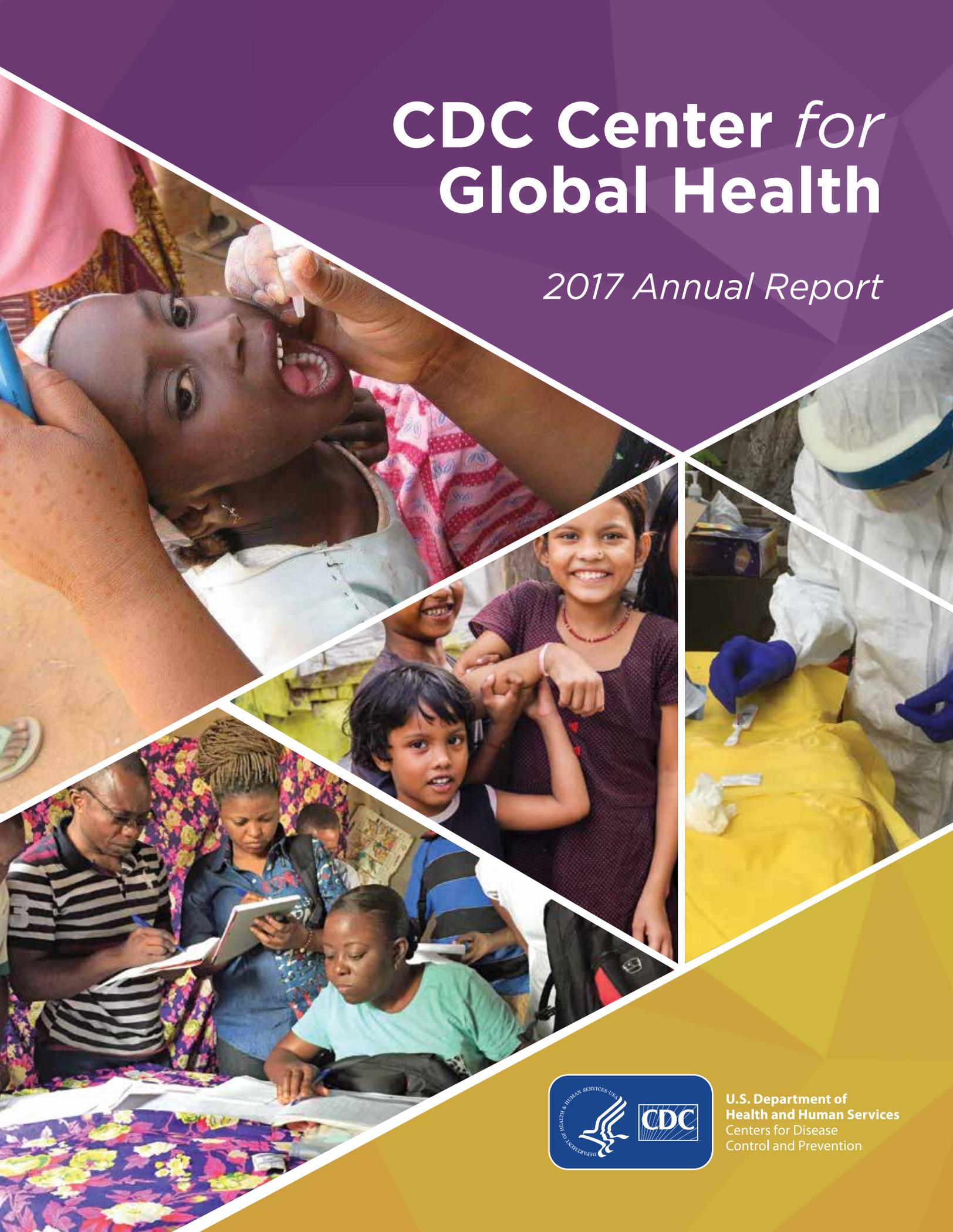


CDC Center *for* Global Health

2017 Annual Report



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention



Rebecca Martin, PhD

*Director, Center for Global Health,
Centers for Disease Control
and Prevention*

Message from the Director

CDC's global health work has a clear mission: to protect and improve health globally through science, policy, partnerships, and evidence-based public health action.

By ensuring that countries can prevent, detect, and respond to health threats within their borders, the Center for Global Health (CGH) helps prevent regional and global health crises that affect health, security, and economic stability abroad and at home. These interventions effectively target specific diseases and populations, which save lives, improve health outcomes, and foster healthy populations globally. Our world-renowned public health science leadership has a measurable, proven health impact on eliminating health disparities and achieving optimal health worldwide. CDC improves health equity and reaches those in greatest need through its global programs.

