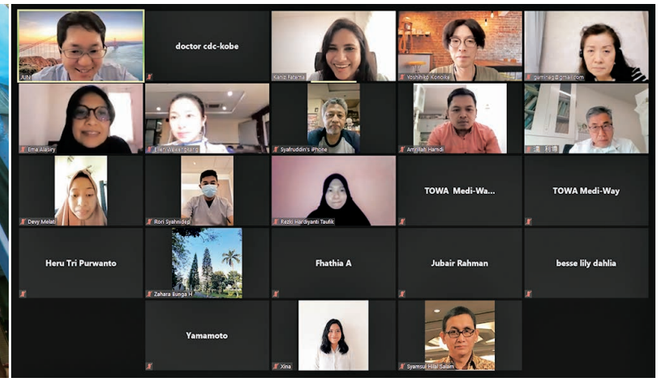
JICA MAGAZINE

4

APRIL 2022
No.004

News from the Japan International Cooperation Agency

Protecting Lives from Infectious Diseases



Protecting Lives from Infectious Diseases

Humankind has long struggled against infectious diseases, and they are still a major cause of death in developing countries. JICA has been cooperating with developing countries in the fight against infectious diseases for many years. Every effort and action taken through such longstanding cooperation has made a difference in providing effective countermeasures against the COVID-19 pandemic. This article reports on JICA's response to infectious diseases including COVID-19, featuring "prevention," "precaution," and "treatment," promoted by JICA's Initiative for Global Health and Medicine.

INTRODUCTION

Age-old global issues facing humankind

What impact is the COVID-19 pandemic having globally, and how does it differ from previous infectious diseases? And how can the international community fight infectious diseases, including COVID-19?

The COVID-19 pandemic continues to rage around the world. In this age of advanced medical science, a threat of this magnitude seems improbable, but in retrospect, humanity's history can be described as one of battles against infectious diseases.

"Smallpox is an infectious disease as old as the scars found on Egyptian mummies from 3,000 years ago. The plague epidemic of the Middle Ages killed one-third of Europeans," says OSHITANI Hitoshi, an expert on viral infections. "The risk of infectious diseases has increased as civilization has developed from family-based hunter-gatherer societies to agrarian societies where people live in groups, and then to city-states where people gather in larger numbers."

The world's first pandemic occurred in the 19th century as the great powers were expanding globally. That was cholera, which originated in India and spread worldwide. Even in the 20th century, infectious diseases regularly threatened humanity, including the 1918 – 1920 Spanish flu pandemic, which is estimated to have killed 40 to 50 million people. Some have been eradicated, such as smallpox, while re-emerging infectious diseases such as tuberculosis were once almost under control but are now spreading again. More recently, emerging infectious diseases have been newly recognized, and the World Health Organization (WHO) has increased its vigilance. These include pandemic influenza, the Ebola virus disease, and of course, COVID-19.

"There have been warning signs for a long time that such emerging infectious diseases would become a global threat. In the 21st century, the risk to humanity has dramatically increased," says OSHITANI. Considering that the world's population has exploded to over 7.8 billion and globalization has proceeded in an unregulated fashion, the risks are obvious.

Whether infections will stay localized or spread globally has a lot to do with the type of disease, according to OSHITANI. "Respiratory infections are the most likely to spread. The precondition for a pandemic is sustained and efficient human-to-human transmission. Avian influenza, for example, does not transmit efficiently between people. On the other hand, COVID-19 fully satisfies this condition."

COVID-19 has some significant differences compared to infectious diseases of the past. Most infectious diseases, including the three major infectious diseases (AIDS,

The impact of COVID-19

COVID-19 threatens the life, livelihoods, and dignity of each of us.

6.03 million people

The cumulative death toll from COVID-19 infection—according to Johns Hopkins University. The country with the largest number of deaths is the USA, at about 965,000. The total number infected worldwide is about 453 million (as of March 11th, 2022).

Over 100 million people

The number of people living on less than 1.90 USD a day, which has increased due to COVID-19 (according to the UN Department of Economic and Social Affairs in October 2021). After two decades of decline in extreme poverty since 1999, this has risen again.

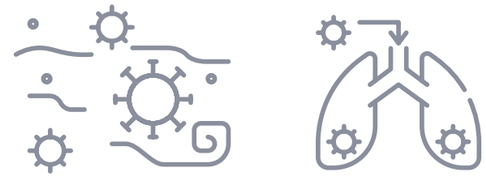
$10 trillion

The number of children unable to learn basic reading and math skills due to school closures has increased by 25%, resulting in a total loss of 10 trillion USD in future income (estimated by the World Bank in June 2020).

