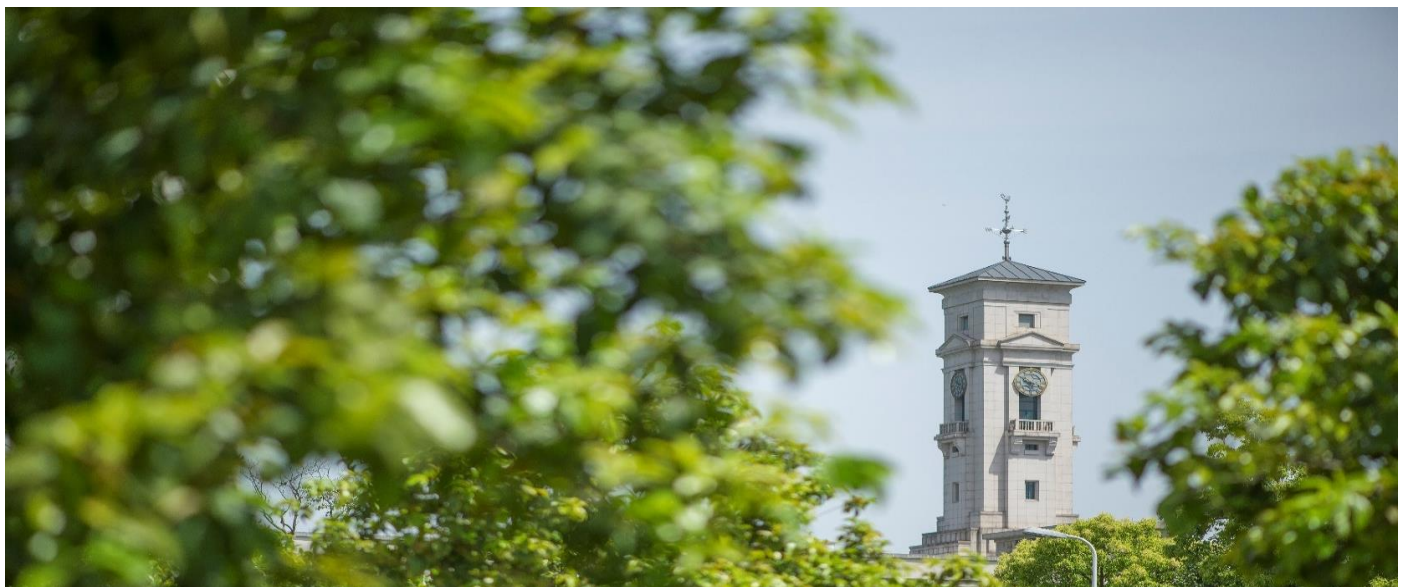


US-China Health Exchange and Collaboration in a Post-COVID-19 Era

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US-China Health Exchange and Collaboration in a Post-COVID-19 Era

Summary:

With the backdrop of a continuing pandemic, we encourage a strong US-China collaboration on health and medicine, as a crucial element of the global fight against COVID-19. We review the history of health collaboration and exchanges between the two countries' public and private sectors, including the long-lasting collaboration between governmental public health agencies of the two countries. Academic and scientific exchanges should be reinvigorated, and the increasing valuable role of nonprofit foundations acknowledged. The shared interests of the two countries and the magnitude of the pandemic necessitate both countries to collaborate and cooperate. We provide recommendations to the two governments and the global health community to control the current pandemic and prepare for future threats.

US-China Health Exchange and Collaboration in a Post-COVID-19 Era

For the last few years, trade, tariff, other economic and security issues have cast a chill on US-China relations. These have been exacerbated by events related to the COVID-19 pandemic, including who knew what/when, issues of transparency and data sharing, and public disputes between the two countries. In this viewpoint, we argue for the viability of the US-China health exchange and collaboration with a historical perspective on what had been achieved in this area, point to the urgency of such exchange and collaboration after turbulent years rife with distrust and disagreements, and outline key areas that are promising to benefit both countries.

History on US-China Health Collaboration

The US-China relationship in health and medicine has fared better than the political interface. Since the days of President Richard Nixon’s visit, scientific exchange and partnering efforts have flourished between the US and China. In early 1980, the corresponding author (Dr. Koplan) had the good fortune to be a member of the first official US government team of health leaders, to visit China promoting collaboration in the fields of Public Health and Health Services Research.^{1,2} He represented the US Centers for Disease Control and Prevention (CDC) while other team members included directors of major institutes of the National Institutes of Health (NIH) and Dr. Julius Richmond, the then US Assistant Secretary for Health. In partnership with Chinese academicians and government leaders, a long-term taskforce was formed, co-chaired by Dr. Koplan and Professor Yang Ming-Ding of Shanghai Medical University.

