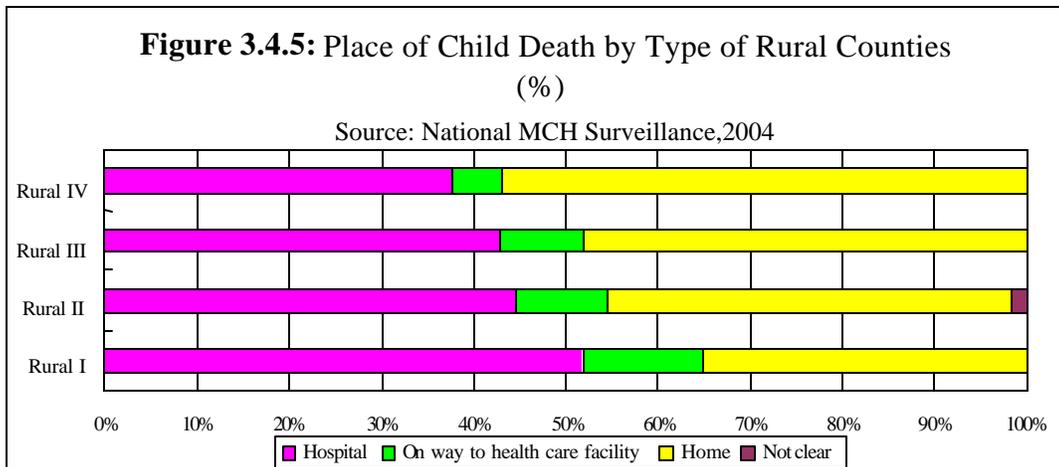
Interventions ^a	L	MS	I	II	III	IV
6 month exclusive breast feeding	31.6	32.6	56.7	61.3	40.4	73.6
Use of antenatal steroid (preterm)	76.0	69.0	23.0	17.0	13.0	7.0
Emergency obstetrical care	95.0	86.0	68.0	54.0	42.0	21.0
Care for preterm/LBW babies	90.0	82.0	60.0	43.0	34.0	27.0
Emergency paediatric care	85.0	78.0	53.0	39.0	30.0	15.0
Antibiotics (for pneumonia)	44.0	50.0	67.0	67.0	76.0	64.0

The 25 interventions were clustered in 6 groups.

Data sources: The 2002 NNSS and where data was unavailable the Delphi technique was used.

Similar to maternal mortality a large percentage of child deaths occur at home, with rural type III and type IV areas accounting for the highest proportion of deaths, followed by rural type II areas. Even in rural type I areas, 40% of child deaths occur at home, indicating that even in this more developed area there are service access constraints (Fig. 3.4.5).

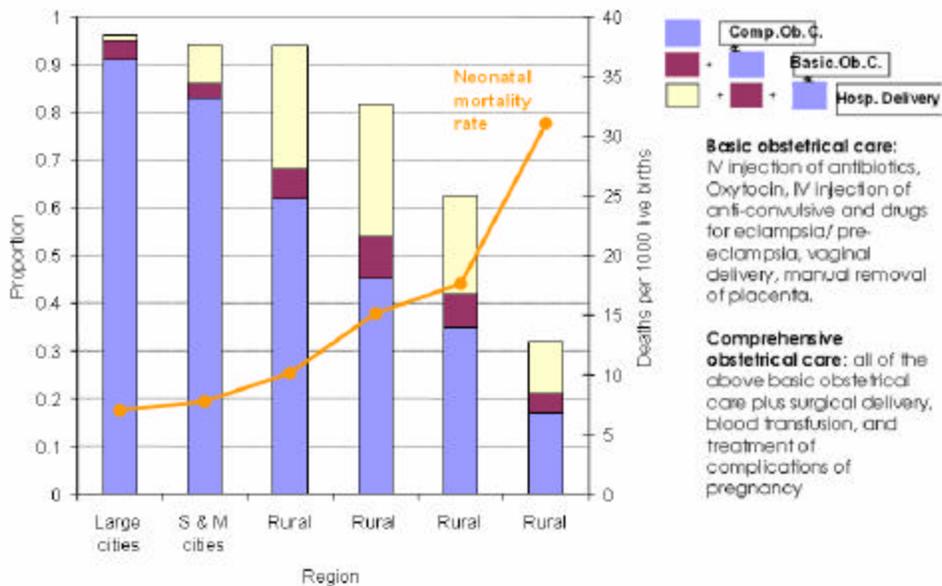
²⁶ Wang Longde (2004). National Health Service Survey. China People Unit University Publishing House.



2.2.2 The quality of obstetrical and child health care services needs to be further improved

As mentioned previously, quality of obstetric care is poor in rural type III and IV areas, and neonatal care is a core component of comprehensive of obstetric care. This implies that neonatal care is also of poor quality in these areas. As shown in Fig. 3.4.6, access to EOC is in inverse proportion to neonatal mortality, which becomes especially clear in rural type III and type IV.

