Health Policy

Universal health coverage in China part 1: progress and gaps

Winnie Yip, Hongqiao Fu, Weiyan Jian, Jue Liu, Jay Pan, Duo Xu, Hanmo Yang, Tiemin Zhai

Over the past 2 decades, China has made remarkable progress in health-care service coverage, especially in the areas of reproductive, maternal, newborn, and child health, infectious diseases, and service capacity and access. In these areas, coverage is comparable to those in high-income countries. Inequalities of service coverage in these areas have been reduced. However, there remain large gaps in the service coverage of chronic diseases. There has been little progress in controlling risk factors of chronic diseases in the past 10 years. Service coverage for most chronic conditions is lower than in high-income countries. Moreover, China has disproportionately high incidences of catastrophic health expenditure compared with countries with similar economic development. This paper comprehensively evaluates China's progress towards universal health coverage by identifying the achievements and gaps in service coverage and financial risk protection that are crucial to achieve universal health coverage goals by 2030.

Introduction

Universal health coverage (UHC) means that all individuals have access to quality health services when and where they need them without financial hardship.¹ It includes the full spectrum of essential health services, from health promotion to prevention, treatment, rehabilitation, and palliative care.² UHC is a core target of the UN's Sustainable Development Goals (SDGs) and is central to achieving other health-related SDG targets.³ To track the progress of UHC worldwide, WHO and the World Bank have developed a monitoring system with targets set for 2030 in two inter-related dimensions: all countries should achieve at least 80% essential healthcare service coverage, and all countries should achieve 100% protection from catastrophic health expenditure and medical impoverishment.¹

Like many other countries, China has embraced UHC as a national health policy priority. In the past 2 decades, China has introduced several policy initiatives with the goal to provide its citizens with equitable and affordable access to good quality basic health care and adequate protection from financial risk. Some previous studies have used household survey data to quantify the extent of China's UHC progress and have found that China has made measurable improvements in service coverage over the past 2 decades.⁴⁻⁷ However, a more comprehensive understanding on China's UHC progress is needed because existing studies have some limitations. First, the UHC indicators used in existing studies do not fully capture the epidemiological transition and socioeconomic development taking place in China.² In particular, with an ageing population, urbanisation, and economic development, the disease burden in China has been shifting from infectious to non-communicable diseases (NCDs; appendix pp 1-6). An assessment of China's progress in UHC that thoroughly examines service coverage for NCDs is needed. Coverage of some emerging cost-effective services reflecting new healthcare needs should also be examined. Second, evidence from existing studies is largely drawn from China's National Health Service Survey (NHSS), a nationally representative household survey with a large sample size done every 5 years for the past 30 years. Although it has provided valuable information on China's UHC progress, some key UHC-related indicators in specific areas are not covered in this survey (eg, family planning, HIV diagnosis and treatment, health-care resources, and palliative and rehabilitative care). In addition, the estimated coverage for some essential health-care services, such as tuberculosis treatment and cancer screening, might be subject to biases associated with the sampling method and questionnaire design in the NHSS. Finally, although the COVID-19 pandemic caused severe disruptions in the health system, existing studies have not yet provided evidence on China's UHC progress during the pandemic.

In this Review, we provide a comprehensive assessment of China's achievements and gaps in service coverage and financial risk protection towards achieving UHC by 2030 that takes account of China's ongoing epidemiological transition and socioeconomic development. We searched the literature for high-quality evidence on coverage of the full spectrum of essential health services and analysed primary data for trends of financial risk protection. Building on the gaps in service coverage and financial risk protection and challenges identified in this paper, a companion paper reviews and analyses the root causes of China's UHC progress, and provides policy recommendations for improvement.

Assessing UHC progress in China

To measure China's UHC progress, we started with the monitoring framework developed by WHO and the World Bank.^{8,9} This framework uses 14 indicators to measure service coverage in four areas: reproductive, maternal, newborn, and child health (RMNCH), infectious diseases, NCDs, and service capacity and access. In this report, we made the following adaptations to the service coverage indicators. First, to capture China's changing epidemiological and demographic profiles, we extensively expanded measures for NCD prevention and treatment. We also modified the term non-communicable diseases from the WHO and World Bank framework with chronic disease and conditions to



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Department of Global Health and Population, Harvard T H Chan School of Public Health, Boston, MA, USA (Prof W Yip PhD, H Yang PhD); Department of Health Policy and Management (H Fu PhD, W Jian PhD), and Department of Epidemiology and Biostatistics (| Liu PhD), School of Public Health, Peking University Health Science Center, Beijing, China: West China School of Public Health and West China Fourth Hospital, Sichuan University, Chengdu, China (Prof I Pan PhD): School of Public Administration, Sichuan University, China (Prof | Pan); Institute of Population and Labor Economics, Chinese Academy of Social Sciences, Beijing, China (D Xu PhD): China National Health Development Research Center, Beijing, China (T Zhai PhD)

