Smallpox Eradication
A Model for Global Cooperation

By Nellie Bristol

THE ISSUE
In order to explore the specific methods and approaches that can advance U.S.-China collaboration on matters of shared concern, the project Advancing Collaboration in an Era of Strategic Competition, a joint initiative between CSIS and the Brookings Institution, is examining a series of historical case studies that demonstrate past instances of cooperation among geostrategic rivals. This inaugural case study examines the motivations and mechanisms of joint U.S.-Soviet efforts in smallpox eradication in the 1960s and 1970s. Even during the Cold War, it argues, the two opposing powers found ways to jointly advance the eradication effort thanks to three critical factors: the facilitating role of the World Health Organization (WHO), the fact that smallpox eradication aligned with the individual interests of each superpower, and the ability of health experts and practitioners to work in relative independence of political forces.

Eradicating a human disease is an enormously complex, daunting task. Of the seven attempts so far, only the campaign against smallpox—certified as eradicated in late 1979—has succeeded. The story is even more remarkable as the effort was led by two global superpowers engaged in their most pitched competition for the hearts and minds of countries around the world. Yet, even though the Cold War prevented collaboration between the United States and the Soviet Union in its early years, it then became a major driver for smallpox eradication as the two countries sought to engage in practical applications of détente while demonstrating their respective strengths on the world stage. Smallpox eradication represented a common goal that served both countries’ domestic interests in eliminating imported smallpox cases. It also allowed the United States to embrace international cooperation as a counter to reputational damages from the Vietnam War and the Soviet Union to showcase its disease control successes. Further, the program facilitated the rivals’ continued competition for influence in developing countries while pursuing their shared faith in medicine and science as an engine of social and economic progress.

Yet, without the binding force provided by the international system—in this case, the World Health Organization (WHO)—these impulses could not have been acted upon. As the public health arm of the United Nations system, the WHO provides a forum for multinational consideration of and response to common health threats at the ministerial level and through ongoing exchanges among medical and public health professionals. Further, it facilitates vital connections with local and national leaders and on-the-ground operational support that promotes health service access in the most underserved parts of the world. All of these assets came to bear in the
achieved of smallpox eradication—considered one of the greatest public health successes in history.

Although the world is very different than it was in the mid-1900s, the story of smallpox eradication provides an inspiring, practical example of how competing world powers can find common ground on common human challenges. Further, it illustrates the invaluable role of international organizations in facilitating cooperation. As the world becomes increasingly interconnected and simultaneously confronts new global threats, including climate change and rapidly moving pandemics, human survival depends on universal commitment to international governance mechanisms that can bridge geopolitical rivalries and provide operating structures for effective action.

**ERADICATION: AN AUDACIOUS GOAL**

The campaign against smallpox is the only successful instance of human disease eradication in history. To grasp the magnitude of the feat and the mechanisms required, it is important to understand what is meant by the term eradication, what is involved, and the challenges that have prevented other attempts from succeeding.

Global disease eradication is defined as the “permanent reduction to zero” of worldwide infections caused by a specific agent “as a result of deliberate efforts.” The goal is not only to relieve humankind from a dreaded disease, but also to create a situation where intervention measures are no longer needed. This both reduces costs and eliminates potential adverse effects associated with disease control, such as rare but sometimes serious reactions to vaccination. For a human disease to be considered eradicable, it must meet specific criteria: it must have easily recognizable symptoms that are diagnosable across all geographies, infections must be limited to and transmitted only by humans, and it must be vaccine preventable or subject to elimination through other means.

Only a handful of human diseases meet the criteria. Since smallpox was eradicated, the International Task Force for Disease Eradication has assessed more than 90 potential infectious diseases and concluded that seven others could be considered candidates: polio, Guinea worm disease, lymphatic filariasis, cysticercosis (tapeworm), mumps, measles, and rubella. (Recently, malaria has also reemerged as a topic, and the WHO has reinstated yaws eradication.)

The criteria for an eradicable disease was developed through research and lessons learned from previous efforts. For example, malaria was the focus of intense eradication attempts during the early and mid-1900s, but its transmission via a nonhuman vector (mosquitoes) ultimately led to failure. Earlier attempts aimed at hookworm, yellow fever, and yaws also failed. A campaign to eradicate polio was initiated in 1988 with a hoped-for end date of 2000. Although the effort has reduced worldwide incidence of the disease by 99.9 percent, the program continues today, having now expended more than $18 billion toward the effort.