Figure 3.4.6: Emergency Obstetric Care, Hospitals and Deaths



Several deficiencies in the quality of child health services were observed through the qualitative study. First, even though the rate of postnatal visits is high, there are no

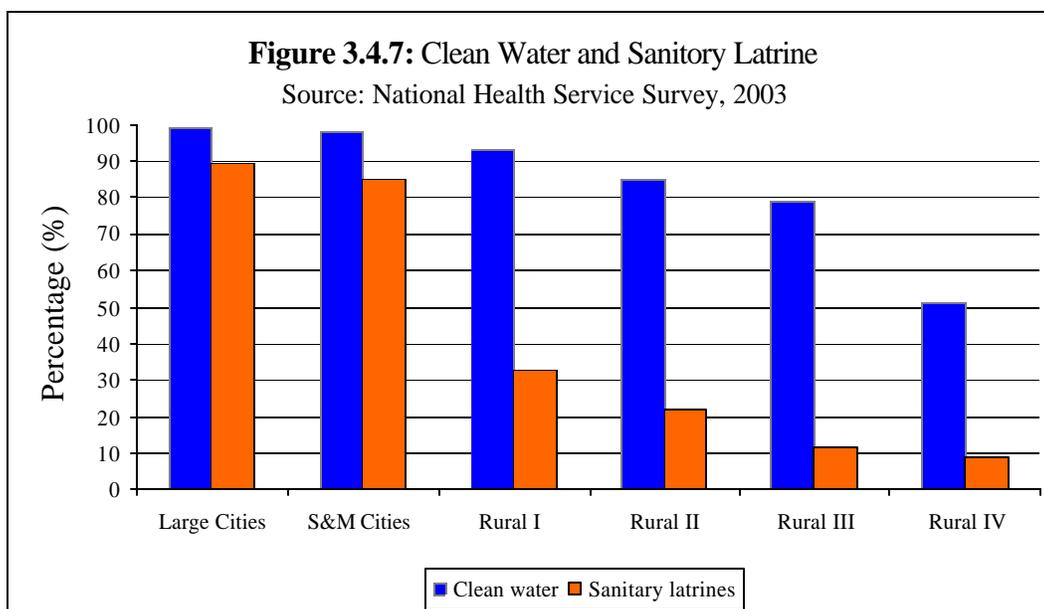
quality guidelines for postnatal follow-up visits and postnatal care appears to be of poor quality. Second, neonatal resuscitation techniques are neither widely nor properly used and the simple and adequate newborn temperature management technique (i.e. Kangaroo Method) is not widely used. Third, some simple measures, such as Oral Rehydration Therapy (ORT) have fallen in use and antibiotics are inappropriately used when treating Acute Respiratory Infection (ARI). Fourth, the quality of regular child health care needs further improvement. Fifth, insufficient resource allocation to child health services, the lack of effective monitoring and supervision or staff motivation also contribute to the provision of poor quality of child care services.

2.3 Other factors

Inappropriate feeding practices are one of the key factors affecting child survival. The NNHS showed the use of adequate complimentary feeding in infants 6-9 months is low across all regions ranging from 32.3% to 54.5%. Combined with low rates of exclusive breastfeeding, early and inadequate complementary feeding contributes to increased stunting, decreased disease resistance and undernutrition (especially for children between 6 and 24 months) which contributes to an increase in morbidity and mortality.

A poor caring practice is another factor that affects mortality. The third National Health Service Survey showed poor parent caring practices for acute respiratory infections (ARI) and diarrhoea, both in urban and rural areas. For example, home care for ARI in urban and rural is 16.7% and 1.7% respectively. Home treatment care for diarrhoea for urban and rural is 22.2% and 12.7%.

Lack of access to safe water, sanitation and hygiene is another problem leading to increased incidence of diarrhoea and requires attention, especially in rural type III and IV. As shown in Fig 3.4.7, only 51% of people living in rural type IV areas have access to clean water, and only 21.8% has access to sanitary latrines.



2.4 Impact of effective interventions on child mortality reduction

Calculations based on the Lancet model, using the same methodology as for maternal mortality, indicate that adopting comprehensive interventions and increasing the coverage rate from the current level to 99% may reduce the current under-five mortality by 34%, allowing China to reach the MCH targets stipulated in the 11th Five Year Plan and the MDGs. The simulation shows that deaths caused by diarrhoea could be reduced by 75%, pneumonia by 56%, neonatal asphyxia by 38%, preterm delivery/low birth weight by 61%, and neonatal sepsis by 66% (Table 3.4.4).

Table 3.4.4 Under-5 deaths by cause and deaths averted by cause

Period 2000-04: with Lancet 2003 and 2005 combined

Cause	Percent total U-5 deaths	Percent of deaths averted
Diarrhoea	4	75.0
Pneumonia	9	56.0
Measles	0	100.0
Malaria	0	
HIV/AIDS	0	
Injuries	8	0
NN-total	61	41.0
NN-asphyxia	18	38.0
NN-prematurity	18	61.0
NN-sepsis	9	66.0
NN-tetanus	0	92.0
NN-congenital	8	5.0
NN-diarrhoea	0	41.0
NN-other	6	0
Other	18	0
Total U5MR		34.0