Correspondence to: Dr Hongqiao Fu, Department of Health Policy and Management, School of Public Health, Peking University Health Science Center, Beijing 100191, China **hofu90@hsc.pku.edu.cn**

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	Definitions	Estimated coverage (year)					
Reproductive, maternal, newborn, and child health							
Prevention							
Family planning*	Demand satisfied with modern methods, including contraceptives in all women of reproductive age irrespective of marital status	92·0% (2019) ¹⁴					
ANC4	Proportion of women receiving ANC4 during their last pregnancy	94·4% (2018) ⁴					
Postnatal care*	Proportion of women receiving postnatal care during their last pregnancy	78·1% (2018) ⁴					
Neonatal screening	Proportion of newborns receiving serological screening for Down syndrome	71.6% (2016–18)15					
Neonatal screening	Proportion of newborns receiving hearing screening	86.5% (2016–18)15					
Neonatal screening	Proportion of newborns receiving serological screening for inherited metabolic disorders	98·5% (2016–18) ¹⁵					
Child immunisation*	Coverage rate of National Immunisation Programme vaccines†	83.1% (2019)16					
Child immunisation*	Coverage rate of non-National Immunisation Programme vaccines	<50% (2019) ¹⁶					
Treatment							
Children with acute respiratory tract infections	Percentage of children <5 years with acute respiratory tract infections in the past 2 weeks who sought formal care	81% (2018) ⁵					
Children diarrhoea treatment*	Percentage of children <5 years with diarrhoea in the past 2 weeks who sought formal care	85% (2018)⁵					
Institutional delivery	Proportion of woman who gave birth at a health facility during their last birth (eg, hospitals, maternal and child health-care institutions, and township hospitals)	98·6% (2018) ⁶					
Infectious diseases							
Promotion and prevention							
Water and sanitation*	Percentage of households with access to safe drinking water	93·7% (2018) ⁴					
Water and sanitation*	Percentage of households with access to adequate sanitation	76·8% (2018) ⁴					
Treatment							
Tuberculosis treatment*	Proportion of individuals receiving treatment among patients living with tuberculosis	75% (2021)17‡					
HIV diagnosis and treatment*	Proportion of people living with HIV who are aware of their HIV status	68·9% (2018) ¹⁸					
HIV diagnosis and treatment*	Proportion of individuals receiving antiretroviral therapy among diagnosed people living with HIV	83·4% (2018) ¹⁸					
HIV diagnosis and treatment*	Proportion of individuals with viral suppression among patients on treatment	94·2% (2018) ¹⁸					
Hepatitis B treatment	The percentage of patients who receive treatment among people with a chronic hepatitis B virus infection	11·0% (2016) ¹⁹					
Chronic diseases and conditions	5						
Promotion and prevention							
Tobacco control*	Proportion of individuals >15 years who do not smoke at the time of survey	76·7% (2018) ⁴					
Alcohol use control	Proportion of individuals >18 years who do not drink excessively, defined as an average daily alcohol intake of \ge 41 g for men and \ge 21 g for women	85·7% (2018) ²⁰					
Obesity control	Proportion of individuals aged 18–69 years who are not obese (BMI <30 kg/m²)	91·9% (2018) ²¹					
Obesity control	Proportion of individuals >18 years whose total activity time in a week is ≥150 min	77·7% (2018) ²⁰					
Healthy diet	Proportion of individuals >18 years whose average daily fruit and vegetable intake is \ge 400 g	55·3% (2018) ²⁰					
Healthy diet	Proportion of individuals >18 years whose average daily red meat intake is <100 g	58·0% (2018) ²⁰					
Management and treatment							
Hypertension management*	Hypertension awareness: proportion of participants who self-reported a hypertension diagnosis among patients with hypertension	45.6% (2014-21) ²²					
Hypertension management*	Hypertension treatment: proportion of participants who used antihypertensive medications among those who were aware they had hypertension	75·0% (2014–21) ²²					
Hypertension management*	Hypertension control: proportion of participants with an average systolic and diastolic blood pressure less than 140 mm Hg and 90 mm Hg, respectively, over two readings among those treated for hypertension	26.8% (2014-21) ²²					
Diabetes management*	Diabetes awareness: proportion of individuals with self-reported, physician-diagnosed diabetes among all patients with diabetes	36.7% (2018)23					
Diabetes management*	Diabetes treatment: proportion of individuals receiving diabetes treatment among all patients who were aware they had diabetes	89.6% (2018)23					
Diabetes management*	Diabetes control: proportion of individuals with an HbA $_{\rm lc}$ level <7.0% among patients receiving treatment for diabetes	50·1% (2018) ²³					
COPD management	COPD awareness: proportion of individuals with self-reported, clinician-diagnosed COPD among people with COPD diagnosed by spirometry	2·6% (2012–15) ²⁴					
COPD management	COPD pulmonary function test rate: proportion of individuals with COPD who reported a previous pulmonary function test	12·0% (2012–15) ²⁴					
	(Table 1 continues on next page)						

