# CDC Global:
## A Year of Action and Impact

CDC

## 2024 Annual Report

Accessible version:
www.cdc.gov/global-health/annual-report-2024/index.html

# 2024 CDC Global: A Year of Action and Impact

At the U.S. Centers for Disease Control and Prevention (CDC), we know that it can take just one person on one plane to turn a local outbreak into a global pandemic. In a year marked by multiple deadly infectious disease threats, CDC's global health investments have proven more valuable than ever.

CDC is often the first call when outbreaks strike globally, thanks to the trusted relationships CDC has built over time with governments, Ministries of Health, and other partners. In 2024, CDC responded to:

New health threats, like Clade I mpox, crossing borders and reaching the U.S.

High-risk pathogens, like Marburg, emerging in new areas of the world

Resurgences of vaccine-preventable diseases, like measles and polio

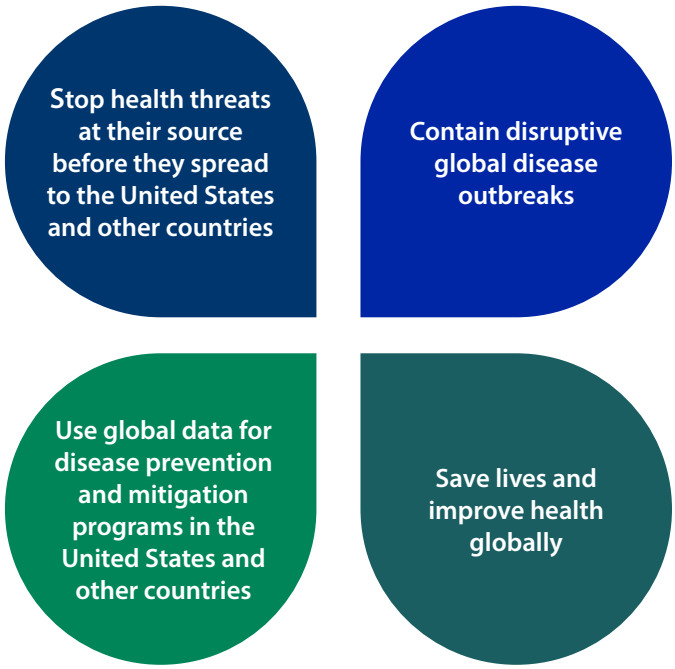
The stories in this report highlight work done in 2024 through the lens of **CDC's Global Health Strategic Framework**, which outlines CDC's six core global public health capabilities:

- **Data & Surveillance** to rapidly find and understand the spread of disease
- **Laboratory** capabilities to accurately identify health threats
- **Workforce & Institutions** to have people with the right skills in the right places at the right time
- **Prevention & Response** to keep people in the U.S. and the world healthy and safe
- **Innovation & Research** to get ahead of existing and emerging challenges
- **Policy, Communications & Diplomacy** to grow the connections that enable success

These stories illustrate how CDC's global work is building a safer world. For example, in 2024 we witnessed the first country-wide adoptions of malaria vaccines – a global milestone years in the making. And, exactly ten years after the devastating West Africa Ebola outbreak, a whole region has been transformed with stronger, more responsive public health systems.

Also in these pages are stories of new innovations, including mosquitoes that cannot transmit dengue to people, how a single idea is empowering a whole generation of teens against HIV, and other CDC efforts that effectively contain the spread of disease.

Together, all of this moves us closer to the four goals set forth in the strategic framework:




CDC works hand-in-hand with countries and partners through global initiatives and programs like the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the President's Malaria Initiative (PMI), global health security, influenza, antimicrobial resistance, and immunization.

CDC's global engagements bring the agency's technical expertise to our counterpart agencies around the world. These partnerships build countries' core capabilities, enabling country governments to pivot swiftly toward identifying, reporting, and controlling outbreaks when every minute counts.

CDC protects the U.S. by strengthening global preparedness for the next health emergency. We work to investigate emerging infectious diseases, reduce morbidity and mortality, and eliminate some of the world's deadliest threats. We forge stronger diplomatic relationships, work to prevent economic losses, and drive future innovations that increase health security for the U.S. and across the world.

# CDC's Global Health impact: by the numbers

## Data & Surveillance

**30+** global health threats monitored each day through CDC's event-based surveillance system in 2024

**70+** countries working with CDC to track the presence of and increases in antimicrobial resistance and improve antibiotic and antifungal use

**120+** countries working with CDC to monitor for increases in – or variants of – respiratory diseases

## Laboratory

**190** countries working with CDC to strengthen laboratory detection of vaccine-preventable diseases and emerging pathogens

**1800+** laboratories and clinical sites working with CDC to strengthen molecular testing capacity for HIV, TB, and other diseases

**41** countries applying CDC training and resources to empower laboratory leadership and strengthen national public health laboratories

## Workforce & Institutions

**182** CDC-trained disease detectives responding to Rwanda's first-ever Marburg virus outbreak

**32** countries and 5 regions partnering with CDC to develop and strengthen their own National Public Health Institutes

**3200+** CDC experts trained and ready to engage in domestic and international emergency responses

## Prevention & Response

**44** countries assisted by CDC immunization experts to respond to outbreaks of vaccine-preventable diseases, including measles

**26** countries working with CDC to identify barriers and solutions to ensure outbreaks can be detected in less than 7 days, reported in 1 day, and responded to within 7 days using the 7-1-7 approach

**11K +** country staff trained by CDC in 2024 on readiness and response capabilities like field epidemiology, infection prevention and control, serology, and disease surveillance

## Innovation & Research

**3** global regions collaborating with CDC to scale up wastewater and environmental surveillance platforms for early outbreak warning

**20** countries in Africa planning for roll out of malaria vaccines developed in partnership with CDC

**10** countries in the Americas, Africa, and Asia partnering with CDC to expand, integrate, and automate the data needed for public health responses