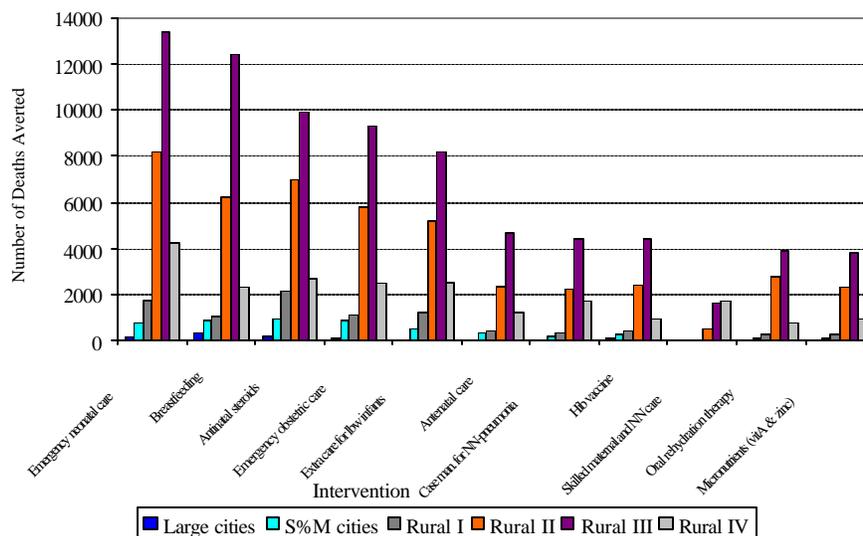
Table 3.4.5: Percentage of under-five mortality averted by areas

Region	Under-5 mortality rate	Geographic distribution of under-5 deaths		
	(/1000)	(%)	Percent of total U-5 deaths averted (%)	Percent of U5 mortality averted (%)
Large cities	15	2	1	12
S & M cities	18	5	2	15
Rural I	21	12	8	24
Rural II	35	32	32	33
Rural III	44	38	43	38
Rural IV	82	11	14	44
Total		100	100	34

The essential package would have different impacts in each area. In terms of U5MR averted, it would be highest in rural type IV areas (44%), followed by type III rural areas (38%), and type II rural areas (33%). In terms of proportion of under-five deaths averted, the biggest gains would be made in type III rural areas with as much as 43% of lives saved per year, or 43% of total deaths averted, followed by rural type II and IV areas with 32% and 14% under-five lives saved annually (Table 3.4.5). Applying these interventions in those three areas would contribute to 89% of total lives saved.

Research shows that different interventions do not have the same level of effectiveness on mortality reduction, as the level of coverage differs depending on the type of area. 4 of the 11 most effective interventions, (i.e. emergency neonatal care, antenatal steroids, essential obstetric care and maternal and neonatal care) as revealed in Figure 3.4.8, have greater impact on children in rural type II, III and IV areas, but must be provided by skilled attendance at birth. Other effective interventions include household caring practices, exclusive breastfeeding, ORS, antibiotic for pneumonia, care for the newborn, and vitamin and mineral supplementation. Thus, ensuring universal access to an essential package of effective interventions, particularly to children in type II, III and IV rural areas, would be sufficient to achieve the 11th Five Year Plan and MDG targets in regards to U5MR.

Figure 3.4.8: Number of U5 Deaths Averted by Single Interventions
Data Source: Lacet Model Estimated



3. Key findings

1. *Insufficient coverage of MCH care services and poor service quality is the leading predisposing factor contributing to maternal and child mortality.*
2. *Great regional disparities in quality of maternal and child healthcare services re-emphasize that improving service capacity and quality of medical institutions in type II, III and IV rural areas will have significant impact on reducing maternal and U5 mortality rates in rural areas and nationwide.*
3. *A large proportion of women and children through the country are affected by inadequate feeding, hygiene and caring practices, contributing, inter alia, to complications at delivery, LBW, child diseases and the children's intellectual and physical development.*
4. *The lack of safe water, essential sanitary facilities and communicable diseases such as TB and Hepatitis B are all indirect factors contributing to the increase of maternal and child mortality.*
5. *Increasing access and quality of the most effective interventions in a comprehensive manner has the potential to reduce maternal and U5 deaths by 52% and 34% respectively, thereby achieving the MDGs and 11th Five Year Plan targets.*

Chapter Five Socio-economic and systemic factors affecting maternal and child mortality

The development of MCH services and improvement in health status of women and children not only rest with the construction and development of the health system, but also with socioeconomic factors such as development of macro social economy, improvement in education level, women's empowerment and optimization of public financing mechanisms. While MDG 4 and 5 aim to reduce maternal and child mortality rates, all the other six MDGs (eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development) have indirect correlation with and impact on maternal and child health. This chapter provides an in-depth analysis of the socio-economic and systemic factors affecting maternal and child mortality, based on the immediate and predisposing factors analyzed in Chapter 3 and 4.

1. Socio – economic factors affect basic social services and information

1.1 Poverty undermines access and increases vulnerability

The Government of China is deeply committed to poverty alleviation. China's economic reform and the resulting growth have enabled China to raise per capita GDP from US\$148 in 1978 to US\$1,700 in 2005. The associated income growth has lifted about 400 million people out of poverty.²⁷ The proportion of China's people living below the poverty line fell from 72.6% of the population in 1990 to 32% in 2004. China has seen an impressive improvement in the Human Development Index (HDI) with its global ranking rising from 101st in 1991 to 85th in 2003.