	Definitions	Estimated coverage (year)			
(Continued from previous page)					
Asthma management	Proportion of individuals with asthma who were diagnosed by a physician	28·8% (2012–15) ²			
Asthma management	Proportion of individuals with asthma that had a pulmonary function test	23·4% (2012–15) ²			
Asthma management	Proportion of individuals with asthma treated with inhaled corticosteroids	5·6% (2012–15) ²			
Chronic kidney disease management	Chronic kidney disease awareness: proportion of individuals with self-reported, clinician-diagnosed chronic kidney disease among individuals with chronic kidney disease reported in the survey	10·0% (2018–19) ²			
Cancer detection	Percentage of women aged 35–64 years who had a cervical cancer screening during their lifetime	43·4% (2018–19) ²			
Cancer detection	Percentage of women aged 35–64 years who had a breast cancer screening during their lifetime	30·9% (2018–19) ²			
Depressive disorder treatment	Proportion of participants who reported a depressive symptom in the past 12 months who were treated in any treatment sector	9·5% (2012–15) ²			
Depressive disorder treatment	Proportion of participants with depressive disorders who were treated adequately	0.5% (2012–15) ²			
Palliative care					
Palliative care and pain relief	Estimated percentage of need that is met for the health conditions most associated with serious health-related suffering	16% (2013) ³⁰			
Rehabilitative care					
Rehabilitation service	Proportion of respondents with disabilities who need rehabilitation services that received any rehabilitation service	45·6% (2019) ³¹			
Service capacity and access					
Inpatient care access					
Inpatient care utilisation	Proportion of individuals who were admitted to hospital among those who were recommended to be hospitalised by physicians within 1 year preceding the survey	78·5% (2018) ³²			
Outpatient care access					
Outpatient care utilisation	Proportion of individuals who sought outpatient care among those who felt ill or uncomfortable in the 2 weeks preceding the survey	88·2% (2018) ⁶			
Access to health facility					
Physical health access	Proportion of households whose travel time to the nearest medical facility is shorter than 10 min	81·7% (2018) ⁶			
Proxy for health access					
Health-care resources*	Number of of medical doctors	2·55 (2021)³³§			
Health-care resources*	Number of of hospital beds	6·70 (2021) ³³ §			
Data are the latest reported estimated coverage for each indicator. ANC4=at least four antenatal care visits. COPD=chronic obstructive pulmonary disease. HBA _{rc} =glycated haemoglobin. *Indicators adopted in the WHO and World Bank universal health coverage monitoring report.* †National Immunisation Programme vaccines include hepatitis B vaccine, bacillus Calmette-Guérin vaccine, polio vaccine, diphtheria, tetanus, and pertussis vaccine, measles, mumps, and rubella vaccine, Japanese encephalitis vaccine, meningococcal polysaccharide vaccine, and hepatitis A vaccine. ‡Percentage is approximate.\$Per 1000 population.					

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include palliative and rehabilitative care. Second, we modified measures for infectious diseases by replacing malaria prevention with hepatitis B treatment because although China has eradicated malaria,^{10,11} it has a high disease burden of hepatitis B.12,13 Third, we added an indicator measuring coverage of neonatal screenings, including Down syndrome, newborn hearing, and inherited metabolic disorders to capture new demands for RMNCH services. Fourth, we included indicators measuring unmet health-care needs and physical health-care access in service capacity and access. Finally, we included 27 indicators measuring service coverage (table 1). The estimated coverage of the indicators were drawn from studies with nationally representative, population-based surveys or administrative data. If such studies were not available, we took high-quality modelling results instead (see appendix pp 7-15 for more details on indicator selection and literature quality assessment). For measuring financial protection in health, we followed the WHO and World Bank framework for catastrophic health expenditure and medical impoverishment.

