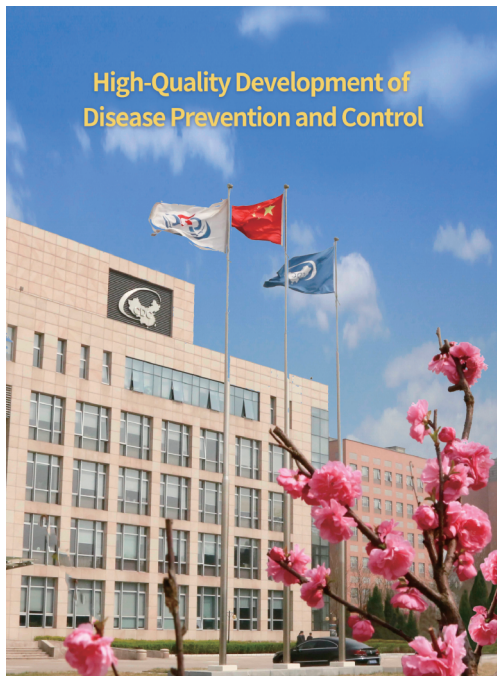


# CHINA CDC WEEKLY



中国疾病预防控制中心周报



## HIGH-QUALITY DEVELOPMENT OF DISEASE PREVENTION AND CONTROL ISSUE

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ISSN 2096-7071



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## Perspectives

## Advancing China's Disease Control and Prevention System: A Strategic Roadmap for High-Quality Development

Zhi Zeng<sup>1</sup>; Hao Chen<sup>1</sup>; Qingfeng Chen<sup>1</sup>; Yuan Wang<sup>1</sup>; Lieyu Huang<sup>1</sup>; Chengyu Lai<sup>1</sup>; Kaixuan Liu<sup>1</sup>; Haotian Pan<sup>1</sup>; Ying Cui<sup>1,†</sup>

China's Disease Control and Prevention (DCP) system has played a critical role in protecting population health and ensuring socioeconomic stability (1). Over the past two decades, China has made significant advancements in disease surveillance, response, and control, particularly following the 2003 severe acute respiratory syndrome (SARS) outbreak and the 2009 national healthcare reforms (2–3). These initiatives have substantially strengthened the national DCP system and led to improved public health outcomes, including the effective control of outbreaks such as avian influenza and coronavirus disease 2019 (COVID-19). Consequently, the incidence of major epidemics has declined markedly (1).

Despite recent successes, several limitations and gaps persist, including insufficient funding, fragmented coordination, workforce shortages, and inadequate health information systems (4–7). The COVID-19 pandemic exposed these vulnerabilities, underscoring the need for further modernization (5,8–10). The increasing global incidence of infectious diseases further emphasizes the urgent need for robust prevention and control measures (6). The World Health Organization (WHO) has emphasized the critical importance of developing resilient health systems capable of effectively preventing, detecting, and responding to public health emergencies (11–12).

Recognizing these challenges, China established the National Disease Control and Prevention Administration in 2021 to strengthen policy, systems, research, and supervision for disease prevention and control (13). The Chinese government recently released guidelines to advance the high-quality development of the DCP system in China by 2030 (14). These guidelines further highlight China's commitment to deepening reform of the country's DCP system and propelling advancements through systematic enhancements to prevention strategies. In this context, this article contributes to this important discourse by providing insights and recommendations based on a thorough examination of the guidelines and

their implications for public health in China and beyond

### NEW VISION FOR REINVENTION

These Guidelines delineate a novel framework for transforming fragmented public health systems into an integrated enterprise. This framework emphasizes society-wide participation through inclusive partnerships and promotes a paradigm shift toward future readiness grounded in resilience and continuous improvement. This ambitious vision encompasses three core dimensions:

#### Fully Reinventing the Cycle

The Guidelines' systematic approach addresses persistent challenges within the DCP system, moving away from fragmented prevention and control methods (9). This emphasis on a comprehensive, process-oriented framework demonstrates a strategic and cohesive approach to mitigating health threats. By adopting an interconnected methodology, this shift breaks down silos across prevention, response, treatment, and oversight, fostering convergence and integration. Consequently, this necessitates the comprehensive reform and integration of existing public health entities — including disease control institutions, medical facilities, and grassroots healthcare centers — into a unified, cohesive framework operating under shared objectives and standardized practices.

#### Society-Wide Participation

Prior pandemics have underscored the critical role of socioeconomic factors such as economic stability, education, agriculture, security, and social services in effective epidemic response (15). The proposed reforms emphasize broad, multisectoral engagement across all levels of society to foster a dynamic public health ecosystem. This entails both vertical integration,

strengthening leadership and coordination across DCP levels, and horizontal collaboration, engaging diverse sectors and civil society. This multifaceted approach can enhance resilience through collective action.

