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ELSA KANIA AND IAN BURNS McCASLIN

PEOPLE'S WARFARE AGAINST COVID-19: TESTING CHINA'S MILITARY MEDICAL AND DEFENSE MOBILIZATION CAPABILITIES



MILITARY LEARNING AND
THE FUTURE OF WAR SERIES

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The background of the entire page is a detailed topographic map, showing contour lines and geographical features in a light tan color. The map is oriented vertically, with the top of the page showing higher elevations and the bottom showing lower elevations. The lines are closely spaced in some areas, indicating steeper slopes, and more widely spaced in others, indicating flatter terrain. The overall appearance is that of a technical or military-style map.

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Cover: HUAIBEI, CHINA - FEBRUARY 7, 2020: Retired soldiers disinfect a community in Huaibei in central China's Anhui Province on Friday, Feb. 7, 2020, in the national campaign against the coronavirus spread. PHOTOGRAPH BY Feature China / Barcroft Media.

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PEOPLE'S WARFARE AGAINST COVID-19:

Testing China's Military Medical and Defense Mobilization Capabilities

Executive Summary

“This epidemic is not only a crisis, but also a big test, and a war. I said from the beginning, we must fight; this is a people’s war.”

—Xi Jinping, General Secretary, Chinese Communist Party

The COVID-19 pandemic is changing the global order and reshaping the balance of power on the world stage. The lessons that nations and their militaries take from this crisis will be highly consequential to their capacity to adapt to this disruption and enhance their resilience going forward. In the wake of the coronavirus pandemic, China’s self-declared successes in its national response increased Beijing’s influence and its confidence in the advantages of its Party-state model, which CCP leaders claim possesses “systemic superiority” (体制优势).

The Party’s accounts of its success can be difficult to evaluate critically, given the suppression of information and extensive propaganda. Indeed, accounts have since emerged that contradict Beijing’s official narrative, including with regard to initial delays in testing and distortions in data. While important lessons can be learned from the CCP’s eventual successes in combating the pandemic, there are also lessons to be drawn from early failures that had allowed the outbreak of COVID-19 to become a pandemic in the first place. Certain issues exposed during the early stages of the pandemic have been revealing of systemic problems that have yet to be resolved. At this point, the question of whether Chinese leaders will learn from and adapt in response to the crisis remains to be seen.

The pandemic has presented a grave test for the CCP; the stakes have been extreme, even existential. By the Party’s reckoning, its response was not only successful but also superior to that of the United States, as PRC state media has often argued. Although there are reasons for skepticism about and recognition of the limitations of available information, a review of official accounts and authoritative commentary on China’s pandemic response can nonetheless provide valuable insights

about China’s national security system and mobilization capabilities.

Significantly, the coronavirus pandemic constituted the first major test of China’s system for “national defense mobilization” (国防动员) since the latest reforms. This architecture constitutes a critical element of China’s capacity to respond to a crisis or conflict contingency and is intended to be coordinated with emergency response functions. Waging “people’s warfare” against the pandemic, China’s leaders sought to leverage and coordinate all available resources and capabilities, including military, reserve, and militia forces, as well as thousands of businesses nationwide. The relative sophistication of this effort hints at the capabilities that China could bring to bear in a future conflict scenario, and indeed, lessons learned from the study of this response, including its strengths and weaknesses, may inform reforms aimed to facilitate the transition from peacetime preparedness to a wartime footing in future conflict scenarios.

The COVID-19 pandemic has demonstrated that medical capabilities are important for ensuring military readiness and national preparedness. The Chinese People’s Liberation Army (PLA) was

a critical component of the pandemic response within Wuhan and beyond, from logistics support to medical research. The PLA's prominent contributions have been lauded as an example of the importance of "military-civilian unity" (军民团结) in PRC state media. The PLA's approach in responding to COVID-19 leveraged experiences with previous pandemics, including SARS in 2003 and Ebola in 2014. Concurrently, the PLA took measures to constrain the spread of the outbreak within its own ranks, aiming to balance training and readiness with ongoing epidemic prevention and control measures.

In the wake of the pandemic, China has elevated biosecurity as a national security priority, and Chinese leaders aim to implement reforms for China's systems for emergency response and national defense mobilization. For the PLA, biosecurity and medical research are likely to be priorities going forward. However, whether the Party-state has the capacity to recognize systemic issues and implement reforms based on lessons learned from the COVID-19 pandemic remains to be seen. In the future, China's national defense mobilization system and potential, enabled by continued improvements in data analytics, will be an important indicator for its capacity to leverage national resources in any future crisis or conflict scenario.

Introduction

“Great historical progress always happens after major disasters... Our nation was steeled and grew up through hardship and suffering.”²

—Xi Jinping, General Secretary, Chinese Communist Party, April 2020

The devastating consequences of the COVID-19 pandemic worldwide have highlighted that medical readiness and biosecurity preparedness must be recognized as integral to national security. China's response to this coronavirus pandemic tested its capabilities in medicine, emergency management, whole-of-nation coordination, and national defense mobilization, highlighting the potential strengths of highly centralized authorities. In particular, this has been the first major test of China's capacity for large-scale military deployment and national defense mobilization since recent reforms. PRC leaders have claimed that the relative success of this response reveals China's "systemic advantages" or "institutional superiority" (体制优势) relative to democracies, yet analysis of the available information can also reveal limitations and potential shortcomings of this model.³ While the study of lessons to be learned from this crisis could continue for years to come, an initial analysis of China's

response based on currently available information can be informative nonetheless, and these questions and dynamics will merit continued analysis.

The lessons that the PLA had learned from previous experiences with pandemics and natural disasters appear to have influenced its response to the novel coronavirus, and the degree to which the PLA can leverage lessons learned from this latest crisis can be a valuable indicator of its current capacity for learning and adaptation. At first glance, the PLA appears to have demonstrated markedly improved performance relative to prior problems in its handling of the SARS pandemic in the early 2000s. Indeed, in recent years, the PLA has been called upon to support non-traditional security concerns, and Chinese military missions encompass disaster rescue and relief, including epidemic control and medical relief.⁴ Such efforts were a significant, though often unrecognized, part of the PLA's mission during its

Red Army days and the PRC's early history, and that legacy is being given new life today. These experiences forced the PLA medical community to adapt and introduce different responses, and the successes of this experimentation have been applied to COVID-19.

The Chinese military, including its reserve and militia forces, was an important component of China's national response, and the PLA's performance in the course of this particular pandemic can be revealing of its capacities to adapt and learn in a moment of crisis, from logistics to medical research on testing and vaccine development. With direction from the Central Military Commission, the PLA undertook large-scale deployment of military medical personnel and the first significant mobilization of the PLA Joint Logistic Support Force (PLAJLSF). The early stages of these efforts exposed continued challenges in logistics, human capital, and central-local coordination. The process of mobilization also tested and revealed aspects of China's system and strategy of military-civil fusion (MCF, 军民融合), which involves efforts to combine and leverage synergies in military and civilian resources. In parallel, the PLA appears to have

proven relatively effective in preventing infections among its officers and enlisted personnel, while maintaining a high tempo of operations along with its regular training schedule, despite the disruption. That said, the PLA's claims of "zero infections" are implausible, given how extensively Chinese military personnel were involved on the front lines.

List of Acronyms Used in this Report

Acronym	Full Name
CCP	Chinese Communist Party
CMC	Central Military Commission
COVID-19	Coronavirus Disease 2019
MCF	Military-civil fusion
MOOTW	Military operations other than war
PLA	People's Liberation Army
PLAJLSF	PLA Joint Logistic Support Force
PRC	People's Republic of China
SARS	Severe acute respiratory syndrome
UAV	Unmanned aerial vehicle
WHO	World Health Organization

China's System and Potential for National Defense Mobilization

During the pandemic, China's national system and capabilities for national defense mobilization were tested and revealed in action. The Chinese government has created a framework for national defense mobilization that is more far-reaching and comprehensive than that of most other countries. Chinese leaders and strategists view national defense mobilization as critical to safeguarding national security, recognizing its importance in transforming national defense potential into capabilities for waging warfare in ways that contribute to deterrence. Chairman of the Central Military Commission, Xi Jinping, has personally emphasized, "even if a big war occurs, we have a complete

national defense mobilization system, and we have this important magic weapon of people's warfare, which can be rapidly mobilized."⁵ In practice, China's concept of national defense mobilization has included economic, political, information, transportation, and technological mobilization, among other elements.⁶ Chinese mobilization plans are intended to be implemented through a whole-of-nation approach, enabled by a system of data and standards and guided by high-level leadership and coordination.

China's approach to national defense mobilization should be recognized as consistent with the priority

of balancing and synergizing economic development with military modernization. During his remarks for the 19th Party Congress' work report in the fall of 2017, Xi Jinping said, "we will improve our national defense mobilization system, and build a strong, well-structured, and modern border defense, coastal defense, and air defense."⁷ Once, it was difficult to anticipate how this extensive architecture for national mobilization would perform in actuality since China has not needed to engage in full mobilization for war in recent history.⁸ However, the coronavirus pandemic that started in Wuhan in late 2019 and for which China's national response officially launched in January 2020 provided the first major test of this system since its latest reforms and recent initiatives.

China initially approved its National Defense Mobilization Law in 2010.⁹ In Article 4, this law highlighted the importance of a highly integrated approach to mobilization that leverages the resources of the whole of society:

"National defense mobilization shall stick to the policies of combining civil with military, combining peacetime production with wartime production and embedding military in civilian, and following principles of unified leadership, participation by the entire people, long-term preparation, with emphasis on the construction of key projects, overall consideration, orderliness and high efficiency."¹⁰

The introduction of this law in 2010 to involve a more detailed delineation of authorities and responsibilities conveyed concern with the continuing relevance of mobilization. For instance, Xi Jinping has since emphasized the importance of "deepening planning for warfare and operations to

ensure quick and effective responses once a matter is happening," while improving the quality of military training and preparations.¹¹

The National Defense Mobilization Commission (国家国防动员委员会) was initially established in 1994 under the leadership of the State Council and Central Military Commission to coordinate national defense mobilization.¹² The primary responsibilities of this institution have included preparing plans for national defense mobilization and coordinating major initiatives in mobilization that extend across military, economic, and social domains. The commission is authorized to lead not only the mobilization of armed forces but also national economic mobilization of industrial resources, such as by directing the activities and capabilities of companies to contribute to this effort, as well as civil air defense, transportation readiness, and national defense education, among other tasks.¹³ For localities, this top-level leadership is extended and augmented by a parallel structure of provincial and even district, county, and/or municipal national defense mobilization commissions that are responsible for local efforts and initiatives.¹⁴

China's mobilization architecture increasingly concentrates on undertaking peacetime preparations to support the intense demands of national mobilization during crisis or wartime.¹⁵ The continued attention to optimizing this system for national defense mobilization indicates Chinese leaders are seriously concerned with and preparing for the possibility of scenarios in which rapid, large-scale mobilization of any or all kinds could be imperative.¹⁶ These efforts merit close examination and critical consideration, especially considering ongoing efforts to promote innovation in national defense mobilization, enabled by the collection of big data at scale.