RMNCH

China is on target to achieve 80% service coverage in the area of RMNCH.⁴⁶ Coverages of essential RMNCH services that received financial subsidies or were covered in social health insurance schemes reached high percentages that were comparable to those in high-income countries.^{9,34} Approximately 92% of the demand for family planning was satisfied among Chinese women of reproductive age in 2019, and institutional delivery was universally covered.^{6,9,14} Coverage for at least four antenatal care visits (ANC4) and postnatal care reached 94·4% and 78·1%, respectively, in 2018, with large improvements in coverage over the past 20 years.⁴ Vaccination under the National Immunisation Programme (NIP) reached 83·1% coverage in 2018.¹⁶ In addition, in 2018, more than 80% of children younger than 5 years could receive timely

treatment for acute respiratory tract infections and diarrhoea when needed.⁵ Moreover, existing evidence suggests that inequality in RMNCH service provision by urban, rural, and regional residency and household income has been greatly reduced over the past 2 decades.⁴⁻⁶

Some new cost-effective RMNCH services have also had rapid growth over the past decades, even though they are not fully covered in the essential public health programme or social health insurance schemes. For instance, coverage of serological screening for Down syndrome, newborn hearing screening, and newborn screening for inherited metabolic disorders increased from 18.1%, 20.9%, and 40.9%, respectively, during 2006-09, to 71.6%, 86.5%, and 98.5%, respectively, during 2016-18.15 Coverage of some non-NIP vaccines among children, such as the Haemophilus influenzae type B vaccine and pneumococcal conjugate vaccine, also had substantial growth in the past 10 years, although coverage is far from 100%.16,35,36 Expanding the coverage of new cost-effective RMNCH services and reducing urban versus rural, regional, and incomerelated disparities should be a key focus in the future.15,16

Infectious diseases

The coverage of essential health-care services for infectious diseases has increased substantially in the past 2 decades. In 2018, 93.7% of households had access to safe drinking water and 76.8% to adequate sanitation, an increase from 83.3% and 40.1%, respectively, compared with 2003.4 Furthermore, inequalities in access to safe water and sanitation by urban, rural, and regional residency and household income narrowed by the end of 2018.5.6 The management of major infectious diseases has also improved. In 2018, among individuals with an HIV infection, 68.9% were aware of their status; among those who were diagnosed, 83.4% received antiretroviral therapy; among those on treatment for at least 12 months, 94.2% entered viral suppression.18 These statistics are comparable to those in Europe.37 The estimated tuberculosis treatment rate was around 75% in 2021, which was much higher than the average rate in 30 countries with high burdens of tuberculosis (approximately 61%).¹⁷ The proportion of people with bacteriologically confirmed tuberculosis among patients with pulmonary tuberculosis increased from approximately 30% in 2014, to 55.3% in 2020, and the treatment success rate for patients with new and relapsed infections has exceeded 93% since 2011.38 Inequalities in tuberculosis treatment by urban, rural, and regional residency and household income had a modest decrease over the past 20 years.6

Some gaps, however, still exist in service coverage for infectious diseases. Among the households with the lowest income, who mostly live in rural areas, the coverage of adequate sanitation remained less than the target of 80% coverage in 2018.⁶ The awareness rate of HIV infection in China was lower than the 90% target set by

the Joint United Nations Programme, and diagnosis and treatment rates for multidrug-resistant tuberculosis in 2021 were around 50% and 71%, respectively, which are much lower than those for patients with any kind of tuberculosis.¹⁷ With the world's largest burden of hepatitis B virus (HBV) infection, China has prioritised ensuring access to prevention services (eg, HBV vaccination, prevention of vertical transmission, and blood safety), which has covered over 90% of the target population.^{12,13} Despite these efforts, only 19% of patients with a chronic HBV infection were diagnosed and only 11% were treated in 2016,¹⁹ which was largely attributable to the unequal geographical distribution of diagnostic abilities and the high cost of antiviral treatment.^{12,13}

Chronic diseases and conditions

There are large gaps in the prevention and treatment of chronic diseases and conditions in China. The progress in controlling risk factors of chronic diseases has not been satisfactory. As the second highest risk factor contributing to deaths and disability-adjusted lifeyears (DALYs), smoking prevalence remained largely unchanged between 2003 and 2018.4 In addition, obesity prevalence (BMI >30 kg/m²) more than doubled, from 3.1% in 2004, to 8.1% in 2018, and the percentage of adults without adequate physical activity (≤150 min per week) increased from 16.3% in 2013, to 22.3% in 2018.^{20,21} Other modifiable behavioural risk factors for NCDs, such as excessive drinking (≥41 g/day for men and ≥ 21 g/day for women), inadequate fruit and vegetable intake (≤400 g/day), and excessive red meat intake g/day) also showed little improvement (>100 between 2013 and 2018.20 Controlling risk factors of chronic diseases requires efforts from health and nonhealth sectors, such as education, business, and agricultural sectors. The unsatisfactory progress in controlling these risk factors suggests poor multisectoral collaborations within China, even though the Chinese government emphasised health in all policies in its Healthy China 2030 strategy.^{39,40}