 Text: TAKASE Yukiko

Q&A: Basic Knowledge about Infectious Diseases

Infectious diseases vary in pathogens, infection routes, symptoms, and treatments. Below is a summary offering a basic understanding of infectious diseases.



Q What are the causes of infectious diseases?

Infectious diseases cause symptoms when pathogens that are carried in the air, soil, water, or animals (including humans) enter the body. The primary pathogens are viruses, bacteria, and parasites. Viruses are the smallest and depend on other cells to multiply. These result in such diseases as AIDS, Ebola virus disease, and polio. Bacteria are capable of reproducing on their own. Examples of bacterial diseases include tuberculosis and cholera. Parasites vary in size and shape. Examples include malaria, filariasis, and Chagas disease.

Q Are there infection routes other than "human-to-human"?

There are two main infection routes: human-to-human, and via non-human organisms or the environment (water, soil). Examples of non-human infection routes include mosquitoes (malaria, dengue fever, filariasis), dogs (rabies), drinking water, and food (cholera).

Q What is an emerging infectious disease?

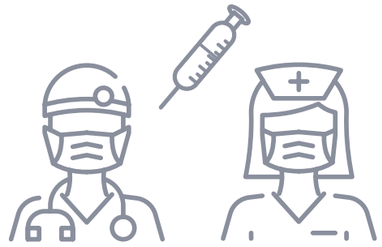
An emerging infectious disease is a disease that has been emerging or recognized in recent years, becoming a local or international public health problem. Avian influenza, SARS, and the Ebola virus diseases are well-known examples. These are difficult to prevent and treat because they spread due to unknown causes or infection routes and because it takes a long time before vaccines and treatments are available. Known infectious diseases with previously decreasing case numbers on the rise once more are called re-emerging infectious diseases.

Q Are any infectious diseases attracting attention at the moment?

Compared to the three major infectious diseases, countermeasures against Neglected Tropical Diseases (NTDs) have been lagging and need to be addressed. Mainly caused by parasites and bacteria, NTDs spread primarily in tropical areas and among the poor, causing a negative cycle of poverty and infectious disease. Currently, the WHO lists 20 diseases as NTDs, including dengue fever, rabies, leprosy, trachoma, lymphatic filariasis, and Chagas disease.

Q What are typical countermeasures against infectious diseases at normal times?

Preventive actions such as hand-washing are important to avoid the risk of contracting infectious diseases. Safe drinking water and mosquito nets to prevent infections transmitted by mosquitoes are also important. Vaccinations should be given for vaccine-preventable infections, and preventive medicines should be taken when available (e.g., antimalarial drugs). Epidemiological studies on the development of infectious diseases must be undertaken at the societal level rather than at the individual level.



Q What kinds of infectious diseases can vaccines prevent?

Proper vaccination is an effective means of making people less susceptible to disease. Vaccines for smallpox were developed over 200 years ago. Smallpox was declared eradicated by the WHO in 1980 due to global measures taken in the mid-20th century. Currently, vaccination is being promoted to eradicate polio and eliminate measles. Available vaccines also exist for diphtheria, pertussis (whooping cough), tetanus, hepatitis B, rubella, etc.

tuberculosis, and malaria), have been concentrated in developing countries, particularly in sub-Saharan Africa. The main reasons are weak public health infrastructure and inadequate medical systems. However, except for South Africa, the impact of COVID-19 in Africa is small. On the other hand, the impact is relatively large in Europe, the United States, and South America, where economic development is more advanced.

"We don't really know why. However, developing countries in Africa and Asia have much experience of the damage caused by infectious diseases. They have promptly taken the necessary measures for public health and the early detection of epidemics. Many of these countries have had some success in their initial response to COVID-19. There were surely opportunities for developed countries to strengthen their preparedness as well. But the SARS epidemic, which began in November 2002 and spread across Asia, was over in about eight months. The 2009 H1N1 influenza pandemic was less virulent and caused less damage, so it is undeniable that the sense of crisis had waned. It is unfortunate that Japan's discussion of economic revitalization based on inbound tourism, and the concentration of people in large cities, has proceeded with little or no consideration of the risk of infectious diseases."

In developing countries, accumulated measures taken so far against infectious diseases have been successful in some respects, says OSHITANI. Strengthening public health with a focus on prevention, the Expanded Programme on Immunization (EPI), and the development of cold chain systems to transport vaccines are also crucial. Added to this is the expansion of the infectious disease testing capacity and secure hospitals capable of providing intensive care to critically ill patients. In addition, the WHO and other international organizations, JICA and other aid organizations, and the governments of various countries, have developed expertise and systems now being utilized in the fight against COVID-19. "At the time of the SARS outbreak, PCR testing was available only in a few developing countries, such as Vietnam. But now, it is available in many developing countries. And we can rapidly identify when an infectious disease has broken out in any country," says OSHITANI. As the global risk of infectious diseases is expected to increase further in the future, international cooperation will become more and more important.