China's military strategy and national defense policies as officially articulated have continued to

Chinese mobilization plans are intended to be implemented through a whole-of-nation approach, enabled by a system of data and standards and guided by high-level leadership and coordination.

highlight the importance of ongoing reforms to national defense mobilization. The official national defense white paper on “China’s Military Strategy,” called in May 2015 for “improving the systems and mechanisms of national defense mobilization,” declaring:

“China will devote more efforts to science and technology in national defense mobilization, be more readily prepared for the requisition of information resources and build specialized support forces. China aims to build a national defense mobilization system that can meet the requirements of winning informationized wars and responding to both emergencies and wars.”¹⁷

Since then, this continued centralization of authorities could be intended to streamline the process of national defense mobilization more directly under the leadership of the Central Military Commission. The former General Staff Department Mobilization Department has been elevated to become the Central Military Commission (CMC) National Defense Mobilization Department (中央军委国防动员部), pursuant to the military reforms launched in late 2015.¹⁸ With this elevation, National Defense Mobilization Department appears to have taken on oversight over the PLA’s reserve forces and militias, as well as province-level military commands (省军区, also known as military districts),¹⁹ over which the former seven military regions (now restructured as the five theater commands) had previous responsibility.²⁰ Typically, these provincial military districts can consist of an office and bureaus for functions such as political work, war preparedness, national defense mobilization, and support, facilitating coordination of military and local forces, such as occurred through Hubei Province’s military district during the coronavirus pandemic.²¹

The ongoing modernization of national defense mobilization has also concentrated on jointness and improved integration among active, reserve, and militia forces. “China’s National Defense in the

New Era,” the official national defense white paper released in July 2019, articulates this focus.

“China has refined the system of national defense mobilization to enhance the development of its defense reserves. China is streamlining the number of primary militia nationwide, driving deeper reform of militia and reserve forces in their size, structure and composition, promoting integrated development and employment of the reserve and active forces, and extending the function of national defense mobilization from mainly supporting the land force to supporting all branches at a faster pace.”²²

While large-scale mobilization is sometimes dismissed as a feature of previous conflicts with limited relevance in modern warfare, the extent of China’s efforts to enhance mobilization capabilities highlight the importance of considering potential contemporary contingencies in which large-scale mobilization may take on strategic relevance. In any future conflict scenario, the Central Military Commission could rapidly mobilize reserve forces, as well as a variety of militias, in coordination with the PLA’s services and theater commands. The PLA has established and expanded a range of reserve units, including those trained for specialized functions such as electromagnetic spectrum management.²³ Since the reforms that Xi Jinping launched, reportedly, the PLA Army’s reserve forces have been streamlined, and those of the Navy, Air Force, Rocket Force, and Strategic Support Force have grown.²⁴

In particular, the use of militias is a relatively distinctive feature of China’s approach to national defense. A militia (民兵) is a “mass armed organization” that is intended to serve as “an assistant and reserve force,”²⁵ including through “combat readiness support and defensive operations.”²⁶ These militia can be utilized to support emergency response, as well as joint air defense, intelligence, reconnaissance, and communications support. PLA

militias might support missions that include cyber defense and psychological operations.²⁷ Infamously, China's "maritime militias," or "little blue men," have contributed to naval activities and operations in the East and South China Seas, often supporting and directly coordinating with the PLA Navy and Coast Guard in the process.²⁸ Increasingly, "new-type" militia units have been established that specialize in emerging capabilities, including network protection and "online public opinion struggle."²⁹ During the pandemic response, militias were also deployed and leveraged in several capacities.

The continued reshaping of this extensive architecture for national defense mobilization remains underway. There were significant improvements targeted to be introduced by the end of the 13th Five-Year Plan in 2020, and Major General Sheng Bin (盛斌), then-director of the CMC National Mobilization Department, had declared in 2017: "By the end of 2020, [we will have] basically constructed a system of laws and regulations for national defense mobilization regulation that is scientifically complete, practically effective, and compatible, providing a solid and powerful legal assurance for the construction and development of national defense mobilization under the new situation."³⁰ For instance, the PRC has introduced new laws and regulations,³¹ including to facilitate the sharing and coordination of resources and infrastructure in transportation.³²

Initiatives for Improving Mobilization

The PLA has been seeking to enhance and innovate in its techniques for national defense mobilization to increase the accuracy and timeliness of the process. For instance, China's smart cities can be designed in a manner that could facilitate national defense mobilization.³³ Several defense mobilization systems

at the provincial and municipal levels have started to explore options for a "smart" model for mobilization enabled by "smart city" projects since at least 2012.³⁴ Considering the improvements in planning, scheduling, and distribution of resources that big data analytics and artificial intelligence technol-

ogies can enable, these advances could be an important application in supporting combat capabilities. PLA planners appear to be greatly interested in the potential employment of artificial intelligence to enhance the military's capabilities for rapid and precise mobilization.³⁵ However, the feasibility of these potential advancements will depend upon the data available and underlying systems.

Indeed, the future of national defense mobilization will be

enabled by and depend upon big data. There has been a range of efforts to promote big data efforts that can facilitate coordination and deployment of resources, initially to overcome previous technical problems and obstacles to data integration.³⁶ In particular, the development of the National Defense Mobilization Potential Index System (国防动员潜力指标体系) remains ongoing. This system was developed based on statistical surveying and is intended to facilitate the collection of core data to evaluate resources and capabilities that are required to evaluate "mobilization potential." The system was developed during the 13th Five-Year Plan (2016-2020) timeframe.³⁷ The ongoing construction of new big data platforms is intended to enable greater precision in national defense mobilization, facilitating the transition to "smarter" approaches to mobilization, which could leverage the Internet of Things, cloud computing, and artificial intelligence, including providing "intelligent assistance" to decision-making.³⁸ The data on potential capabilities in national defense mobilization is even regarded as critical "ammunition" for future warfare, yet its quality and accuracy are recognized as requiring further improvement.³⁹

In any future conflict scenario, the Central Military Commission could rapidly mobilize reserve forces, as well as a variety of militias, in coordination with the PLA's services and theater commands.

The Chinese government's increased concentration on the importance of science, technology, and innovation in mobilization has also been displayed in a series of partnerships that concentrate on "new type" capabilities. China has developed the capacity to leverage civilian infrastructure and commercial capabilities in distinct ways relative to the United States to support future military operations. For instance, the PLA Air Force introduced major partnerships with companies, including Jingdong (JD), SF Express, and China Railway Express,⁴⁰ known for their respective strengths in logistics, and has explored the employment of commercial drones as of late 2017.⁴¹ Notably, several companies have also provided logistics support to the PLA in joint exercises, such as through facilitating transportation and enabling recovery after a simulated air attack on an airbase.⁴² The capacity to partner with companies can provide the PLA with an important resource that could be mobilized in times of actual conflict.

China's militias have been starting to engage in more active and regular training with the PLA's services and theater commands.⁴³ As the PLA shifts its focus to new-type forces, the development of militias has also looked to leverage local high-tech industries to contribute to force construction. For instance, Shanghai initially established a UAV militia unit as early as 2015, primarily for purposes of reconnaissance.⁴⁴ Within several municipalities or provinces, the creation of national defense mobilization alliances looked to prepare high-tech enterprises to contribute to this endeavor.⁴⁵ Going forward, future militia and reserve forces construction intend to emphasize new efforts to incorporate "talents from new professions related to wartime requirements," including e-sports players and artificial intelligence engineering technicians to provide "technical support and talent guarantee" for winning future warfare.⁴⁶

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Mobilization to Combat the Pandemic

The Party Central Committee, Central Military Commission, and Xi Jinping, in his capacity as CCP General Secretary and CMC Chairman, exercised authority and direction for China's response to the coronavirus within Wuhan and nationwide. In this endeavor, the joint prevention and control mechanism under the State Council was intended to facilitate coordination among the various stakeholders.⁴⁷ At the height of the crisis, Xi Jinping often characterized this campaign against the pandemic as "people's war,"⁴⁸ and when inspecting epidemic control initiatives in Wuhan, Xi Jinping also called for "general mobilization" to involve "putting in place a defense line across the whole of society and

relying on the people to win the battle."⁴⁹ Indeed, these efforts attempted to leverage all available resources and personnel across the military, reserve, and militia forces, as well as the civilian economy, through the efforts of commercial enterprises.

However, after the initial outbreak of the COVID-19 pandemic, serious missteps by the Chinese government, especially at the local level, delayed the local response and national mobilization that would ultimately be undertaken, while also creating global consequences. In Wuhan,

where the virus first emerged, the Military World Games had been convened in October, only weeks before the first confirmed cases were discovered.⁵⁰ In preparing for this event, Hubei Province had even organized a drill that focused on epidemic readiness in case of an outbreak.⁵¹ Despite that recent exercise, when provincial authorities were forced to handle an actual outbreak just weeks later, it became evident that the drill had been "just a show."⁵² Ultimately, the dysfunction and lack of transparency that characterized the early stages of the local response, including delays in testing and the distortion of data on cases

as leaked documents later revealed, can belie state claims of successes untarnished by mistakes.⁵³ In particular, the delayed release of information about the pandemic to the public, as well as belated notification of the World Health Organization (WHO), enabled and exacerbated the local outbreak to become a global pandemic.⁵⁴ The failures of China's early warning system, especially because of suppression of critical information at a local level, delayed the deployments and national mobilization that would later be undertaken.⁵⁵

The PLA appears to have been slow to respond at scale and initially impeded by these issues in its response but was directed ultimately to undertake a large-scale mobilization of historic proportions. As the initial delays in its mobilization seem to have reflected the degree to which local officials in Wuhan had suppressed the truth on the outbreak and silenced whistleblowers, once China's central government recognized the urgency and undertook a more forceful response in earnest, the PLA started to come into play with the direction of the Central Military Commission.⁵⁶ In particular, on the ground in Wuhan, the Military Frontline Command and Coordination Group (军队前方指挥协调组) was responsible for the coordination of logistics and medical support among the stakeholders involved.⁵⁷

The first PLA teams started to arrive in Wuhan as of January 24, 2020.⁵⁸ Notably, the PLA Joint Logistic Support Force, which manages most of the PLA's hospitals and medical community, received the first mobilization directive since its establishment in September 2016.⁵⁹ The PLA military transport aircraft, including the Y-9, Il-76, and Y-20, were also used for large-scale logistics, and this was the first time the Y-20 had been leveraged for military operations other than war (MOOTW).⁶⁰ Ultimately, at this stage, the PLA also deployed over 4,000 medical personnel to Wuhan in a large-scale mobilization

that became among the most significant undertaken in its history.⁶¹ At the height of the crisis, shortcomings in the civilian medical system even forced the PLA itself to take over the distribution of limited medical supplies and essential logistics in Wuhan.⁶² This tendency to turn to the PLA to impose order highlights its utility as a centralized organization that can organize a response more quickly than varied local civilian governments.

While the PLA was mobilized to support logistics and transport, the CMC National Defense Mobilization Department also contributed to nationwide campaigns for pandemic prevention and control activities that proved to be massive in scope and scale, activating an emergency response mechanism.⁶³ While this effort is challenging to evaluate in its totality, a review of notable features of this mobilization can inform initial assessments of the strengths and weaknesses of this system.⁶⁴

Wuhan was the epicenter for the pandemic, and authorities within the city and Hubei Province were at the center of the struggle to constrain the pandemic. In the process, the Hubei Military District, within which Wuhan is located, concentrated on coordinating military and local efforts (军地协调) during the pandemic.⁶⁵ For example, the Hubei Province Military District commanded a multi-arms combined transportation team involving 130 military trucks and more than 260 officers and men dispatched from across different services who were responsible for deliveries of critical materials.⁶⁶ When cities in Hubei experienced urgent shortages of medical supplies, the Hubei Military District took responsibility for coordinating the emergency mobilization from the Central Theater Command of helicopters that were able to provide rapid delivery of supplies.⁶⁷ The capacity of the Hubei Military District to be responsive to requests was attributed to the availability of "accurate and perfect mobilization potential data," according to Mao Hongshan

Going forward, Chinese military medical research and capabilities will remain important indicators of the PLA's capacity to learn, evolve, and innovate, while also constituting critical elements of Chinese military readiness and potential operational resilience.

