




A perspective on impeding the COVID-19 pandemic: Lessons from Mongolia's comprehensive countermeasure

Jerome G. Ganzon¹  | Xu Lin² | Dina J. Shehata³ | Georges Gandour⁴  |
Foday U. Turay⁵ | Alhaji S. Bah⁵ | Angel Anthony R. Camua⁶ |
Attaullah Ahmadi^{7,8}  | Don Eliseo Lucero-Prisno III⁹

¹School of Pharmacy, College of Pharmacy, Taipei Medical University, Taipei, Taiwan, ROC

²Department of Thoracic Surgery, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, People's Republic of China

³College of Medicine, Hawler Medical University, Erbil, Kurdistan, Iraq

⁴Faculty of Medicine and Medical Sciences, University of Balamand, Koura, Lebanon

⁵Faculty of Pharmaceutical Sciences, College of Medicine and Allied Health Sciences, University of Sierra Leone, Freetown, Sierra Leone

⁶College of Education, University of the Philippines Diliman, Quezon City, Philippines

⁷Medical Research Center, Kateb University, Kabul, Afghanistan

⁸École des Hautes Études en Santé Publique, Paris, France

⁹Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK

Correspondence: Attaullah Ahmadi, Medical Research Center, Kateb University, Kabul, Afghanistan.

Email: attaullah.ahmadi@kateb.edu.af

Keywords

COVID-19, global health, health policy, healthcare management, Mongolia, public health

1 | INTRODUCTION

On March 11, 2020, the world was struck by the World Health Organization (WHO) announcement of a coronavirus disease 2019 (COVID-19) pandemic,¹ which tolled to 505,817,953 confirmed cases and claimed 6,213,876 lives globally to date.² In retrospect, on December 31, 2019, the WHO in China obtained information on cluster pneumonia occurrence from the Wuhan Municipal Health Commission website and later identified it due to a novel coronavirus.³ Mongolia, on the other hand, a landlocked country situated north of China and south of Russia, exhibited a remarkable response to the coronavirus pandemic. Let us look at some possible factors that made its society resilient and government responsive. Mongolia's geopolitical situation limits its full potential for economic growth to its immediate superpower neighbors. Although it continued to expand economic ties with third neighbors, Japan and East Asia, Mongolia's efforts were delimited

by maintaining its peacekeeping status quo.⁴ The agriculture-based economy of Mongolia is influenced by its nomadic way of life. However, this is shifting toward the mining industry, harnessing its gold, copper, and coal, with increasing demands from its neighboring economic giants Russia and China.⁵ In 2014, the Presidents of Russia and China agreed to join the Eurasian Union and Central Asia through the Silk Road Economic Belt. Mongolia's landlocked dilemma has turned into a geopolitical advantage, making constant mobility with China inevitable.⁴ Disasters of incorrigible nature such as droughts, floods, storms, heatwaves, and extreme winter surges (*Dzuds*) are climate change-related events that decapitate, especially the marginalized.⁶ These recurrent catastrophic events prompted the Mongolian government to institutionalize disaster risk reduction interventions aided by nongovernmental organizations (NGOs) through forecast-based humanitarian assistance. This reduced loss of human lives, livestock, and improved risk reduction outcomes.^{6,7}

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2022 The Authors. *Health Science Reports* published by Wiley Periodicals LLC.

2 | SIGNIFICANT IMPACT OF TRAVEL RESTRICTIONS, HEALTH PROMOTION, HEALTH POLICY, AND REGIONAL COOPERATION ON LOCAL TRANSMISSION

On January 26, 2020, as novel coronavirus spreads throughout the region, Mongolian President Khaltmaa Battulga quickly implemented travel restrictions at the Mongolian-Chinese borders.⁷ Isolation of potential carriers, closure of all educational institutions, and cancellation of all public gatherings were enforced from January 27 until March 2, 2020. Even though there has been no confirmed infection case, handwashing was promoted, and hygiene supplies and personal protective equipments (PPEs) were distributed to front liners and police staff.⁷ On March 10, 2020, there was only one confirmed case. This first imported case was of a French national who transited through Moscow from France and works for Badrakh Energy in the southern province of Dornogovi.⁸ To attenuate local transmission, the National Emergency Commission performed immediate contact tracing and identified 42 direct contact and 120 close contacts with Case 1 patients. Thus, as a response, contact tracing together with intensified border control and travel restrictions were implemented. The government also restricted local travel to Dornogovi province. This kept the cumulative number of cases low at 261 until July 17, 2020.² As shown in Figure 1, there were zero COVID-