Moreover, China has a poor record of chronic disease management. Hypertension prevalence increased from 25.7% in 2007, to 31.5% in 2017,⁴¹ and despite some modest improvements, hypertension treatment and management were overall unsatisfactory.42 Of the 660 565 individuals with hypertension who were surveyed between 2014 and 2021 in the China Patient-Centred Evaluative Assessment of Cardiac Events Million Persons Project, only 45.6% were aware of their hypertension. Among those who were aware, 75.0% were under treatment and among those treated, only 26.8% had their blood pressure effectively controlled.22 These findings suggest that only 34.2% of patients with hypertension were treated and only 9.2% had their blood pressure effectively controlled, which is much lower than corresponding statistics reported by Zhou and colleagues

for 12 high-income countries.43 Similar results were observed in diabetes management; a survey study found no measurable improvements in the adequate treatment rate between 2013 and 2018: in 2018, among adults with diabetes, only 36.7% were aware of their condition; among those who were aware, 89.6% were under treatment; and among those treated, only 50.1% had managed their diabetes effectively.23 These results suggest that only 16.5% of adults with diabetes had effectively controlled their condition, which is substantially lower than the percentage in the USA (50.5% between 2015 and 2018).44 Furthermore, studies done between 2017 and 2022 suggest that there are still considerable variations in effective coverage of hypertension and diabetes management by urban, rural, and regional residency and household income.^{23,45–47}

Poor chronic disease management in China is also reflected in low essential service coverage for chronic obstructive pulmonary disease (COPD), asthma, chronic kidney disease, depressive disorders, and cancers. A survey revealed that only 2.6% of the respondents with spirometry-defined COPD were aware of their condition and only 12.0% of people with COPD reported receiving a previous pulmonary function test.24 Among patients with asthma, only 28.8% reported ever being diagnosed by a physician and 5.6% were treated with inhaled corticosteroids, much less than the average percentages in high-income countries (eg, ranging from 17% in Italy to 49% in the UK).²⁵ The awareness rate of chronic kidney disease was only 10.0% and the control rate of chronic kidney disease comorbidities remained low during 2018-19 (eg, 24.5% for hypertension).26 Although some progress was achieved in improving access to mental health care,48,49 only 9.5% of participants who reported a depressive symptom in the past 12 months were treated and only 0.5% of participants with depressive disorders were assessed as having been treated adequately between 2013 and 2015.²⁹ Similar patterns were observed regarding treatment rates for other mental disorders.^{48,50} By contrast, in 12 high-income countries, an average of 50.5% and 22.4% of patients who reported depressive symptoms in the past 12 months were treated and received minimally adequate treatment, respectively.⁵¹

The lifetime cervical and breast cancer screening coverages among women in China aged 35–64 years were $43 \cdot 4\%$ and $30 \cdot 9\%$, respectively, at the end of 2019.^{27,28} By contrast, in many high-income countries, such as Sweden, the UK, and New Zealand, coverage for these cancer screenings exceeded 70% in 2019.³⁴ Coverages of screening for other cancers, such as lung cancer, gastric cancer, and colorectal cancer, were even lower.⁵² This unsatisfactory coverage of cancer screening services might have contributed to a higher percentage of advanced breast cancer, lung cancer, and colorectal cancer in China.⁵³

Although demands for palliative and rehabilitative care are on the rise, supply has not caught up. There is



Figure 1: Volume and distribution of outpatient visits (A) and hospital admissions (B) by health facility levels (2008–21)

Data from the China Health Statistical Yearbook (2022).33

no nationwide survey to evaluate the coverage of palliative care in China. According to a modelling analysis, morphine-equivalent consumption (morphine [mg] per patient in need of palliative care) in China could satisfy only 16% of the need for palliative care and pain relief in 2010–13.30 Regarding rehabilitative care, a cross-sectional survey showed that the estimated prevalence of unmet rehabilitation needs was 45.6% among respondents with disabilities, with large disparities between urban and rural residency and socioeconomic groups.31 These findings imply that China's health system has important weaknesses in serving the health needs of the population for NCDs and this constitutes a major barrier for the country to achieve the target of at least 80% essential health-care service coverage.