(毛洪山), director of Office of the Leading Group for Epidemic Prevention and Control of the Hubei Military District.⁶⁸

During the crisis, China's system for national defense mobilization contributed to coordinating among the military and localities to connect demands with available supplies and capacity for production. China also succeeded in massively scaling up the manufacturing of medical equipment significantly by directing companies nationwide to redirect their activities to that end, and the Chinese defense industry was also mobilized and repurposed to step up the production capacity for protective equipment, as well as delivering medicine.⁶⁹ For instance, in neighboring Henan Province, Changyuan City is known as a major center for the production of medical products. At the initial peak of the pandemic, around January 2020, the Xinxiang Military Subdistrict of Changyuan City ordered the activation of a wartime mobilization mechanism to assist 44 medical protection companies in expanding their production capabilities, with support from local militias and military veterans.⁷⁰ During February, Changyuan City sent more than 1.8 million medical surgical masks and nearly 15,000 sets of protective clothing every day for Wuhan and other pandemic hotspots.⁷¹ Throughout China, companies were directed and expected to redirect their activities and production to facilitate pandemic response. For example, high-tech companies in Shanghai concentrated on providing robotic systems, used for autonomous distribution, self-disinfection, and unmanned guidance for diagnosis.⁷²

PLA militias were also leveraged nationwide at a scale that was truly massive to support efforts to control the pandemic. Reportedly, on one day alone, 450,000 militia members were mobilized nationwide in support of pandemic response.⁷³ For instance, militia forces were described as on the front lines of epidemic prevention and disinfection, as well as to support the resumption of work and production in critical

industries.⁷⁴ Within Wuhan, militia forces ensured that daily supplies could be transported while the quarantine was in effect because logistics and distribution enterprises that would usually undertake those efforts had been closed.⁷⁵ In the process, militia cadres that were previously engaged in poverty alleviation efforts in local communities were dedicated to counter-epidemic missions, including delivering supplies to local villagers.⁷⁶

China's militias also contributed to messaging on pandemic prevention to facilitate communication to local communities. Their primary task was to ensure that local households were fully informed and aware of best practices on hygiene and quarantine, while also supporting those in need of basic supplies.⁷⁷ The familiarity of militia units with their local communities was apparently advantageous for public education on and enforcement of prevention measures. These grassroots campaigns were intended to reinforce the CCP's capacity to shape the narrative and maintain social stability in the face of unrest. Indeed,

PLA militias were also leveraged nationwide at a scale that was truly massive to support efforts to control the pandemic.

Xi Jinping personally highlighted "public opinion work" as a priority to maintain stability and adherence to best practices in pandemic control.⁷⁸

The prominence of militias highlighted their unique positioning and multifaceted responsibilities in supporting multiple elements of state power. The use of militias as a continuation of the tradition of people's war highlights the enduring relevance of a concept with history and tradition in Chinese strategic thinking. This effort involved huge numbers of people outside of the medical profession who acted as facilitators for medical professionals and enforced drastic quarantine requirements. Such facilitation not only of ensuring medical professionals were properly equipped and supplied, but also enabling the implementation of prevention measures were stressed across the country. Going forward, the employment of their militias and their integration with China's overall national defense system is likely to continue to expand.

China's Military Medical Services and Capacity

The Chinese military medical community brings to bear important capabilities in research and treatment. Since the latest military reforms, the CMC Logistics Support Department Health Bureau has been designated as responsible for the overall management of the majority of the PLA's hospitals and medical programs, while the new Joint Logistics Support Force (PLAJLSF) has taken on responsibility for most units and medical services across the various theater commands.⁷⁹ Each of the five theater commands has its own Joint Logistics Support Center, which includes medical units, and the key hub for PLA logistics is located within Wuhan itself.⁸⁰

Across the services, the PLA Army, Navy, and Air Force all have their own medical universities, and the PLA Strategic Support Force oversees a special medical center.⁸¹ Under the aegis of the Academy of Military Science, which leads military scientific research for the PLA, the Academy of Military Medical Sciences specializes in military medical research, actively pursuing research, including through its Institute of Biotechnology.⁸² The recent reforms have been intended to reorient these medical institutions towards combat and preparing for relevant operational contingencies.⁸³

China's military medical services are typically responsible for the healthcare and readiness of Chinese military personnel in peacetime and would support their survival or recovery in crises or potential conflict scenarios. While undertaking medical research of general importance and contributing to military readiness, Chinese military medical institutions have been encouraged to reorient their activities with operational considerations, such as greater attention to battlefield medicine, with the aim to enable more precise and rapid response.⁸⁴ In particular, changes in the character of warfare were recognized as demanding improvements in the medical evacuation system to overcome "inflexibility" and issues in coordination, according to a 2017 analysis by a group of Chinese military medical experts.⁸⁵

The reforms and debates within China have been but one source of change in the PLA medical community. The PLA does not operate in a vacuum as a professional organization, and its experts have leveraged and continue to benefit from its medical community's engagement with foreign medical practitioners, both military and civilian. Such engagements, including through official exchanges, professional associations, and research collaborations, have contributed to the transfer of expertise and intangible knowledge that can be valuable in helping the PLA study and learn from foreign approaches to military medicine. As PRC technology transfer tactics, including the exploitation of scientific cooperation to that end, have come under growing scrutiny, the studies and activities of Chinese military medical researchers, including at American institutions, have started to provoke concern.⁸⁶ These dynamics raise the question of how to draw the line between basic research that is more benign in character relative to research that may have more directly military or dual-use applications

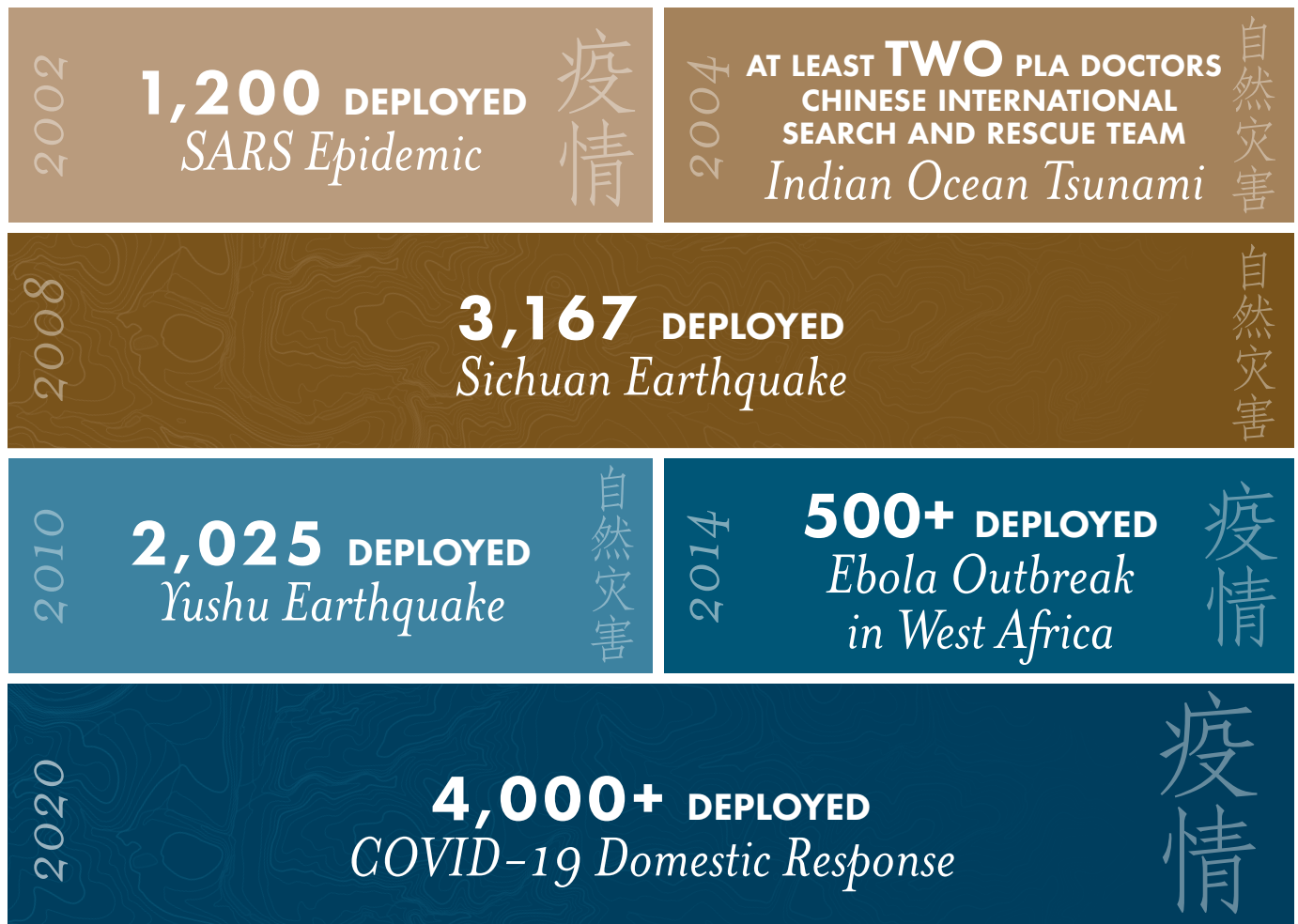
The robust capacity of the Chinese military medical community for learning and adaptation appears to have served it well during the pandemic. Over time, PLA medical experts have accumulated relevant expertise and valuable experience while deployed at home and abroad. PLA medical researchers have also learned from the public writings and practices of foreign militaries, most notably the US military. Increasingly, teams of PLA medical experts have been deployed for purposes of military diplomacy, including recently to support responses to COVID-19 by China's neighbors, a notable component of Chinese health diplomacy that can bolster China's geopolitical influence.⁸⁷ Going forward, Chinese military medical research and capabilities will remain important indicators of the PLA's capacity to learn, evolve, and innovate, while also constituting critical elements of Chinese military readiness and potential operational resilience.

Case Studies on Past Chinese Military Medical Learning

The COVID-19 pandemic has drawn the world's attention to China's response, which appears to have been relatively successful, and in which Chinese military medical services have rendered important contributions. During the initial stages of the COVID-19 outbreak in Wuhan, Chinese military medical experts were deployed to Wuhan at scale and were responsible for important components of the response. As captured in state propaganda and international headlines at the time, their efforts included running new hospitals and treating patients. At the time, the PLA's mobilization of resources and personnel was criticized as slow and limited relative to the urgency of the crisis, seemingly

because of breakdowns in communication between the central and local governments, given incentives to conceal unfavorable information.⁸⁸ At a critical moment, such delays proved terribly costly.

Nonetheless, the capacity and apparent success that was demonstrated at scale in the PLA's response within and beyond Wuhan highlights the impacts of experiences the PLA has gained from its past efforts in combating epidemics within China and when deployed overseas to that end. This review of these past cases provides a starting point from which to evaluate the degree to which the PLA has drawn out and introduced lessons learned.



▲ *Select deployments of Chinese PLA medical personnel in previous natural disasters or epidemics*

This is a limited selection of cases chosen to be generally representative of the Chinese response to these emergencies. These estimates are based on the best available open-source information.