## Policy, Communications & Diplomacy

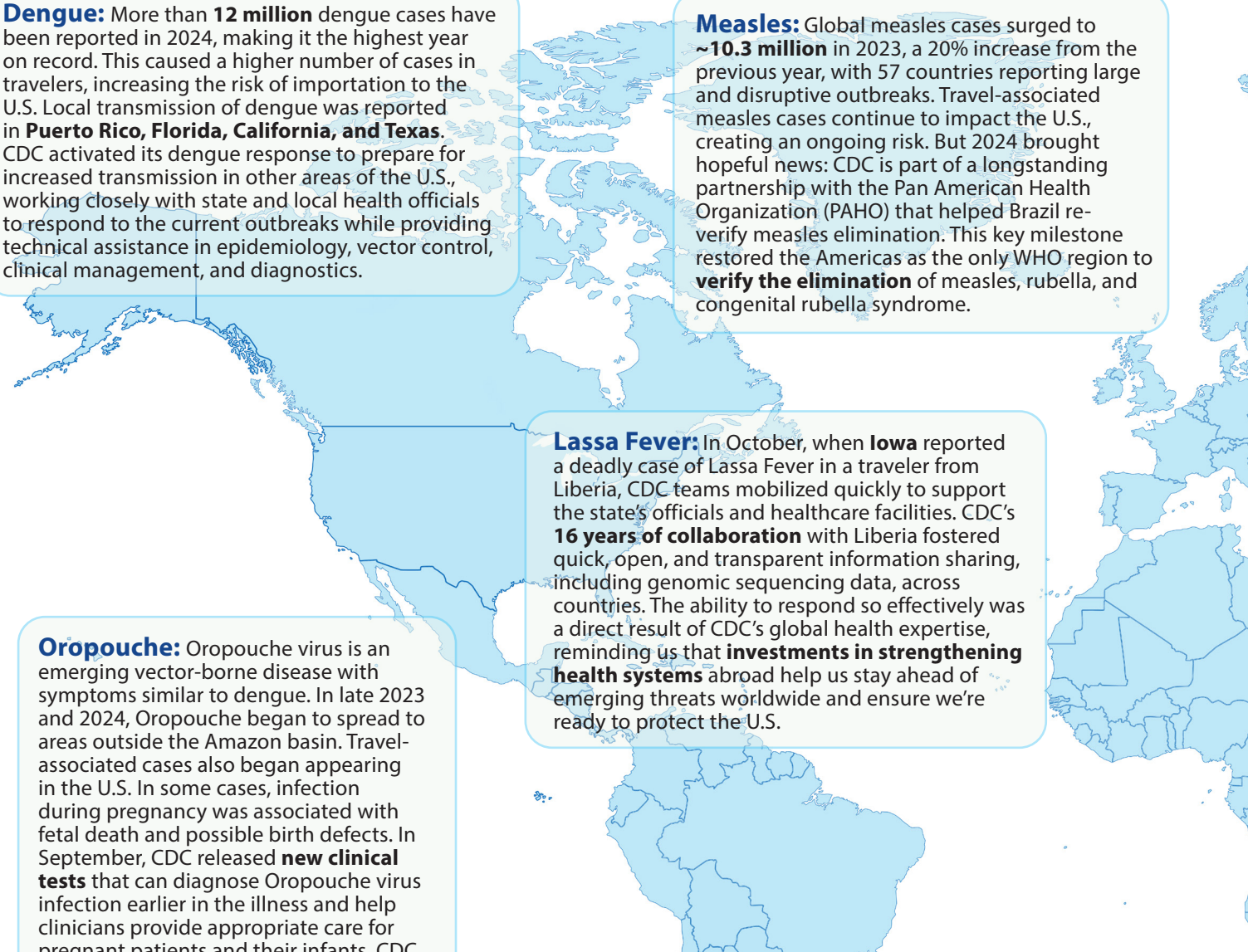
**1000** partners in 105 countries using CDC's Undetectable=Untransmittable (U=U) resource guide to promote consistent HIV treatment that helps stop the spread

**~560** public health officials trained on international public health law and methods for enhancing legal preparedness across CDC, regional, and partner networks

**100** countries around the world working in partnership with CDC and the U.S. through the U.S. Global Health Security Strategy

# A disease threat anywhere is a threat everywhere.

It can take less than 36 hours for an outbreak to spread from a remote village to major cities on six continents. These selected 2024 responses highlight CDC's work toward the Global Health Strategic Framework goal to stop health threats at their source before they spread to the United States and other countries.



**Dengue:** More than **12 million** dengue cases have been reported in 2024, making it the highest year on record. This caused a higher number of cases in travelers, increasing the risk of importation to the U.S. Local transmission of dengue was reported in **Puerto Rico, Florida, California, and Texas**. CDC activated its dengue response to prepare for increased transmission in other areas of the U.S., working closely with state and local health officials to respond to the current outbreaks while providing technical assistance in epidemiology, vector control, clinical management, and diagnostics.

**Measles:** Global measles cases surged to **~10.3 million** in 2023, a 20% increase from the previous year, with 57 countries reporting large and disruptive outbreaks. Travel-associated measles cases continue to impact the U.S., creating an ongoing risk. But 2024 brought hopeful news: CDC is part of a longstanding partnership with the Pan American Health Organization (PAHO) that helped Brazil re-verify measles elimination. This key milestone restored the Americas as the only WHO region to **verify the elimination** of measles, rubella, and congenital rubella syndrome.

**Lassa Fever:** In October, when **Iowa** reported a deadly case of Lassa Fever in a traveler from Liberia, CDC teams mobilized quickly to support the state's officials and healthcare facilities. CDC's **16 years of collaboration** with Liberia fostered quick, open, and transparent information sharing, including genomic sequencing data, across countries. The ability to respond so effectively was a direct result of CDC's global health expertise, reminding us that **investments in strengthening health systems** abroad help us stay ahead of emerging threats worldwide and ensure we're ready to protect the U.S.