At the same time, however, inequalities have also widened as the development is more rapid in urban and coastal areas than in rural areas. The Gini coefficient, a measure of income inequality (0 fully equitable, 1 all the wealth accumulated in 1

²⁷ World Bank (2003), "China: Promoting Growth with Equity", Country Economic Memorandum, September Washington, D.C.

person), was 0.24 in 1990 and 0.46 in 2002 showing an increase in disparities,²⁸ which might explain the increasing disparities in MMR and IMR among different regions in China.²⁹ Thus, the poorest regions in China (rural type IV area) present the highest rates of MMR and IMR. Falling into or back to poverty due to a catastrophic disease is the key reason affecting socio-economic development in poor regions, meanwhile, poverty increases the incidence of deaths and diseases, contributing to a vicious cycle. For example, poverty gives rise to increased incidence of diseases like diarrhoea and malnutrition. Poverty hinders people from seeking medical treatment, for instance, as shown in the NHSS, economic conditions is the leading cause limiting access to hospital delivery. It has been estimated that some 30% of poor families fall into poverty due to debts incurred because of a catastrophic health episode.

Poor migrant populations in urban areas also face severe threat and challenges to their health status. Despite a lack of systematic and representative data about migrant population, some small studies suggest that this vulnerable populations experience the worst disparities in both accessibility to maternal and child health services and health indicators. Maternal and child mortality rates amongst migrant population of urban areas are high.

1.2 Weak basic education, basic services, and deficient healthcare knowledge indirectly affect maternal and child mortality rates

Weak basic education in rural poor areas (e.g. illiteracy rate in rural type I and IV areas is 20.5% and 37.8% respectively) and lack of quality education affect development in these areas, thereby contributing to the vicious cycle of poverty. Low levels of education and poor knowledge about healthy behaviours contribute to weak personal healthcare practices among women and children and hinder people from seeking medical treatment, thereby indirectly affecting maternal and child mortality rates.

Furthermore, minorities and the poor often live in the mountainous and remote areas of China, where there is a lack of basic services including quality health services and education. As a result, maternal and child mortality rates are higher among these groups. In addition, it appears that the existing health education program is not well adapted to cultural difference which limits its effectiveness in changing behaviour. Therefore, cultural factors also need to be taken into account. Adopting interventions

²⁸ Wang Longde (2004), National Health Services Survey, Peking Unite University Publishing House and MOFA/UN (2005), MDG Report.

²⁹ CDRC and UNDP (2005) China Human Development 2005: Development with Equity, Beijing.

without considering culture, region and language differences of ethnic minorities will not only reduce expected results, but also affect demand for healthcare and behaviour among ethnic minorities. Thus, culturally sensitive education/awareness campaigns in regards to maternal and child health services and interventions are key to the improvement of maternal and child health amongst these vulnerable groups.

1.3 Women's status and gender issues affecting MCH

While gender equality has become one of the basic national policies in China, low women's status and gender inequality still exist in some regions, indirectly affecting maternal and child health. Local studies show in some rural areas, women's status is lower than men at the household level, it is usually the husband who decides whether his wife will deliver in hospital, and priorities will be given to men in terms of medical treatment, education and job opportunities. In poor western areas of China, the average school enrolment rate of girls is lower than that of boys. The illiteracy rate was 17% amongst rural females and 6.5% for rural males showing a large gender gap.³⁰ Limited opportunities in receiving education and using health services have become an indirect factor affecting maternal and child mortality.

1.4 Transportation and geographic factors affect utilization for maternal and child healthcare service

According to the analysis of places of maternal and child deaths, it can be seen a large percentage of maternal and child deaths occur at home or on the way to the hospital. As most poor and remote areas are located at plateau or mountainous regions with poor geographic conditions, it appears that a lack of transportation and geographic constraints hinder access to maternal and child healthcare services.

2. Impact of systemic and institutional factors

2.1 Insufficient funding for public health and MCH healthcare services in poor rural areas

In recent years, China has made remarkable achievements in economic development. In contrast, government input in public health is lagging behind particularly in rural areas, and insufficient funding to MCH healthcare services affects overall development to some extent. For instance, in 2003, per capita expenditure on health services in the central areas was only 47.3% and 54.7% of that in eastern areas and western areas respectively. Per capita expenditure on MCH services in the central

³⁰ Wang Longde (2004), National Health Services Survey, Peking Unite University Publishing House and MOFA/ UN (2005), MDG Report.

areas was only 50.5% of the funds allocated to western areas. Furthermore, since the beginning of the 1980's, the amount of earmarked public funds transferred by the central level to the provinces to finance health expenditure has declined. Local health departments and providers are expected to generate revenue to cover their operating budgets; Tax base, and thus the tax revenue, in poor areas is limited. As a result, many poor counties do not have enough resources to finance the provision of social services including health and education.

Given the limited financial resources of local governments, institutions of medical treatment have to rely on themselves to offset personnel and operational expenditure. Some medical facilities focus on more profitable services, there is less emphasis in providing cost-effective services such as preventive interventions, and other non-profitable public health interventions. Thus, it seems that the use of some basic, effective interventions (e.g. partogram, vacuum extraction) is decreasing, while the use of C-sections, which are more profitable, is increasing. This has resulted in soaring outpatient fees and in-patient costs, effectively reducing access to care for the poor, and it also results in over-treatment, causing various iatrogenic complications (e.g. complications due to unnecessary C-section and antibiotic resistance), and opposes the original intention of protecting maternal and child health. Furthermore, this profit-oriented model will not only reduce the supply of preventive interventions, but will weaken supervision of healthcare workers and facilities at township and village levels. Insufficient MCH funding in rural areas and a lack of adequate support and incentive to medical facilities below the county level results in low capacity and motivation and hinders provision of quality services, care or follow-up, and reduces accessibility to rural poor population. Therefore government input to the MCH services must be increased and more public funds need to be spent on high cost-effective services including MCH care at the township level. The new resources should be used to change the phenomenon of “emphasis on treatment over prevention, and on paid over non-paid services” and MCH workers at the village and township levels need to be properly paid for the provision of ante-natal and post-natal care.

