

## Perspectives

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

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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.

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