2002 SARS Outbreak

The severe acute respiratory syndrome (SARS) outbreak in 2002-2003 revealed the limitations of the PLA medical system and frictions between Chinese military leaders and civilian authorities. The SARS outbreak first emerged in 2002 in southern China, and the disease first appeared in Beijing in 2003, within PLA hospitals.⁸⁹ At that time, the PLA did not report its SARS cases to China's civilian authorities, which reflected frictions in PRC civil-military and Party-army relations. Beyond the failure to inform domestic civilian authorities, Chinese military medical officers actually transferred SARS patients out of one of its own hospitals, hiding them within a nearby hotel to prevent visiting members of the WHO from discovering them.⁹⁰

As a result of this deception, an outbreak in the capital, which might have been contained otherwise, worsened. Ultimately, such concealment was challenged from within. Acting as a whistleblower, Dr. Jiang Yanyong, former director of the PLA 301 Hospital, who held the rank of major general, revealed the cases the PLA had been concealing in a letter to top leaders.⁹¹ The exposure of the outbreak helped to push the Chinese government to engage closely with the international medical community on the virus.⁹² However, even after central leaders ordered that such cover-ups cease, the PLA continued to hide relevant information from both the civilian authorities and the WHO.⁹³ This past deceptive behavior by the PLA and its medical community raises questions about the extent to which such behavior may continue and whether the culture that created the conditions for it has truly been changed.

While the PLA's actions worsened the outbreak, Chinese military medical personnel also contributed to the fight against SARS that followed, demonstrating the capability to mobilize large-scale responses. In April 2003, the "PLA SARS hospital" was built in Beijing.⁹⁴ This facility, staffed by 1,200 PLA medical personnel, managed to treat almost 15 percent of China's SARS patients in two months.⁹⁵ Initially, this hospital was staffed with medical personnel from the Beijing, Shenyang, and Jinan

military regions, the #175 and #180 Hospitals in the Nanjing military region, the Changzheng Hospital under the No. 2 PLA Medical University, and the No. 3 PLA Medical University.⁹⁶

The PLA medical system also pursued research into the SARS virus and vaccine in its own efforts and cooperated with the civilian medical community.⁹⁷ For instance, a PLA team developed a nasal spray to help prevent medical workers from becoming infected.⁹⁸ PLA medical professionals publicized knowledge of the virus and how best to deal with it, while traveling to rural parts of the country to improve the limited medical systems in place.⁹⁹ Since this outbreak, the Chinese government has dedicated further efforts to research, teaching, and training for public health emergencies and natural disaster medical rescue issues.¹⁰⁰

2004 Indian Ocean Tsunami

Chinese military medical personnel contributed to the international rescue and medical response to the 2004 tsunami centered on Aceh, Indonesia. The PLA's former General Logistics Department contributed to relief by airlifting food, clothing, and medicines into Sri Lanka.¹⁰¹ This mission of disaster relief was among the most significant that the PLA had undertaken in decades given the scale and overseas deployment. However, the PLA was not deployed to carry out direct relief and evacuation, and its role was limited to logistics and medical response at that point.¹⁰²

The Chinese International Search and Rescue (CISAR) team, which at least included two members of the PLA General Hospital, was also deployed to support the medical response. The CISAR team would treat and transfer 217 patients within a week that January, which was regarded as significant for the team on its initial deployment.¹⁰³ The PLA medical professionals who participated in this effort later wrote a study on their lessons learned from that experience of emergency rescue and medicine.¹⁰⁴ In particular, their retrospective described the system that the international community had established to facilitate the response.¹⁰⁵

2008 Sichuan Earthquake

The Sichuan earthquake was a traumatic and seminal moment for Chinese thinking on the threats of natural disasters and the importance of emergency response. After the 2008 Sichuan Earthquake, 130,000 troops from every service of the PLA were sent to help with the rescue and cleanup effort.¹⁰⁶ While such a large-scale deployment was significant in revealing the PLA's capacity for large-scale mobilization, the PLA was also criticized for being ill-equipped and relatively unprepared to support the disaster relief efforts.¹⁰⁷ The vast majority of those deployed lacked training or equipment for search and rescue. In later years, the PLA would develop and place a greater emphasis on medical rescue capabilities, such as by establishing the first medical rescue department at the Military Police Medical College in 2009.¹⁰⁸

At the time, the PLA deployed numerous medical personnel to support the initial response and treatment of those wounded in the disaster. The PLA deployment featured 103 medical teams totaling 3,167 medical staff, including 47 teams of psychiatrists,¹⁰⁹ and 397 mobile medical service squads totaling 7,061 medical personnel.¹¹⁰ These mobile squads treated 69,000 injured people and performed 22,000 surgeries in the aftermath of the earthquake.¹¹¹ The PLA's ability to rapidly mobilize military medical personnel to augment civilian medical professionals would again come into play with the 2010 Yushu Earthquake, in which 25 mobile medical service squads of 2,025 medical personnel were deployed and performed 1,635 surgeries.¹¹²

The Sichuan earthquake also provided one of the PLA's initial contemporary experiences attempting to deal with the trauma and strain on mental health that can accompany operations under such demanding conditions during peacetime. In response to concerns that personnel who had been involved were suffering psychologically, the PLA assigned hundreds of psychologists to treat them.¹¹³ This episode highlighted that leveraging military psychologists could be beneficial in major non-war operations. Since this earthquake, "mental health

service groups include military psychologists within the main body," and mental health professionals (including civilians) are considered to have become "an essential power in various significant non-war operations," according to a study on Chinese military psychology published years later.¹¹⁴

PLA experts recognize the shortcomings that persist and appear to be concerned about their capacity to capture lessons from these past experiences. In particular, "comprehensive and systematic research at the national level for natural disaster relief medicine is lacking, which leads to serious deficiencies in the accumulation and consolidation of valuable experience," according to one group of PLA medical experts writing in 2016.¹¹⁵ While the PLA medical community has gained further experience in recent years, it remains unclear how effectively their expertise and lessons learned are institutionalized. If they are not, then the PLA medical community will have to learn the same lessons the hard way each time it is deployed with personnel who have not already personally encountered a situation they are facing.

2014 Ebola Outbreak

The outbreak of Ebola in 2014 had presented the PLA's first experience in an overseas deployment to contribute to pandemic response. As China had expanded its presence in Africa, this threat also appeared much more proximate to Chinese leaders than in years past. As a result, the PLA sent a series of medical teams totaling more than 500 personnel¹¹⁶ to Sierra Leone and Liberia.¹¹⁷ For the PLA, this engagement required training and preparation, guided by and in coordination with international stakeholders. In its totality, the PLA medical team in Liberia was composed of 163 military experts from multiple disciplines, including epidemiologists, medical technicians, and logistics support staff.¹¹⁸ The majority of these personnel were from the Third Military Medical University in Chongqing. The PLA military medical team that was deployed to Sierra Leone was composed of 115 military medical professionals, who concentrated on infection prevention and control.¹¹⁹

Ahead of their deployment, PLA medical personnel underwent required training to prepare for the demanding conditions and requirements of fighting such a severe disease.¹²⁰ During that preparation, the PLA altered several protocols and protective measures, such as those for personal protective equipment, based on the suggestions and guidelines from the WHO and the Chinese Center of Disease Control and Prevention.¹²¹

While the Ebola outbreak marked the first time the PLA had deployed military medical staff abroad at scale to fight a pandemic, the PLA's Ebola response leveraged their existing expertise and experiences. A number of those deployed had supported the response to the SARS pandemic. In addition, with the PLA's increasing activities abroad, its medical community had a small, though expanding, stable of experienced personnel to draw from. Over two-thirds of those selected to deploy as part of the PLA team had prior experience with infectious diseases in Africa, such as supporting international peacekeeping missions or participating in joint military exercises. Beyond selecting relatively experienced personnel, in order to help ensure their effectiveness once in the theater, the PLA also provided mental health services to its medical members there.¹²² In further recognition of the need to take care of those providing medical care to others while deployed, the home institution of a large number of those sent to Liberia, the Third Military Medical University, even helped provide care for the families back in China of personnel while they were deployed, a new consideration for the PLA given its limited experience with overseas deployments.¹²³

The Sichuan earthquake also provided one of the PLA's initial contemporary experiences attempting to deal with the trauma and strain on mental health that can accompany operations under such demanding conditions during peacetime.

The Chinese Ebola Treatment Center (ETC) operated from October 2014 to January 2015 in Liberia, and its track record reflected relative success by most accounts. PLA personnel who had previously participated in the SARS response leveraged “valuable experience and knowledge” while deployed to counter the Ebola epidemic.¹²⁴ Notably, while many health care workers from other countries contracted Ebola, reportedly, no members of the PLA medical teams were infected.¹²⁵ The PLA medical community conducted studies after this deployment to evaluate its performance and determined the measures taken by the teams were successful in protecting the physical and mental health of team members, as well as local healthcare workers.¹²⁶

While the PLA had looked to draw upon lessons learned from its experiences with SARS in its response to the Ebola outbreak, PLA teams failed to take into account certain critical demands and different requirements that came into play in this scenario, including the value of “diplomatic skills” to coordinate with different stakeholders.¹²⁷ The PLA team in Liberia was also limited by shortages in medical supplies, especially that of personal protective equipment (PPE), which necessitated its reuse, raising the risk of infection.¹²⁸ In addition, the PLA medical team running their treatment center in Liberia recruited local healthcare workers who had experience working in Ebola treatment centers that were run by other countries. A retrospective study by a team of PLA medical experts stated this move was taken in order to alleviate the shortage of Chinese healthcare workers.¹²⁹

The PLA's Medical Contributions to COVID-19 Response

Chinese military medical personnel were on the frontlines of fighting the pandemic and treating patients with the coronavirus. In particular, within Wuhan, PLA personnel operated two temporary COVID-19 hospitals that were rapidly constructed to accommodate the surge in patients.¹³⁰ The Huoshenshan Hospital was built in 10 days, and the Leishenshan Hospital was built in 12 days.¹³¹ The construction of hospitals dedicated specifically to deal with the virus followed the precedent steps taken in past outbreaks.¹³² PLA medical professionals were deployed from multiple hospitals and research institutions nationwide to support efforts in Wuhan.

However, initial efforts underestimated the scale and severity of the pandemic, such that the first wave of PLA medical personnel mobilized was insufficient. The shortages of experienced staff even forced the PLA to recall veterans and retired personnel who had relevant medical knowledge and experience in pandemic response disaster relief to active duty to serve for the duration of the pandemic.¹³³ The PLA ended up operating these two hospitals with a reported combined capacity of 2,500 beds, staffed by at least 3,000 personnel, responding at a far greater scale than the SARS response, when the PLA ran a single 1,000-bed hospital with 1,200 personnel.¹³⁴

The PLA medical personnel on the frontlines of fighting the pandemic were backed up by new waves of fresh personnel that were brought on as the pandemic continued. These reinforcements drew upon military medical professionals across all services and theater commands. Ultimately, over 4,000 military medical professionals were deployed to Wuhan between January 24 and February 13 as part of this relief force.¹³⁵ Beyond the PLA's own hospitals, military personnel were also directed to support civilian hospitals, such as the Hubei Maternity and Child Health Care Hospital and the Wuhan Tongji Hospital.¹³⁶

Throughout this crisis and in its aftermath, the research capabilities of the PLA medical community

built upon the aforementioned experiences in pandemic response. At the forefront of the fight against COVID-19 were personnel with firsthand experience in outbreaks that included SARS in 2003 and Ebola in 2014.¹³⁷ In particular, Major General Chen Wei (陈薇), the PLA's leading virologist and epidemiologist, had contributed to the response to SARS, the 2008 Sichuan earthquake, and China's Ebola response in the past.¹³⁸ In this crisis, she was placed in charge of China's efforts to develop treatments and a vaccine for COVID-19, succeeding in creating one of the first viable candidates to enter testing. The Academy of Military Medical Sciences has proven to be a critical player in vaccine development. Her vaccine has been patented, tested abroad, and administered to military members.¹³⁹ However, the degree to which these quick efforts are a clear priority for central leadership may raise concerns about the rigor and even ethics of the process for its development and eventual dissemination, especially given China's chequered history with medical and scientific ethics.¹⁴⁰