### **Far-Reaching Initiatives**

The increasing complexity of domestic and global epidemics demands an adaptable and progressive approach to public health. In light of the imminent threats posed by future epidemics and pandemics (16), this document represents a commitment to continuous strategic improvement, drawing upon past experiences and incorporating new knowledge. While addressing current challenges, the overarching vision remains future-oriented. This strategy balances long-term planning with adaptability, emphasizing sustained preparedness for future pandemics while continuously improving the effectiveness and resilience of public health interventions (15).

## **STRATEGIC OBJECTIVES AND KEY STRATEGIES**

The outlined strategic objectives encompass the development of an integrated and comprehensive DCP framework that spans prevention, treatment, and research. Furthermore, the objectives emphasize promoting collaboration across governmental agencies, various sectors, and within the community, while prioritizing scientific innovation and talent development. Finally, the objectives underscore a focus on individual and community health and well-being. The Guidelines provide key strategies for governance, infrastructure development, collaborative efforts, and capacity building.

### **Implementing Holistic Development**

A key focus is the comprehensive restructuring of the hierarchical disease prevention and control agency network at the national, provincial, prefectural, and county levels. Guidelines delineating the core functions of each level aim to improve clarity and efficiency. The proactive establishment of national, regional, and provincial public health centers is envisioned, with these centers serving as vital support hubs and models for public health best practices. Disease control institutions and specialized facilities will form the backbone of this system, supported by medical institutions and a strong foundation of grassroots centers. Integration of these elements and

implementation of holistic development will drive the system toward its goals.

### **Refining Governance and Leadership**

Effective governance and leadership are crucial for a robust DCP system. Clarifying responsibilities across DCP levels and strengthening coordinated leadership are essential. To enhance governance efficiency, the Guidelines recommend a model of centralized authority with decentralized implementation. Furthermore, they emphasize developing the technical leadership capacity of senior DCP agencies to improve oversight and streamline collaboration across DCP hierarchies. Prefecture and county-level CDCs and health inspection institutions will undergo restructuring and integration into a unified agency to enhance coordination, oversight, and supervision of law enforcement in epidemic prevention and control, public health, and medical care.

### **Modernizing Infrastructure and Technology**

The Guidelines recommend strengthening the essential functions of disease control and prevention agencies at all levels, particularly enhancing the core functional capacities of the China CDC (17). Priority areas include enhancing real-time disease surveillance, early warning systems, rapid response capabilities, testing capacity, clinical infectious disease management, public health interventions, regulation, and public education. The emphasis on upgrading infrastructure, workforce skills, operational protocols, and governance mechanisms underscores the importance of developing robust systems and expertise to address complex health challenges now and in the future.

### **Integrating Prevention and Clinical Care**

Integrating clinical medicine and public health is crucial for effective and coordinated epidemic responses (18). The Guidelines emphasize the importance of collaboration between CDCs at all levels, primary healthcare providers, and medical institutions to bridge this divide. This can be achieved through talent exchange, cross-training, service integration, and information sharing. Recommended strategies include defining clear public health responsibilities for medical institutions, establishing dedicated preventive health departments, and implementing robust supervisory systems to strengthen



disease control efforts within healthcare settings.

### Forging Collaborative Partnerships

The inherently transnational nature of infectious diseases necessitates multifaceted partnerships to bolster preparedness and response capabilities. The Guidelines emphasize the significance of multi-sectoral collaboration and regional cooperation in addressing diverse health challenges across geographical boundaries. The DCP system, particularly the China CDC, is urged to expand collaboration with relevant international organizations and other countries to facilitate information exchange, resource sharing, and coordinated action. Such collaboration will contribute valuable Chinese expertise, solutions, and resources to global public health governance and response efforts, ultimately fostering a global community with a shared future (17).

### Prioritizing Community Empowerment

Partnerships at the grassroots level proved invaluable in disease control efforts (19). Sustaining community mobilization for surveillance efforts and promoting health literacy empowers individuals to become active participants in disease control. Patient-centered models of care further prioritize public health. This emphasis on community engagement, through active public involvement, strengthens the effectiveness of public health initiatives. Furthermore, fostering and supporting the engagement of stakeholders in disease control efforts and developing volunteer teams will enhance the collective capacity for disease management and prevention..

### Workforce Development

A highly skilled public health workforce is fundamental to the development of high-quality public health systems (20). However, limited numbers of public health professionals hinder the effectiveness of DCP institutions. Enhancing training programs and incentives to attract and retain talent is crucial. The establishment of national and provincial Academies of Preventive Medicine will be pivotal in fostering specialized technical expertise and emphasizing the importance of scientific innovation. Strategies should include training programs designed to cultivate specialized technical, investigative, laboratory, and emergency response skills. Establishing innovative salary and incentive systems tailored to the specific needs of DCP professionals is essential for attracting,

retaining, and motivating a highly qualified public health workforce.