19 cases since the onset of the pandemic until March 9, 2020. The first recorded case was an imported case, a French national who works in the southern province Dornogovi and had come from Europe and transited through Moscow. Learning about this, the National Emergency Commission responded by performing contact tracing and found 42 people had direct contact and 120 persons had close contact with the French patient Case 1. The French national has fully recovered after 47 days of treatment by Mongol health workers. As a quick response, the National Center of Communicable Diseases (NCCD) performed testing on repatriated citizens. Moreover, returning Mongols from various territories like Russia, Europe, Asia, and other parts of the world are the bulk of the early cases causing a spike in the cumulative number of confirmed/positive cases.^{9,10} The NCCD also intensified their surveillance and increased the testing frequency per person entering the border. These efforts contributed to making the number of cumulative cases low and relatively flat and having only two (2) cumulative deaths, from the onset of the global transmission until March 6, 2021 (Figure 1). Recognizing the scarce facility to treat a multitude of cases, Mongolian authorities treated positive cases in isolation facilities to prevent local transmission. Furthermore, most of the positive cases were successfully treated and patients had fully recovered since the first wave as shown by having only two cumulative deaths on March 6, 2021. Moreover, even up to the present, there was a very large difference between

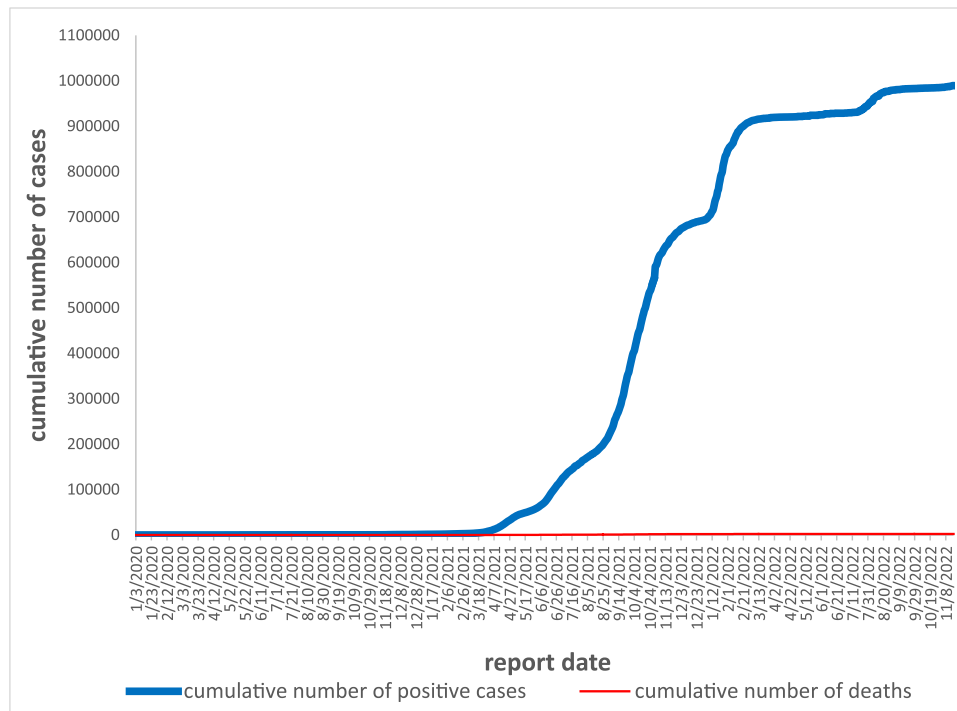


FIGURE 1 Cumulative daily positive reported cases of COVID-19 (blue line) and cumulative number of deaths (red line) in Mongolia from January 3, 2020 to November 18, 2022 are shown. There have been zero positive cases from January 1, 2020 until March 9, 2020. The number of confirmed cases remained ≤ 6 people from March 10 to March 20. The number of positive cases remained ≤ 98 people until May 15, 2020. The number of positive cases was ≤ 918 people compared with the number of deaths ($n = 0$). The cumulative number of deaths due to COVID-19 was $n = 1$ from December 18, 2020 until January 21, 2021 with a cumulative number of positive cases ($n = 1584$). The number of cumulative positive cases was 989,320 and cumulative deaths was 2133 on November 18, 2022.

cumulative confirmed cases (989,320) and cumulative deaths (2133) (Figure 1).