Similarly, a Guinea worm eradication program overseen by the Carter Center has reduced the number of recorded cases to 13 in 2022. So, though most of these campaigns resulted in substantial (albeit sometimes fleeting) reductions in each of the diseases, only the smallpox campaign has been able to reach its ultimate goal.

Although disease experts assert that “in theory if the right tools were available, all infectious diseases would be eradicable,” the endeavor is in fact not only technologically complex, but also in need of significant social, political, and financial commitments. Considerations include ensuring adequate resource mobilization from beginning to end without diverting those needed for other critical health priorities, strong political commitment from all parties, and identification of the disease as a control priority across a broad geography.

Educational and advocacy campaigns are a critical part of a successful campaign, as eradication involves high short-term costs.

Eradication requires ensuring that all people everywhere are no longer susceptible to the disease and thus involves reaching previously inaccessible populations in sometimes inhospitable terrain. Eradicators have employed donkeys, helicopters, boats, and motorcycles and traveled through jungles, over mountains, and through swamps. They have overcome civil wars, broken and inadequate equipment, vaccine refusal, and even targeted assassination of staff. Although many efforts face seemingly impossible odds, they also have their advantages. Eradication campaigns offer a clear, winnable objective; galvanize resources and attention for public health; and, if planned correctly, can produce longer-term health infrastructure enhancements.
The smallpox eradication campaign, for example, led to the establishment of the WHO’s Expanded Program on Immunization, which strengthens immunization programs in resource-poor countries. Infrastructure used for the polio program has aided in health emergency response and broader disease surveillance, among other contributions.

SUPERPOWERS COLLABORATE TO ERADICATE AN ANCIENT SCOURGE

Smallpox afflicted—and often killed—millions of people throughout history. Historians estimate that as many as 300 million people died as a result of the disease in the twentieth century and millions more were left with deep scarring. An ancient scourge, smallpox was active from at least the fourteenth century BCE. Inoculation efforts against it first began in China as early as the 1500s. Englishman Edward Jenner developed the first vaccine in 1796 based on viral material from cowpox.

An initiative for global smallpox eradication was first proposed at the World Health Assembly (WHA), the WHO’s governing body, in 1953. But it wasn’t until Soviet deputy minister of health Viktor Zhdanov brought a resolution in 1958 that the plan was approved. The Soviets saw the program as a way to take their own successful smallpox elimination program to the world stage while also protecting themselves from imported cases from neighboring countries. The proposal also served to push back on what they viewed as excessive U.S. influence at the WHO through advancement of a bold global health program. Although the Soviet proposal was accepted at the WHA, the move toward eradication was slow to get off the ground. The WHO was already deeply involved in a U.S.-supported global malaria eradication program that was not going well and would eventually sputter out. Malaria proved a much harder eradication target, as it involved eliminating large populations of disease-transmitting mosquitoes. Although the advent of the insecticide DDT made the prospect of eradication seem feasible, beating back the insect population to the levels required to eradicate the disease proved enduringly difficult.

Impeding the establishment of the smallpox program was skepticism among some at the WHO about the feasibility of eradication overall, and of smallpox specifically, and concern for the organization’s reputation as the malaria program faltered. The WHO began studies on smallpox, standardized the vaccine in developing countries, and provided technical assistance, but its Smallpox Eradication Program initially received minimal funding and virtually no staff.

The United States initially gave the program short shrift, viewing it as a Soviet initiative and concerned that it would compete with its own pet project: malaria eradication. Yet over time, as its foreign policy goals shifted, it changed its position. In 1967, the United States spearheaded what came to be called the Intensified Smallpox Eradication Program, backing it with financial and technical contributions, as well as personnel. With U.S. leadership and staff support from the United States Centers for Disease Control and Prevention (CDC)—and bolstered with more than a billion doses of Soviet vaccine—the intensified program overcame multiple obstacles to record the final case of smallpox in 1977 and achieved official eradication certification in late 1979.

Economist Scott Barrett describes smallpox eradication as “one of the greatest achievements of international cooperation—ever.” Although the United States and the Soviet Union drove the program, the WHO created widespread vaccination had already eliminated smallpox in North America and Europe, but cases were still occurring in South America, Asia, and Africa, and the disease killed two million people worldwide annually. Even countries with the disease largely under control were subject to outbreaks brought in by travelers from endemic countries.
platform that allowed it to be truly global. Of the $64 million contributed in cash or in kind, $28 million came from 40 countries other than the United States and the Soviet Union, including a sizable allocation from Sweden. The United States provided more than 100 technical staff, but participants also included nationals from 73 different countries who worked closely with leaders and volunteers on the ground. Five countries—the United States, the Soviet Union, Canada, the United Kingdom, and the Netherlands—produced a step-by-step manual of standard production and testing procedures that ensured an effective vaccine was available worldwide, while researchers in multiple other countries contributed important findings to the effort.