## THE PROSPECT

The successful implementation of China's ambitious new DCP Guidelines will necessitate overcoming challenges related to resource allocation, interagency coordination, workforce development, program evaluation, and adaptation to emerging health threats. Addressing these challenges will require sustained political will, resource mobilization, and stakeholder engagement. Key strategies include developing sustainable funding plans and mechanisms, fostering collaboration through clearly defined roles and effective communication, investing in research and innovation, strengthening workforce training and retention efforts, establishing robust monitoring and evaluation systems, and promoting program responsiveness and adaptability.

Future research should prioritize the development and implementation of an evaluative framework to monitor the progress of DCP Guidelines, assessing their implementation and impact on key public health outcomes. This framework should specifically evaluate enhancements in disease surveillance, outbreak response, and health system resilience (21). Additionally, studies should explore innovative and effective approaches within the DCP system, investigating novel methodologies such as digital health tools and intelligent solutions for the early detection of infectious diseases to address identified public health challenges (22). The development of new models for integrating medical care and prevention warrants further investigation. Researchers should also employ implementation science to systematically evaluate, synthesize, and disseminate empirically supported best practices, thereby optimizing the implementation of DCP Guidelines across diverse settings (23–24).

By proactively implementing targeted strategies outlined in the Guidelines, China can overcome the complex challenges inherent in public health system reform. Optimizing China's DCP system will directly enhance the health security of its citizens against prevailing and emerging public health threats. Constructing an integrated public health infrastructure that prioritizes early warning systems, rapid response mechanisms, and community resilience can minimize the social and economic disruptions of epidemics. Furthermore, as emerging pathogens are not confined by geographical borders, strengthening the national

public health system, while harmonizing it with international standards, is essential. Through a robust DCP system, China can contribute valuable knowledge, resources, and best practices to global health governance and collaborative initiatives.

## CONCLUSION

The updated Guidelines mark a significant milestone in the Chinese government's dedication to reforming and strengthening the national DCP framework. This will be achieved through systemic improvements to governance, infrastructure, collaboration, and capacity building. The resulting integrated and resilient public health system is poised to safeguard population health against the increasing burden of infectious diseases. Effective implementation of these Guidelines has the potential to enhance China's preparedness for emerging health threats and contribute to global health security.

**Conflicts of interest:** No conflicts of interest.

doi: 10.46234/ccdcw2024.202

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Submitted: March 11, 2024; Accepted: September 02, 2024

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## Perspectives

## China's Initiatives and Achievements in Enhancing the Professional Capabilities of CDCs

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Capacity building is essential for developing a robust disease control and prevention system (1). Recognizing this, on December 25, 2023, the General Office of China's State Council issued the "Guidelines for Promoting the High-Quality Development of Disease Control and Prevention" (hereinafter referred to as the "Guidelines") (2), emphasizing the need to enhance six key professional capabilities within the disease control and prevention system. These Guidelines provide a foundational framework for the future growth and enhancement of centers for disease control and prevention (CDCs).

### China's Disease Control and Prevention System Capacity has been Enhanced over the Past Two Decades

Since the transformation of health and anti-epidemic stations into CDCs in China around 2001, these institutions have primarily focused on public health technology management and service provision. Between 2003 and 2005, the Chinese government consistently strengthened the disease prevention and control workforce, emphasizing improvements in epidemiological investigation, on-site prevention and control, laboratory testing, and inspection capabilities to enhance the professional capacity building of CDCs (3). In 2008, the Ministry of Health outlined seven core responsibilities for CDCs: disease prevention and control, preparedness for and response to public health emergencies, management of epidemic information and health-related factors, monitoring and intervention of hazardous health factors, laboratory testing and evaluation, health education and promotion, and guidance on technology management and application research (4). Subsequent discussions on CDC capacity building have predominantly focused on these foundational responsibilities (1,5–7). Since 2020, numerous Chinese experts and scholars have offered insights and recommendations on reforming the disease control and prevention system and strengthening CDC capabilities. These

recommendations center around enhancing monitoring and early warning systems, epidemiological investigation and risk assessment, laboratory testing, big data analysis, and scientific research in response to public health emergencies (8–10). Several provincial governments in China have been actively refining the disease control and prevention system, implementing policies to reinforce core disease control capabilities, and accumulating valuable practical experience.

### The Guidelines Comprehensively Delineate the Essential Capacities of Disease Control and Prevention Systems in the Modern Era

Through comprehensive policy reviews, in-depth investigations, and extensive consultations, the Chinese government has identified essential capabilities and strategies for strengthening its disease control and prevention system. These are outlined in the "Guidelines," which prioritize core disease control functions, including monitoring and early warning systems, testing and detection, emergency response, medical treatment, public health interventions, administrative law enforcement, and public education. These measures aim to enhance preparedness, prevention, and ensure more effective and coordinated intervention and response efforts.

Firstly, enhance monitoring, early warning, and testing capacities. Monitoring and early warning systems serve as the first line of defense against major infectious disease threats, while testing is a crucial function of CDCs. The guidelines emphasize strengthening monitoring and early warning systems by refining mechanisms, expanding monitoring channels, and standardizing assessment procedures. Furthermore, the guidelines advocate for establishing a robust network of public health laboratories and accelerating the standardization of CDC laboratory construction and management.