"There is a tremendous amount of uncertainty in measures against infectious diseases, including COVID-19. It is a series of unexpected events. Extensive experience and knowledge are needed to respond according to the evolving circumstances. Human resource development is an urgent issue, including for Japan." Another issue is that vaccines are not yet readily available in developing countries. Although the number of infected people in Africa is relatively low, vaccination rates for the entire population are below 10%. In many countries, the vaccine is not even available to medical personnel.

"The effectiveness of vaccines has been recognized, and developed countries, including Japan, have started to administer booster vaccinations. Protecting our citizens is a requirement, but it is also important from ethical and crisis-management perspectives to ensure equitable access."

This was why COVAX (COVID-19 Vaccine Global Access) was established in 2020. COVAX is an international framework that aims to ensure the equitable distribution of COVID vaccines by jointly purchasing and providing them free of charge to low-income countries. There are currently more than 180 participating countries. The fact that new variants of COVID have kept emerging, one after another, without any sign that the disease is under control clearly shows that "No one is safe, until everyone is safe." It is not enough to simply provide vaccines; we also need to promote understanding of vaccines among local populations, secure medical personnel to administer vaccinations, dispatch experts, and provide other support. Amid the restrictions on human movement caused by COVID-19, innovative approaches to cooperation with developing countries are also necessary.

Drawing on its experience in international cooperation, JICA launched its Initiative for Global Health and Medicine in 2020. It consists of three cornerstones: "prevention," mainly through the dissemination of vaccines, hand-washing, and better sanitation; "precaution," by strengthening infectious disease research, surveillance, and testing systems; and "treatment," by strengthening medical services through building, expanding and upgrading hospitals as well as investing in the capacity development of medical professionals. By addressing these three cornerstones in an integrated manner, we aim to overcome the COVID-19 pandemic and become a society that is resilient to newly emerging infectious diseases. Our efforts to combat infectious diseases in cooperation with the international community should lead to a future in which each person's health and life, livelihood, and dignity are protected.

Trainees at the KEMRI laboratory learn testing techniques, such as the key points and how to use the instruments.

1 In 2021, trainees from Uganda, Ethiopia, Djibouti, Sudan and South Sudan participated in the training in Kenya. 2 A KEMRI scientist gives a lecture on infectious disease and illness. 3 Trainees listening to the lecture. After the lecture, many questions were raised in quick succession.

LABORATORY NETWORK

Improving laboratory testing capacity across borders

To prevent the spread of infectious diseases, rapid and accurate laboratory testing is crucial. To enable this, testing capabilities and systems need to be improved not only in our own countries but also everywhere beyond our borders. Regional training for Eastern Africa to help achieve this is being conducted in Kenya.

It is essential to identify pathogens and disease outbreaks through prompt and accurate testing to prevent the spread of infectious diseases. Generally, laboratories for this purpose are set up at the national (central) level, state, province, county, prefecture, and lower administrative levels. Each level of laboratory has its own role to play within the network—they have different operating environments and test for different infectious diseases.

Laboratories at each level need to work closely together to create a nationwide system capable of dealing with infectious diseases. And if they can collaborate with laboratories in neighboring countries, they can share information on outbreaks of infectious diseases and respond in a timely manner to those that cannot be tested for in their own country. JICA is promoting the establishment of such a network of laboratories in developing countries.

One such project is the “Third Country Training of Strengthening Laboratory Preparedness for Building Resilience against Public Health Emergencies in Eastern Africa,” which is underway in Kenya, targeting 14 countries in the region.

Kenya has faced challenges from a variety of infectious diseases, including cholera, polio, measles, malaria, tuberculosis, yellow fever, Rift Valley fever, and AIDS. The Kenya Medical Research Institute (KEMRI) plays a central role in surveillance, diagnosis and research of these diseases.

KEMRI has been working alongside the Nagasaki University Institute of Tropical Medicine (NEKKEN) for many years on, among others, yellow fever and Rift Valley fever research. KEMRI has also made significant contributions to infectious disease control by developing blood test kits for hepatitis B and HIV that provide immediate results.

The training project was started in 2019 in order to share KEMRI’s experience and knowledge on infectious disease control not only domestically, but also with neighboring countries. Training is held once per year. Scientists from KEMRI and NEKKEN serve as lecturers, teaching about theories of epidemiology and infectious diseases, and the practical techniques applied in the laboratory testing system in Kenya. In 2019, about 20 laboratory technologists from nine East African countries participated in the training program conducted at KEMRI.