PLA Efforts in Balancing Prevention, Training, and Readiness

The PLA's performance during the COVID-19 pandemic can also be evaluated with regard to its capacity to ensure the health of its officers and enlisted personnel and to sustain the continuity in training and operations. For the US military, a surge in infections caused serious disruption and raised urgent debates about the tradeoffs between health and continuing peacetime missions. The PLA has displayed less transparency regarding any outbreaks within the force, and claims from the Chinese government that the PLA maintained a track record of "zero infections" are implausible, given how extensively Chinese military medical personnel were involved in the pandemic response.¹⁴¹

While there are reasons for skepticism that the force emerged from the pandemic so entirely unscathed,¹⁴² the PLA is reported to have adhered to best practices in prevention. During the pandemic, the PLA implemented strict procedures for health and safety throughout the force. For instance, local units concentrated on improving hygiene and nutrition and regularly monitoring temperatures.¹⁴³ Moreover, the PLA scaled up testing and reportedly administered tests through mobile laboratories, an effort enabled by the Academy of Military Medical Sciences, among these frontline medical experts and across its ranks.¹⁴⁴ The extensive testing, including of the family members of PLA personnel, appears to have contributed to their “strategic health strength.”¹⁴⁵ Meanwhile, there was also concern about mental health and psychological pressures of frontline military medical workers, as well as those in units, even those not directly involved in pandemic response, and attempts to ensure their well-being.¹⁴⁶

The PLA has intended to “normalize” its efforts in epidemic prevention and control, while minimizing impact on combat readiness. While initially the PLA was forced to cease its joint training exercises, its drills later resumed, along with patrols near Taiwan intended to act as a show of strength and deterrence.¹⁴⁷ The PLA even sent an aircraft carrier group through the Miyako Strait and conducted exercises in the South China Sea as a part of a cross-regional mobilization at a moment when US aircraft carriers, including the USS Theodore Roosevelt, were in the news for outbreaks onboard.¹⁴⁸ Across various services and commands, units later attempted to adjust and continue training with masks required and at smaller scales.¹⁴⁹ Throughout the crisis, the PLA continued to highlight its efforts to sustain training and maintain readiness despite the adjustments required.¹⁵⁰

China’s Medical and Military Diplomacy

The respective trajectories of the United States and China in the aftermath of the coronavirus may impact the balance of power for years to come. The pandemic could prove to be a decisive moment in shaping future geopolitics. Insofar as this great power rivalry has centered upon systemic competition, the relative trajectories of US and PRC efforts in response is presented in Chinese propaganda—and highlighted by Xi Jinping personally—as reflective of the relative strength, even systemic or institutional advantages, of its own systems of governance.¹⁵¹ To further that narrative, Chinese diplomacy in the course of the pandemic has concentrated on providing donations of masks and medical supplies and highlighting these donations prominently. In addition, Chinese scientists engaged to share expertise and lessons learned from their own successful experiences in fighting the coronavirus with certain foreign medical communities.

Beijing has recognized a nearly unprecedented opportunity to establish a leading position on the world stage. The PLA has been directly involved in providing supplies and direct medical support to important partners of China. For instance, the PLA has sent medical supplies to Iran and deployed medical professionals and supplies to Cambodia and Zimbabwe.¹⁵² To date, PLA medical teams have also been dispatched to Pakistan, Myanmar, and Laos, among others.¹⁵³ Often, these efforts appeared targeted to strengthen military-to-military ties in important defense relationships.¹⁵⁴ China’s primary vaccine candidate, developed in conjunction with the Academy of Military Medical Sciences, will be tested abroad in order to access cases sufficient for large-scale trials.¹⁵⁵

The PLA’s intention has been to “normalize” its efforts in epidemic prevention and control, while minimizing impact on combat readiness.

Which countries are provided access to these vaccines will likely be impacted by strategic considerations and could have geopolitical implications.¹⁵⁶ At the intersection of Chinese health diplomacy and military diplomacy, PLA medical institutions have become important stakeholders in this diplomatic endeavor, and their international engagement

going forward thus tests China's capacity to continue to adapt in its efforts to increase its influence. Meanwhile, China has also joined a new global alliance, known as COVAX, to promote vaccine development and distribution.¹⁵⁷ If China takes on a leading position in vaccine distribution, this centrality may further increase its global influence.

Initial Assessments and Concluding Reflections

China's pandemic response efforts may prove to be formative experiences for its current leadership, as well as the Chinese military and national security community. As Xi Jinping declared to the Politburo at the height of the pandemic, this crisis presented a grave test for China's "system of governance and capability," increasing confidence in the capacity to concentrate resources in response to urgent problems.¹⁵⁸ China's Secretary of the Central Political and Legal Affairs Commission Guo Shengkun (郭声琨) even reflected in the aftermath of the outbreak, "during the pandemic, we seized important achievements in a short time and have posed a great contrast between 'China's orderliness' and 'the West's chaos.'" ¹⁵⁹ Despite facing a crisis that had the potential to destabilize Chinese society and delegitimize the Party's authority, the dramatic national response and mobilization proved relatively successful in ultimately constraining the pandemic.

The pandemic tested and exercised China's capabilities for emergency response and defense mobilization, enabled by centralized leadership at the highest levels. In particular, the exercise of this system for national defense mobilization contributed to important elements of the response, including redirecting companies to produce critical equipment and leveraging militia forces to sustain production. While this initial analysis does not provide a comprehensive assessment of these efforts, and these questions of capacity and potential weaknesses in mobilization will continue to merit more

detailed analysis, the availability of data and relative efficacy of mechanisms to coordinate these local efforts appears to indicate significant maturation in this system. So too, the serious shortfalls that occurred in the initial stages of the crisis, such as that of medical and protective equipment, appear to have drawn attention to concerns about bolstering stockpiles of critical resources.

The contributions of Chinese military, reserve, and militia forces in pandemic response highlighted its unique missions and positioning within China's system. Indeed, the PLA's role in the pandemic has been lauded in state media as epitomizing and highlighting the advantages of a tradition of military-civil unity (军民团结), an idea that can be traced back to the time of Mao Zedong.¹⁶⁰ In any crisis or future conflict scenario, these linkages, especially as initiatives to leverage such synergies, including to enlist companies in defense, should not be overlooked. From its deployment to provide logistic support to the thousands of military medical personnel and hundreds of thousands, perhaps millions, of militia members involved in various capacities, this crisis featured China's national defense capabilities as deployed domestically, yet hints at the capacity that could be brought to bear against a foreign adversary. The capacity to coordinate among these various forces and elements of China's national security will likely remain a focus going forward.

The trajectory of this people's war has also revealed various weaknesses and shortcomings in China's national security and defense that persist and can be apparent despite the focus on self-declared successes in state media. Notably, the experience of the pandemic also evidently demonstrated that emergency management and national defense as distinct systems within China were insufficiently integrated to start and would require more extensive integration and coordination going forward.¹⁶¹ While the use of data on "defense mobilization potential" contributed to the deployment of resources at scale, the continued development of big data platforms and systems continues to confront practical and technical impediments. Moreover, as the failure of China's early warning systems demonstrated, the quality of data and the capacity to overcome perverse political incentives or potential fractures between the central and local governments can be a serious concern as well.

Since the PLA is a force that lacks contemporary operational experience, Chinese military strategists are also starting to

look at this pandemic experience as revealing the strengths and potential weaknesses of its preparations for future "informatized" warfare. In particular, the capacity for rapid mobilization in response to future conflicts that are anticipated to have sudden outbreaks and rapid escalation requires transforming the military from peacetime preparedness to a wartime footing.¹⁶² Likely, this exercise of logistics support in MOOTW also highlighted the complexity of undertaking significant operations even in peacetime with the fog of crisis. Within the PLA itself, while its actual track record on infections remains to be difficult to ascertain, this crisis stressed the importance of health and mental health to readiness and performance. However, the

degree to which these lessons will be institutionalized remains to be seen, since the PLA appears to have encountered difficulties in the past in efforts to fully implement such changes. Indubitably, the pandemic will prompt further reforms to China's national security system, including to incorporate biosecurity as a more integral concern, in an effort to improve its national capacity and resilience.

The PLA's role in the pandemic has been lauded in state media as epitomizing and highlighting the advantages of a tradition of military-civil unity, an idea that can be traced back to the time of Mao Zedong.

Endnotes

1. "Aggregating indestructible and powerful forces—summary of General Secretary Xi Jinping's important expositions on winning the people's warfare and overall blockade for epidemic prevention and control" [凝聚起坚不可摧的强大力量——凝聚起坚不可摧的强大力量——习近平总书记关于打赢疫情防控的人民战争总体战阻击战重要论述综述], September 8, 2020, www.dot.gov.cn/xinwen/2020-09/08/content_5541392.htm.
2. qtd. in Steven Lee Myers and Chris Buckley, "In China's Crisis, Xi Sees a Crucible to Strengthen His Rule," *The New York Times*, May 20, 2020, www.nytimes.com/2020/05/20/world/asia/coronavirus-china-xi-jinping.html.
3. "China's epidemic prevention and control demonstrates the Party's institutional advantages" [中国疫情防控彰显党的体制优势], *People's Daily*, April 10, 2020, theory.people.com.cn/n1/2020/0410/c40531-31668355.html.
4. "China's National Defense in the New Era," *Xinhua*, July 24, 2019, www.dot.xinhuanet.com/english/2019-07/24/c_138253389.htm.
5. "Xi Jinping's Strong Military Ideology Opens a New Realm of People's Warfare" [习近平强军思想开辟人民战争新境界], *PLA Daily*, November 30, 2017, www.mod.gov.cn/jmsd/2017-11/30/content_4798607.htm.
6. Dean Cheng, "Converting the Potential to the Actual: Chinese Mobilization Policies and Planning" in Andrew Scobell, Arthur S. Ding, Phillip C. Saunders, and Scott W. Harold (eds.), *The People's Liberation Army and contingency planning in China*, (Washington, DC: National Defense University Press, 2015), ndupress.ndu.edu/Portals/68/Documents/Books/PLA-contingency/PLA-Contingency-Planning-China.pdf.
7. "Xi Jinping's Report at the Chinese Communist Party 19th National Congress" [习近平在中国共产党第十九次全国代表大会上的报告], *Xinhua*, October 27, 2017, www.dot.china.com.cn/19da/2017-10/27/content_41805113_3.htm.
8. Dean Cheng, "Converting the Potential to the Actual: Chinese Mobilization Policies and Planning" in Andrew Scobell, Arthur S. Ding, Phillip C. Saunders, and Scott W. Harold (eds.), *The People's Liberation Army and contingency planning in China*, (Washington, DC: National Defense University Press, 2015), ndupress.ndu.edu/Portals/68/Documents/Books/PLA-contingency/PLA-Contingency-Planning-China.pdf.
9. Hu Tianjiang [胡田疆] and Huang Gang, [黄刚], People's Republic of China National Defense Mobilization Law Study Questions and Answers [《中华人民共和国国防动员法》学习问答] (Beijing: National Defense University Press, 2010), 1.
10. "National Defense Mobilization Law of the People's Republic of China," *Ministry of National Defense*, eng.mod.gov.cn/publications/2017-03/03/content_4774223.htm.
11. Xi Jinping Attended Central Military Commission Military Work Conference and Delivered an Important Speech" [习近平出席中央军委军事工作会议并发表重要讲话], *Xinhua*, January 4, 2019, www.dot.gov.cn/xinwen/2019-01/04/content_5354931.htm.
12. "National Defense Mobilization Commission" [国家国防动员委员会], www.dot.gfdy.gov.cn/org/2016-09/28/content_7281555.htm.
13. *Ibid.*
14. Specifically, according to Article 12 of the National Defense Mobilization Law: "The national defense mobilization councils in the military area/district and the local national defense mobilization councils at or above the county level shall organize, direct and coordinate the national defense mobilization work within their respective regions." "National Defense Mobilization Law of the People's Republic of China," *Ministry of National Defense*, eng.mod.gov.cn/publications/2017-03/03/content_4774223.htm.
15. Dean Cheng, "Is There Still a Need for War Time Mobilization? China Thinks So," *Heritage*, March 29, 2010, www.heritage.org/asia/report/there-still-need-war-time-mobilization-china-thinks-so.
16. For the official English-language translation of this national defense white paper: State Council Information Office, "China's Military Strategy (full text)," May 27, 2015, english.dot.gov.cn/archive/white-paper/2015/05/27/content_281475115610833.htm.
17. *Ibid.*
18. "China's National Defense in the New Era," *Xinhua*, July 24, 2019, www.dot.xinhuanet.com/english/2019-07/24/c_138253389.htm.
19. There are several exceptions, including the Western Theater Command where the Tibet Military Command/Military District is reported to have been elevated by one level relative to other provincial-level military districts and has been placed under command of the PLA Army, unlike other provincial-level military districts that are primarily subordinated to the CMC National Defense Mobilization Department. See: Kevin McCauley, "Snapshot: China's Western Theater Command," *China Brief*, Volume: 17 Issue: 1, January 13, 2017, jamestown.org/program/snapshot-chinas-western-theater-command/.
20. Kevin Pollpeter and Kenneth W. Allen (eds.), *PLA as Organization v2.0.*, www.airuniversity.af.edu/Portals/10/CASI/Books/PLA_as_Organization_v2.pdf.
21. "The Shanghai Garrison Organ Has Taken the Former Command Department, etc. Four Major Departments and Adjusted to 'One Office, Four Bureaus'" [上海警备区机关由原司令部等四大部调整为"一办四局"], *The Paper*, June 23, 2017, www.dot.thepaper.cn/newsDetail_forward_1716485. "Exploring the 'epidemic' code for national defense mobilization" [探寻国防动员战"疫"密码], *China National Defense News* [中国国防报], April 8, 2020, www.dot.xinhuanet.com/mil/2020-04/08/c_1210548801.htm.
22. "China's National Defense in the New Era," *Xinhua*, July 24, 2019, www.dot.xinhuanet.com/english/2019-07/24/c_138253389.htm.
23. "The All-Military reserve electromagnetic spectrum management center operationalizes testing of electromagnetic space management and control capabilities" [全军预备役电磁频谱管理中心实战化检验电磁空间管控能力], *China National Defense News*, April 26, 2017, web.archive.org/web/20190324035239/http://www.dot.gfdy.gov.cn/information/2017-04/26/content_7677219.htm; "Protecting Spectrum Resources is Just Like Protecting Combat Power" [保护频谱资源就是保护战斗力], *China National Defense News*, March 14, 2017, web.archive.org/web/20190324035905/www.dot.gfdy.gov.cn/information/2017-03/14/content_7688198.htm.
24. "Sheng Bin: Strive to promote the innovation and development of the national defense mobilization enterprise under the new system" [盛斌: 奋力推进新体制下国防动员事业创新发展], *Xinhua*, March 10, 2017, www.dot.xinhuanet.com/mil/2017-03/10/c_129506319.htm.
25. "People's Republic of China Militia Work Regulations" [中华人民共和国民兵工作条例], www.dot.mod.gov.cn/regulatory/2016-02/12/content_4618055.htm.
26. "National Defense Mobilization and Reserve Force," www.dot.china.com.cn/english/features/book/194477.htm.

