

Investing in Primary Care to Reduce the Burden of Chronic Obstructive Pulmonary Disease

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ABSTRACT

The recent inclusion of chronic obstructive pulmonary disease (COPD) in China's national basic public health services (NBPHS) represents a historic milestone — marking the first time a chronic respiratory disease has been incorporated into this programme. This article examines the medical and socio-economic significance of integrating COPD management into the NBPHS, evaluates current efforts to address the disease burden, and discusses their alignment with broader health objectives outlined in *Healthy China 2030*.

COPD is a heterogeneous lung condition characterized by chronic respiratory symptoms accompanied by structural abnormalities of the airways and/or alveoli (1). Acute exacerbations — episodes of symptom worsening beyond normal day-to-day variation — can irreversibly diminish lung function and increase the frequency of subsequent exacerbations. Furthermore, patients with COPD face elevated risks of both respiratory and cardiovascular events that may result in premature mortality (2).

As the most prevalent chronic respiratory disease globally, COPD now affects more than 300 million individuals worldwide and accounted for 3.3 million deaths in 2019 (3). China's efforts to combat this disease carry particular global significance, as approximately one-third of all COPD-related deaths worldwide occur within the country (4).

Prevalence of COPD in China

COPD ranks as the third most prevalent non-communicable disease in China(5), following hypertension and type 2 diabetes, and currently affects 99.9 million people (6). Substantial regional disparities in disease burden exist, with higher prevalence rates observed in rural areas and among populations with

lower educational attainment (7). At the provincial level, economically less developed regions demonstrate elevated COPD prevalence (8). The disease burden increases markedly with age, particularly in adults aged 50 years and above, with prevalence rates of 12.8% in males and 5.7% in females (9).

Approximately 71% of patients experience exacerbations — defined as sustained worsening of symptoms beyond the usual stable state (10) — which significantly elevates the risk of cardiovascular complications, including acute coronary syndrome, heart failure decompensation, cerebral ischemia, arrhythmias, and cardiovascular-related mortality (11). The age-standardized mortality rate (ASMR) in China reached 45.90 per 100,000 population in 2021, with rural regions experiencing significantly higher mortality rates compared to urban areas (12).

Socio-Economic Burden of COPD in China

COPD accounts for 10% of all health service expenditures in China, with inpatient hospitalizations representing the largest component of COPD-related costs (13). A regional study from northeastern China documented a doubling of COPD hospitalizations between 2005 and 2015 (14).

The disease substantially affects patients' working lives and economic productivity. Evidence demonstrates that compared with individuals with hypertension or hypercholesterolemia, COPD patients in China experience significantly higher rates of work absenteeism, presenteeism, and overall impairment in work performance and daily activities (15). Projections indicate that over the next three decades, China's economic losses attributable to COPD will reach 1.363 trillion (US dollars), representing nearly 30% of the total global economic burden from this disease (16).

Against this backdrop of substantial health and financial burden, the China Central Committee and State Council published the *Healthy China Initiative (2019–2030)* (17), which proposed comprehensive actions to improve population health. The *Healthy China* framework recognized the critical need to

“improve the ability and level of prevention and treatment of chronic respiratory diseases, and strengthen the allocation of relevant diagnosis and treatment equipment” in primary care settings. Key initiatives include investigating the inclusion of COPD management in the National Basic Public Health Service (NBPHS) list and establishing ambitious targets to enhance local-level treatment capacity. The *Healthy China* initiative specifies that these improvements will be achieved through expanded access to nebulized inhalation facilities, oxygen therapy equipment, non-invasive ventilators, and comprehensive long-term disease management programs in primary care facilities.

Investing in Primary Care to Prioritise COPD

The inclusion of COPD in the NBPHS represents a strategic shift toward enhanced primary care involvement in disease management. This policy decision draws upon substantial evidence from pilot programmes, expert consultations, and international best practices.

International experience demonstrates the effectiveness of primary care-based COPD management. Canada’s integrated primary care programme, for instance, has significantly reduced acute care burden while improving patient outcomes: quality of life improved in 43% of patients, physician visits decreased by 33.1%, emergency department presentations fell by 9.6%, and hospitalisations declined by 6.8% (18), all while achieving substantial cost savings (19).

Expanding primary care capacity for COPD management offers considerable economic advantages through more targeted patient interventions. Population-based COPD screening strategies have proven cost-effective in China, with incremental cost-effectiveness ratios (ICERs) ranging from 8,034 to 13,209 USD per quality-adjusted life year (QALY) — well below the willingness-to-pay threshold of 38,441 USD/QALY (20).

Healthy China and COPD

Over the past decade, China has implemented a comprehensive series of policy interventions and public health initiatives designed to improve COPD prevention, diagnosis, and management outcomes nationwide. The following table summarizes these key developments (Table 1):

The *Healthy China* framework provides critical support for sustained improvements in COPD prevention and treatment. As a disease that imposes a substantial and growing clinical and economic burden on China, COPD presents significant health equity challenges through disproportionate unmet needs across different populations.

The inclusion of COPD management within the National Basic Public Health Programme represents another important milestone toward achieving *Healthy China 2030* goals. These include an anticipated decline in premature death rates from respiratory diseases to 8.1 per 100,000 and a potential increase in disease awareness to 30%. This policy enables China’s primary care services to assume a pivotal role in addressing the COPD burden, reflecting a broader structural shift

TABLE 1. Summary of policies and projects introduced to improve respiratory care for the Chinese population.

Year	Policy
2012	COPD incorporated into the National Work Plan for the Prevention and Treatment of Chronic Diseases
2014	COPD monitoring integrated into the national chronic disease and nutrition surveillance system
2017	Medium and Long-Term Plan for the Prevention and Treatment of Chronic Diseases in China (2017–2025) recommends incorporating pulmonary function testing into routine physical examinations for individuals aged 40 years and older
2017	COPD incorporated into the national tiered diagnosis and treatment initiative
2017	“Happy Breath” initiative launched to promote standardized COPD diagnosis and treatment protocols
2019	<i>Healthy China Action Plan</i> – mortality rate targets established for chronic respiratory diseases
2020	Supplementary funding allocated to equip primary healthcare centers with spirometry equipment
2021	COPD incorporated into the national prevention and treatment program for chronic non-communicable diseases
2021	COPD management integrated into the local Basic Public Health Services List in Xishui County, emphasizing coordinated care alongside hypertension and diabetes programs
2024	Pilot programs established in eight regions to develop and evaluate implementation pathways and service delivery models for COPD within the NBPHS framework
2024	Announcement of COPD management in the National Basic Public Health Services

Abbreviation: COPD=chronic obstructive pulmonary disease.

toward preventive and equitable healthcare delivery.

Looking forward, successful nationwide implementation of the COPD NBPHS project will require addressing current capacity and capability limitations in China's primary care system. Key priorities include extensive training for general practitioners, strengthened collaboration between primary care facilities and tertiary hospitals, and improved access to inhaled medications and lung function testing equipment.

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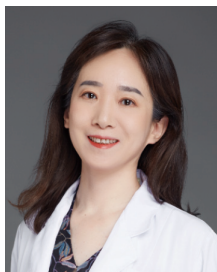
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