As a first step, in 2002 the new Rural Cooperative Medical Scheme (RCMS) was launched by the central government to help the rural population cope with catastrophic diseases. Nevertheless, still more than 90% of the rural population does not have medical insurance. For the poor to access basic MCH services, it would be important to bring these services into the minimum benefit package – with low or no co-payment - covered by the RCMS.

2.2 Inefficient structure and coordination of service delivery in the health sector

At present, 80% of health resources are concentrated in urban areas, while the majority of maternal and child deaths occur in rural areas, particularly poor and remote regions. Therefore, there is a need to strengthen macro-control; further enhance allocation of MCH resources to rural areas so as to ensure the equity and accessibility of MCH services. While the capacity of the disease prevention and control system has been intensified in recent years, in contrast, insufficient attention and support has been given to the maternal and child healthcare, which are also within the framework of public health services.

The field visits undertaken during this review revealed a lack of effective coordination within the healthcare system. Some MCH institutions fail to fulfil their role of organizing, managing, coordinating and delivering maternal and child healthcare services; they focus more on individual development than the construction of grassroots networking to increase utilisation of MCH services and to improve the accessibility and quality of services at county, township and village levels. Moreover, while MCH resources are managed by different departments, insufficient cross-sectoral coordination gives rise to inefficient use of MCH resources in rural China.

2.3 Human resource constraints

In many countries, nurses and midwives constitute the backbone of maternal and child health care, and often the work under the supervision of and in collaboration with specialized doctors. However in China the delivery of these services is centred on doctors and not on nurses or midwives. At present there is a shortage of qualified doctors working in rural areas, especially at township health centres, which are most used, particularly by poor rural residents. It is also difficult to ensure that qualified staffs remain in rural areas and to attract new medical graduates to these areas. An additional problem is that most MCH health workers have little formal training. For instance, some “obstetricians” have only three years basic training, one year or half a year of specialized training, and a few years of work experience.

The current and future role of the “village doctors” in clinical MCH needs further analysis. “Village doctors” and trained traditional birth attendants (TBAs) are in many instances no longer allowed to assist home deliveries. However, they are still required to provide ante and post-natal care services without proper remuneration and training. The inadequate incentives given to village health workers in the provision of MCH services have jeopardised the effectiveness of MCH care in many rural areas. Finally technical support and supervision of MCH staff from senior to lower levels

need to be further enhanced.

3. Key findings

1. Poverty, lack of basic education and healthcare knowledge, gender imbalances, inadequacy of services to cater for cultural and ethnic differences all contribute to large disparities in access to information and health services in the poorest areas.

2. The public resources allocated at present to fund social services in poor rural areas are insufficient to ensure access to a quality essential package of interventions. Moreover, most financial resources are used in hospital based curative care at county level and not at the township level nor public health interventions. This profit-oriented model will not only reduce the supply of preventive interventions, but will weaken supervision of healthcare workers and facilities at township and village levels.

3. Concentrated health resources in urban areas, prioritized disease control and prevention in the field of public health, neglected MCH services and insufficient MCH human resources hamper accessibility and quality of the rural MCH services.

4. The lack of qualified staff, capacity, and adequate support and incentive systems below county level, hamper the delivery of quality services, care and follow-up and access for the rural poor.

Chapter Six Recommended Interventions and Measures

China has made great strides in reducing maternal and child mortality over the past two decades. However, it is important not to be complacent and to recognize that in the recent past progress has tended to slow down (particularly in the case of maternal mortality) and that there are still very large geographical disparities in mortality. Only if the current trends continue can China be on track to achieve MDGs 4 and 5 and the child and maternal mortality targets set in the 11th Five Year Plan

Therefore, it is essential to strengthen MCH interventions, particularly in the rural areas, and to back this up with systemic reforms that ensure equal access to quality MCH services across the whole of China. Such measures should be viewed as key components of a strategy for operationalizing the Government's aim of building a "new socialist countryside" and promoting balanced development among regions in order to build a harmonious society. In paying close attention to solving problems related to the vital interests of the people, the Government cannot over-emphasize the importance of ensuring the health of the people, particularly access to quality essential MCH services among the most vulnerable populations, i.e. women and children from the poorest areas and households.

The recommendations below are based on the maternal and child survival status analyzed in Chapter 3, 4 and 5 and are key to reach MDGs 4 and 5 and the targets set in the 11th Five Year Plan. It should be noted that the proposed interventions and related institutional reforms all relate specifically to health services, and can have a very substantial impact on child and maternal mortality, but they need to be complemented in other sectors, such as family planning, water and sanitation, education and the reduction of income disparities and poverty, all of which indirectly affect levels of morbidity and mortality among women and children.