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THE UNITED STATES’ LONG PURSUIT OF DISEASE ERADICATION

The United States had long been perhaps the most ardent supporter of global disease eradication. The earliest campaigns were carried out by the Rockefeller Foundation, aimed at yellow fever and hookworm. Although both efforts failed, the image of saving the world from dreaded diseases remained incredibly attractive, especially as appropriate technologies proliferated in unison with U.S. global power after World War II. In the 1950s, the United States became a major financial and technical supporter of a WHO program to eradicate malaria, the organization’s largest undertaking at the time. The program reflected a U.S. penchant for technological fixes for social and medical problems and also served its geopolitical goals; much of the malaria campaign was focused on Southeast Asia, where the United States wanted to increase its influence as the Cold War progressed.

Despite the disappointments of malaria eradication, and the concept of eradication falling out of favor in some quarters, public health officials at the CDC were eager to prove themselves internationally and had begun responding to disease outbreaks around the globe. Those forays were supported by the broader U.S. government, reflected in a 1963 statement from President Lyndon B. Johnson: “We have the knowledge to reduce the toll of many diseases,” he said, adding that the country should be using its resources and scientific insights “to avert millions of separate tragedies of needless death and suffering.” The CDC’s interest in confronting health issues worldwide meshed with broader U.S. foreign policy goals to support a remarkably successful CDC smallpox eradication and measles control program in Central and West Africa. Starting in 1967, hundreds of physicians and technical staff from the United States supported African countries’ smallpox vaccination programs—an effort that resulted in the elimination of the disease in 20 countries by 1970 and became the model for the global program.

With the United States’ abundance of technological innovations—most visible in its space program—youthful idealism, and strong focus on internationalism, the early and mid-1960s were an optimistic and expansive period in U.S. history. Seeking to spread his vision of a U.S. society free of poverty and disease onto the global stage and anxious to bolster the country’s image as the Vietnam War dragged on, President Johnson envisioned a “Global Great Society”—an effort to promote advances in science, technology, and medicine as a cornerstone of worldwide economic development. U.S. support for smallpox eradication offered a relatively inexpensive opportunity to express that impulse. “As long as smallpox exists anywhere in the world, no country is safe from it. This dread disease spreads so rapidly, that even a single case creates the threat of epidemic. It is clear that every nation of the world, whether or not it has experienced smallpox in recent years, has a major stake in a worldwide eradication program,” Johnson said in announcing the program in May 1965.

Building on smallpox successes in Africa, the United States offered dedicated funding toward smallpox eradication through the WHO and helped initiate the intensified campaign. The program was led by Donald A. Henderson, who had been instrumental to the U.S. smallpox success in Africa, and who retained his CDC salary while working at the WHO.

In addition to aligning with U.S. foreign policy goals,
smallpox eradication had appeal domestically. The United States was still spending $15–$20 million a year controlling smallpox with a vaccine that could have severe adverse effects. This meant that though the United States eventually spent $32 million on global eradication, the country still benefited in saved costs of domestic vaccination—and, globally, benefits outweighed costs by a ratio of 400-to-1. The campaign had domestic business appeal through a “buy American” approach and through potentially expanding U.S. markets. Activities funded through the United States Agency for International Development were required to use equipment and tools made in the United States. Additionally, the program supported U.S. aims of nurturing the health and stability of developing countries to create more purchasers of U.S. goods.

By working the program through an international organization like WHO, the United States could leverage its investments by attracting those of other nations, operate in potentially hostile areas under the auspices of the largely trusted WHO, and avoid perceptions of overstepping. “To carry out our own foreign policies under the aegis of the United Nations helps America directly, as we then get credit for practicing altruism instead of power politics,” UN ambassador Henry Cabot Lodge said in 1957.

RUSSIA’S HISTORY WITH SMALLPOX

Smallpox had long been of particular concern for Russians, who lost millions to the disease throughout history. When an outbreak hit the aristocracy in the late 1700s, Catherine the Great arranged for inoculation of the nobility and championed widespread vaccination among the general population. Although deadly epidemics of the disease continued to occur cyclically, vaccination efforts continued and had a measurable effect: Between 1893 and 1898, smallpox incidence in European Russia was 7.4 per 10,000 people. It dropped to 4.4 per 10,000 by 1913.