**Oropouche:** Oropouche virus is an emerging vector-borne disease with symptoms similar to dengue. In late 2023 and 2024, Oropouche began to spread to areas outside the Amazon basin. Travel-associated cases also began appearing in the U.S. In some cases, infection during pregnancy was associated with fetal death and possible birth defects. In September, CDC released **new clinical tests** that can diagnose Oropouche virus infection earlier in the illness and help clinicians provide appropriate care for pregnant patients and their infants. CDC also expanded its ArboNET system to **pick up cases in the U.S.** and has been working with partner countries to clarify the risks during pregnancy and potential harm to unborn babies.

**New World screwworm:** CDC initiated a human health response to New World screwworm (NWS) infestations in Central America in 2024. Previously eliminated from Central and North America, this health threat poses a **significant economic and veterinary concern**, as the fly larvae largely affect livestock. In partnership with the U.S. Department of Agriculture and Department of State, CDC developed and shared human health information on the prevention, detection, and clinical management of NWS. CDC's parasitic morphology lab serves as a national reference laboratory for the species identification of NWS larvae from humans.

**Polio:** For the first time in nearly 20 years, variant polio was detected in Gaza in 2024. Polio anywhere represents a polio **threat everywhere**. When positive environmental samples were identified in July, CDC quickly sprang into action together with its partners in the Global Polio Eradication Initiative (GPEI) to plan a response. CDC worked with GPEI and U.S. Government partners on a critical vaccination campaign to help prevent an outbreak. Nearly **95%** of the eligible children in Gaza were vaccinated for polio, despite the ongoing conflict. Stopping outbreaks at their source is essential to reaching our goal of a polio-free world and advances CDC's Global Health Strategic Framework goals.

**Mpox:** In 2024, outbreaks of clade I mpox across Central and Eastern Africa led to a Public Health Emergency of International Concern declaration by WHO. CDC's **longstanding partnership** with the Democratic Republic of the Congo (DRC) building core capabilities – including strengthening laboratories, increasing diagnostic capacity, and training disease detectives – helped the DRC government respond faster. CDC, through the National Security Council-approved **Playbook for Biological Incident Response**, is leading a team of 15 U.S. Government departments and agencies, working with partners in **Africa and in the U.S.** to improve surveillance, case investigation, contact tracing, vaccine distribution, case management, lab capacity, infection prevention and control, emergency management, and risk communication and community engagement, while sharing guidance and subject matter expertise. Due to CDC's **extensive preparation** for imported cases, the first clade I mpox case in the U.S. was detected and laboratory-confirmed quickly and immediately contained with no further spread.

**H5N1 bird flu:** CDC's experts have worked globally for decades to ensure country partners can detect and respond to novel influenza cases, allowing CDC to assess the pandemic potential of novel viruses and stopping novel influenza at its source. The recent successful public health responses to human cases of bird flu in Cambodia and Vietnam highlighted the critical work of CDC's 20+ year involvement in the region, which has resulted in strengthened surveillance and lab capacity, trained responders, effective relationships and technical exchanges with local governments and other partners, and a strong CDC regional presence that readily provided outbreak support to identify and prevent additional human cases.

**Marburg:** In September 2024, Rwanda reported their first recorded outbreak of Marburg virus disease (Marburg), a rare, severe viral hemorrhagic fever that can have up to a 90% fatality rate. CDC has maintained an office in Rwanda helping to fight the HIV epidemic through PEPFAR since 2002, building up workforce, laboratory, and other public health capabilities that Rwanda leveraged for the response, including in-country disease detectives trained through CDC's Field Epidemiology Training Program. CDC deployed subject matter experts **within 72 hours** of being notified of the outbreak by the Government of Rwanda while also successfully **preparing the U.S. against potential imported cases**. CDC led the U.S. Government response according to the NSC Playbook for Biological Incident Response, partnering with Rwandan health authorities across the pillars – infection prevention and control, laboratory, and surveillance – to contain the outbreak by December.

# Data & Surveillance

**In 2024, CDC strengthened core data and surveillance capabilities to find and face emerging and re-emerging health threats.**

## Insights for action

CDC plays a leading role in designing and implementing nationally representative country-led surveys, like Population-based HIV Impact Assessments (PHIA) that measure the impact of HIV treatment and prevention programs in PEPFAR-supported countries. During 2024, CDC worked with local and government partners to plan and implement 9 national and sub-national PHIAs in 7 countries. **PHIAs provide powerful insights that allow countries to focus efforts where they are most needed.** For example, results from Tanzania's CDC-supported PHIA published in 2024 showed that, of all people living with HIV aged 15 and over, 83% knew their status and 78% had reached viral suppression – up from 61% and 52% in the previous PHIA from 2018. These findings demonstrate the success of the government of Tanzania's response to HIV in partnership with PEPFAR.

**GLOBAL ACTION:** *CDC **increases** detection of respiratory pathogens of epidemic and pandemic potential through global strategic initiatives like the Preparedness and Resilience for Emerging Threats initiative*

## Disease elimination

The malaria-causing parasite species spreading in Cambodia, *Plasmodium falciparum*, was resistant to the drugs used to fight and cure it. Through the President's Malaria Initiative (PMI), CDC helped evaluate the effectiveness of antimalarial drugs and incorporate drug resistance monitoring as part of routine malaria surveillance and response. Thanks to sustained U.S. Government efforts, there have been **no documented cases** of *P. falciparum* since January 2024. This lowers the potential risk of drug-resistant malaria spreading, including to the U.S.

## Innovative platforms

Candida auris, an emerging antimicrobial-resistant fungus, is often resistant to first-line treatment, and cases resistant to all available treatments have been identified in several countries. CDC provided technical expertise to develop and pilot a protocol incorporating detection of antimicrobial-resistant fungi into WHO's Global Antimicrobial Resistance Surveillance System (GLASS). The GLASS-Fungi platform was officially launched by WHO in 2024, accepting Candida surveillance data from participating countries and providing valuable data to **inform national and global strategies** to prevent these dangerous infections.