Collaborative actions by the WHO Mongolia, the European Union, and the Ministry of Health (MOHM) of Mongolia focused on strengthening the national healthcare system capacity. In particular, on monitoring, prevention, and control; laboratory capacity; and ensuring a continuous provision of essential healthcare services amid lockdown or transmission.¹¹ The Chinese government assisted Mongolia during the initial stages by providing facemasks, goggles, remote thermometers, rapid test kits, and thermographic cameras with the capacity of simultaneously measuring 15 body temperatures at once.⁷

Cumulative positive cases (3161) and cumulative deaths (2) were kept low until March 6, 2021.² These are evidence that demonstrated the remarkable response of Mongolian authorities in controlling the COVID-19 transmission given its proximity to the pandemic epicenter.

3 | REPERCUSSIONS OF COVID-19 ON THE NATIONAL AND HOUSEHOLD ECONOMY

COVID-19 affected Mongolia's national economy. However, the effects on local lives were unknown. To understand this, the Mongolian National Statistics Office collaborated with the World Bank and performed a survey through phone calls to track COVID-19 impact on domestic lives.¹² Participants (2000 households) were chosen from previously pooled households in the concluded National Household Socioeconomic Survey in 2018. Three phone interviews, referred to as rounds, were completed. Data collected for Round 1 was on May 22–29, Round 2 on August 31–September 7, and Round 3 on December 3–15, 2020. Round 1 covered the first lockdown (January 27), while Round 3 encompassed the second lockdown (November 12). Areas covered by the survey included monetary transmission; changes in behavior; coping mechanisms; access to information, education, financial, health services, and welfare. Employment distribution by sector among respondents before the first lockdown was in the services sector (67%), industry (32%), and agriculture (1%). The industry sector was hardest hit with a collective job loss of 71%, followed by services (50%) and agriculture (33%). Since job losses were twice as higher in the lower-income class employees and occurred even at the beginning of the first-round survey indicated that the poorer working class is most vulnerable and likely to experience wage income losses during the pandemic.¹²

Although farmers had normal operations, the increase of agriculture-engaged households experiencing income losses (from 44% to 60%) in the second to third rounds was attributed to an interrupted demand-driven supply chain due to COVID-19 rather than *Dzuds*.¹² Meanwhile, about 85% of family businesses not engaged in agriculture reported impeded operation. The impact on small entrepreneurs triggered a cascade of commodity price

increases, which were felt strongly by the poor (61%) than by rich (48%) households.¹²

The education sector was also badly affected by the pandemic. As confirmed positive case increases, the deputy prime minister suspended “classroom classes” starting December 1, 2021 onwards for kindergarten and elementary schools. However, to prevent disruption of learning among children, classes are held telephonically (using the telephone). Furthermore, education channels were organized to allow students access the lessons even without telephones. While online classes were conducted for university students.¹³ However, there are some learning activities that may require actual guided hands-on like laboratory work or clinical practice that requires live subjects. Thus, online learning should only be considered as an option during high-transmission situations when classroom classes are not feasible.¹⁴

4 | IMPACTS ON PRIMARY HEALTH CARE, POPULATION HEALTH, AND THEIR RESOLUTIONS

The Canadian Nurses Association views primary health care (PHC) as clinical health care provided to individuals through community health service.¹⁵ Meanwhile, PHC in the United States is referred to as “primary care” and is almost interchangeable with general or family medicine and may be administered by other healthcare workers but usually in a stringent facility.¹⁶

The WHO otherwise defines PHC as holistic and encompassing the whole spectrum of patient care. The scope goes beyond the conception-to-death of patients. But most important is the promotion of preventive intervention rather than just treatment.¹⁷ Foremost, WHO incorporated integrated public health services, health policy-making bodies, and social empowerment in the PHC definition.¹⁷

The new and emerging field of population health includes social environment as one of the pillar determinants that encompass financial aspects like employment and income, education, and sociocultural support. In addition to the physical environment like access to clean water, clean air, and urban planning.¹⁸

Poor urban households are most vulnerable due to the lack of proper facilities, especially when living in traditional housing such as *ger*. About 400,000 Mongols live in conditions where sanitation, ventilation, and water were installed or supplied poorly.¹⁹ The Mongolian government addressed the effects of COVID-19 on the socioeconomic sector by collaborating with the World Bank. It establishes a “COVID-19 Rapid Response Program” amounting to \$1.8 billion to alleviate the impacts of the pandemic and reduce poverty.¹⁹ Poorer sectors intended to benefit from this program are children, the unemployed, small businesses, and agriculture-engaged households in the form of economic stimulus. The assistance shall create employment and a dedicated portion to developing the country's healthcare system and improving its response to outbreaks. The Mongolian authorities intended to allocate \$71.8 million to

public health programs, \$1.3 billion to economic stimulus, and \$474 million to social protection.¹⁹ Public health programs included epidemic preparedness, testing, isolation, and contact tracing.