Even so, the disease remained a major concern at the time of the Russian Revolution in 1917. As a way to show its commitment to preventive healthcare, the Soviet government issued a decree in April 1919 instating compulsory smallpox vaccination for the entire population. The move had multiple motivations, from cultivating a healthy workforce to acting as a method for claiming superiority over czarist governments and capitalist Western countries. The Soviet Union continued improving the smallpox vaccine, including ramping up production of a freeze-dried version and ensuring widespread vaccination. Through these efforts, it eliminated the disease from within its borders by 1936.

Seeking to translate the achievement to a global success—while also wanting to eliminate the hundreds of cases imported yearly from neighbors India and Pakistan—the Soviet Union pushed the WHO to initiate worldwide compulsory vaccinations in remaining endemic countries. Its contributions to the program included research, personnel, and the lion’s share of vaccines used—1.4 billion vaccine doses between 1958 and 1979.

SMALLPOX ERADICATION AND COLD WAR POLITICS

The WHO ratified its constitution in 1948, just as the Cold War was beginning. The competition between the United States and the Soviet Union for influence among the world’s countries played a major role in the organization’s early years and in smallpox eradication. For example, in protest of what it viewed as disproportionate U.S. influence in the health organization (the United States was then and remains one of the WHO’s largest financial supporters), the Soviet Union and other eastern bloc countries dropped out of the organization in 1949. The nation returned in 1956 as Nikita Khrushchev came to power with a more cooperative international vision that promoted peaceful coexistence and friendly competition, ushering in the period of détente.

The 1958 WHA marked the first Soviet appearance at the governing body since the Soviet Union’s reinstatement. Its global smallpox eradication proposal was a way to emphasize the nation’s reengagement with a bold move that would challenge U.S. influence at the organization and make its own mark on international health. Eager to welcome the Soviet Union back into the fold, delegates accepted the resolution.

U.S. investment in international health programs, including smallpox eradication, was also largely driven by self-interest and Cold War politics. Johnson administration officials saw the programs as a way to highlight U.S.
technological prowess and win “hearts and minds” in countries vulnerable to possible communist influence. As historians Marcos Cueto, Theodore M. Brown, and Elizabeth Fee suggested, “For U.S. policymakers, health work . . . seemed to provide an extraordinary opportunity to demonstrate the power of American technological expertise; to forge a link between health programs, modernization, and anticommunism; and to develop influence in newly independent developing countries.”

As one administration official put it: “I leave aside all soft-spoken questions of humanity and brotherhood. I speak only of hardheaded self-interest. The best breeding place for communism is disease and poverty. If we are going to lead the free world in its fight against the bondage of communism, we have to do something about the health of these poor people.”

Despite the Cold War rhetoric swirling above them, public health experts generally were left alone to focus on the humanitarian and technical aspects of eradication. Even though there were a variety of potential stress points between the two main supporters of the program, the sides were largely able to work out their differences quietly and effectively. For example, though Soviet leaders initially objected to having an American run the program, they later told director Henderson that they had checked him out and trusted his leadership.

Historians credit Henderson’s doggedness and savvy diplomatic skills with keeping the program on track. When it was discovered that some of the Soviet vaccine doses were ineffective, for example, he was able to have quiet conversations with his counterparts in the Soviet Union and facilitate a resolution. When the Soviet Union wanted more of its officials hired onto the program, Henderson went to Moscow to help review candidates.

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Through approaches fostered and supported at the WHO, even while engaged in a pitched battle for influence across the globe, the Soviet Union and the United States were able to harness their domestic and geopolitical self-interests and their mutual interest in using science and technology to advance human development and produce a remarkable public health achievement.

**WHO: THE WORLD’S PUBLIC HEALTH AGENCY**

The WHO was a critical focal point for smallpox eradication and continues to play an essential role in global health. Understanding the organization’s purpose and structure helps illuminate the mechanisms by which the smallpox campaign advanced, and which continue to help address the world’s most pressing issues.

As the directing and coordinating authority on global health for the UN system, the WHO’s primary purpose is to provide technical support to countries; establish global norms and standards for products and systems, such as pharmaceuticals and laboratory operations; and recognize and coordinate responses to health emergencies throughout the world. The WHO is governed by the WHA, an annual meeting of health ministers from the organization’s member states. Its executive board oversees implementation of WHA decisions, and the WHO secretariat runs day-to-day activities. Further technical support is provided by designated collaborating centers.

Supporting the organization’s decisionmaking and technical tools are expert advisory panels made up of medical and public health professionals from around the world. These bodies facilitate a global network of professionals who develop relationships with each other independent of their countries’ geopolitics. Other key governance structures include six regional authorities, country offices, and field staff. Officials in these structures foster critical ongoing relationships with country leaders at the national and local levels and support on-the-ground operations.