Secondly, enhancing emergency response capabilities is crucial for effective infectious disease control and

prevention. The “Guidelines” emphasize China’s commitment to developing a sophisticated multi-point trigger monitoring and early warning system. Key areas of focus include refining emergency plans, expanding emergency response teams, enhancing emergency drills, and ensuring sufficient emergency stockpiles. These measures are designed to continuously improve the nation’s capacity to prevent, control, and respond to major epidemics.

Thirdly, enhancing surge capacity for infectious disease response is critical. Effective treatment is crucial for outbreak response. In recent years, the Chinese government has actively promoted the development of surge capacity for major epidemics and strengthened the “flat-to-sharp switching mechanism” for medical treatment capacity. Moving forward, the “Guidelines” emphasize improving disease prevention and treatment at primary healthcare institutions and establishing national centers for the prevention, control, and treatment of major infectious diseases. These centers will leverage the upgraded capacity of high-level medical institutions.

Fourthly, enhancing public health intervention capacity is crucial. The reformed disease control and prevention system should consider evolving health determinants in the modern era, establishing the system as a cornerstone of the “health-centered” approach (11). Therefore, continuous strengthening of key infectious disease prevention and control, consolidation of efforts against major parasitic and endemic diseases, optimization of vaccine performance and immunization coverage, and improvement of health-influencing factor monitoring and comprehensive intervention are essential.

Fifthly, the “Guidelines” recommend enhancing administrative and law enforcement capacity. They propose re-establishing CDCs at the municipal and county levels by integrating them with local institutes of health supervision, thereby returning supervision and law enforcement functions to the CDCs. However, the “Guidelines” do not address reforms for national and provincial institutes of health supervision. Notably, the functions of the national Health Supervision Center have already been integrated into the newly established National Disease Control and Prevention Center. While disease control and prevention focus on implementation, supervision and law enforcement address oversight and enforcement. The “Guidelines” emphasize the need to improve the comprehensive supervision and law enforcement system by clearly defining powers and responsibilities,

standardizing procedures, and ensuring robust implementation. Additionally, they call for enhancing the licensing and qualification management system for health administrative and law enforcement personnel and advocate for increased resource allocation for health administrative law enforcement and standardized development.

Sixthly, enhancing public health outreach and education is crucial. Promoting health knowledge and awareness is a fundamental prerequisite for improving public health literacy and advancing the Healthy China initiative. The guidelines emphasize the need to widely disseminate disease control policies and scientific knowledge by establishing an integrated working mechanism that combines news releases on disease control, public opinion guidance, health dissemination, and social mobilization to create a comprehensive, multidimensional, and interactive communication framework.

## DISCUSSION

Since 2020, strengthening the professional capacity of disease control and prevention systems has been a key priority for numerous countries and international organizations (12–14). The issuance of the Chinese government’s “Guidelines” represents a significant step towards comprehensively enhancing the professional capacity of CDCs, bolstering the public health system, and advancing the overarching goal of Healthy China. Notably, this is the first national-level document to systematically outline the professional capacity requirements of CDCs. Addressing deficiencies exposed by the COVID-19 pandemic, such as inadequate early warning systems for emerging infectious diseases and gaps in epidemiological investigation and laboratory testing capacity, the “Guidelines” prioritize infectious disease prevention, control, and emergency response as the core functions of disease control institutions at all levels (15). Furthermore, the document defines key areas requiring strengthening. In accordance with the “Guidelines,” the China CDC has outlined eight core capabilities for national-level disease control institutions to develop (16). The implementation of these guidelines is expected to drive continuous improvement across all levels of China’s CDCs, particularly in their capacity to respond to emerging infectious diseases. Consequently, China’s disease control and prevention system is poised to become more resilient and better equipped to support the goals of Healthy China and contribute to



socio-economic development.

**Conflicts of interest:** No conflicts of interest.

doi: 10.46234/ccdcw2024.203

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Submitted: March 18, 2024; Accepted: August 01, 2024

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## Perspectives

## Strengthening Organizational Support Is Essential for the High-Quality Development of Disease Prevention and Control Initiatives

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Organizational security in public health encompasses structural and supportive measures designed to ensure public health security and effectively prevent and control disease outbreaks. These measures include organizational leadership, investment mechanisms, information technology support, scientific research, and international exchange and cooperation. Disease prevention and control is often described as an “invisible war”, emphasizing the need for preparedness and proactive measures (1). As the adage states, “Before soldiers and horses move, food and grass go first,” highlighting the critical role of a robust organizational security foundation for successful disease prevention and control efforts. This foundation is essential for promoting high-quality development within the field. During its 14th Five-Year Plan period, the Chinese government has implemented policies to bolster organizational security. Furthering this commitment, on December 25, 2023, the State Council issued the “Guiding Opinions on Promoting the High-Quality Development of Disease Prevention and Control.” This new policy aims to comprehensively strengthen the organizational security of disease prevention and control system construction and development. This study provides an examination of the development of organizational security work in China.