27. Discussing the dynamics of military struggle in the cyber domain, *The Science of Military Strategy*, a textbook produced by the Academy of Military Science that is considered authoritative, included the statement: “since the boundaries between peacetime and wartime are ambiguous, and military and civilian attacks are hard to distinguish, persist in the integration of peace and war [and] in military-civil integration; in peacetime, civilians hide the military, while in wartime, the military and the people, hands joined, attack together...” See: Academy of Military Science Military Strategy Research Department [军事科学院军事战略研究部] (eds.), *The Science of Military Strategy* [战略学]. Military Science Press [军事科学出版社], 2013, p. 131. See also: Robert Sheldon and Joe McReynolds, “Civil-military integration and cyber-security: A study of Chinese information warfare militias,” in *China and Cyber Security* (2015): 188-222. See also: Kieran Richard Green, “People’s War in Cyberspace: Using China’s Civilian Economy in the Information Domain,” *Military Cyber Affairs* 2, no. 1 (2016): 5.
28. Andrew S. Erickson, “The South China Sea’s Third Force: Understanding and Countering China’s Maritime Militia.” *Testimony Before the House Armed Service Committee Seapower and Projection Forces Subcommittee* 21 (2016).
29. “Win the online information public opinion war! Shunde established the first militia cyber unit” [打赢网络信息舆论战! 顺德组建首支民兵网络分队], *Sohu*, September 28, 2018, www.sohu.com/a/256684029_161795.
30. “Sheng Bin: Strive to promote the innovation and development of the national defense mobilization enterprise under the new system” [盛斌: 奋力推进新体制下国防动员事业创新发展], *Xinhua*, March 10, 2017, www.xinhuanet.com/mil/2017-03/10/c_129506319.htm.
31. “Military Delegates Hotly Discussed Accelerating and Improving Innovative Development of National Defense Mobilization” [军队人大代表热议加速推进国防动员创新发展], *China Military Network*, March 15, 2019, www.web.archive.org/save/http://www.legaldaily.com.cn/army/content/2019-03/15/content_7802049.htm.
32. “PRC National Defense Transportation Law” [中华人民共和国国防交通法], *China National People’s Congress*, September 2016, www.dot npc.gov.cn/npc/xinwen/2016-09/03/content_1996764.htm.
33. “Smart National Defense Mobilization” in Datong City, Shanxi Province opens up the Intelligent Command Link” [山西省大同市“智慧国防动员”打通智能化指挥链路], *China National Defense Report*, May 8, 2019, www.dot mod dot gov.cn/mobilization/2019-05/08/content_4841351.htm; For general reference on the CCP’s approach to mobilization, see research by Dr. Samantha R. Hoffman, including: “Programming China: The Communist Party’s autonomic approach to managing state security,” PhD diss., University of Nottingham, 2017.
34. “How does national defense mobilization embrace the 5G era?” [国防动员如何拥抱5G时代], *China Military Network*, June 27, 2018, www.dot 81 dot cn/gfbmap/content/2018-06/27/content_209482.htm.
35. Zhang Fengpo [张凤坡], “Make artificial intelligence boost national defense mobilization” [让人工智能助力国防动员], August 29, 2018, www.dot 81 dot cn/gfbmap/content/2018-08/29/content_214536.htm.
36. “Accelerate the Construction of National Defense Mobilization Potential Big Data” [加快建设国防动员潜力大数据], *Global Times*, May 22, 2020, www.dot 81 dot cn/gfbmap/content/2020-05/22/content_262047.htm. See also: “A historic breakthrough in national defense mobilization during the 13th Five-Year Plan” [“十三五”期间国防动员事业取得历史性突破], *Sina*, October 26, 2020, k.sina.com dot cn/article_5338340917_13e309e350200ow761.html?from=news&subch=onews.
37. Ibid.
38. “Reflections on the Construction of a “Smart Mobilization” Command System” [关于构建“智慧动员”指挥体系的思考], *National Defense* [国防], October 2019, www.dot cnki dot com dot cn/Article/CJFDTotal-GUOF201910010.htm.
39. “Let potential data accurately meet the needs of the battlefield” [让潜力数据精准对接战场需求], *China National Defense News* [中国国防报], June 24, 2020, m dot cyol dot com/content/2020-06/24/content_18675356.htm.
40. “Air Force and Local Quality Logistics Companies Strategical Cooperation Promote Logistics Military-Civil Fusion” [空军与地方优质物流公司战略合作推进后勤物流军民融合], *Xinhua*, October 26, 2017, www.web.archive.org/web/20190423075802/http://www.dot xinhuanet dot com//mil/2017-10/26/c_1121862258.htm.
41. “Drones become standard vehicles in China’s logistics industry,” *People’s Daily*, September 27, 2018, en dot people dot cn/n3/2018/0927/c90000-9504311.html.
42. Peter Wood, “Local Companies Provide Logistics Support During PLA Joint Exercise,” *OE Watch*, December 1, 2018, community.apan.org/wg/tradoc-g2/fms0/m/oe-watch-articles-singular-format/262283.
43. “New-Quality Militia Forces All Debut Their Skills” [新质民兵力量悉数登场显身手], *China Military Network*, October 10, 2018, www.dot 81 dot cn/gfbmap/content/2018-10/10/content_217310.htm.
44. “Shanghai established militia drone reconnaissance sub-unit” [上海成立民兵无人机侦察分队], *Observer*, May 14, 2015, www.dot guancha dot cn/military-affairs/2015_05_14_319500.shtml?&cd=1&hl=en&ct=clnk&gl=us.
45. “Expanding the science and technology innovation “circle of friends” for national defense mobilization” [扩大国防动员的科技创新“朋友圈”], *PLA Daily*, November 19, 2018, www.dot 81 dot cn/gfbmap/content/2018-11/19/content_220956.htm.
46. “Exploring new mobilization power among talents from new professionals” [在新职业人才中挖掘新质动员力量], *Sohu*, March 29, 2019, www.dot sohu dot com/a/304502815_628598.
47. Ibid.
48. “Aggregating indestructible and powerful forces—summary of General Secretary Xi Jinping’s important expositions on winning the people’s warfare and overall blockade for epidemic prevention and control” [凝聚聚起坚不可摧的强大力量——习近平总书记关于打赢疫情防控的人民战争总体战阻击战重要论述综述], September 8, 2020, www.dot gov dot cn/xinwen/2020-09/08/content_5541392.htm.
49. “Fighting Covid-19: China in Action,” *The State Council Information Office of the People’s Republic of China*, June 2020, english.scio dot gov dot cn/white-papers/2020-06/07/content_76135269.htm.
50. “Military games to open Friday in China,” *China Daily*, October 17, 2019, www.dot china dot org dot cn/sports/2019-10/17/content_75311946.htm.
51. Minnie Chan, “China’s military put to the crisis test in coronavirus call-up,” *The South China Morning Post*, February 9, 2020, www.scmp.com/news/china/military/article/3049672/chinas-military-put-crisis-test-coronavirus-call.
52. Ibid.
53. Nick Paton Walsh, “The Wuhan files: Leaked documents reveal China’s mishandling of the early stages of Covid-19,” *CNN*, December 1, 2020, www.dot cnn dot com/2020/11/30/asia/wuhan-china-covid-intl/index.html.
54. “China didn’t warn public of likely pandemic for 6 key days,” *The Associated Press*, April 15, 2020, apnews.com/68a9e1b91de4ffe166acd6012d82c2f9.
55. Steven Lee Myers, “China Created a Fail-Safe System to Track Contagions. It Failed,” *The New York Times*, March 29, 2020, www.nytimes.com/2020/03/29/world/asia/coronavirus-china.html.
56. Dali L. Yang, “Wuhan officials tried to cover up covid-19 — and sent it careening outward,” *The Washington Post*, March 10, 2020, www.washingtonpost.com/politics/2020/03/10/wuhan-officials-tried-cover-up-covid-19-sent-it-careening-outward/.