“In addition to classroom lectures, the training included instruction in testing techniques in the highly secure KEMRI Biosafety Level 3 laboratory. The training was well received by the participants, who by also visiting the Kenya Public Health Emergency Operations Center learned how a country should prepare and respond to a public health crisis,” says Elijah Kinyangi of JICA’s Kenya office, who coordinated the training program.

Each of the trainees’ countries differs in their public health systems and the infectious diseases they are prone to. That is why there was something to be learned for everyone, says Kinyangi. “In Kenya, we have not experienced outbreaks of highly infectious diseases like Ebola, but Rwanda and Uganda have more experience in dealing with such outbreaks. On the other hand, Rift Valley fever and other diseases have been studied in Kenya for many years. I think one of the most significant aspects of this training is being able to share our knowledge and experience of diverse infectious diseases.” From Kinyangi’s perspective, it’s clear that the participants work to improve each other’s capabilities. Even after the training was complete, the participants created a social media platform to regularly share information on the situation and developments in their respective countries.

In 2020, due to the spread of COVID-19, the training was limited to laboratory personnel drawn from the 47 counties of Kenya, while in 2021, both online training and face-to-face training in Kenya were conducted for trainees from multiple countries. This training keeps growing in importance, and will continue again this year.

 Text: HISASHIMA Reiko

Applying the Kaizen principles to hospital management

Santa Cruz Japanese Hospital in São Paulo, Brazil, has applied the concept of "5S-Kaizen," which originated in Japan, to healthcare-associated (nosocomial) infection control for the COVID-19 pandemic, achieving outstanding results.

The global COVID-19 pandemic has emphasized the importance of healthcare-associated infections (HAIs) control. At Santa Cruz Japanese Hospital in Brazil, staff members who have participated in JICA training use the knowledge they gained to prevent HAIs.

The basis of the training was "Improving Nurses' Management Skills through Kaizen," a training course for the Japanese-Brazilian community held at JICA's Yokohama International Center in 2016. The theme of 5S is a concept used to improve and maintain work environments. The acronym "5S" stands for *Seiri*, *Seiton*, *Seiso*, *Seiketsu*, *Shitsuke* (Sort, Set in order, Shine, Standardize, Sustain) and is widely used in industries such as manufacturing. Tigussa Yoshida from Santa Cruz Japanese Hospital participated in this project. "Applying 5S principles to hospital management was new to me, and I found it interesting," she says.

When she took the training and visited the site where the 5S method was adopted, she found that such an approach includes many aspects important for hospitals. "Keep your surroundings tidy and clean. This concept is essential not only for manufacturing sites but also for infection control. In particular, hand-washing frequently and keeping them clean is linked to various preventive measures. For hospitals, hand-washing symbolizes the 5S principles, and I realized once again how this basic, simple act can save the world." Yoshida currently supervises the Operating Room Scheduling Center and plans and leads HAIs control measures.

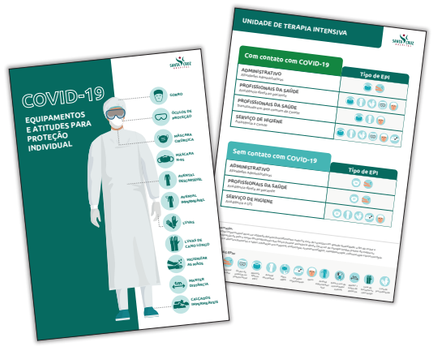
When the COVID-19 pandemic started in Brazil, the Santa Cruz Japanese Hospital also ran out of supplies for medical personnel. At that time, 1,500 protective suits and 1,000 fine particle masks were delivered by JICA, which helped a lot. However, the effectiveness of protective suits and medical masks is limited if they are not used properly. Yoshida and the hospital emphasized the importance of creating and thoroughly observing rules. The Shitsuke (Sustain) aspect of 5S covers this.

"We've put together guidelines not only for nurses but also for patients on what measures need to be taken in different circumstances. This is a digital booklet with an emphasis on visuals, so anyone can read and understand it immediately. If someone is not following the rules, they are cautioned. It's really helped the staff to share a common mindset." In addition to the Japanese 5S, Japanese hospitality (*omotenashi*) has also played a role during the COVID-19 outbreak. Established in 1939 with donations from Japanese immigrants, the hospital has a strong relationship with Japan, and the Japanese mentality has been passed down from generation to generation.

"Because the pandemic was unprecedented, our staff were feeling constant tension, and I think they were afraid to interact with the patients. However, I think they coped well with the situation because, in addition to thorough implementation of 5S, Japanese hospitality, which involves treating people with empathy and kindness, has been passed down from generation to generation here."

There are many patients with weakened immunity in hospitals, and infection can spread quickly. "To reduce nosocomial infections to zero, we reviewed the flow of patients and staff, as well as PCR testing methods, etc., to ensure strict compliance with the rules," says Yoshida. So far, there have been no nosocomial infections at the Santa Cruz Japanese Hospital, and the number of patients with COVID-19 is falling. Everyone involved in the project feels the positive effects of these nosocomial infection control measures.