This promptly led to substantive collaboration – a research agenda and a supplementary issue of the *American Journal of Public Health* on public health in China with each paper co-authored by Chinese and US scholars.³ Further exchanges followed. Over the next several decades, ties flourished between the US and Chinese health research institutions. Hundreds of MOUs between educational institutions, health science centers, and hospitals have been established along with many substantive and sustained relationships.⁴

Box 1 lists a small portion of the many accomplishments in biomedical research, medical education, public health, and global health between government agencies, academic institutions, nonprofit organizations, and private sectors.

Box 1: Accomplishments of Past US-China Health and Medicine Collaborations

Sector	Collaboration	Field
Government	<p>Public Health System: The US CDC has worked together closely with Chinese public health leadership for over 35 years to develop an effective and responsive public health system in China and achieved improved institutions at the national, provincial, and municipal levels.^{2,5}</p>	Public health
	<p>Outbreak Investigation and Reporting: The China CDC Weekly, a scientific journal modeled after the US CDC Morbidity and Mortality Weekly Report (MMWR), is a collaborative effort between China and US CDCs. The journal started in 2019, reporting on outbreaks in China in English.⁶</p>	Public health

	The US-China Global Disease Detection Cooperative Agreements: From 2004 to 2014, the Chinese National Influenza Center (CNIC) and the US CDC developed cooperative agreements to build capacity in influenza surveillance in China. ⁵ The initiative led to a network of 411 laboratories and 556 sentinel hospitals (as of 2009) and a Weekly Influenza Reports, in both Chinese and English, shared among key stakeholders and published on the CNIC website.	Public Health
	The African CDC: The African CDC has benefited from US-China collaborative efforts to build public health capacity in sub-Saharan Africa. ⁷	Global health
	Combating Ebola in West Africa: US and China collaborated successfully in laboratory capacity, logistics, and drug development to combat Ebola. ⁸	Global health
	The China-US Collaborative Project for Neural Tube Defect Prevention: A partnership between US CDC and Chinese institutions to generate high-quality evidence for folic acid fortification, leading to policy changes in the US. ⁹	Biomedical science
	Human Genome Project: A collaborative effort between 20 scientific centers in six countries, China, France, Germany, Great Britain, Japan, and the US, to sequence the human genome. ¹⁰	Biomedical science
Academia	The China Tobacco Control Partnership: Strong and effective tobacco control programs of the Partnership, in collaboration with Emory Global Health Institute, the Gates Foundation, and a China-based non-governmental organization, The ThinkTank Research Center for Health Development, in 22 cities in China, have resulted in marked reductions in smoking in public places. ¹¹	Public health
	Yale University: Dating back to 1835 when Yale graduate Peter Parker opened the first Western-style hospital in China, Yale University has maintained a collaborative relationship with Chinese institutions, particularly the Central South University, whose medical graduates are eligible to be licensed in China and Connecticut. ¹²	Medical education
	Harvard China Health Partnership (HCHP): HCHP provides a platform for faculty across Harvard University to advance scholarship on China, particularly China's health systems. ¹³	Health systems
Nonprofit foundations and thinktanks	China Medical Board (CMB): Founded in 1914 with endowments from the Rockefeller Foundation, CMB strives to advance health, equity, and the quality of care in China and Southeast Asia. Key focuses of CMB include health policy and systems sciences and health professional education. ¹⁴	Medical education; Health systems
	Resolve to Save Lives: An initiative founded by a former director of the US CDC, Dr. Thomas Frieden, Resolve to Save Lives has an office in Beijing and works with Chinese	Chronic disease prevention

	institutions to prevent deaths from cardiovascular disease through hypertension control and sodium reduction policies. ¹⁵	
	Gates Foundation: Bill and Melinda Gates Foundation has an office in Beijing, working with Chinese partners to develop innovative low-cost vaccines and vaccine refrigeration equipment for low-income settings, low-cost interventions to reduce risks of HIV infection in Africa. ¹⁶	Global health