57. "Military Frontline Command and Coordination Group Organised Experts To Go To Huoshenshan Hospital for Consultation" [军队前方指挥协调组组织专家赴火神山医院会诊], *PLA Daily*, February 15, 2020, www.dot.xinhuanet.com/mil/2020-02/15/c_1210475215.htm. See also: "The military frontline command and coordination group focuses on the treatment of critically ill patients with the coronavirus" [军队前方指挥协调组集中研讨新冠肺炎危重症患者救治工作], *CCTV*, March 14, 2020, www.sohu.com/a/379991647_362042.
58. Peter W. Singer, Peter Wood, and Alex Stone, "As Coronavirus Spreads, China's Military Is Largely MIA," *Defense One*, February 6, 2020, www.defenseone.com/ideas/2020/02/coronavirus-spreads-chinas-military-has-been-largely-mia/162950/.
59. Zhao Lei, "PLA support force joins disease fight," *China Daily*, February 7, 2020, english dot chinamil dot com dot cn/view/2020-02/07/content_9735244.htm.
60. "PLA Y-20 strategic cargo planes debut in fight against novel coronavirus outbreak," *China Military Online*, February 14, 2020, eng dot chinamil dot com dot cn/view/2020-02/14/content_9741871.htm.
61. "Fighting Covid-19: China in Action," *The State Council Information Office of the People's Republic of China*, June 2020, english dot scio dot gov dot cn/whitepapers/2020-06/07/content_76135269.htm. Minnie Chan, "China's military put to the crisis test in coronavirus call-up," *The South China Morning Post*, February 9, 2020, www.scmp.com/news/china/military/article/3049672/chinas-military-put-crisis-test-coronavirus-call.
62. Minnie Chan, "Coronavirus: Chinese military takes control of medical supplies in Wuhan," *The South China Morning Post*, February 3, 2020, www.scmp.com/news/china/society/article/3048778/coronavirus-chinese-military-takes-control-medical-supplies.
63. "The national defense mobilization system actively throws itself into winning the battle against epidemic prevention and control" [国防动员系统积极投身打赢疫情防控阻击战], *National Defense Times* [国防时报], February 11, 2020, www.sohu.com/a/372187264_594189.
64. "National defense mobilization system: gathering all people's forces to fight the epidemic" [国防动员系统：汇聚同心抗疫的全民力量], *PLA Daily*, February 26, 2020, webcache.googleusercontent.com/search?q=cache:B4xYoVTvKqwj:www.dot.xinhuanet.com/2020-02/26/c_1210490583.htm+&cd=2&hl=en&ct=clnk&gl=us.
65. "National defense mobilization system unites to fight the coronavirus" [国防动员系统众志成城抗击新冠肺炎疫情], *Xinhua*, March 11, 2020.
66. "National defense mobilization system: gather all people's forces to fight the epidemic" [国防动员系统：汇聚同心抗疫的全民力量]
67. *Ibid.*
68. "Exploring the "epidemic" code for national defense mobilization" [探寻国防动员战“疫”密码], *China National Defense News* [中国国防报], April 8, 2020, www.dot.xinhuanet.com/mil/2020-04/08/c_1210548801.htm.
69. "National Defense Science and Industry Bureau: Urgently mobilize military industry forces to provide strong support to win the battle against epidemic prevention and control" [国防科工局：紧急动员军工力量，为打赢疫情防控阻击战提供坚强支持], February 05, 2020, www.qizhiwang dot org dot cn/n1/2020/0205/c431673-31572960.html.
70. "National defense mobilization system: gather all people's forces to fight the epidemic" [国防动员系统：汇聚同心抗疫的全民力量].
71. *Ibid.*
72. "The circle of friends mobilized by technology is getting bigger and bigger" [科技动员的朋友圈越来越大], *China National Defense News*, April 10, 2020 www dot mod dot gov dot cn/mobilization/2020-04/10/content_4863411.htm.
73. "Exploring the "epidemic" code for national defense mobilization" [探寻国防动员战“疫”密码], *China National Defense News* [中国国防报], April 8, 2020, www dot xinhuanet dot com/mil/2020-04/08/c_1210548801.htm.
74. *Ibid.*
75. "The national defense mobilization system actively dedicates itself in winning the fight of epidemic prevention and control" [国防动员系统积极投身打赢疫情防控阻击战], *National Defense Times* [国防时报], February 11, 2020, www dot sohu dot com/a/372187264_594189.
76. *Ibid.*
77. "National defense mobilization system: gathering all people's forces to fight the epidemic" [国防动员系统：汇聚同心抗疫的全民力量], *PLA Daily*, February 26, 2020, webcache.googleusercontent.com/search?q=cache:B4xYoVTvKqwj:www.dot.xinhuanet.com/2020-02/26/c_1210490583.htm+&cd=2&hl=en&ct=clnk&gl=us.
78. "Xi Jinping: Speech during the meeting of the Standing Committee of the Politburo Of the CCP Central Committee to study the response to the novel coronavirus" [在中央政治局常委会会议研究应对新型冠状病毒肺炎疫情工作时的讲话], *Seeking Truth*, February 15, 2020, www dot gov dot cn/xinwen/2020-02/15/content_5479271.htm.
79. LeighAnn Luce and Erin Richter, "Handling Logistics in a Reformed PLA: The Long March Toward Joint Logistics," in Phillip C. Saunders, Arthur S. Ding, Andrew Scobell, Andrew N.D. Yang, and Joel Wuthnow, (eds.), *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms*, (Washington, D.C.: National Defense University Press, 2019), 272.
80. Joel Wuthnow, "Responding to the Epidemic in Wuhan: Insights into Chinese Military Logistics," *China Brief*, April 13, 2020, jamestown.org/program/responding-to-the-epidemic-in-wuhan-insights-in-to-chinese-military-logistics/.
81. "The story of the Strategic Support Force Special Medical Center going all out to fight the epidemic" [战略支援部队特色医学中心全力以赴抗击疫情记事], *PLA Branch of Xinhua News Agency*, February 5, 2020, www dot xinhuanet dot com/mil/2020-02/05/c_1210462850.htm.
82. "Academy of Military Medical Sciences (AMMS)," www.natureindex.com/institution-outputs/china/academy-of-military-medical-sciences-amms/51d26921140ba0bc70000000.
83. "Reform of military medical universities to put focus back on combat," *Global Times*, March 14, 2018, www dot globaltimes dot cn/content/1093285.shtml.
84. Zhang Xiping [张熙平] and Zhao Zhihong [赵芝洪], "The Western Theater Command General Hospital explores a new battlefield medical treatment model" [西部战区总医院探索战场医疗救治新模式], *PLA Daily*, March 11, 2020, www dot mod dot gov dot cn/services/2020-03/11/content_4861816.htm.
85. Yang Pei, Yue Song, and Min Yu, "A New Approach to Organization and Implementation of Military Medical Treatment in Response to Military Reform and Modern Warfare in the Chinese Army," *Military Medicine*, Vol. 182, Is. 11-12, November-December 2017, e1819.
86. Matthew Ormseth, "Grand jury charges UC Davis researcher with visa fraud and concealing membership in Chinese military," *LA Times*, August 6, 2020, www.latimes.com/california/story/2020-08-06/grand-jury-charges-uc-davis-researcher-with-visa-fraud-and-concealing-membership-in-chinese-military.
87. "Chinese military medical team returns home after anti-pandemic mission in Myanmar," *China Military Online*, May 13, 2020, english dot chinamil dot com dot cn/view/2020-05/13/content_9812981.htm.
88. Peter W. Singer, Peter Wood, and Alex Stone, "As Coronavirus Spreads, China's Military Is Largely MIA," *Defense One*, February 6, 2020, www.defenseone.com/ideas/2020/02/coronavirus-spreads-chinas-military-has-been-largely-mia/162950/.
89. James C. Mulvenon, "Party-Army Relations Since the 16th Party Congress: The Battle of the 'Two Centers'?", in Andrew Scobell and Larry Wortzel, eds., *Civil-Military Change in China: Elites, Institutes, and Ideas After the 16th Party Congress*, (Carlisle, PA: U.S. Army War College, September 2004), 27-28.
90. *Ibid.*
91. Joseph Kahn, "China Releases the SARS Whistle-Blower," *The New York Times*, July 21, 2004, www.nytimes.com/2004/07/21/world/china-releases-the-sars-whistle-blower.html. Don Weiland, "Tale of two doctors reveals how China controls the narrative," *Financial Times*, February 3, 2020, www.ft.com/content/cf59b132-43d7-11ea-a43a-c4b328d9061c.
92. James C. Mulvenon, "Party-Army Relations Since the 16th Party Congress: The Battle of the 'Two Centers'?", p. 28-29.