## Cross-border collaboration

CDC partners with the U.S.-Mexico Border Health Commission to address a wide range of priority infectious diseases along the U.S. and Mexico border. For example, healthcare authorities in the U.S. and Mexico work together to prevent **further transmission of TB** through the innovative Binational Border Infectious Disease Surveillance program (BIDS). An example of this is BIDS' Imperial County and Mexicali Binational Tuberculosis (TB) Contact Investigation Project, which as of 2024, has successfully identified 150 TB cases with 559 binational contacts—people living, working, or studying in the neighboring country. This allowed for contacts to be tested and treated by local health departments or community health workers to stop TB spread. Diseases don't recognize borders, but strong binational cooperation can help address public health challenges and improve outcomes in both countries.

**DID YOU KNOW?** *CDC **monitors** for different respiratory and other pathogens entering the U.S. through its Traveler-based Genomic Surveillance program, which also helps understand infection levels in travelers' countries of origin*

A live bird market in Cambodia. Credit: CDC Staff

# Global data helps inform H5N1 bird flu risk assessments

Although H5N1 has been circulating among wild birds and poultry globally for decades, 2024 marks the first time it was detected in dairy cows in the U.S. Following detection in dairy cows in March, a human case was detected in April in a dairy farm worker in the U.S.

The specimen from the human case was sent to CDC, where H5N1 was confirmed. CDC's experts also conducted genetic sequencing and analysis, including comparing the virus to other recent H5N1 human cases from Chile, Cambodia, and Vietnam. Comparing these contemporary viruses to previously circulating H5N1 bird flu viruses helps CDC monitor for genetic changes in the virus.

This information is used to assess the risks to human health, including assessing severity and transmissibility, which informs U.S. Government preparedness and response. CDC has spent decades building surveillance infrastructure across the globe that detects novel influenza viruses worldwide to better protect Americans from these infectious disease threats.

This example illustrates how **global data informs disease prevention and mitigation programs in the U.S.** and other countries. It also underscores one of our global priorities: sharing sequences across human and animal sectors so we can compare them and assess evolving public health risks. CDC's contribution to sequencing around the world has **built platforms that are applicable across diseases, strengthening public health understanding and response.**

*CDC works with global partners to enhance influenza data reporting, ensuring that the data captures a wide geographic representation of which influenza viruses are spreading around the world.*

*This information is critical for deciding which vaccine viruses to include in seasonal flu vaccines and helps target flu vaccines against the viruses that are currently circulating—including U.S. flu vaccines that help protect Americans from severe flu illness.*

# Laboratory

**In 2024, CDC improved core laboratory capabilities critical for detection and action on high-priority pathogens.**

## Efficient methods

CDC transformed our global Xpert Tuberculosis (TB) Proficiency Testing program into a multi-region, sustainably funded, and locally led operation with more than 1,400 testing sites across **27 countries**. This increases local laboratory capacity, speeding TB diagnosis and appropriate treatment. The program improved testing turnaround time from 3-9 weeks to ~2 hours.

## Disease elimination

In October 2024, WHO announced that trachoma – the world's leading infectious cause of blindness – had been eliminated as a public health problem in Vietnam. CDC scientists developed a serology (antibody) test to help countries that have eliminated trachoma as a public health concern with ongoing monitoring for the disease. Five countries have already used the test to validate that trachoma has not come back. CDC provides **scientific expertise** to ensure other countries have the capabilities to control and eliminate key neglected tropical diseases as part of our role as a WHO Collaborating Center for Trachoma.

**GLOBAL ACTION:** *CDC **strengthens** laboratory capacity globally, including helping more than 400 labs achieve international accreditation through the Strengthening Laboratory Management Toward Accreditation program*

## Threat containment

The war in Ukraine has stressed health systems, creating an environment where antimicrobial-resistant bacteria can thrive and quickly spread – **including across borders**. With technical expertise from CDC, and in collaboration with our Ukraine country office and Eastern Europe/Central Asia Regional Office, the government of Ukraine is improving rapid and accurate detection of AR threats by improving critical laboratory skills, equipment, procedures and practices. Reducing the spread of AR will protect Ukrainian civilians, soldiers, and allies in the region, and **ultimately protect Americans** by reducing the likelihood of further global spread.

**DID YOU KNOW?** *CDC **detects and responds** to antimicrobial-resistant threats alongside partners in 50+ countries through the Global AR Lab and Response network*

## Cutting-edge knowledge

In March 2024, the CDC Polio Essential Facility (PEF) received an Interim Certificate for Containment from the Global Commission for the Certification of Poliomyelitis Eradiation. The CDC PEF is a WHO reference laboratory that performs the **largest volume of testing** for the global polio eradication campaign. The CDC PEF is the sixth facility in the world to receive this certification, demonstrating the unique global status of CDC's polio laboratory and operations and the agency's leadership in the eradication of poliovirus.

***Public health laboratories with strong quality, biosafety and biosecurity measures are the key to early detection and response to pathogen threats.***


Scientists from Oman CPHL and Wyoming engage in open discussions. Credit: Rajesh Kumar-Oman APHL

# Innovative "lab twinning" approach benefits U.S. and Oman

When CDC opened its Middle East/North Africa Regional Office in Oman in 2020, one of the top priorities identified by the Ministry of Health was strengthening laboratory capacity. Recently, a first-of-its-kind "lab twinning" program matched the Oman Central Public Health Laboratory (CPHL) with laboratories in Wyoming and Oregon, delivering **benefits for both countries**.

With the help of the Association of Public Health Laboratories, the program sent two groups of Omani laboratory experts to U.S. State Health Laboratories in Wyoming and Oregon. While there, they received hands-on training in advanced molecular detection, whole genome sequencing, and bioinformatic data analysis. Next, the U.S. laboratorians made three visits to Oman to help enhance analysis at CPHL using in-house generated data.

Dr. Hanan Al Kindi, Director of the Oman CPHL, says the twinning program has had transformative impact for scaling up CPHL's next generation sequencing capabilities. In an outbreak, labs use next generation sequencing to rapidly diagnose the pathogen, track the spread and variant type, and formulate the right response. Since CPHL serves as a WHO regional reference laboratory, enhancing these capabilities **helps make the whole region safer**.

But, according to Dr. Josef Reed, Director of the Wyoming State Laboratory, the benefits go both ways. "The twinning program has significantly broadened Wyoming scientists' expertise," he says. "This partnership has been instrumental in **advancing public health capabilities** across both regions."