### Strengthening Organizational Guarantees

The May 2021 listing of the National Bureau of Disease Control and Prevention (NBDC) (2) prompted a system-wide reform of disease prevention and control efforts. This reform aimed to strengthen management, organizational safeguards, and leadership capacity. Subsequently, local disease prevention and control bureaus were established across provincial, municipal, and county levels, further enhancing organizational leadership in disease control (3–4).

The May 2021 listing of the NBDC initiated a reform of China’s disease prevention and control system, strengthening management, organizational

safeguards, and leadership for disease control efforts (2). This reform led to the establishment of local disease prevention and control bureaus at the provincial, municipal, and county levels (3–4). Under the Fourteenth Five-Year Plan, the Chinese government allocated 13.1 billion Chinese Yuan (CNY) to support disease control system development at the national, provincial, prefecture, and county levels. This funding further increased in 2023, with 17.687 billion CNY allocated through transfer payments for projects focused on preventing and controlling major infectious and endemic diseases (5). The “14th Five-Year Plan and the 2035 Vision for National Economic and Social Development of the People’s Republic of China,” issued in March 2021, outlined plans to strengthen China’s public health infrastructure by building a robust public health system, establishing stable investment mechanisms for public health initiatives, improving foundational disease control conditions, and strengthening the primary public health system. Subsequently, the central government and relevant departments issued a series of important policy documents to further these goals (Table 1). These evolving policies, aimed at safeguarding national health, seek to strengthen and improve the medical and healthcare service system. They establish organizational safeguards for disease prevention and control and outline targeted, operational measures to ensure the high-quality development of the disease control system, providing an essential foundation for future progress.

These policies encompass a range of initiatives, including: establishing a sustainable investment mechanism for public health initiatives and coordinating diverse funding channels to bolster the capacity of disease prevention and control institutions (6); emphasizing governmental responsibility; enhancing interdepartmental collaboration mechanisms; refining policies and measures in a timely fashion; developing an authoritative and

TABLE 1. Since the 14th Five-Year Plan, relevant documents have been issued on the organization and protection of disease control institutions.

Released time	Issued institution	Published by policy name
Jun 2021	The National Development and Reform Commission	The 14th Five-Year Plan for the Construction of a High-quality Medical and Health Service System
Apr 2022	The General Office of the State Council	The “14th Five-Year Plan” for national health
Mar 2023	The General Office of the Central Committee of the Communist Party of China and the General Office of the State Council	On Further Improving the Medical and Health Service System
Dec 2023	The General Office of the State Council	Guidelines for Promoting High-Quality Development of Disease Prevention and Control Initiatives

interconnected national health information platform; improving the core national health information database; promoting the integration and data sharing of medical and health institutions at all levels; exploring the establishment of information sharing mechanisms among health, medical insurance, and drug regulatory departments, and achieving cross-regional and interdepartmental data sharing through the national integrated government service platform; strengthening disease prevention, research systems, and capacity building, launching national science and technology plans such as the Health and Health-related Science and Technology Innovation 2030 — Major Projects and the Fourteenth Five-Year Key Research and Development (R&D) Plan; advancing comprehensive international cooperation in health and healthcare and promoting the development of a global community of health for all; promoting health cooperation along the Belt and Road and advancing the construction of the Health Silk Road; and innovating health development assistance and cooperation models (7). Additionally, the policies prioritize building a high-quality and efficient medical and health service system, integrating it into the government’s work goals and assessment targets; advancing the reform of the public health service system; optimizing and improving the functional configuration of disease prevention and control institutions; standardizing public health technical services provided to society; implementing government responsibility for investment in professional public health institutions and basic public health services, and implementing financial investment policies for medical institutions to carry out public health services such as infectious disease prevention; establishing a cross-departmental and cross-institutional public health data sharing and scheduling mechanism and an intelligent early warning multi-trigger mechanism; and accelerating the construction of a health and medical data security system, and strengthening data security monitoring and early warning (8). These

comprehensive policies collectively strengthen the public health safety net.

### Strengthening Organizational Capacity and Promoting Development

The “Guidelines” advocate for a centralized and unified leadership and management system for disease control efforts, emphasizing improved joint prevention and control mechanisms and encouraging the participation of grassroots communities and social sectors. Strengthening interconnectivity between national and local levels of disease control institutions bolsters a unified national strategy. Enhanced collaboration between medical and preventative healthcare facilitates interdepartmental and interinstitutional joint monitoring, information sharing, and coordinated prevention and control initiatives. Financial responsibility will be clearly delineated for governments at all levels. Establishing a tiered and differentiated scientific research and innovation formation will accelerate improvements to the disease control research system, continuously strengthening scientific and technological breakthroughs and the translation of research achievements into disease control practice. Organizational support will be increased in the following areas to further promote the high-quality development of disease prevention and control:

Local governments at all levels must assume primary responsibility for the reform and development of disease control initiatives. This includes integrating high-quality disease control development into local economic and social development plans and incorporating the prevention of major public health risks into government performance evaluations. Furthermore, it necessitates strengthening the leadership and coordination of superior disease control institutions over subordinate institutions and implementing robust supervision, inspection, and evaluation mechanisms.