The smallpox eradication campaign depended on all of the WHO’s assets. Global disease eradication required buy-in from all countries, a commitment that could only be achieved through a UN organization like the WHO. The program required countries that had solid national immunization systems to muster the operational support and resources to eliminate smallpox from within their borders. Through the WHO, the United States,
the Soviet Union, and other countries could provide strategic and technical aid, along with resources and vaccines, to countries that needed it. Other countries stepped up with research and laboratory resources coordinated by the international health organization. The WHO's regional and country offices pitched in with operational structures and ongoing relationships with local and national leaders that helped countries facilitate widespread vaccination. The campaign benefited from a dedicated and focused staff equipped with the tools needed to succeed.

Even though the WHO was able to marshal its resources toward the eradication of smallpox, it often struggles to meet the many expectations placed on it. While its complicated governance structure can get in its way, the organization also suffers from vast underfunding. Although expected to serve as the public health agency for the entire world, its current budget is about the same size as that of a large U.S. hospital and one-quarter that of the CDC. As it has from the beginning, it also inevitably finds itself embroiled in geopolitics, since it caters to the sensitivities of all nations. Recently, for example, as the Covid-19 pandemic spread, WHO staff attempted to pull additional case information from a reticent China while ensuring communications channels with Beijing remained as open as possible. The WHO was required to employ maximum diplomatic skills during the event but was judged to be too conciliatory and unduly positive about China's Covid-19 response. The United States accused the WHO of being too “China-centric,” eventually leading to a temporary halt in U.S. funding to the organization.

Despite its shortcomings, the WHO has proven indispensable throughout numerous outbreaks and health campaigns. In addition to its role in improving health services worldwide and providing data, support, and guidance in the face of health emergencies, it provides an irreplaceable forum for all countries to discuss common health concerns. While health ministers meet annually at the WHA, medical and public health professionals network regularly through the WHO via expert panels and other forums. Further, WHO regional and country offices provide ongoing support to the world’s poorest countries as they strive to strengthen health services. Under the WHO, experts from more advanced health systems are able to contribute to that effort while largely avoiding geopolitical tensions they would encounter if they acted bilaterally.

Even though the United States in particular is a top bilateral contributor to international health, an effort as monumental and global as smallpox eradication could only have been shouldered under the auspices of the international system since it required universal buy-in, drew on the collective resources of a variety of contributors, and relied on an operational structure trusted in most parts of the world.

Smallpox eradication was driven by U.S. and Soviet domestic and geopolitical self-interest and came at a point when both countries were seeking to showcase their scientific and medical prowess, as well as soften their images through international cooperation and humanitarianism. But achieving those goals, especially during the Cold War, would have been impossible without the international forum and coordinating unit provided by WHO. As the historian Erez Manela has argued, “bridging the global East-West and North-South divides was crucial for the success of the [Smallpox Eradication Program], and here the WHO served as an indispensable forum. It provided an institutional framework for conceiving of disease control as a global problem, for coordinating a global campaign, and no less important, for taking credit for success that neither superpower would have wanted to cede to the other.”

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Indeed, of all the factors that came together to produce this monumental public health achievement, the WHO is still cited as the most critical factor. As the 1,460-page WHO-issued history of smallpox eradication argues: “The first and most important [factor for success]
was the existence of an international organization through which a collective international policy could be expressed and which could call on governments and individuals in fostering and coordinating activities directed towards a common purpose."

THE INTERNATIONAL SYSTEM IS CENTRAL TO TACKLING GLOBAL CHALLENGES

Through the WHO, and despite substantial bipolar global tensions, the world was able to come together to rid humankind of a deadly disease. The success was driven in large part by the United States’ and the Soviet Union’s ability to act on their domestic and geopolitical self-interests through the international system. The WHO served as a critical coordinating unit where countries could come together to provide collaborative leadership, strategic and technical guidance, resources, and operational support. Under the WHO brand, an international corps of health professionals was able to work toward a common goal in countries around the world, largely free from macropolitical forces.

Although the WHO often struggles with its complex remit, it continues to serve as an irreplaceable forum in an increasingly interconnected and complex world. Yet, as a member state organization with no enforcement power, the WHO is only as strong as the financing and cooperative commitments it receives from national governments. Several efforts are currently under way to improve the WHO’s independence and strengthen country commitments to transparency and adherence to obligations related to global health security. These efforts must also navigate the bilateral dynamics between the United States and China within the WHO, as the politics of great power competition impact each country’s engagement with the organization.

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