***Lab twinning is a matchmaking process that:***

- ***Connects** labs that have similar technologies for peer-to-peer learning*
- ***Strengthens** capabilities that help identify and respond to outbreaks*
- ***Builds** long-term relationships between the U.S. and other countries*

***U.S. laboratory experts say the twinning experience has resulted in ongoing knowledge sharing and fostered long-lasting collaboration with their counterparts in Oman.***

# Workforce & Institutions

**In 2024, CDC empowered a network of epidemiology, clinical, and laboratory professionals to tackle present and future threats.**

## Skilled responders

When Uganda's Kasese district detected the country's first case of clade Ib mpox on July 15, CDC-supported Field Epidemiology Training Program (FETP) fellows from CDC's Uganda country office **immediately deployed** for case investigation and contact tracing, identified transmission links, and educated healthcare workers and the public. FETP investigations identified a major trend in the community: fishermen and commercial sex workers were experiencing higher rates of transmission. CDC and the Ministry of Health used this **new insight** to target resources for mpox detection and response.

*CDC broadens global knowledge and expertise through a **network of country and regional offices** and placement in international organizations.*

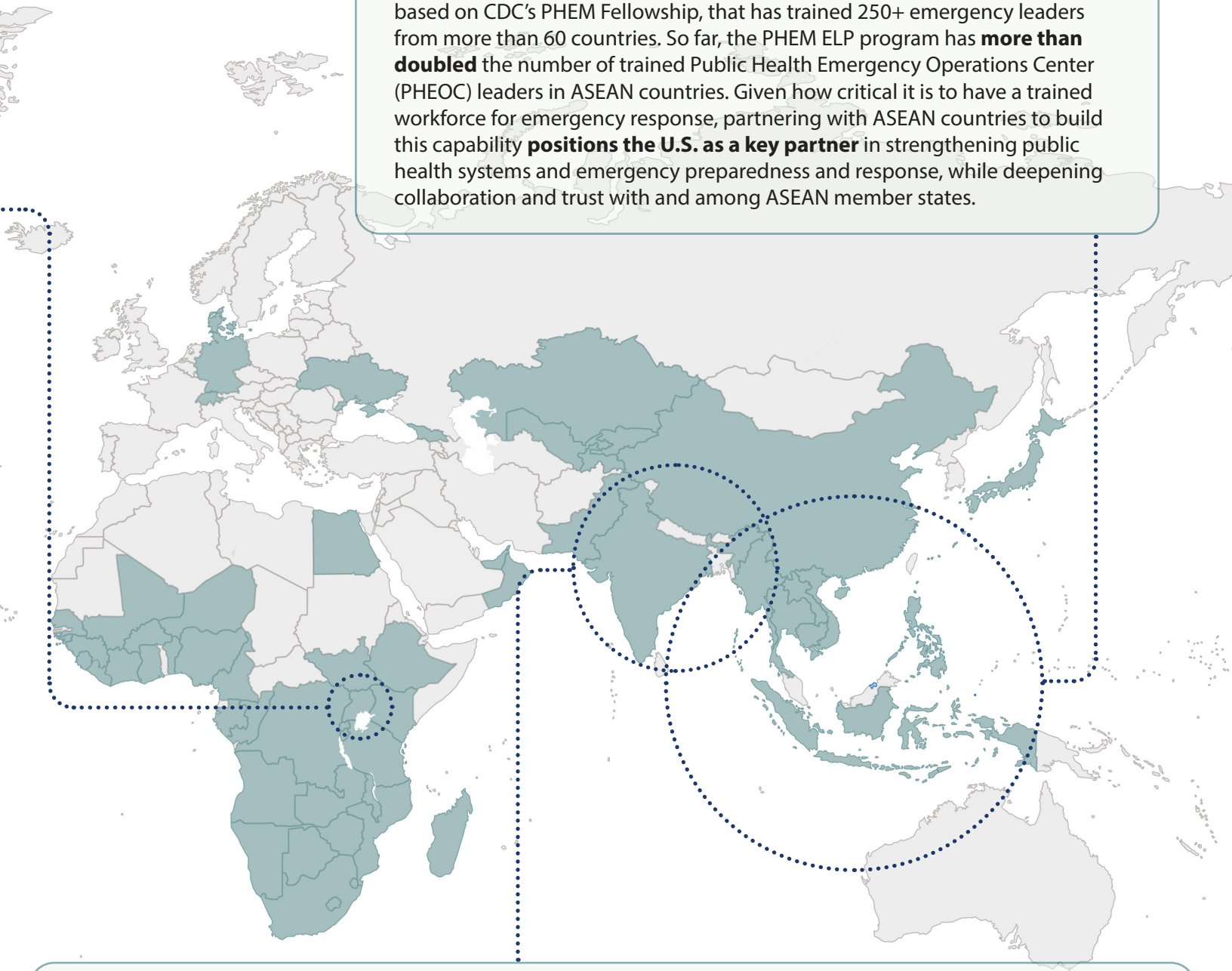
*CDC subject matter experts from across the agency partner with country governments to build core capabilities in surveillance and data use, laboratory, workforce development, emergency preparedness, and outbreak response.*

*CDC expertise and training advances global health security and strengthens public health systems across countries and regions.*

Green-shaded areas represent where CDC works.

## Collaboration and diplomacy

In 2024, the Association of Southeast Asian Nations (ASEAN) launched the Public Health Emergency Management Emerging Leaders Program (PHEM ELP), based on CDC's PHEM Fellowship, that has trained 250+ emergency leaders from more than 60 countries. So far, the PHEM ELP program has **more than doubled** the number of trained Public Health Emergency Operations Center (PHEOC) leaders in ASEAN countries. Given how critical it is to have a trained workforce for emergency response, partnering with ASEAN countries to build this capability **positions the U.S. as a key partner** in strengthening public health systems and emergency preparedness and response, while deepening collaboration and trust with and among ASEAN member states.