	2007	2013	2018	Difference, percentage points (2007–18)	p value			
Catastrophic health expenditure (10% threshold)*								
All	20.4% (19.7–21.2)	19.4% (18.7–20.1)	21.7% (21.4–22.0)	1.3	<0.001			
Urban	24.1% (22.8–25.3)	16.6% (15.6–17.6)	17-4% (17-0–17-8)	-6.7	<0.001			
Rural	18.1% (17.2–19.1)	22.3% (21.4–23.2)	27.0% (26.5-27.4)	8.9	<0.001			
Eastern	18.9% (17.8–20.0)	16.7% (15.6–17.8)	18.7% (18.2–19.1)	-0.2	0.74			
Central	19.6% (18.4–20.8)	20.2% (19.1–21.3)	22.8% (22.4–23.3)	3.2	<0.001			
Western	24.6% (22.8–26.3)	21.9% (20.5-23.2)	21.3% (20.8–21.8)	-3.3	<0.001			
Quarter 1	21.0% (19.5–22.5)	24.6% (23.1–26.0)	28.9% (28.2–29.6)	7.9	<0.001			
Quarter 2	18.3% (16.8–19.7)	21.8% (20.4–23.2)	24.4% (23.8–25.1)	6.1	<0.001			
Quarter 3	22.8% (21.2-24.4)	16.9% (15.7–18.2)	19.0% (18.4–19.6)	-3.8	<0.001			
Quarter 4	19.8% (18.3–21.2)	15·2% (14·0–16·4)	15.2% (14.7–15.8)	-4.6	<0.001			
Catastrophic health expenditure (25% three	eshold)†							
All	5.1% (4.7-5.5)	5.4% (5.1-5.8)	4.7% (4.5-4.8)	-0.4	0.05			
Urban	5.5% (4.9-6.2)	4.1% (3.5-4.6)	3.4% (3.2-3.6)	-2.1	<0.001			
Rural	4.8% (4.2-5.3)	6.9%(6.4–7.4)	6.2% (6.0-6.5)	1.4	<0.001			
Eastern	4.3% (3.7-4.8)	4.8% (4.2-5.4)	4.1% (3.9-4.4)	-0.2	0.51			
Central	5.4% (4.7-6.0)	6.0% (5.4-6.7)	5.1% (4.8-5.4)	-0.3	0.39			
Western	6.0% (5.0-6.9)	5.9% (5.1-6.7)	4.1% (3.8-4.3)	-1.9	<0.001			
Quarter 1	5·3% (4·4–6·1)	7.3% (6.5-8.2)	6.5% (6.1-6.9)	1.2	<0.001			
Quarter 2	4.9% (4.1-5.7)	6.4% (5.6-7.3)	5·3% (5·0–5·6)	0.4	0.34			
Quarter 3	5·2% (4·4–6·0)	4.1% (3.4-4.7)	4.0% (3.7-4.3)	-1.2	<0.001			
Quarter 4	4.8% (4.1-5.6)	4.3% (3.7-4.9)	3.1% (2.9-3.4)	-1.7	<0.001			
Medical impoverishment‡								
All	2.1% (1.8–2.4)	1.3% (1.1–1.5)	1.9% (1.8–2.0)	-0.2	0.13			
Urban	0.4% (0.2–0.5)	0.2% (0.1–0.3)	0.7% (0.6–0.7)	0.3	0.02			
Rural	3·2% (2·8–3·7)	2.5% (2.2-2.9)	3.5% (3.3-3.7)	0.3	0.19			
Eastern	1.2% (0.9–1.5)	0.8% (0.5–1.0)	1.1% (1.0–1.2)	-0.1	0.54			
Central	2.7% (2.2-3.2)	1.6% (1.3-1.9)	1.8% (1.7-2.0)	-0.9	<0.001			
Western	2.8% (2.0-3.5)	1.9% (1.5–2.3)	2.7% (2.5-2.9)	-0.1	0.81			
Quarter 1	6.6% (5.7–7.5)	5.0% (4.3-5.7)	6.9% (6.5–7.3)	0.3	0.52			
Quarter 2	0.6% (0.3–0.8)	0.4% (0.2–0.7)	0.9% (0.8–1.1)	0.3	0.11			
Quarter 3	0.2% (0.0-0.3)	0.1% (0.0-0.2)	0.3% (0.2–0.4)	0.1	0.27			
Quarter 4	0.1% (0.0-0.2)	0.0% (0.0–0.0)	0.1% (0.1–0.2)	0.0	0.93			

For the **Chinese Household** Income Project see http://www. ciidbnu.org/chip/index.asp

Data are percentage (95% Cl), unless stated otherwise. Trends in financial protection by use of data from the China Household Income Project. An increase between quarters corresponds with a progressive increase in household income per capita. *The proportion of households whose health-care expenditure was at least 10% of their household consumption expenditure. †The proportion of households whose health-care expenditure was at least 25% of their household consumption expenditure. ‡The incidence of medical impoverishment refers to the difference in the poverty headcount with and without out-of-pocket health spending included in household total consumption. With the poverty line set by the World Bank (US\$1-9 per person per day in 2010),⁵⁹ and the purchasing power parity between China and the USA (¥3-308 per US\$1-000 in 2010), we used ¥2300 per person per year in 2010 as the poverty line ad adjusted this threshold by the Consumer Price Index for other years. This poverty line is consistent with the national poverty line set by the Chinese government in its anti-poverty campaign.⁵⁹

Table 2: Financial protection between 2007 and 2018 in China

Service capacity and access

In China, health-care resources and access to them have substantially expanded in the past 20 years. The number of medical practitioners and health-care facility beds per 1000 people increased from 1·22 and 2·34, respectively, in 2003, to 2·55 and 6·70, respectively, in 2021, which is comparable with high-income countries.³³ In 2018, 81·7% of households could reach the nearest medical facility within 10 mins, which was 10·5 percentage points higher than in 2003.⁶ The volume of outpatients and admissions also doubled between 2008 and 2019 (figure 1).