The Chinese government is establishing a robust public health investment mechanism to ensure consistent funding for essential infrastructure, equipment procurement, disciplinary advancement, and personnel training within disease control institutions nationwide. Government budgets encompass personnel, administrative, and operational costs, alongside dedicated policy support for scientific research investments and platform development. Financial policies are being implemented to support medical institutions in delivering public health services, including infectious disease prevention. Furthermore, the government is strengthening the financial safety net for major epidemic prevention, control, and treatment efforts, while exploring exemption systems for vulnerable populations and specific diseases during public health emergencies.

Leverage information technology to enhance disease control information standardization, network security, and data security guarantee systems. Develop intelligent, multi-trigger monitoring, early warning, and emergency command mechanisms for infectious diseases. Promote data exchange between healthcare institution information systems and the infectious disease monitoring system, establishing a comprehensive mechanism for the automated acquisition of infectious disease diagnosis and pathogen testing data. Utilize big data, cloud computing, and other technologies to improve data integration, risk identification, intelligent analysis, and timely warning capabilities.

China has established a robust scientific research network, spearheaded by the Chinese Academy of Preventive Medicine and bolstered by provincial academies of preventive medicine and infectious disease medical institutions. This network has fostered the development of numerous scientific and technological innovation platforms and key laboratories, enhancing R&D and translational capabilities in disease control. It promotes collaborative industry-university-research-application platforms involving disease control institutions, medical institutions, universities, research institutes, and enterprises, facilitating the shared use of scientific and technological platforms and resources. Moreover, the network supports the Chinese Academy of Preventive Medicine in establishing core research centers for infectious disease prevention and control, with an emphasis on strengthening research into prevention and control strategies, core technologies, and essential equipment for major diseases and health risk factors.

China will deepen its international collaborations by strengthening infectious disease prevention and control cooperation with relevant countries and regions. This initiative will focus on bolstering cross-border joint prevention and control measures, enhancing information exchange, and improving training programs for global public health personnel. Additionally, China will prioritize think tank development, actively engage in foreign aid initiatives related to public health, and participate actively in global health governance to promote the establishment of a global community of health for all (9).

## DISCUSSION

Robust organizational support is fundamental to the success of disease control system reform in China, enabling comprehensive planning, system restructuring, and capacity building. This support is also essential for the effective implementation of the “Guidelines” and the continued safeguarding of public health. Health and organizational support policies introduced during the initial three years of the “Fourteenth Five-Year Plan” will drive progress in disease prevention and control initiatives nationwide. These recent policies are characterized by more precise positioning and objectives, directly addressing key obstacles hindering the development of disease control initiatives. Building upon this foundation, China has adopted measures aligned with both international best practices and its unique national context. These measures include strengthening organizational leadership; advancing internal reforms (10); enhancing the rule of law; integrating public health law experts into disease control expert committees (11); optimizing investment mechanisms by integrating economic considerations with public health priorities (12); strengthening information technology support; establishing a modern, integrated, and real-time public health data and surveillance core (13); promoting international exchange and cooperation; cultivating new roles and partnerships with international stakeholders; and contributing to the building of a global community of health for all (14). Guided by these national policies, local governments at all levels have issued tailored organizational support policies. These localized policies have bolstered organizational support, providing robust backing for the high-quality development of disease control initiatives and playing a pivotal role in realizing the overarching national objective of a Healthy China.

**Conflicts of interest:** No conflicts of interest.

doi: 10.46234/ccdcw2024.204

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Submitted: April 18, 2024; Accepted: September 13, 2024

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## Perspectives

## Strengthening the Construction of the Talent Team and Promoting the High-Quality Development of Disease Prevention and Control

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Talent is essential for development, and career development strategies should prioritize talent cultivation (1–2). China's CDC workforce comprises a diverse, multidisciplinary team of disease prevention and control experts. This workforce includes personnel from various CDC agencies, public medical institutions, township health centers, and community health service centers. Strengthening the development of this pool of talent is crucial for enhancing the quality of disease prevention and control systems and forms the foundation of a robust public health infrastructure (3). On December 25, 2023, the State Council released the Guideline on Promoting the High-Quality Development of Disease Prevention and Control, outlining a comprehensive strategy for strengthening the CDC's talent base. This paper analyzes this policy to clarify the historical context, principal actions, and future trajectory of workforce development within China's CDC.