Examples abound of the productive and reciprocal health and medicine collaboration between the two governments. The China-US Collaborative Project for Neural Tube Defect Prevention, a partnership between the US CDC and Chinese institutions during the 1990s, produced landmark findings on the efficacy of folic acid and contributed to the evidence base for mandatory folic acid fortification policies in the US.^{9,17} In January 2002, the Chinese Academy of Preventive Medicine was reorganized into the Chinese Center for Disease Control and Prevention (China CDC), which was established as China’s premier public health agency. The US CDC and Dr. Koplan, who was the director of the US CDC at the time, worked closely with the newly founded China CDC and its founding director, Dr. Liming Li. The two sister agencies signed a Memorandum of Cooperation and until recently held annual director-level meetings to report on progress and exchange views on global health and collaborations. The US CDC helped China establish programs, including the China Field Epidemiology Training Program (CFETP), the Tuberculosis Prevention and Control Cooperation Project, among others. These collaborations have played a critical role in China’s responses to emerging infectious diseases, such as Severe Acute Respiratory Syndrome (SARS), avian influenza, and COVID-19, and are crucial to US global health security. The national scientific funding agencies, the US NIH and the National Natural Science Foundation, China (NSFC), have partnered to encourage collaborative biomedical research even as the bilateral relationship has soured.¹⁸

In academia, since the Carter Administration opened the door for US-China student exchange, Chinese students at every educational level, estimated at over 350,000 in recent years, are studying in the US.^{19,20} The number of Chinese students who received a doctoral degree in the United States reached 6,182 in 2018.²⁰ Many of those with biomedical training have returned to China, while some of those who came to the US earlier have taken leadership roles, such as department chairs and deanships in both the US and China. Misuse of data, challenges to intellectual property, and frayed partner relationships have occurred.²¹ But these unfortunate events have been few in comparison to the tens of thousands of trainees, faculty exchanges, and successful research collaborations in biomedical and public health. Yale University and Harvard University are two of the many US educational institutions that have long-lasting collaborations with Chinese counterparts on topics related to health and medicine.^{12,13}

Nonprofit foundations have played an instrumental role in US-China health exchange and collaboration. The China Medical Board (CMB), for over 100 years, has collaborated with medical universities and schools of public health and nursing in China to train healthcare professionals, provide incentives for doctors to stay in needy areas, and develop capacities in global health and health policy and system sciences (HPSS) in China.^{14,22} Bill and Melinda Gates

Foundation has funded initiatives in China directly and through other agencies, including Emory Global Health Institute and Resolve to Save Lives,^{11,15,16} to promote health in China and to harness the manufacturing capability in China to develop innovative and low-cost means to benefit people in need elsewhere.

To benefit the health of people in both countries, we need to maintain and support our productive, mutually beneficial medical and scientific exchanges and collaborations in every sector of the two societies.

Challenges and Opportunities in US-China Health Collaboration

Challenges to the US-China health collaboration exist, including those deeply rooted political and economic differences, acute stresses related to the pandemic, and more targeted global trends, including mental health issues, NCD, aging, urbanization, climate change that are of joint concerns. The political and economic differences need to be acknowledged and may require a long-term solution involving continuing dialogues. The other two types of challenges lend themselves to be addressed given common concerns and value of collaboration.

In recent years, even before the pandemic, steps have been taken by both countries that hinder bonds of scientific inquiry, friendship, and productivity.^{2,23} The US CDC China Office has had a significant reduction of its staff, compromising collaborative efforts.² The past several years have been stressful for Chinese scholars in the US, particularly those who have close collaborations with Chinese institutions.²³ The intensity of these stresses has increased along with those emanating from the pandemic. The conflict has been initiated and has intensified more at the higher political levels than at the scientific/technical levels.

As an unresolved pandemic continues to threaten everyone, everywhere, travel will be compromised for the near future. There will be less face-to-face collaboration, even with masking as the norm. But collaboration will continue through virtual means, with the eventual return to common practice of in-person travel and face-to-face meetings. Anticipation of one or more effective and safe vaccines may be promising but not assured. Even excellent vaccines may be introduced to a population that is skeptical, untrusting, and wary, with vaccine hesitancy a challenge. Strong US and Chinese collaboration in vaccine development and distribution would benefit both countries and the world.

There are also many inherent long-term societal and health challenges that confront both nations will only be greater in years to come, alluding to collaborative opportunities in health and medicine. These include: urban health as China experiences dramatic urban growth and develops its megacities; aging populations in both countries with expanded demands for medical and social services for older adults; environmental degradation, climate change, clean water, air, and soil; energy needs and approaches; policy and economic issues in which health has a major stake; non-communicable diseases and their risk factors, including tobacco use/smoking, diet/overnutrition, salt intake, fat intake, physical activity, diabetes, heart disease and stroke, mental health and substance abuse, arthritis and mobility and injuries.