93. James C. Mulvenon, "Party-Army Relations Since the 16th Party Congress: The Battle of the 'Two Centers'?" See also: Huang, Yanzhong, "The SARS epidemic and its aftermath in China: a political perspective." In *Learning from SARS: preparing for the next disease outbreak: workshop summary*, pp. 116-136. National Academies Press, 2004.
94. Wendy Wu, "Coronavirus hospital set to open in Wuhan with 1,400 military medical staff," *South China Morning Post*, February 2, 2020, www.scmp.com/news/china/politics/article/3048592/coronavirus-hospital-set-open-wuhan-1400-military-medical-staff.
95. Wendy Wu, "Coronavirus hospital set to open in Wuhan with 1,400 military medical staff," *South China Morning Post*, February 2, 2020, www.scmp.com/news/china/politics/article/3048592/coronavirus-hospital-set-open-wuhan-1400-military-medical-staff.
96. James C. Mulvenon, "Party-Army Relations Since the 16th Party Congress: The Battle of the 'Two Centers'?", p. 30.
97. *Ibid.*, p. 29-30.
98. "Chen Wei: Racing against time, let the vaccine defend life" [陈薇: 争分夺秒, 让疫苗捍卫生命], *PLA Daily*, May 14, 2020, www.dot.xinhuanet.com/politics/2020-05/14/c_1125981877.htm. Minnie Chan and William Zheng, "Meet the major general on China's coronavirus scientific front line," *South China Morning Post*, March 3, 2020, www.scmp.com/news/china/military/article/3064677/meet-major-general-chinas-coronavirus-scientific-front-line.
99. James C. Mulvenon, "Party-Army Relations Since the 16th Party Congress: The Battle of the 'Two Centers'?", p. 29-30.
100. Bihan Tang and Lulu Zhang, "Introduction," in Lulu Zhang, ed., *Modeling the Injury Flow and Treatment after Major Earthquakes*, (Springer Nature, 2016), 8.
101. Hu Xiao & Tonny Chan, "PLA troops active in tsunami relief," *China Daily*, January 5, 2005, www.dot.chinadaily.com.cn/english/doc/2005-01/05/content_405886.htm.
102. Drew Thompson, "TSUNAMI RELIEF REFLECTS CHINA'S REGIONAL ASPIRATIONS," *China Brief*, January 18, 2005, jamestown.org/program/tsunami-relief-reflects-chinas-regional-aspirations/.
103. Xiang-Hui Li and Jing-Chen Zheng, "Efficient Post-Disaster Patient Transportation and Transfer: Experiences and Lessons Learned in Emergency Medical Rescue in Aceh After the 2004 Asian Tsunami," *Military Medicine*, Vol. 179, Is. 8, August 2014, academic.oup.com/milmed/article/179/8/913/4159508?searchresult=1.
104. *Ibid.*
105. *Ibid.*
106. Mulvenon, James. "The Chinese military's earthquake response leadership team." *China Leadership Monitor* 25, no. 1 (2008): 1-8.
107. Jake Hooker, "Quake Revealed Deficiencies of China's Military," *The New York Times*, July 2, 2008, www.nytimes.com/2008/07/02/world/asia/02china.html.
108. Xiao-Bing Fu, "Military medicine in China: old topic, new concept," *Military Medical Research*, Vol. 1, April 15, 2014, mmrjournal.biomedcentral.com/articles/10.1186/2054-9369-1-2.
109. *Ibid.*
110. Yan-Ling Zhang, "Organization and implementation of mass medical rescue after an earthquake," *Military Medical Research*, Vol. 1, April 22, 2014, mmrjournal.biomedcentral.com/articles/10.1186/2054-9369-1-5.
111. *Ibid.*
112. *Ibid.*
113. Danmin Miao, Hui Wang, Xuefeng Liu, Xia Zhu, Wei Xiao, and Shengjun Wu, "Development of Military Psychology in China," in Stephen V. Bowles and Paul T. Bartone, eds., *Handbook of Military Psychology: Clinical and Organizational Practice*, (Springer, 2017), 486-487.
114. *Ibid.*
115. Bihan Tang and Lulu Zhang, "Introduction," in Lulu Zhang, ed., *Modeling the Injury Flow and Treatment after Major Earthquakes*, (Springer Nature, 2016), 8.
116. Carlos Tejada, "China Sending Elite Army Medical Team to Liberia," *The Wall Street Journal*, October 31, 2014, www.wsj.com/articles/china-sending-elite-army-medical-team-to-liberia-1414759664.
117. Ying Li, Huan Wang, Xu-Rui Jin, Xiang Li, Michelle Pender, Cai-Ping Song, Sheng-Lan Tang, Jia Cao, Hao Wu, and Yun-Gui Wang, "Experiences and challenges in the health protection of medical teams in the Chinese Ebola treatment center, Liberia: a qualitative study," *Infectious Diseases of Poverty*, Vol. 7, August 16, 2018, idpjournal.biomedcentral.com/articles/10.1186/s40249-018-0468-6.
118. Ying Li, Sheng-Lan Tang, Kaori Sato, and Jia Cao. "Chinese People's Liberation Army on Action of Fighting against Ebola in Africa: Implications and Challenges." *Chinese medical journal* 128, no. 10 (2015): 1420. www.ncbi.nlm.nih.gov/pmc/articles/PMC4830329/.
119. Lu, Yinying, G. Rong, S. P. Yu, Z. Sun, X. Duan, Z. Dong, H. Xia et al. "Chinese military medical teams in the Ebola outbreak of Sierra Leone." *BMJ Military Health* 162, no. 3 (2016): 198-202.
120. *Ibid.*
121. *Ibid.*
122. *Ibid.*
123. Ying Li, Huan Wang, Xu-Rui Jin, Xiang Li, Michelle Pender, Cai-Ping Song, Sheng-Lan Tang, Jia Cao, Hao Wu, and Yun-Gui Wang, "Experiences and challenges in the health protection of medical teams in the Chinese Ebola treatment center, Liberia: a qualitative study," *Infectious Diseases of Poverty*, Vol. 7, August 16, 2018, idpjournal.biomedcentral.com/articles/10.1186/s40249-018-0468-6.
124. *Ibid.*
125. The PLA's concern with the mental health of their medical teams was also seen with measures they took during their quarantine, such as ensuring that mental health counselors were available when necessary and ensuring they had internet access "to facilitate communication with friends and family outside."
126. *Ibid.*
127. Ying Li, Huan Wang, Xu-Rui Jin, Xiang Li, Michelle Pender, Cai-Ping Song, Sheng-Lan Tang, Jia Cao, Hao Wu, and Yun-Gui Wang, "Experiences and challenges in the health protection of medical teams in the Chinese Ebola treatment center, Liberia: a qualitative study," idpjournal.biomedcentral.com/articles/10.1186/s40249-018-0468-6.
128. *Ibid.*
129. For instance: Ying Li, Huan Wang, Xu-Rui Jin, Xiang Li, Michelle Pender, Cai-Ping Song, Sheng-Lan Tang, Jia Cao, Hao Wu, and Yun-Gui Wang, "Experiences and challenges in the health protection of medical teams in the Chinese Ebola treatment center, Liberia: a qualitative study," *Infectious Diseases of Poverty*, Vol. 7, August 16, 2018, idpjournal.biomedcentral.com/articles/10.1186/s40249-018-0468-6.
130. *Ibid.*
131. "China's answer to the global war of the 'epidemic'" [全球战“疫”的中国答卷], *PLA Daily*, April 10, 2020, www.dot.mva.gov.cn/sy/xx/gfxx/202004/t20200410_39377.html.
132. Wendy Wu, "Coronavirus hospital set to open in Wuhan with 1,400 military medical staff," *The South China Morning Post*, February 2, 2020, www.scmp.com/news/china/politics/article/3048592/coronavirus-hospital-set-open-wuhan-1400-military-medical-staff. These military hospitals were not built by the PLA, but were built by state-owned enterprises. Zhang Wanqing, "The Blood, Sweat, and Fears Behind Wuhan's Pop-Up Hospital," *Sixth Tone*, March 24, 2020, www.sixthtone.com/news/1005356/the-blood-sweat-and-fears-behind-wuhans-pop-up-hospital.
133. "In the fight against the epidemic, we will never be absent" [战“疫”，我们决不缺席], *PLA Daily*, March 9, 2020, www.dot.cn/jfjbmap/content/2020-03/07/content_258336.htm.
134. *Ibid.*; Minnie Chan, "China's military put to the crisis test in coronavirus call-up," *South China Morning Post*, February 9, 2020, www.scmp.com/news/china/military/article/3049672/chinas-military-put-crisis-test-coronavirus-call.
135. Minnie Chan, "Chinese military sends in fresh medical crews to coronavirus-hit Wuhan." www.scmp.com/news/china/diplomacy/article/3050520/chinese-military-sends-fresh-medical-crews-coronavirus-hit.

136. Ibid.
137. Wendy Wu, "Coronavirus hospital set to open in Wuhan with 1,400 military medical staff," *South China Morning Post*, February 2, 2020, www.scmp.com/news/china/politics/article/3048592/coronavirus-hospital-set-open-wuhan-1400-military-medical-staff.
138. Minnie Chan and William Zheng, "Meet the major general on China's coronavirus scientific front line," *South China Morning Post*, March 3, 2020, www.scmp.com/news/china/military/article/3064677/meet-major-general-chinas-coronavirus-scientific-front-line.
139. "The State Intellectual Property Office confirms that Chen Wei's team's new crown vaccine has been patented" [国家知识产权局确认陈薇团队新冠疫苗获专利授权], *Science and Technology Daily* [科技新闻], August 19, 2020, digitalpaper.stdaily.com/http_www.kjrb.com/kjrb/html/2020-08/20/content_451723.htm?div=-1.
140. Minnie Chan, "Chinese military scientists ordered to win global race to develop coronavirus vaccine," *South China Morning Post*, March 19, 2020, www.scmp.com/news/china/military/article/3075843/chinese-military-scientists-ordered-win-global-race-develop.
141. "Tens of thousands of doctors and nurses throughout the army put in the first-line treatment of new coronavirus to maintain 'zero infection'" [全军上万名医护投入新冠肺炎一线救治 保持“零感染”], *China News Network* [中国新闻网], March 2, 2020, www.chinanews.com/gn/2020/03-02/9110445.shtml.
142. Joel Wuthnow, "China's Military Claims to Be Virus-Free," *Foreign Policy*, March 20, 2020, foreignpolicy.com/2020/03/20/pla-coronavirus-invasion-chinas-military-claims-to-be-virus-free/.
143. "Scientific prevention and control, providing strong support for combat readiness training" [科学防控, 为战备训练提供有力支撑], *PLA Daily*, February 18, 2020, www.dot.xinhuanet.com/mil/2020-02/18/c_1210479113.htm.
144. "Our Military's Academy for Military Medical Sciences Experts are on the Frontline of War of Epidemic Prevention and Control" [我军军事医学专家奋战疫情防控阻击战一线], *China Military Online*, February 1, 2020, www.dot.81dot.cn/jmywyl/2020-02/01/content_9729671.htm.
145. "A Sample of the 'Systemic Advantages' of Strategic Health Strength" [一支战略卫勤力量的“体系优势”样本], *PLA Daily*, April 30, 2020, militarydotworker.cn/32821/202004/30/200430142846445.shtml.
146. "PLA Psychologist: facing the epidemic, wear 'protective clothing' for your psychology" [解放军心理专家: 疫情面前, 给心理穿好“防护服”], *Xinhua*, February 18, 2020, www.dot.xinhuanet.com/2020-02/10/c_112555162.htm.
147. Minnei Chan, "PLA flexes military muscle near Taiwan 'in show of Covid-19 control' to virus-hit US," *The South China Morning Post*, April 15, 2020, www.scmp.com/news/china/military/article/3079898/pla-flexes-military-muscle-near-taiwan-show-covid-19-control.
148. "Chinese aircraft carrier Liaoning conducts exercises in South China Sea: PLA Navy spokesperson," *Global Times*, April 13, 2020, www.globaltimes.cn/content/1185471.shtml.
149. "How Will the Military Accomplish Neglecting Neither Military Training Nor Epidemic Prevention?" [军队如何做到练兵与防疫“两不误”], *China News Online*, March 1, 2020, m.chinanews.com/wap/detail/zw/mil/2020/03-01/9109725.shtml.
150. "Upsurge in Training and Preparedness for Warfare" [掀起练兵备战热潮], *China Military Online*, February 17, 2020, www.dot.81dot.cn/jmywyl/2020-02/17/content_9744097.htm.
151. "China's epidemic prevention and control demonstrates the Party's institutional advantages" [中国疫情防控彰显党的体制优势], *People's Daily*, April 10, 2020, theorydotcomdotcn/2020/0410/c40531-31668355.html.
152. "China's military continues to step up int'l cooperation against coronavirus," *Xinhua*, March 27, 2020, eng.chinamil.comdotcn/view/2020-03/27/content_9778521.htm.
153. Ibid.
154. For a prior analysis on the topic see: Helena Legarda, "The PLA's Mask Diplomacy," *MERICs*, August 3, 2020, meric.org/en/analysis/plas-mask-diplomacy.
155. Minnie Chan, "Chinese military scientists hope to test coronavirus vaccine abroad," *The South China Morning Post*, April 2, 2020, www.scmp.com/news/china/science/article/3077988/chinese-military-scientists-hope-test-coronavirus-vaccine-abroad.
156. Dyani Lewis, "China's coronavirus vaccine shows military's growing role in medical research," *Nature*, September 11, 2020, www.nature.com/articles/d41586-020-02523-x.
157. Jon Cohen, "With global push for COVID-19 vaccines, China aims to win friends and cut deals," *Science Magazine*, November 25, 2020, www.sciencemag.org/news/2020/11/global-push-covid-19-vaccines-china-aims-win-friends-and-cut-deals.
158. "Aggregating indestructible and powerful forces—summary of General Secretary Xi Jinping's important expositions on winning the people's warfare and overall blockade for epidemic prevention and control" [凝聚起坚不可摧的强大力量——习近平总书记关于打赢疫情防控的人民战争总体战阻击战重要论述综述], September 8, 2020, www.dot.govdotcn/xinwen/2020-09/08/content_5541392.htm.
159. Jun Mai, "Our tense rivalry with US will foster political volatility in China, warns domestic security chief," *The South China Morning Post*, November 13, 2020, www.scmp.com/news/china/diplomacy/article/3109762/our-tense-rivalry-us-will-foster-political-volatility-china.
160. Seeking Truth Commentator [求是网评论员], "The struggle for epidemic prevention and control demonstrates the significant political advantages of military, political, and military-civilian unity" [疫情防控斗争彰显军政军民团结的显著政治优势], *Seeking Truth Network* [求是网], May 29, 2020, www.dot.qstheorydotcn/wp/2020-05/29/c_1126048519.htm.
161. Ibid.
162. Dong Wentao [董文韬], "The Enlightenment of Epidemic Prevention and Control for Winning Future Local Informatized Wars" [疫情防控对打赢未来信息化局部战争的启示], *Guangming Daily*, April 19, 2020, www.dot.qstheorydotcn/llwx/2020-04/19/c_1125876036.htm.