Tigussa Yoshida shares 5S-Kaizen principles for hospital operations with Santa Cruz Japanese Hospital staff.



Above: Guidelines (a digital booklet) for prevention of COVID-19 were prepared by a team at the Santa Cruz Japanese Hospital. Icons were used to make the brochure easy to understand. Below: Santa Cruz Japanese Hospital was established in 1939 in São Paulo, Brazil's largest city (renamed from Santa Cruz Hospital in April 2021). Built for Japanese immigrants who were previously unable to receive adequate medical care, it was funded by the immigrants themselves and supported by Japan's Imperial Family and the Japanese government. The wider community regards the hospital highly.

Expanding the scope of testing methods

JICA, Chiba University of Japan, the State University of Campinas, and Eiken Chemical Co., Ltd., Japan conducted performance evaluation testing of the "Loopamp SARS-CoV-2 Detection Kit" which uses the LAMP method, in Brazil. This testing was carried out through the "Project for the Establishment of a Research and Reference Collaborative System for the Diagnoses of Fungal Infections including Drug-Resistant Ones both in Brazil and Japan."

Although travel from Japan to Brazil was not possible due to COVID-19, the parties utilized online conferencing tools, and took advantage of the collaborative research and technology framework cultivated through the project. After an initial preparation period of three months, performance evaluation testing was conducted for approximately 10 months. The findings indicated that both sensitivity and specificity were comparable to those of the conventional real-time PCR method (sensitivity and specificity are both indicators of test accuracy). The collaboration among these four parties demonstrated that the LAMP method can produce results more quickly than the real-time PCR method, and can detect COVID-19 in Brazil with the same accuracy as in Japan, despite the difference in environment. MORI Yasuyoshi, an Eiken Chemical executive, emphasized, "It is a miracle that we were able to conduct remote performance testing so quickly and smoothly in the middle of the COVID-19 pandemic," and expressed his gratitude, saying, "We could not have done it by ourselves."

There are high expectations that these results will serve as an important step toward improving test kits and strengthening the testing system in both Japan and Brazil, thus leading to the end of the COVID-19 pandemic as quickly as possible.

The LAMP method, initially developed by Eiken Chemical, is a rapid and simple gene amplification method. It offers fast testing times and easy handling because it is available as a kit.

 Text: KOKUBO Atsuo

REMOTE ICU

Supporting intensive care in developing countries from Japan

Intensive care units (ICUs)—the treatment of critically ill patients—are facing crippling shortages of equipment and human resources worldwide. A project has been launched in which doctors and nurses in Japan provide remote support to medical personnel in intensive care facilities in developing countries under pressure from the COVID-19 pandemic.

The COVID-19 pandemic has caused great confusion in the medical field all over the world. ICUs require advanced knowledge and technology, so developing countries have needed skilled human resources and equipment more urgently than developed countries.

However, due to border controls during the pandemic, support requiring travel to developing countries has been hindered. Considering this need, JICA launched the "Project for Capacity Development of ICU Using Telemedicine under COVID-19 Pandemic". This project connects doctors and nurses working in ICUs in developing countries and Japan via the internet to provide real-time advice on diagnosis and treatment.

The project targets about 10 countries in Asia, Pacific Islands, Africa, and Central and South America. A preliminary study for introducing the system commenced at the end of 2020, and full-scale activities commenced in July 2021, beginning with Indonesia and Kenya. T-ICU, a company commissioned by JICA to implement the project, is one of Japan's leaders in remote ICU. KONOIKE Yoshihiko of T-ICU, who is participating in the project as an intensive care specialist, says, "I think this is a unique opportunity for us to utilize our knowledge and experience from Japan for developing countries."

Firstly, arrangements are made for medical equipment and devices to be used in ICUs at partner hospitals, as well as medical containers and prefabs for use as ICUs at hospitals requiring additional units. After that, Japan is remotely connected with partner countries to support diagnosis and treatment while monitoring ICU patients' conditions. Doctors and nurses in the partner countries are instructed on the knowledge and techniques needed to give treatment in local ICUs. At the same time, Japanese doctors listen to what they need, and answer questions about potential troubles, helping them make adjustments where needed.

"The difficulty was that we couldn't travel directly to the site," says KONOIKE. For remote ICU work conducted in Japan, the hospital is visited in advance to check the actual size of the ICU, number of beds, distance between beds, and how the nurses circulate. This enables provision of accurate advice. For this project, however, since actual sites couldn't be visited, personnel had to communicate online right from the start.