### Strengthening the CDC Career Talent Team

The Chinese government has prioritized the development of professional disease control and prevention teams. The “Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Objectives through the Year 2035,” published in March 2021, outlines strategies for strengthening public health schools and professional teams. Subsequently, the central government and associated departments released numerous policy documents (Table 1) focused on bolstering public health school and workforce capacity, advancing the medical and health service system, safeguarding population health, and fostering medical and health workforce development. These initiatives constitute a comprehensive strategic framework for developing the talent pool essential for disease control.

This series of proposed policies focuses on key enhancements within the public health sector, including increasing the proportion of professional and technical personnel and strengthening the public health and health engineering workforce through enhanced training and incentives (4). The establishment of new training paradigms for public health personnel has also been suggested (5). Efforts to strengthen core disease control teams include improving competencies in epidemiological investigations, proposing systems that reduce emphasis on publication requirements, and piloting new representative systems (6). Furthermore, the proposed policies support the strategic development of public health roles, the restructuring of positions within health institutions, and enhanced collaboration between public health and medical institutions. This collaboration would facilitate personnel exchanges, promote standardized training for public health physicians, and initiate the “Grassroots Disease Control Backbone Talent Capacity Improvement Project.” Proposed enhancements to investment and remuneration frameworks would foster research and community service, with improved treatment guaranteed for personnel. Dynamic adjustment of staffing levels in public health institutions is planned, along with the rational setting of performance-based pay scales and the introduction of benefits such as health and epidemic prevention allowances and temporary work subsidies (7). Finally, the proposals would augment the public health physician system by potentially granting prescribing rights and enhancing staffing norms across specialized public health entities to bolster team capacity and operational efficacy in disease prevention and control (8).

### The New Policy Has Been Developed Carefully

The updated guidelines implement a comprehensive



TABLE 1. Since the 14th Five-Year Plan, documents on the construction of disease control talent team have been released.

Released time	Issued institution	Policy name
Jun 2021	The National Development and Reform Commission	The 14th Five-Year Plan for the Construction of a High-quality Medical and Health Service System
Dec 2021	The Ministry of Education, the National Development and Reform Commission, the National Health Commission, and the National Bureau of Disease Control and Prevention	Notice on the Construction of High-Level Public Health Schools
Apr 2022	The General Office of the State Council	The “14th Five-Year Plan” for national health
Aug 2022	The National Health Commission	The “14th Five-Year Plan” for health talent development
Mar 2023	The General Office of the Central Committee of the Communist Party of China and the General Office of the State Council	On Further Improving the Medical and Health Service System

strategy encompassing various aspects.

**Public health talent cultivation necessitates a structured training system:** At the collegiate level, this involves developing high-quality public health schools and integrating public health and preventive medicine disciplines into the “National Strategic Talent Reserve Enrollment Plan for Key Fields.” Postgraduate education should be promoted, standardized training for public health physicians should be actively supported, and public health personnel should receive enhanced clinical knowledge training. Continuing education is also crucial for training professional and technical staff at or above the intermediate level within disease control institutions.

**Talent utilization should be optimized by establishing a comprehensive management system:** This system should foster trust to better integrate independently sourced talent into structured research programs. An emergency research protocol should be developed to enable the strategic deployment of experts during public health crises. Additionally, an exchange and training framework should be created to facilitate reciprocal movement of public health professionals and clinicians between medical and health institutions. Finally, comprehensive strategies, including short-term training programs, doctoral service groups, and targeted assistance, should be implemented to encourage the deployment of talent to underserved and remote areas, as well as to frontline, grassroots locations.

**Talent evaluation should prioritize the development of a system that aligns with disease control principles:** This system should emphasize enhanced work performance and refined professional title evaluation standards. A structured and categorized assessment method, particularly focused on grassroots-level orientations, should be implemented. Senior professional and technical positions should be allocated to grassroots disease control institutions, with separate quota allocations. Additionally, clear promotional

pathways within health engineering, inspection, and testing technology disciplines should be established to improve professional categorization.

**To foster talent, it is essential to prioritize incentivization and cultivate enthusiasm:** This can be achieved through robust personnel training, comprehensive support programs, and the strategic appointment of leading experts across diverse domains. Furthermore, increasing the proportion of middle- and senior-level professional and technical positions within disease control institutions is recommended. A scientifically and rationally designed performance-based salary structure should be implemented to enhance the remuneration of disease control professionals. Additionally, establishing an awards and recognition mechanism can increase the visibility of exemplary figures and foster a culture of appreciation (9–10).