1. Delivery of an essential package of MCH services

The recommendations below focus on the geographical areas and population groups that need to be given the highest priority, the minimum package of interventions that should be provided and delivery measures of the interventions.

Recommendation 1: Give priority to type II, III and IV rural areas and poor migrants in urban areas

Great disparities exist between urban and rural areas, between and within different regions in China, and rural type IV areas experience 4 to 6 times higher levels than

urban areas. Therefore, close attention should be given to rural type IV areas.

However, while giving priority to reducing the very high mortality rates in type IV rural areas, it is also essential to pay close attention to rural type II and III areas. Although the mortality rates in these areas are lower than in the type IV areas, their large population means that their absolute number of deaths is much higher than in the rural type IV areas. Indeed, they account for 75% of maternal mortality and 70% of under-five mortality in China. To have a significant impact on the overall national situation and to ensure achievement of the MDGs and the targets in the 11th Five Year Plan, it is crucial to reduce mortality significantly in these areas.

In addition, specific attention needs to be given to improving the health status of women and children of migrant population in urban areas. Although there is no systematic data, some local studies suggest that migrant women account for a large proportion of maternal deaths in the urban areas.

In summary, rural type II, III and IV areas should be the priority areas for interventions to reduce child mortality and maternal mortality. In addition, migrants should be the priority target group in urban areas.

Recommendation 2: Ensure universal access to an essential package of quality antenatal, obstetrical and neonatal care, and integrated childhood care, and adapt the MCH service delivery package to the characteristics of different areas.

In accordance with the principle of equity, all women and children, regardless of where they live or where they are born, are entitled to an essential package of basic obstetrical and neonatal care, as well as effective preventive care, treatment and nutrition interventions. The delivery of such an essential package to all women during pregnancy and to all young children would have a major impact.

In China, over 75% of maternal and child mortalities result from a small number of preventable or curable causes. Targeted interventions therefore should be adopted to address direct causes of deaths, such as postpartum haemorrhage and neonatal diseases. Furthermore, it should also be remembered that 79% of neonatal deaths occur within the first seven days after birth. These birth-related deaths are closely related to the quality of obstetrical care and the service quality of postnatal follow-up services; they could be addressed by using the same type of interventions as those needed for reducing maternal deaths. The major strategy should therefore be to provide quality antenatal and basic essential obstetrical care for women, along with essential neonatal care and the integrated childhood care (including IMCI), and to ensure that these are accessible to all.

Moreover, it would be helpful to design and deliver tailored packages of MCH interventions that take into account the specific characteristics of the different types of rural and urban areas. In-hospital services, outreach services and preventive services will be priority levels for intervention. Table 3.6.1 lists the service delivery mechanism proposed for three different types of areas. The key features of each model can be summarized as follows.

Type IV rural areas. In these areas there would be universal coverage of an essential package of care, delivered as much as possible by township hospitals but complemented by village doctors in very dispersed populations. Township hospitals that can meet the basic requirements would provide basic obstetrical and neonatal care (excluding vacuum extraction) and integrated management of child diseases, while also providing outreach services for immunization, nutrition counselling and health education. These activities would be complemented at village level by large-scale social mobilization and the promotion of hospital delivery. The village doctors would provide an essential package of preventive and treatment services as well as safe delivery in clean, hygienic conditions for women who for one reason or another may not be able to deliver in hospitals. The county hospitals would act as a back-up level of care for township and village levels, providing comprehensive obstetrical care (including vacuum extraction, blood bank and surgery) and neonatal care, referral and supervision.

Type II and III rural areas. Apart from the type IV rural areas, these areas would be the main focus for the strategy. There should be universal coverage of an essential package of care in these areas, and special emphasis would be given to those counties with the highest mortality rates and the largest absolute numbers of deaths. The emphasis would be on building the capacity of township hospitals and outreach programs. At township level or above, basic obstetrical and neonatal services (excluding vacuum extraction) would be delivered, along with integrated management of child diseases, programmes for prenatal checkups, postnatal follow-up, EPI, neonatal and child monitoring and micronutrient supplementation. At village level, the emphasis would be on social mobilization and health promotion, as well as the provision of basic treatment for pneumonia and diarrhoea. Hospitals at the county level would provide comprehensive obstetrical care, neonatal transfer and support, as in type IV rural areas. Since capacity is greater in type II and III than type IV rural areas, it would be easier to add other components, such as child injury prevention, the introduction of new vaccines (e.g. Hemoinfluenza type B, Rotavirus, and epidemic encephalitis B) and, where local HIV/AIDS prevalence rates justify it, Prevention of Mother to Child Transmission of HIV (PMTCT).

Type I rural areas and urban areas. Ensuring delivery of the essential package of MCH services to the poor and to the migrant population is important. As these groups account for the majority of maternal and child mortality in type I rural areas and in urban areas and face challenges that are similar to those found more widely in types II, III and IV rural areas. Township hospitals and Community Health Centres (CHC) would provide basic obstetrical care (including vacuum extraction), neonatal and child care and outreach services. Social mobilization and health education would be provided at village and neighbourhood levels. At county level and above, hospitals would provide comprehensive obstetrical care and neonatal transfer and support, as in the previous two groups. Along with the additional interventions mentioned above for Types II and III rural areas, it would also be possible to gradually introduce birth defect screening and prevention.