For example, when doctors said that they "know" a certain procedure, it wasn't immediately clear whether they only knew of it theoretically or had the practical skills to perform it. Even so, after several training sessions, they began to understand each other better. "In fact, our counterparts are delivering medical treatment to the best of their ability with very little equipment and supplies. Initially, we thought this would be a one-sided training program where we would just teach them, but there was a lot of active discussion and questions, and it really provoked me to think about opinions different from my own."

Currently, there are about 60 doctors and nurses working on the Japanese side. "Even for people interested in international cooperation in the field of medical care, including me, the idea of working for a long time in a developing country is a major barrier. However, with remote ICU, everyone is very motivated because we can contribute to bringing quality medical care to developing countries while staying in Japan. I think this experience can be applied to the spread of remote ICU in Japan too, which is still in its infancy."

The link between medicine and IT is creating new forms of international cooperation in the health sector.

Viewing patient data and images on a monitor, Japanese ICU specialists advise medical personnel in developing countries on diagnosis and treatment policies, such as when to start using mechanical ventilators and what to do when patients do not recover as expected.

In hospitals lacking ICUs, medical containers are set up on the premises and used as hospital wards. The photos show a prefabricated ICU ward and its interior, which were preliminarily assembled in Japan. After this, it will be installed in a hospital in Kenya.

 Text: HISASHIMA Reiko

VACCINES

Delivering vaccines safely to everyone

Establishing systems for transporting and storing vaccines at low temperatures and securing medical personnel is essential. Let's look at the efforts of those trying to get more people vaccinated.

NIGERIA / TIMOR-LESTE

Strengthening the vaccination systems

Left: A vaccine carrier developed by Twinbird Corporation. It controls temperature precisely, maintaining 4°C±2°C at all times in all kinds of environments. Right: The system is vibration-resistant, enabling delivery of vaccines to remote areas while maintaining their quality.

There are many issues to be addressed before providing vaccinations, including financial resources, transportation and storage, and the availability of medical personnel. International collaboration is crucial to improving vaccination systems, and in recent years JICA has been working together with the WHO (World Health Organization), UNICEF (United Nations Children's Fund), and many other organizations. Their efforts have recently borne fruit in the declaration of Africa as polio-free.

Polio (poliomyelitis) largely affects children under five, and can leave them with paralysis in their legs and arms. Nigeria was the last country in Africa where polio was endemic. This was due to a reluctance to have children vaccinated in many areas on religious and cultural grounds, and large numbers of people being displaced by internal conflicts. However, JICA has been working to improve the testing technology of the country's national polio laboratory.

Since the 2000s, it has collaborated with UNICEF to procure vaccines and cold chain equipment, and has also conducted vaccination campaigns with the WHO and UNICEF using vaccines procured through Japanese ODA loans from JICA. The campaign introduced a new mechanism whereby the Bill & Melinda Gates Foundation would repay the Japanese ODA loans on behalf of the Nigerian government if a predetermined vaccination rate was achieved. It offers an innovative example of a public-private partnership for infectious disease control. Subsequently, in August 2020, Africa was declared polio-free (i.e., free of wild strains of polio).

It also requires ingenuity to deliver vaccines to various locations in good condition. Consider the example of Timor-Leste, where Japanese technology has contributed to this endeavor.

Vaccines need to be stored and transported at low temperatures at all times so as not to degrade in quality. In developing countries where there are many rough roads, and the power supply is unstable, one of the challenges is to secure proper methods of transport. In response to the outbreak of COVID-19, JICA teamed up with Twinbird Corporation. in the city of Tsubame in Niigata, Japan, to provide Timor-Leste with vaccine carriers utilizing Twinbird's patented technology. "We loaded the vaccine carriers onto a vehicle provided by the Japanese government, carrying more than 100 vaccines in a single carrier. The temperature of the carriers is properly controlled," says a representative of the local health department.

Power can be supplied from the vehicle's cigarette-lighter socket, making it possible to deliver vaccines to remote areas without electricity. These carriers, which leverage Japan's technological strengths, are expected to see continued use in rural areas of developing countries.

Photo courtesy of WHO Nigeria

Dr. Fiona Braka, WHO Immunization Team Lead for Nigeria, administers polio vaccines to children.

PAKISTAN

Building awareness within families

Immunization is key to preventing the spread of infectious diseases. JICA has been implementing the "Project for Strengthening Routine Immunization System in Primary Health Care Settings" in Pakistan's Khyber Pakhtunkhwa Province near the Afghan border since 2019. Pakistan has harsh environments, with mountainous areas reaching 7,000 meters in the north and desert areas in the south, and is home to many people who move seasonally. There are often no medical facilities nearby, and vaccination rates are low.