Besides the ongoing pandemic, long-running global health challenges include fragile health systems in the low-and-middle-income countries that can be overwhelmed by an emerging infectious disease or a pandemic of chronic diseases. The US and China may complement each other in their global health aid and engagement despite differences in objectives, approaches, and where they succeed and fail. The US has extensive experience in evaluating health aid programs and may offer lessons learned. China may operate with more security and efficiency in certain geopolitical settings that are out of reach for the US. China may also complement the American prowess in technology and management with its strengths in manpower and logistics, as the US-China collaboration in combatting Ebola has demonstrated. The US also has a much larger global health workforce and more global health academic programs, supporting the scale of operation of the US global health engagement. The Chinese global health programs are limited in number and scale. Much may be shared through collaboration and exchange between the global health communities in the US and China. Global health science and knowledge will be enriched from a bi-directional exchange.²⁴

What will the post-pandemic US-China health and medicine collaboration be like? The immediate future will be challenging. However, we have so much to learn from and offer to each other that our biomedical and public health ties must be maintained and strengthened. It makes sense for US and Chinese scientists to work together on elements of the pandemic response and best practices for future pandemics.

Recommendations for US-China Health Collaboration in Post-COVID-19 Era

Looking forward, amidst the pandemic, what are the prospects for the very productive and mutually valuable US-China health exchange and collaboration?

The health and medicine collaborations between the US and China have been fruitful, as we have shown earlier. We refer to the US and China, but in reality, it is global – every nation on the planet is threatened as long as the virus circulates. Although elimination of transmission in one country may be excellent as far as that nation goes, it must prepare for the re-introduction of the virus and its rapid propagation. There is great value in our addressing the pandemic in partnerships, collegially, sharing information, being transparent, improving communications in accuracy and timeliness. The collaboration must be kept alive and nurtured to support our common interests and to address health challenges and threats.

These are perilous times threatened by a very dangerous virus and heightened political tensions. We hope new leadership in the US can help resolve our political and economic differences. There are many areas of real or potential conflict. However, health and medicine are areas where we have shown we can work together productively for mutual benefits – because we live in an interconnected world.²⁵ Collaborations and exchanges will be more important than ever. We need to learn together and appreciate our similarities and differences. We are intellectually enhanced and socially challenged by both. We all benefit from working with and enjoying each other's energy and accomplishments in research and application of our scientific findings.

We offer three immediate recommendations:

1. To weather through the current pandemic and to prepare for future outbreaks and pandemics, we need to restore partnership and collaboration on health and medicine between the US and Chinese government agencies that has been hampered by politics;²⁶⁻²⁸ The collaboration could be between the CDCs,²⁹ between the FDA and the China Drug Administration, between USAID and CIDCA,³⁰ and between the China Academy of Medical Sciences and the NIH. We welcome the announcement from the Biden Administration that the US will not withdraw from the WHO and will participate in the COVID-19 Vaccine Global Access (COVAX) Facility, providing an opportunity where the US may collaborate with the WHO and China to provide funds for countries that lack the financial resources.³¹ The two countries may go beyond the COVAX initiative to increase access to COVID-19 vaccines in low-and-middle-income countries as called upon by a recent Lancet editorial.³² With its experience and strengths in mass testing, China may team up with the US to assist African countries in testing and screening of COVID-19 cases to contain the pandemic. The US and China should work with WHO and other nations to expand the “Yellow Card vaccination record” to address needs generated by the COVID-19 pandemic.

2. To facilitate the collaboration and exchange between the academic and scientific communities that has been hindered by both political considerations and the pandemic. Scholarly exchanges continue to exist amid the tensions and the pandemic but the momentum may be dampened if the set course continues.^{33,34} Collaboration and exchange in health and medicine between academic institutions should be encouraged rather than held back. Previous missteps, such as the discontinuation of the Fulbright Program in China, should be reversed. Both sides should invest in earnest efforts to improve bilateral exchanges in science and cultural perspectives.

3. The business case for US-China collaboration on health and medicine is evident. US and China may collaborate in investing in innovations for health, expanding market access for pharmaceuticals, regulatory control of synthetic opioids, with benefits to both US and China.²⁷ There are ample opportunities for the private sector, including businesses and nonprofit organizations, to work with the governments in both countries to improve US-China collaboration on health and medicine.

Conflict of Interest Statement: Drs. Li, Wang, Chen, and Koplan declare no competing interests.

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