The percentage of individuals with unmet needs for hospital admission dropped from $27 \cdot 5\%$ in 2003, to $21 \cdot 5\%$ in 2018;³² the unmet need for outpatient care declined from $48 \cdot 9\%$ to $11 \cdot 8\%$ during the same period.⁶ Moreover, the gaps in health-care utilisation and medical resources between urban and rural areas, across regions, and by income groups have narrowed.^{32,54}

However, China is still faced with unequal geographical distributions of medical resources, especially health-care staff. For example, only 60.8% of medical practitioners had a bachelor's degree or higher in 2021,³³ and most of

those with degrees provided care in urban areas. In addition, physicians in some specialties, such as general practitioners, paediatricians, and psychiatrists, are not only in shortage, but also unevenly geographically distributed, predominantly working in urban areas.55-57 During 2019-21, the number of paediatricians per 1000 children aged 0-14 years was 0.63, the number of general practitioners per 10000 people was 3.08, and the number of psychiatrists per 100000 people was only 3.55, which are all much lower than the average numbers for countries in the Organisation for Economic Cooperation and Development. More importantly, medical resources are concentrated in tertiary hospitals, leaving the primary care system weak. Moreover, many patients do not trust primary care providers and often seek care at tertiary hospitals, even for simple conditions. The percentage of outpatient visits at tertiary hospitals increased from 13.0% in 2009, to 27.4% in 2021; this number for tertiary hospital admissions increased from 21.2% to 47.4% during the same period (figure 1). Such a hospital-centric, fragmented, and treatment-focused health system cannot effectively manage NCD challenges or control health expenditures.⁵⁸

Financial risk protection

Table 2 shows the trends in the incidences of catastrophic health expenditure and medical impoverishment by use of data from the Chinese Household Income Project (CHIP) between 2007 and 2018. Unlike household survey data that can have recall bias,60,61 CHIP uses the diary method to collect more accurate information on household expenditures⁶² (appendix pp 16-18 describes the data and methods used to calculate catastrophic health expenditure and medical impoverishment). The diary method involves each member of a household keeping track of disposable income, expenditure (eg, food, clothing, household goods, housing, transport communication, education, and entertainment), and health expenditure (medical supplies, medicine, and health-care services), which is aggregated at the household level. Staff from the local beaureau of statistics visit selected households regularly to ensure diary quality and collect monthly records. The calculation methods in this study are consistent with the ones adopted by WHO and the World Bank in global monitoring.63 The overall incidences of catastrophic health expenditure in 2018 with 25% and 10% thresholds (measured as out-ofpocket health expenditure greater than 25% or 10% of the total household consumption) were 4.7% (95% CI 4.5-4.8) and 21.7% (21.4-22.0), respectively. The overall incidence of medical impoverishment was 1.9% (1.8-2.0) in 2018, and was largely unchanged between 2007 and 2018. Although the estimated incidences of catastrophic health expenditure and medical impoverishment reported here are lower than previous ones based on household survey data,459,64 the results in table 2 point to China's poor financial protection. With the same definitions in table 2, the global average incidences of catastrophic health expenditure in 2017, with the 25% and 10% thresholds,



Figure 2: Annual growth rates for real total health expenditures and real GDP (2001–21) Data from China Health Statistics Yearbook (2022)³³ and China Statistics Yearbook (2022).⁶⁶ GDP=gross domestic product.

were 3.8% and 13.2%, respectively, according to the 2021 global monitoring report on financial protection in health.⁶³ In Russia (2020) and Malaysia (2019), which have similar gross domestic product (GDP) per capita as China, the incidences of catastrophic health expenditure with the 25% threshold were both less than 1%, and the catastrophic health expenditure incidences with the 10% threshold were 7.7% and 1.5% between 2019 and 2020, respectively.⁶³ Moreover, consistent with previous studies,^{62,6465} we report large variations in financial risk protection across subgroups. In 2018, households in rural areas in central and western provinces with low incomes were more likely to have financial hardships due to health spending.