Table 3.6.1 Essential package of MCH services by types of area

	Village/Household	Township	County hospitals
Type IV rural areas	<p>Skilled attendance at delivery (if feasible)</p> <p>Basic curative care for diarrhoea, pneumonia and deworming</p> <p>Antenatal care (ANC), post natal care (PNC), child growth monitoring and vitamin & mineral supplementation</p> <p>Referral for sepsis</p> <p>Social mobilization for referral</p> <p>Outreach services</p> <p>Health education and promotion</p>	<p>Facility based:</p> <p>Basic essential obstetric and neonatal care (except vacuum delivery)</p> <p>Integrated Management of Childhood Illness (IMCI)</p> <p>Referral for obstetrical and neonatal complications and severe sepsis</p> <p>Outreach:</p> <p>EPI</p> <p>ANC and PNC</p>	<p>Service delivery:</p> <p>Comprehensive obstetric and neonatal care (B-EOC + Blood Bank, C-Section, treatment of eclampsia and management of obstructed labour)</p> <p>Comprehensive curative care</p> <p>Preventive and promotional activities for catching area population</p> <p>Support:</p> <p>Organization of referral, surveillance, monitoring and evaluation</p>
Types II & III rural areas	<p>Basic curative care and treatment of diarrhoea and pneumonia</p> <p>Social mobilization for referral</p> <p>Outreach services</p> <p>Health education and promotion</p>	<p>Facility based:</p> <p>Basic Emergency Obstetrical Care (BEOC) and neonatal care as above</p> <p>IMCI, emergency and curative care</p> <p>Referral for complications as above</p> <p>Outreach :</p> <p>ANC, PNC, EPI, Child monitoring and vitamin supplementation</p> <p>Follow -up of LBW babies</p> <p>Health promotion</p>	<p>Service delivery:</p> <p>Comprehensive-EOC (CEOC), neonatal and curative care, as above</p> <p>Preventive and promotional activities for catching area population</p> <p>Support:</p> <p>Organization of referral, surveillance, monitoring and evaluation</p> <p>Additional interventions :</p> <p>Prevention of Mother to Child Transmission of HIV (PMTCT) (where needed), Child injury prevention</p>
Types I rural areas and cities	<p>Social mobilization and health education if feasible</p>	<p>Facility based:</p> <p>Basic EOC and neonatal care (including vacuum delivery)</p> <p>IMCI, emergency and curative care and referral as above</p> <p>Outreach: as above</p>	<p>Service Delivery and Support functions: as above</p> <p>Additional interventions :</p> <p>PMTCT (where needed)</p> <p>Child injury prevention</p> <p>Birth defect screening and prevention</p>

Recommendation 3: Give priority to strengthening MCH interventions at township and village levels

Since the township hospitals are the primary provider of MCH services in rural type II, III and IV areas, and are close enough to the families to be accessible, these hospitals should be the priority focus of efforts to strengthen capacity for health service delivery. All township hospitals should be able to provide basic antenatal, obstetrical and neonatal care and qualified child healthcare.

The findings cited in Chapter 4 show that there is inadequate capacity to provide quality MCH services in rural type II, III and IV areas. In fact, less than two thirds of women who delivered in hospitals receive basic obstetrical care at this level. It is therefore vitally important to improve the service capacity of township hospitals in these areas. The priority should be to develop service standards and guidelines for basic obstetrical care, neonatal care and health education, to ensure that basic facilities are in place for these services, and to provide corresponding training.

It is also vital to strengthen emergency obstetrical and neonatal referral systems, through improved mechanisms for township-county communications. At the same time, training should be provided in management skills, especially to improve the capacity and quality of supervision. The strengthening of capacity at township level needs to be complemented by the strengthening of services at village level, particularly in the type IV areas with highly dispersed populations.

The delivery of key maternal and neonatal interventions, particularly in the important first week of life, is crucial. A range of effective interventions include LBW management (Kangaroo method), foliate and vitamin A supplementation and guidance to mothers on caring practices and early child development.

2. Systemic reforms and capacity building

A series of institutional reforms are required to ensure successful delivery of the proposed package of MCH services and achieve equitable accessibility, particularly in the poorest areas of the country and among the poorest segments of the population.

Recommendation 4: Reaffirm the public health positioning of MCH services

MCH services should be clearly defined as a foundation in the process of socio-economic development and be reaffirmed as one of the key components in the public health system. Governments at all levels should take the leading role of strengthening MCH services to ensure it receives the attention it deserves and full utilization of services.

In an effort to achieve universal access to essential MCH services, the concept of the “three ones” needs to be applied at the national, provincial and county levels: one unified planning mechanism should be established for ensuring access to essential health and nutrition services; one unified coordination mechanism for coordinating resources from different sectors to ensure efficiency, effectiveness and impact; and one unified surveillance, monitoring and evaluation mechanism for improving efficiency and quality of MCH resources.

Recommendation 5: Develop an effective strategy for human resource development

A related challenge is to develop a long term plan for human resource development for MCH professionals. This would need to address the composition and geographical distribution of the staff working in this field, along with basic and in-service training requirements, remuneration and reward systems, and supervision. As discussed in Chapter 5, the problem of the poor distribution of qualified doctors and nurses needs to be solved in order to improve access to quality health care, including MCH services. A new cadre of nurse–midwives could be created to provide basic obstetrical and neonatal care at township level.