"In collaboration with health departments, we analyze the areas and timing of seasonal migration to develop and implement annual mobile routine immunization activity plans. Mobile teams consist of two vaccination workers, one supervisor—usually male in Pakistan—and one female health worker, known as a Lady Health Worker (LHW)," says project member UEKI Hikaru. LHWs are essential because male health workers are not allowed to touch women and children (besides members of their own family) due to religious and cultural reasons. Human resource development for LHWs is also conducted in parallel, but many challenges are posed by the low literacy rate of women and restrictions on their activities. In addition, fathers and grandfathers have the right to decide whether mothers and children should receive vaccinations.

"It is important to raise awareness among men," says project member MURAKAMI Izumi. "During the traditional *jirga*, a meeting of village elders and other leaders, and during prayers at mosques, correct information about vaccines is conveyed. We also held the first *jirga* for women in history." Additionally, the project focuses on developing educational tools such as family health handbooks and social media sites. "It's important to respond to residents' questions sincerely and to share information."

Above: Female vaccinators who can vaccinate mothers and children are valuable. Efforts are devoted to human-resource development for maternal and child health workers, especially Lady Health Workers.
Right: During intensive mobile routine immunization activities in the summer, awareness-raising sessions are held before vaccinations.

 Text: WAKIMOTO Akiko

Emergency assistance for the Kingdom of Tonga

In response to the volcanic eruption and tsunami disaster that took place in the Kingdom of Tonga on 15th January, JICA has been providing emergency relief goods at the request of the Tongan government, which have been transported by the Japan Disaster Relief (JDR)Team Self-Defense Force Unit.

Japan has deployed JDR and sent essential humanitarian supplies to Tonga.

The volcanic disaster has caused serious damage to people and property. According to the UN Office for the Coordination of Humanitarian Affairs (OCHA), as of 19th January, three deaths have been recorded, while around 104,000 people have been affected and 150 houses have collapsed or been otherwise damaged. Coming to the aid of the people of Tonga, JICA has been supplying emergency relief goods in the form of water, shovels, wheelbarrows, water jelly cans, goggles, dustproof masks, work gloves, hand carts, and high-pressure washing machines.

Helping Africa solve social issues on its own:

Interview with MASUDA Junko, JICA Africa Department director general

"As a result of the lockdown and other limitations on the flow of people and goods, there is now a growing momentum in Africa for the continent to solve social issues on its own, using digital technology and other means, rather than relying on other regions of the world," says MASUDA Junko, director general of the JICA Africa Department. "African people are also promoting initiatives to strengthen connectivity in relation to both the 'hard' [physical infrastructure] and 'soft' [systems, institutions, and human resources] components of society, and aim for Africa's economic unification as a continent, rather than seeking economic independence for individual countries."

Under these circumstances, JICA is supporting startup companies working to combat COVID-19 in Africa and is collaborating with the African Union Development Agency - New Partnership for Africa's Development (AUDA-NEPAD) in order to strengthen cooperation to promote regional integration within the continent.

"I respect African ownership of the development process and would like to continue to firmly demonstrate that Japan is a reliable partner for the continent. I hope to connect with Japanese people who have not been involved in international cooperation in the past, and expand our relationship with Africa in new and more flexible ways. Recently, we have been working on an initiative to utilize the manufacturing capabilities of Japanese technical college (KOSEN) students to resolve issues in Africa, while also contributing to the revitalization of local communities in Japan. We will continue to take on the challenge of innovative cooperation between Africa and Japan."

Left: MASUDA Junko, director general of the JICA Africa Department.
Right: KOSEN students and a Kenyan startup company partnered to create a livestock feed-sorting device prototype (photographed in 2019).

Witnessing Ghana's healthcare system improving lives

Prosper Naazumah Tang is program officer for Health at JICA's Ghana office and is responsible for supporting the implementation of technical cooperation projects and interventions aimed at strengthening the country's health care system. In this role, he provides advice and context to guide project experts on the execution of health-related projects in Ghana.

From his perspective as program officer, Tang has been able to witness the impact of JICA's work in the Ghanaian health sector, which he describes as "phenomenal and transformational." As an example, he describes how JICA's "Community-based Health Planning and Services" project and other novel initiatives have "translated into a massive reduction in maternal and child mortalities." Similarly, in response to the Ebola crisis and the current COVID-19 pandemic, JICA's flagship projects positioned Ghana's Noguchi Memorial Institute for Medical Research as "the cradle of excellence in West Africa." The institute has not only carried out approximately 80% of Ghana's COVID-19 testing at the peak, but also provided other West African countries such as Liberia and Sierra Leone with testing support.