One of the most effective tools that Mongols have used throughout the years in providing PHC and population health care, especially the marginalized household, is volunteerism. Even before the pandemic hit the country, the Mongols have been battered by natural disasters. Thus, when COVID-19 hit the country, volunteerism once more takes the spotlight. The Mongolian Red Cross Society (MRCS) is among the largest and most active nongovernment organizations that has always been assisting the marginalized families or individuals that are in need. In response to the pandemic, the MRCS adopted and implemented the National Society Response Plan with the purpose of providing assistance to the poor and vulnerable people of Mongolia. During this pandemic, the group's priority is to provide clean water for sanitation, socioeconomic impacts, and strengthening the national society. About 184,380 people have become vulnerable due to COVID-19-related income loss. As a result, around 92% of households received food and other basic needs.²⁰

5 | COMBATting COVID-19 THROUGH HEALTH PROMOTION AND VACCINATION

Public awareness of the stay-at-home policy was high at 97% among respondents. Due to massive information dissemination, most of the participants practiced frequent hand washing (94%), wearing a face mask (93%), avoiding handshakes (97%), and avoiding gatherings (96%). There was proper education about vaccination. When asked if they were willing to be vaccinated with an approved vaccine, if free 80% were willing to be vaccinated, and 61% were willing to be vaccinated even if they had to pay. The survey afforded the chronology of groups for vaccination: healthcare professionals, senior citizens, peacekeeping officers (military and police), children, chronic disease patients, the poor, government officials, public transport workers, and young professionals.¹² Mongolia planned to vaccinate 60% of its people, which commenced on February 23, 2021.²¹

The challenge is how Mongolia will acquire vaccines with a battered economy and locked international trade. Mongolia's strategy was to turn its 2011 foreign policy resolution into a vaccination diplomacy program. The intended purpose is to foster good neighborliness with Russia and China. However, it resulted in the immediate vaccine supplies (Sputnik V and Sinopharm) provided by the two superpowers.²² Moreover, one of the pillars of the Mongolian foreign policy was to extend humanitarianism, security, politics, and economic ties with its third neighbors. It paid off as vaccines poured in from India (AstraZeneca),²³ Japan (Pfizer),²⁴ COVAX facilities (Pfizer and AstraZeneca),²⁴ and others in the form of financial aid (United States Agency for International Development) from the United States.²⁵ Furthermore, in just 8 months, Mongolia has fully vaccinated 64% of its population, with 3.5% having the first dose totaling 68% as of October 28, 2021.²⁶ The successful

vaccination rollout of Mongolia has increased the first dose vaccinated population to 96% and 92% for people who received the second dose.²⁷ The commendable vaccination program in Mongolia might be the primary contributor to keeping the COVID-19-related cumulative mortality to a low number of 2108 to date.²⁷

6 | MONGOLIA'S ROAD TO RECOVERY

Unforeseen circumstances increased the positive cumulative cases to 15,014 on April 5, 2021, when the government pronounced a COVID-free summer early that month. In addition, after the lifting of the lockdown on May 8, a series of events during the election period like the antivaccination protests and the election itself possibly contributed to the rise in local transmission. The daily positive cases ranged from 2263 to 3766 from June 14 to September 6.^{2,28} However, the daily number of deaths began to decrease (October 29, 2021). This is possibly the effect of the increased number of vaccination among its population.² It is notable that amidst the sharp increase in the cumulative confirmed cases reported, the death toll remained relatively low and even continued to decline mid-November 2021 and reduced to less than 5 death cases per day as the year ends in 2021 (Figure 1). This may be due to the increase in the vaccinated population among Mongols and reducing the risk of death upon infection.