## One Health

Stopping diseases that spread between animals and people (zoonotic diseases) requires both strong core capabilities and the One Health approach, which recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. CDC collaborated with India's national public health institute to **strengthen core workforce and laboratory capabilities** for zoonotic diseases like Nipah virus and anthrax, including building diagnostic capacity at 32 sentinel surveillance sites and launching a new One Health FETP Frontline program – an innovative 3-month program that prepares epidemiologists with the skills to contain outbreaks impacting both humans and animals.

# Prevention & Response

**In 2024, CDC tackled frequent, complex, and long-lasting public health emergencies and took action to keep people healthy and safe.**

## Effective targets

CDC aims to increase the speed of outbreak detection and response for diseases that threaten global health security. The **7-1-7** approach includes a bottleneck analysis, which helps countries identify barriers to detecting outbreaks within 7 days, reporting within 1 day, and mounting a response within 7 days. With CDC partnership, Sierra Leone used the 7-1-7 approach to analyze 16 outbreak responses and found that, while they met the targets for detection and reporting, the average response time was 63 days – mainly due to laboratory delays. The country is using this result to **direct resources where they are needed most,** including improving timely specimen transport. As of 2024, CDC is working to expand use of 7-1-7 in 26 countries worldwide.

## Centralized response

Nipah virus is a highly fatal pathogen with epidemic potential. Bangladesh has faced repeated outbreaks of Nipah, with a fatality rate as high as 71%. CDC has collaborated with local partners to **build laboratory testing and surveillance capacity** for Nipah virus, but the country's Public Health Emergency Operations Center (PHEOC) had not been involved in responses. CDC partnered with Bangladesh to review its PHEOC activation criteria and processes, and in February 2024 it activated for Nipah **for the first time**.

**GLOBAL ACTION:** *CDC **protects** against vaccine-preventable diseases through the "big-catch up," working with global partners to recover immunization progress lost due to the COVID-19 pandemic*

## Data-driven recommendations

In 2024, Zambia's largest and deadliest **cholera outbreak** in decades impacted more than 20,000 people. CDC advised the Ministry of Health and provided data-driven recommendations to prevent cholera at the community level, helping to end the outbreak in 7 months. In the DRC, a pilot project led by CDC, WHO, and the DRC Ministry of Health demonstrated that cholera control can be achieved with multisectoral strategies like surveillance, case management, and safely managed water, sanitation and hygiene. This proved that **small, but sustained investments** can work to stop cholera in low-resource, endemic communities.

**DID YOU KNOW?** *CDC **responds** to international disease outbreaks through our Emergency Operations Center, which has activated ~70 times since opening*

## Novel methods

CDC is focused on **ending HIV as a public health threat by 2030**. In 2024, CDC initiated the first PEPFAR implementation of injectable cabotegravir (CAB-LA) in Ukraine amidst wartime challenges, allowing for long-acting HIV prevention. Injectable long-acting CAB-LA taken every two months dramatically lowers the chances of acquiring HIV, expands HIV prevention options, and mitigates the need for frequent dosing and the need to carry or take pills. CDC has also begun preparations for the global distribution of the twice-yearly injectable Lenacapavir for HIV prevention, working in 2024 to identify and prioritize implementation where it has the potential to have a significant impact on our collective goal of ending HIV as a public health threat in the U.S. and worldwide.

***PEPFAR's efforts have dramatically altered the course of the HIV epidemic and have substantially strengthened the public health systems that keep the United States and world safe from other global health threats. CDC has played a critical role at every step.***

Somalia FETP residents observe environmental surveillance sample collection in Mogadishu. Credit: Fethi Ali Sharif

# Strengthening public health capacity in Somalia

Somalia faces the **longest uninterrupted variant polio outbreak** globally, spanning nearly eight years. Food insecurity, climatic shocks, and conflict cause internal displacement and create inaccessible areas that drive the transmission of variant polio, requiring urgent humanitarian and polio response activities.

To address this, CDC collaborated with the Federal Ministry of Health and Human Services of Somalia, including the National Institute of Health and Expanded Program on Immunization, to develop and launch **Frontline FETP cohorts** that specifically focus on vaccine-preventable disease surveillance, routine immunization, and polio outbreak response. This new approach was launched under the guidance of the Somalia Ministry of Health with support from WHO Somalia, UNICEF Somalia, the Task Force for Global Health, and the African Field Epidemiology Training Network.

The unique value of FETP is that it brings in and trains people who live and work in the areas they are helping. Residents from diverse public health disciplines – including surveillance, routine immunization, and maternal and child health – were recruited to assist case and outbreak investigations, conduct health facility immunization assessments, and serve as independent monitors for vaccination campaigns.

**The impact extends beyond the usual scope of FETP to support broader Global Polio Eradication Initiative objectives.** In April 2024, FETP graduates assisted the Somalia polio program in field data collection for an external acute flaccid paralysis surveillance review in areas that were inaccessible to international staff. The combined efforts of CDC and partners promise to contribute significantly to **polio eradication** and the control of other vaccine-preventable diseases in the region, with Somalia FETP residents and graduates continuing to play a key role in these efforts moving forward.

*Since 1980, CDC has partnered with Ministries of Health in more than 90 countries to train 22,000+ disease detectives through the flagship Field Epidemiology Training Program (FETP).*

*The presence of FETPs – and their training in rapid detection, response, and control – not only saves lives in their own countries but prevents illness from spreading to other countries by land, ship, and plane.*

# 10 Years after the world's largest Ebola outbreak, stronger global health security

Ten years ago, the Ebola epidemic in West Africa shook the world, claiming more than **11,000 lives**. The outbreak cost the U.S. more than **2 billion dollars** and **10,000+ jobs** tied to exports. The epidemic's size and scope illustrated the need for stronger, sustainable disease detection and prevention capacity worldwide and was the catalyst for investment in strengthening systems to **protect global health security**.