In addition, a satisfactory benefit package and performance based incentives should be introduced with a view to raising the morale and motivation of MCH staff working in types II, III and IV rural areas. This requires an effective policy framework and appropriate operational mechanisms to motivate new medical graduates to work at peripheral sites and to encourage those qualified health professionals already at such sites to continue working there.

Distance learning programmes could be developed to facilitate the implementation of the most important interventions and delivery strategies. Given the current rapid development of information technology and the good telecommunication networks in the country, China has an enormous opportunity to enhance implementation of improved strategies and interventions through the use of IT-based distance learning programmes.

Recommendation 6: Strengthen the MCH surveillance system

Data from the MCH Surveillance System provides important information for evaluating the trends in MCH and thereby serves as the foundation for MCH policy development. However, the system needs further strengthening. The MCH surveillance needs to have greater geographical representation and apply weight for under-reporting and proportion of live births in the different populations to give a more accurate picture of the situation. Also, the classification of causes of mortality could be made fully compatible with the ICD 10 classifications for better international

comparison. For tracking progress across various population groups, it will also be useful to classify data according to type of county rather than just by the broader classification of coastal, inland and western provinces or by rural and urban areas since this approach can help better understand the gaps in achieving the MDGs and help formulate targeted policies and programmes for those areas.

3. Financial support

Recommendation 7: Increase funding for health services in poor areas

Healthcare services in poor rural areas remain severely under-funded not only because of the limited tax base but also because of increased costs and inefficiencies. Hence many county governments in the poor areas do not have adequate financial resources to support the delivery of social services, including health and education.

It is imperative for the central government to provide adequate financial support for the provision of public health and essential clinical services in these areas. Given the limited financial capacities of local governments and the large number of rural poor in the middle and western regions of China, especially in the type II, III and IV rural areas, a significant increase in government spending on healthcare, through larger fiscal transfers and improved budget management at provincial, county and township levels, should be a top priority in the ongoing public finance reforms.

Particular attention needs to be given to the central region, which ranks lowest in terms of per capita expenditure in MCH, which was only 50.5% of that in western areas, while accounting for the highest absolute number of maternal and child deaths. If the bottleneck of severely inadequate government financing is not addressed in a timely manner, the success of China's maternal and child survival strategy and the achievement of the MDGs and 11th Five Year Plan targets will be severely hampered.

Recommendation 8: Improve the efficiency and effectiveness of health expenditure

It is necessary to increase funding for MCH services in poor rural areas as well as to improve efficiency and effectiveness in the use of government health resources. The emphasis should be on strengthening the rural MCH network and service capacity, improvement of obstetrical service facilities at township level and the development of a system for referral of obstetrical emergencies and further scaling-up of the "Mortality Reduction Program".

The increased funds should be used to ensure the extensive use of some basic, effective interventions such as partograms and decrease over-medicalization, such as the use of C-section. MCH workers at the village and township levels need to be

properly paid for their provision of ante-natal and post-natal care. In addition, adequate government funding should be allocated to cover in full the operational costs of preventive and promotional activities, including supervision, where necessary through transfer payments (i.e. in the case of poor counties without adequate local resources to cover these activities).

To improve the accountability of MCH funding, it is vital to strengthen policy and planning capacity. This could be done by setting performance indicators and introducing more standardized benchmarks for evaluating spending, so that local governments have incentives to ensure that increased government resources are appropriately spent.

Recommendation 9: Ensure full coverage of MCH health care by the RCMS and other health insurance mechanisms and provide medical subsidies for those unable to pay

The financial barriers of poor populations to the access of MCH services should be addressed not only through government inputs, but can be overcome through insurance, subsidies, price controls and/or voucher systems. Under the 11th Five Year Plan, the Government plans to extend coverage of the RCMS from 23.5% of the rural population in 2005 to more than 80% by 2010. When planning for the extension and funding of the RCMS, it will be important to ensure that this provides for full coverage of the essential package of MCH services (prenatal check-up, hospital delivery and postnatal care). Free hospital delivery should be provided to pregnant women from poor families in rural type IV areas. Several constraints (e.g. financial and human resources) need to be overcome before the new RCMS will be able to cover these MCH services. Furthermore, the Ministry of Civil Affairs (MOCA) should develop Medical Financial Assistance (MFA) schemes for the poor in both rural and urban areas.

4. Key recommendations

1. Implement essential MCH package

- 1) Give priority to type II, III and IV rural areas and poor migrants in urban areas.
- 2) Ensure universal access to an essential package of quality antenatal, obstetrical and neonatal care and the integrated childhood care and development (including IMCI). Adapt the MCH service delivery package to the characteristics of different areas.
- 3) Give priority to strengthening MCH interventions at township and village levels.

2. Systemic reforms and capacity building

- 4) Reaffirm the public health positioning of MCH services through a strengthened policy and planning framework.
- 5) Develop an effective strategy for MCH human resource development.
- 6) Strengthen the MCH surveillance system.

3. Financial support

- 7) Increase funding for health services in poor areas.
- 8) Improve the efficiency and effectiveness of health expenditure.
- 9) Ensure full coverage of MCH health care by the RCMS and other health insurance mechanisms and provide subsidies for those unable to pay

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