With vaccinations rolling out, reforms on drug regulations were speeded up since Mongolia has the highest global prevalence of "fake" pharmaceuticals.²⁹ The Asian Development Bank released \$100 million in financial aid to help Mongolia's healthcare system mitigate COVID-19 transmission. The program shall make available essential medicines to improve and safeguard the procurement system of hospital supplies. In most countries, prevalent mismanagement of funds and aid led to undelivered essential medical supplies and services.³⁰ This was unlikely in Mongolia, where an integrated management system that shares databases across government agencies was implemented to improve response to similar disasters.²⁹

Economic experts projected Mongolia's economy will exhibit a 4.8% recovery in 2021 and will continue full recovery at 5.7% in 2022.³¹ Growths will be driven by increased demands in domestic markets, as much as the influx of foreign investment and increased export to the recovering markets in China.³¹ Foreign investments are driven by the resumption of the mining business climate.³¹

7 | CONCLUSION

In summary, the quick response of the Mongolian executive government to close borders was crucial to preventing the entry and spread of COVID-19. Furthermore, the collaborative efforts of the MOHM, NGOs, and international agencies strengthened its healthcare system's capability of containment and prevention. Implementation of proper hygiene and preventive distancing measures, frequent handwashing, and wearing of masks decreased the transmission risk. A correct, scientific, and fast information

dissemination is crucial to attain national cooperation among its people. A well-prepared and coordinated national action plan will facilitate effective results of preventive measures undertaken. However, to attain total welfare for all, special attention to the needs of the poorest and the most vulnerable should never be overlooked. The commendable foreign policy of the Mongolian government allowed the acquisition of the needed vaccines promptly, which has possibly saved its people from contracting the novel coronavirus. However, with the spread of various variants, Mongolia will have to acquire more effective booster vaccines to administer to its people. Moreover, the exemplary efforts of Mongolia in combating the pandemic should be emulated by most countries.

AUTHOR CONTRIBUTIONS

Jerome G. Ganzon: Conceptualization; writing – original draft; writing – review and editing. **Xu Lin:** Writing – review and editing. **Dina J. Shehata:** Writing – review and editing. **Georges Gandour:** Writing – review and editing. **Foday U. Turay:** Writing – review and editing. **Alhaji S. Bah:** Writing – review and editing. **Angel Anthony R. Camua:** Writing – review and editing. **Attaullah Ahmadi:** Conceptualization; Writing – review and editing. **Don Eliseo Lucero-Prisno:** Conceptualization; supervision; writing – review and editing. All authors have read and approved the final manuscript. Jerome G. Ganzon had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

TRANSPARENCY STATEMENT

The lead author Attaullah Ahmadi affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ORCID