Since 2014, CDC has strengthened country lab capabilities to detect viral hemorrhagic pathogens, created surveillance systems to collect and report action-oriented data, built emergency operations centers to respond to outbreaks, and bolstered the local workforce, including disease detectives and frontline responders to investigate viral hemorrhagic fevers and outbreaks. These **core capabilities** yielded immediate returns in West Africa and continue to prevent local outbreaks from spiraling into epidemics. When Guinea faced Ebola again in 2021, they identified the outbreak in 15 days and received laboratory confirmation in one day. Instead of international experts, 179 CDC-trained local disease detectives investigated. The outbreak was stopped after only 23 cases.

The magnitude and rapid spread of the 2014 Ebola outbreak showed that the U.S. is vulnerable if we aren't prepared. It redefined our understanding of high-consequence pathogens and demonstrated their significant potential to threaten national security. Investing in comprehensive core capabilities at home and abroad—including genomic sequencing, advanced molecular detection, and wastewater surveillance—is the most effective and least expensive way to stop infectious disease threats before they can harm Americans and people across the globe.

Ruth, an Ebola survivor, celebrates as she is released from the Ebola treatment unit.

***"We hope and we pray that there is never another Ebola outbreak. But we also know that outbreaks occur, and our legacy is that countries can provide support to themselves, that lives can be saved, and that CDC can remain a trusted partner."***

**- Chinyere Ekechi, JD - Deputy Country Director, CDC Sierra Leone**

# Innovation & Research

**In 2024, CDC pushed public health forward, protecting people's lives and livelihoods.**

## Early warning

Wastewater and environmental surveillance (WES) can provide early warning on community-level infections, especially in low-resource settings where clinical testing is unavailable or underused. CDC expanded WES in countries across **three global regions** with targeted demonstration platforms in Georgia, Kenya, and Thailand. In addition to expanding the number of WES systems, CDC also expanded the breadth. For example, to aid ongoing mpox response efforts in Kenya, mpox surveillance will be added to the existing WES systems. To further improve global capacity, CDC and partners developed materials to help country partners prioritize this critical innovation within single and multi-pathogen surveillance strategies.

## Treatment for children

CDC collaborated with global partners to address a critical treatment gap for children living with HIV. CDC led PEPFAR efforts to introduce optimal child-friendly formulations of antiretroviral medications recently approved for children through helping PEPFAR-supported countries develop procedures that support the use of pediatric dolutegravir. In 2024, CDC's implementation of child-friendly antiretroviral medications contributed to **90% viral load suppression** in children under 15 years old living with HIV, up from 73% in 2020.

**GLOBAL ACTION:** *CDC* **studies** *how people may carry antimicrobial resistant bacteria – even without symptoms – in six countries through the Antibiotic Resistance in Communities & Hospitals consortium to understand how these bacteria spread*

## Disease eradication

The world continues to inch closer to Guinea worm (GW) eradication, with just **14 human cases** reported in 2023. However, more than 800 infections in animals were reported in six countries, mostly in domesticated dogs. No tools currently exist to diagnose GW infection in humans or animals at its earliest stages.

CDC is developing a new test to detect GW in people and animals months before worms emerge. Catching GW early can prevent environmental contamination and stop the disease from spreading. CDC's work on novel diagnostics provides national programs with critical innovations that further build core capabilities and help make global eradication possible.

## Vaccine innovation

- **Game-changing developments:** In 2024, the malaria vaccine CDC developed with Kenya Medical Research Institute was officially added to routine immunization programs in Cameroon and Burkina Faso, marking a historic milestone in the global fight against malaria. CDC laboratory scientists are also working with NIH to develop a new vaccine against the deadly Nipah virus, which is currently in late pre-clinical studies.
- **New delivery methods:** CDC's partnership on a novel measles-rubella microneedle patch vaccine produced the **first data on the use of any microneedle patch** to deliver any vaccine to children. Very positive results from the first clinical trial were published in May 2024, with a follow-up trial planned for 2025. This success has sparked new development of patch vaccines for other diseases such as a Hepatitis B, as well as a new rotavirus vaccine that could be delivered by shot or patch— helping to overcome safety and efficacy concerns with oral rotavirus vaccines.
- **Efficient approaches:** CDC experts developed plans to conserve the limited polio vaccine supply by using a fractional dose of inactivated poliovirus vaccine (fIPV) alongside a full dose of the oral vaccine. With 5.9 million doses of fIPV successfully given to children in Nigeria, the approach has proven effective and has been implemented in other countries like Pakistan and China.

*A female Aedes aegypti mosquito. Credit: Lauren Bishop, CDC*

# An innovative way to fight dengue — more (but safer) mosquitoes

In the midst of 2024's record-breaking dengue outbreaks in Latin America, CDC partnered with El Salvador's Ministry of Health, the World Mosquito Program, and the Puerto Rico Vector Control Unit - International (PRVCU-International) to implement an innovative program known as the *Wolbachia* Program.

Like many other diseases, dengue is spread by mosquitoes. But researchers have discovered that infecting mosquitos with a common bacteria called *Wolbachia* blocks serious viruses like dengue, chikungunya, and Zika from growing in mosquitoes. This means they **cannot transmit those diseases to people**. Not only that, but the *Wolbachia*-infected mosquitoes pass the bacteria to their offspring, gradually replacing the local mosquito population over time. The good news is that *Wolbachia* is harmless to humans; lots of other insects already carry it, including bees and butterflies.

***Controlling vector-borne diseases in high-burden countries also protects Americans who live in or travel to these endemic areas, including U.S. military troops and their families.***

From January to June 2024, the program released *Wolbachia*-infected mosquitoes in three of El Salvador's municipalities with high dengue transmission. Through the *Wolbachia* Program in El Salvador, **CDC and partners expect to protect almost 400,000 people** from mosquitoes carrying dengue. As of late 2024, the *Wolbachia* replacement method has been successfully implemented in 14 countries worldwide. CDC continues to work closely with governments in Central America to respond to dengue outbreaks, enhance dengue and mosquito surveillance, and assess the long-term impact of *Wolbachia* on dengue rates.