## DISCUSSION

A key strategy for enhancing China’s disease prevention and control system is strengthening its talent base. This approach leverages China’s extensive experience in managing disease incidence and prevalence while fortifying the public health protection network to safeguard future public health. However, challenges remain, including a disconnect between public health training and future public health system needs, a shortage and uneven distribution of skilled personnel, and a pressing need for capacity building (11). During the 13th Five-Year Plan, CDC organizations experienced staffing reductions, and the percentage of graduates with advanced public health degrees entering CDC employment remained below 5%. Modernizing training approaches and aligning talent incentives with human resource management within CDCs are crucial for promoting workforce engagement (12). Furthermore, the workforce

demographic within many CDC agencies, largely composed of individuals nearing retirement age (over 50), underscores a significant generational gap. To address these challenges, the guidelines emphasize a problem-oriented, application-focused approach, advocating for evidence-based decision-making in developing a comprehensive CDC career development plan. This plan encompasses all aspects of talent management, from training and utilization to evaluation and incentivization, with the goal of establishing a work and evaluation system tailored to the specific functions of CDCs. Implementing these guidelines, along with incentives for scientific research, is expected to optimize talent team structure, bolster morale, and cultivate a high-quality CDC workforce. This initiative is essential for advancing CDCs and contributes to the broader goals of promoting a healthy China and contributing to global health (13–15).

**Conflicts of interest:** No conflicts of interest.

doi: 10.46234/ccdcw2024.205

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Submitted: March 21, 2024; Accepted: August 01, 2024

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## Notifiable Infectious Diseases Reports

## Reported Cases and Deaths of National Notifiable Infectious Diseases — China, July 2024\*

Diseases	Cases	Deaths
Plague	0	0
Cholera	5	0
SARS-CoV	0	0
Acquired immune deficiency syndrome <sup>†</sup>	4,832	1,729
Hepatitis	170,397	330
Hepatitis A	1,206	0
Hepatitis B	145,530	24
Hepatitis C	20,236	305
Hepatitis D	23	0
Hepatitis E	2,815	1
Other hepatitis	587	0
Poliomyelitis	0	0
Human infection with H5N1 virus	0	0
Measles	171	0
Epidemic hemorrhagic fever	313	1
Rabies	16	11
Japanese encephalitis	10	0
Dengue	554	0
Anthrax	56	0
Dysentery	4,512	0
Tuberculosis	62,437	346
Typhoid fever and paratyphoid fever	557	0
Meningococcal meningitis	9	2
Pertussis	74,964	0
Diphtheria	0	0
Neonatal tetanus	2	0
Scarlet fever	6,309	0
Brucellosis	8,272	0
Gonorrhea	9,571	0
Syphilis	62,430	5
Leptospirosis	37	0
Schistosomiasis	1	0
Malaria	306	2
Human infection with H7N9 virus	0	0
Monkey pox <sup>§</sup>	39	0
Influenza	300,232	0
Mumps	8,438	0

Continued

Diseases	Cases	Deaths
Rubella	64	0
Acute hemorrhagic conjunctivitis	2,867	0
Leprosy	21	0
Typhus	179	0
Kala azar	27	0
Echinococcosis	461	5
Filariasis	0	0
Infectious diarrhea <sup>¶</sup>	134,419	0
Hand, foot and mouth disease	170,723	0
<b>Total</b>	<b>1,023,231</b>	<b>2,431</b>

\* According to the National Bureau of Disease Control and Prevention, not included coronavirus disease 2019 (COVID-19).

<sup>†</sup> The number of deaths of acquired immune deficiency syndrome (AIDS) is the number of all-cause deaths reported in the month by cumulative reported AIDS patients.

<sup>§</sup> Since September 20, 2023, Monkey pox was included in the management of Class B infectious diseases.

<sup>¶</sup> Infectious diarrhea excludes cholera, dysentery, typhoid fever and paratyphoid fever.

The number of cases and cause-specific deaths refer to data recorded in National Notifiable Disease Reporting System in China, which includes both clinically-diagnosed cases and laboratory-confirmed cases. Only reported cases of the 31 provincial-level administrative divisions in the Chinese mainland are included in the table, whereas data of Hong Kong Special Administrative Region, Macau Special Administrative Region, and Taiwan, China are not included. Monthly statistics are calculated without annual verification, which were usually conducted in February of the next year for de-duplication and verification of reported cases in annual statistics. Therefore, 12-month cases could not be added together directly to calculate the cumulative cases because the individual information might be verified via National Notifiable Disease Reporting System according to information verification or field investigations by local CDCs.

doi: 10.46234/ccdcw2024.206

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Indexed by Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), PubMed Central (PMC), Scopus, Chinese Scientific and Technical Papers and Citations, and Chinese Science Citation Database (CSCD)

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The inauguration of *China CDC Weekly* is in part supported by Project for Enhancing International Impact of China STM Journals Category D (PIIJ2-D-04-(2018)) of China Association for Science and Technology (CAST).



*Vol. 6 No. 38 Sept. 20, 2024*

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**Responsible Authority**

National Disease Control and Prevention Administration

**Sponsor**

Chinese Center for Disease Control and Prevention

**Editing and Publishing**

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No.155 Changbai Road, Changping District, Beijing, China  
Tel: 86-10-63150501, 63150701  
Email: [weekly@chinacdc.cn](mailto:weekly@chinacdc.cn)

**CSSN**

ISSN 2096-7071 (Print)

ISSN 2096-3101 (Online)

CN 10-1629/R1