Jerome G. Ganzon  <http://orcid.org/0000-0003-2650-5683>

Georges Gandour  <http://orcid.org/0000-0002-6258-7439>

Attaullah Ahmadi  <http://orcid.org/0000-0001-6687-4526>

REFERENCES

- Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed.* 2020;91:157-160.
- WHO. WHO COVID-19 Dashboard; 2022. <https://covid19.who.int/>
- WHO. Listings of WHO's Response to COVID-19; 2020. <https://www.who.int/news/item/29-06-2020-covid-timeline>
- Jargalsaikhan M. Mongolia's dilemma: a politically linked, economically isolated small power. In: Rozman G, Radchenko S, eds. *International Relations and Asia's Northern Tier*. Asan-Palgrave Macmillan Series; 2018:157-173.
- Puntsag D. Mongolian mineral export basket risk: a portfolio theory approach. *Resources Policy.* 2020;68:101691.
- Gros C, Easton-Calabria E, Bailey M, et al. The effectiveness of forecast-based humanitarian assistance in anticipation of extreme winters: evidence from an intervention for vulnerable herders in Mongolia. *Disasters.* 2020;46(1):95-118.
- Campi A. Mongolia and the coronavirus outbreak—rethinking strategies for regional integration. *Mongolian Journal of International Affairs.* 2020;21:13-49.
- Tsagaanbaatar S, Lee SY. Mongolia Confirms its First Coronavirus Case in French Worker; 2020. <https://www.reuters.com/article/us-health-coronavirus-mongolia-idUSKBN20X03F>
- Montsame. Total COVID-19 Cases in Mongolia Jump to 30, with 5 Recovered; 2022. <https://montsame.mn/en/read/222249>
- Ambaselmaa A. There are 428 confirmed cases of coronavirus infection in our country. *ikon.* 2020. Accessed December 1, 2022. <https://ikon.mn/n/21eb>
- WHO. Ministry of Health, European Union and WHO Work Together for Mongolia's Response to COVID-19; 2020. <https://www.who.int/mongolia/news/detail/30-10-2020-ministry-of-health-european-union-and-who-work-together-for-mongolia-s-response-to-covid-19>
- Uochi I. Monitoring COVID-19 impacts on households in Mongolia. *The World Bank.* 2020. Accessed March 20, 2021. <https://www.worldbank.org/en/country/mongolia/brief/monitoring-covid-19-impacts-on-households-in-mongolia>
- Saran T, Sodbaatar Y. There will be no classroom classes in high schools and elementary schools from December 1. *ikon.* 2020. Accessed December 1, 2022. <https://ikon.mn/sp/about#contact>
- Cheng HC, Lu SL, Yen YC, Siewchaisakul P, Yen AMF, Chen SLS. Dental education changed by COVID-19: student's perceptions and attitudes. *BMC Med Educ.* 2021;21:364.
- CNA. Position Statement: Primary Health Care; 2015. <https://www.cna-aaic.ca/~media/cna/page-content/pdf-en/primary-health-care-position-statement.pdf>
- AAFP. Primary Care; 2021. <https://www.aafp.org/about/policies/all/primary-care.html>
- WHO. Primary Health Care; 2021. <https://www.who.int/news-room/fact-sheets/detail/primary-health-care>
- Kindig D, Stoddart G. What is population health? *Am J Public Health.* 2003;93:380-383.
- ADB. Proposed Countercyclical Support Facility Loan-Mongolia: COVID-19 Rapid Response Program; 2020. <https://www.adb.org/sites/default/files/project-documents/54174/54174-001-rp-en.pdf>
- International Federation of Red Cross and Red Crescent Societies. Review of Mongolian Red Cross Society COVID-19 response [Press Release]. 2022. Accessed December 1, 2022. <https://www.ifrc.org/media/51048>
- WHO. Mongolia Begins COVID-19 Vaccine Rollout; 2021. <https://www.who.int/mongolia/news/detail/23-02-2021-mongolia-begins-covid-19-vaccine-rollout#:~:text=On%2023%20February%202021%2C%20Mongolia,who%20are%20at%20high%20risk>
- Stevenson A. Countries are scrambling for vaccines. Mongolia has plenty. *The New York Times.* 2021. Accessed September 21, 2021. <https://www.nytimes.com/2021/05/20/business/coronavirus-vaccine-mongolia.html>
- Batchimeg B. Mongolia receives first COVID vaccine from India. *Montsame.* 2021. Accessed September 21, 2021. <https://www.montsame.mn/en/read/254413>
- UNICEF. Over 84,000 Pfizer Vaccines Arrive in Mongolia, the First Batch of 2.5 Million Doses; 2021. <https://www.unicef.org/mongolia/press-releases/over-84000-pfizer-vaccines-arrive-mongolia-first-batch-25-million-doses>

25. DOS. *US Relations with Mongolia*; 2021 <https://www.state.gov/u-s-relations-with-mongolia/>
26. Our World in Data. *Share of People Vaccinated Against COVID-19*; 2021. <https://ourworldindata.org/covid-vaccinations?country=MNG>
27. WHO. *Mongolia Coronavirus Disease 2019 (COVID-19) Situation Report # 99*; 2022. <https://www.who.int/mongolia/internal-publications-detail/covid-19-situation-report-for-mongolia-100>
28. Battur M. Mongolia had big plans for a COVID-free summer. What went wrong? *Global Press Journal*. 2021. Accessed September 21, 2021. <https://globalpressjournal.com/asia/mongolia/mongolia-big-plans-covid-free-summer-went-wrong/>
29. ADB. *ADB to Help Strengthen Mongolia's Health Sector and Response to COVID-19*; 2021. <https://www.adb.org/news/adb-help-strengthen-mongolia-health-sector-and-response-covid-19>
30. Nayupe SF, Munharo S, Mbulaje P, Banda C, Lucero-Prisno DE. Covid-19 and fund mismanagement in Malawi: a major challenge to its effective pandemic containment. *Health Sci Rep*. 2022;5:e546.
31. ADB. *Mongolia's Growth to Gradually Recover in 2021*; 2021. <https://www.adb.org/news/mongolia-growth-gradually-recover-2021-adb>

How to cite this article: Ganzon JG, Lin X, Shehata DJ, et al. A perspective on impeding the COVID-19 pandemic: lessons from Mongolia's comprehensive countermeasure. *Health Sci Rep*. 2022:e1017. doi:10.1002/hsr2.1017