It is becoming challenging for China to improve their financial protection, especially because of slowed economic growth. In the past 15 years, the average annual growth rate for health expenditure was 11.3%, outpacing the average annual GDP growth rate of 7.4% (figure 2). Reduction in catastrophic health expenditure and medical impoverishment inevitably requires extra financing from the public sector. According to a modelling study, the estimated annual growth rate for health expenditures between 2025 and 2030 will remain at 8.0%.67 However, the estimated annual GDP growth rate is projected to be approximately 4.5% during this period.68 The growth rate of fiscal revenue will most likely follow that of GDP, and if the Chinese government does not increase its share of public spending on health, the gap between health expenditure and GDP could result in the growth of private health spending in the form of outof-pocket expenditure or private insurance. Wagstaff and colleagues' studies of more than 100 countries show that a higher share of private financing is associated with poorer financial risk protection.69,70

For the **Chinese Household Income Project** see http://www. ciidbnu.org/chip/index.asp

Search strategy and selection criteria

We based our Health Policy on published work, international and domestic reports, and government policy documents. We searched PubMed, MEDLINE, Google Scholar, and China National Knowledge Infrastructure (CNKI) for articles and research in English and Chinese that were published from database inception up to June 1, 2023, to identify relevant studies on UHC progress in China. In our search, we used the search terms "universal health coverage", "UHC", "health service coverage", "RMNCH", "infectious disease", "chronic diseases", "service capacity", "healthcare access", "preventive care", "curative care", "health promotion", "palliative care", "rehabilitation service", "risk factors", "pregnancy and delivery care", "family planning", "immunization", "children treatment", "tuberculosis", "HIV/AIDS", "Hepatitis B", "Water and sanitation", "smoking", "obesity", "hypertension", "diabetes", "asthma", "COPD", "cancer screening", "chronic kidney disease", "depressive disorder", "physical access", "unmet healthcare needs", "health utilization", "financial protection", "catastrophic health expenditure", "impoverishment", "monitoring", "primary health care", "health reform", "health system", "health financing", "Healthy China 2030", "health in all policy", "China", and combinations of these terms. We mainly selected studies with nationally representative, population-based surveys or administrative data to estimate the service coverage. If such studies were not available, we took high-quality modelling results.

The COVID-19 pandemic

For Universal health coverage in China part 2: addressing challenges and recommendations see Health Policy page e1035 Our report is mainly based on evidence up to 2019 and does not include years after the COVID-19 pandemic. The scarcity of data precludes a comprehensive assessment of the pandemic's effects on access to essential health-care services and financial protection in China, but emerging evidence seems to suggest adverse effects on UHC progress.

First, policy responses to the COVID-19 pandemic (eg, lockdowns and movement restrictions) and patients' fear of being infected in health facilities might have disrupted the timely use of essential health-care services.71,72 Outpatient visits and hospital admissions have declined in 2020 and 2021, compared with 2019 (figure 1). Some studies found that the pandemic adversely influenced access to and quality of HIV care,73,74 tuberculosis control,75 and chronic disease care⁷⁶⁻⁷⁸ in China; similar patterns were observed in other countries.979 Second, as health-care resources were redirected to COVID-19 prevention and treatment, health-care access and quality for non-COVID patients might have been reduced. For example, Chinese hospitals faced severe understaffing along with shortages of beds and medicines as COVID-19 infections surged in the fourth quarter of 2022, causing large unmet needs for non-COVID care.⁸⁰ Third, the economic decline during the COVID-19 pandemic might have exacerbated financial hardship because of out-of-pocket health-care expenditures. Economic slowdown with an increasing unemployment rate might have exposed Chinese households, especially the most vulnerable ones, to greater risks of incurring catastrophic health expenditure and impoverishment.

Conclusion

Over the past 2 decades, China has achieved remarkable progress towards UHC—with indicators for RMNCH,

infectious diseases, and service capacity and access being now comparable with those in high-income countries. Inequalities in service coverage in these areas have also narrowed. However, China has crucial gaps in the service coverage of chronic disease prevention and treatment, mental health services, rehabilitation services, and palliative care. There were little improvements in controlling NCD-related risk factors and some of them became worse in the past 10 years. The service coverages for hypertension and diabetes in particular were much lower than corresponding statistics in high-income countries. The service coverages for COPD, asthma, chronic kidney disease, depressive disorders, and cancers were even more unsatisfactory. In addition, compared with countries with similar economic developments, China had disproportionately high incidences of catastrophic health expenditure and impoverishment, revealing large margins for improvements in financial risk protection. Providing better financial protection for the lowest income groups is key to reducing the overall incidences of catastrophic health expenditure and medical impoverishment. These weaknesses have causes at the health system level and in broader social contexts and systemic approaches are needed to address them. We discuss these issues and policy recommendations in the companion paper Universal health coverage in China part 2: challenges and recommendations.

Contributors

WY and HF contributed to designing and conceptualising this Review, analysed data, developed policy recommendations, and wrote the original draft. All authors searched the literature, gathered and analysed data, commented on the manuscript, and approved the final version for publication.

Declaration of interests

We declare no competing interests.

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