# Policy, Communications & Diplomacy

**In 2024, CDC drove evidence-based decisions, clear communication, and relationships that expand respect and trust.**

## Epidemic intelligence

The organized and systematic collection, analysis, and interpretation of information – also known as epidemic intelligence – is critical to **rapid, informed responses**. CDC provides leadership and guidance to key international partnerships that provide critical aspects of epidemic intelligence, including coordinating signal detection, standardizing public health intelligence practice, and coordinating international public health emergency operations. This work includes collaborating with PAHO as they develop and implement a 10-year Regional Strategy for Epidemic Intelligence across the Americas.

**DID YOU KNOW?** *CDC **strengthens** health diplomacy, with 60+ Memorandums of Understanding signed with other countries to advance shared health priorities as of 2024*

## Data-driven policy

Every year, around **32,000 infants** globally are diagnosed with congenital rubella syndrome (CRS), severe birth defects which can be prevented by rubella vaccination. CDC's global immunization experts guided the presentation of collaborative data analyses and modeling scenarios, showing that hundreds of thousands of children would be protected from CRS over 30 years if all countries adopt rubella vaccines. These results led WHO to change their recommendation to universal rubella vaccine introduction. With CDC support, global donors **changed funding policies** to encourage the remaining countries who have not yet adopted the vaccine to implement it. Because rubella and measles vaccines are combined, this policy change will also prevent measles cases and deaths.

## Health diplomacy and global commitments

- **Global Health Security partnerships**, such as between CDC and Japan, solidify bilateral and regional collaboration to fortify global health security. Through CDC's new East Asia/Pacific regional office, in 2024, CDC and Japan reaffirmed commitments to exchange information and insights on public health events.
- **Memorandums of Understanding** (MOUs), such as a 2024 MOU signed by CDC and the UK Health Security Agency, elevate U.S. government bilateral health priorities with Ministries of Health and advance CDC's mission. For example, the UK MOU strengthens collaboration on global health security through pandemic preparedness, prevention, and response.
- **Diplomatic engagements**, such as a 2024 visit from the King and Queen of the Netherlands to CDC, result in action on joint health priorities. For example, CDC and Dutch leaders held strategic discussions and signed a collaborative arrangement focusing on global health security and antimicrobial resistance.

## Collective global action

In September, global leaders gathered in New York City for the second United Nations General Assembly High-level Meeting (UNGA HLM) on Antimicrobial Resistance. CDC and global partners committed to actions to combat AR and achieve the targets outlined in the HLM political declaration. CDC's work with domestic and global partners will continue advancing these newly established commitments and targets, including a goal to **reduce global deaths** associated with bacterial AR by 10% by 2030.


A "treatment wheel" used as part of Operation Triple Zero. Credit: CDC Kenya

# Operation Triple Zero sparks global HIV policy change

With more than **1000 young people** becoming infected with HIV globally every day, one of CDC's Kenya staff, Dr. Immaculate Mutisya, started Operation Triple Zero (OTZ). As a pediatrician and public health specialist, Immaculate knew a real solution was needed to engage adolescents and empower them to take charge of their health.

OTZ is a powerful program that helps adolescents living with HIV become "heroes" for achieving zero viral load, zero missed appointments, and zero missed drugs. OTZ is built on **solid scientific principles** like leadership, connectedness, effective participation, positive peer pressure, decision-making, and treatment literacy. It is uniquely led by youth, for youth: older members mentor younger or newer ones. OTZ also nurtures self-leadership, which boils down to "my life, my treatment, my choice."

By 2018, all CDC implementing partners in Kenya had adopted OTZ. Clinics run by other U.S. Government agencies also came on board. Teams from other countries began traveling to Kenya to learn how to implement the program.

***12.6 million+ people living with HIV are on antiretroviral treatment supported by CDC, which represents more than 60% of all people on treatment through PEPFAR.***

***Beyond its immediate impact on HIV, the health and laboratory infrastructure funded by PEPFAR continues to play a pivotal role in enabling countries to control many types of disease outbreaks locally, before they spread out of control.***

"My position at CDC gave me training and a platform. I learned to build a strong case for a public health problem, then design, implement, monitor, and scale up," says Immaculate.

As a low-cost, high impact program for young people living with HIV, OTZ has informed global policy. In 2019, the World Health Organization cited OTZ as a **best practice for adolescent programming**. In 2024, PEPFAR announced a $20 million initiative to strengthen youth-focused HIV programming. As these efforts take flight, OTZ provides a foundation.

# Looking ahead

In 2025 and beyond, CDC's global health mission – **to protect people in the United States and around the world by preventing, detecting, and responding to disease threats, anytime and anywhere** – remains critical.

Every day, we tackle the ongoing threats we know about – from flu to antimicrobial resistance – while strengthening core capabilities to protect against the unforeseeable. Building on decades of experience, CDC experts will continue to prevent major health threats while working to finally end devastating epidemics that endanger millions, like HIV, TB, and polio. CDC's global health investments will keep decreasing the time it takes to detect and respond to diseases that **threaten global health security and U.S. national security**.

We will leverage our global knowledge to protect the U.S. while strengthening the partnerships that make public health possible. Our **longstanding relationships and global presence** are the reason CDC gets the first call when deadly disease threats emerge in other countries. For example, when Marburg virus emerged in Rwanda for the first time in 2024, CDC's established country office supported rapid action, and we had additional responders on the ground within 72 hours, working together with the Rwandan government. Looking ahead, CDC will continue to collaborate with countries to create integrated, functional, and flexible public health systems.

At their core, CDC's capacity strengthening efforts are designed to be **owned by partner countries**, which also increases the sustainability of CDC's global public health impact. Our ultimate vision is to stop outbreaks from crossing borders through mutual collaboration, with relationships based on sharing vital information to not only contain public health emergencies but prevent them.

This is how we will **reach our Global Health Strategic Framework goals** to stop health threats at their source before they spread across borders or to the U.S., contain disruptive global disease outbreaks, use global data for disease prevention and mitigation programs in the U.S. and other countries, and save lives and improve health globally.

Protecting health and achieving global health security requires commitment from partners and countries around the world – **none of us can do it alone**. CDC remains committed to building on our collective impact, knowing that our actions today will shape a better tomorrow for Americans and people around the world.

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