Having worked as an ex-counterpart for JICA projects himself, Tang has witnessed how the organization's people-to-people connections and practical development of human resources have "helped strengthen collaboration and elevated the impact and sustainability of JICA initiatives" in Ghana. Tang praises the "high level of commitment, discipline, timeliness, positive mindset, and desire to achieve results" of Japanese experts. And through the transfer of knowledge and skills that comes from the field-orientated collaboration between Ghanaian officials and Japanese experts, Tang himself has been able to assimilate such qualities. Tang describes JICA's unique approach as one in which "different people are encouraged to innovate to overcome barriers or bottlenecks and set the foundation for achieving results or targets."

Working at JICA, an organization "with comprehensive support that has improved the lives of many deprived or poor people in Ghana," is very motivating for Tang. He says, "I feel extremely proud to be able to showcase the influence and sustained impact of JICA-supported projects on the development of healthcare in the country. A fundamental challenge that needs attention is the limited understanding of JICA's project formulation and implementation processes by major counterparts in the health sector. Here, I can play an important role as a bridge between the JICA and Ghanaian counterparts. Promoting counterpart engagement on JICA project formulation and implementation processes to involve them deeply in the process and enable them to lead JICA projects by themselves, is what I intend to initiate." In the future, he hopes to contribute to materializing solid healthcare delivery in Ghana. "I see the delivery of quality healthcare as a major step towards improving human capital development." Thanks to JICA, the country has "witnessed an improved healthy population that has transformed Ghana and drives productivity for economic development."

Tang with a JICA Senior Representative on a business trip to assess health facilities preparations against the COVID-19 in Northern Ghana. (Northern Regional Public Health Reference Lab)

Program Officer for Health,
JICA Ghana
Prosper Naazumah Tang

JICA's comprehensive support for Vietnam's fight against the pandemic

Dang Duc Anh

Director of National Insitute of Hygiene and Epidemiology

Biosafety Level 3 (BSL3) laboratory at the National Institute of Hygiene and Epidemiology supported by JICA

Over the years, the National Institute of Hygiene and Epidemiology has received valuable support from JICA to control infectious diseases in Vietnam and to improve people's health.

This support and collaboration includes cold chain logistics for children's immunization programs since the 1990s. Starting in 2006, JICA has also supported Vietnam in safety and biosecurity, including the building of Biosafety Level 3 (BSL3) laboratories at the National Institute of Hygiene and Epidemiology and the Pasteur Institute in Ho Chi Minh City.

At the National Institute of Hygiene and Epidemiology, JICA has supported the construction of four BSL3 laboratories. These were the first BSL3 laboratories in Vietnam. It was an important cooperation project and contributes to Vietnam's capacity in controlling endemic infectious diseases, and especially in dealing with pandemics in the early years of the 21st century, such as SARS-CoV, avian influenza A(H5N1), and the current COVID-19 pandemic.

Currently, JICA is providing the equipment and technical support to set up BSL3 laboratories for the Pasteur Institute in Ho Chi Minh City, which are expected to be completed and put into operation in 2022, helping support the south of Vietnam.

In addition, the project provides training in biosafety practices for the entire health system. At the time of construction, biosafety capacity in Vietnam was almost non-existent, but now the entire health system is doing very well in that respect. BSL2 laboratories are standardized, medical staff trained, and certified in biosafety. Biosafety regulations are also issued nationwide.

During the COVID-19 pandemic, JICA has also provided timely support with diagnostic biological products and equipment for the preventive medical system in order to assist in rapid diagnosis and support the cold chain system for the COVID-19 vaccine in response to the largest vaccination campaign ever in Vietnam.

JICA's comprehensive support of the National Institute of Hygiene and Epidemiology, in particular, and the health system in general, has helped Vietnam significantly improve its capacity in infectious disease control and health security.

PROFILE

Professor Dang Duc Anh has been director of the National Institute of Hygiene and Epidemiology since 2015. He graduated from Sofia University, Bulgaria in 1988, obtained a master's degree in Medical Biology from the University of Amsterdam in 1995, and a Ph.D. in 2001 from the National Institute of Hygiene and Epidemiology Vietnam. He has 30 years' experience in microbiological and epidemiological research of emerging and re-emerging infectious diseases such as SARS-CoV, avian influenza A(H5N1), cholera, and dengue fever. He has also dedicated his time to many clinical trial studies.

JICA's WORLD has been rebranded as JICA Magazine starting from the JULY 2021 issue.

JICA MAGAZINE is published by **JICA**

Publisher: TAKEDA Sachiko Media and Public Relations Department
Nibancho Center Bldg. 5-25 Niban-cho, Chiyoda-ku, Tokyo 102-8012, Japan
Tel: +81-3-5226-6660 Fax: +81-3-5226-6396
https://jicamagazine.jica.go.jp/en/

Edited in cooperation with CCC Media House

Cover: JICA on the Global Front Line Against Infectious Diseases