CDC's work in mitigating risk and saving lives through its global health engagement is longstanding and effective. Yet the measure in public health of success is best determined by the things that can't be seen – the fact that people aren't getting sick, the absence of fear, and the knowledge that the talents and tools are in place to quickly and decisively detect health threats and to defeat them.

Highlighting the work and contributions of our staff and partners around the world are the primary goals of this report – the progress we realized, and why it matters in the countries where we work and to Americans at home and abroad.

I am proud of the impact and results that we achieved in 2017. This report highlights how dedicated staff, including scientists, epidemiologists, laboratorians, public health advisors, and countless other highly-trained experts played critical roles immunizing children at risk, have pressed forward the fight against HIV and tuberculosis (TB), lead efforts to control malaria, Zika, and many other dangerous diseases that still afflict far too many people, and strengthened public health systems for a strong foundation against future health threats.

There is ample evidence that our work in 2017 saved lives and made Americans safer by ensuring the world as a whole is more prepared and better equipped to stop disease threats at the earliest possible moment.

This report provides a portrait of our priorities and results, and how CGH, like CDC at large, continues to put science into action to implement proven, life-saving programs that protect people against threats to their health.

We continue to work 24/7 to prevent diseases, to detect outbreaks early to stop them at their source, and to respond rapidly to emerging public health threats and emergencies to keep America and the world healthy, safe, and secure.

As John F. Kennedy said, "The time to build a roof is not when it is raining."

Rebecca Martin, PhD
Director, Center for Global Health

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Clients of an antenatal clinic in Dawakin-Tofa local government area (Kano State, Nigeria) wait to participate in surveys and outreach activities conducted by Frontline support staff at Dawanau primary health care center.

Photo Courtesy: CDC photo by S. Patrick Kachur



Center for Global Health



Division of Global Health Protection



Division of Global HIV & TB



Division of Parasitic Diseases and Malaria



Global Immunization Division

CDC's Center for Global Health (CGH)

CDC's global health mission is to improve the health, safety, and security of Americans while reducing morbidity and mortality worldwide. This is achieved through its unique technical skills, scientific knowledge and research, collaborative partnerships, and evidence-based, global public health action. CDC, through CGH, executes its global health vision and mission by focusing on three key goal areas: achieving measurable global health impact; assuring global health security; and providing world-renowned public health science leadership.

Disease knows no borders. In today's interconnected world, a disease threat anywhere can be a health threat everywhere. A pathogen can travel around the globe to major cities in as little as 36 hours. CDC experts are on the frontlines fighting diseases to protect Americans in the U.S. and abroad.

CDC's global activities protect Americans from major health threats, including HIV, TB, polio, Ebola, Zika, cholera, and malaria. CDC, through CGH, monitors disease outbreaks 24/7 around the world to prevent regional and global health crises that affect health, security, and economic stability abroad and at home.

CGH coordinates global health activities across CDC. CGH has four divisions - Division of Global Health Protection (DGHP), Division of Global HIV & TB (DGHT), Division of Parasitic Diseases and Malaria (DPDM), and Global Immunization Division (GID). Each division has a specific focus, but all aim to protect the health of Americans at home and to save lives overseas.

Division Goals

Division of Global Health Protection:

- Reduce the impact of disease outbreaks and other public health events by monitoring 24/7 for outbreaks and by increasing rapid response to global health emergencies.
- Protect Americans from deadly and costly infectious disease outbreaks by building capacities in partner countries to effectively prevent, detect, and respond to infectious disease outbreaks at their source.
- Sustain and strengthen partnerships for global health security.

Division of Global HIV and TB:

- Drive global progress in HIV prevention and treatment as part of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), moving some of the world's most effected countries toward HIV epidemic control.

- Protect Americans at home and abroad by finding, curing, and preventing TB locally before it takes root globally.
- Use data to drive program impact and cost effectiveness.
- Strengthen in-country public health systems for long-term sustainability.
- Sustain long-standing collaborations with Ministries of Health to further enhance the country capacity needed to respond to infectious disease threats.

Division of Parasitic Diseases and Malaria:

- Reduce death, illness, and disability from parasitic diseases in the United States.
- Eliminate the global burden of malaria and targeted neglected tropical diseases.
- Advance research to detect, prevent, and eliminate parasitic diseases.

Global Immunization Division:

- Stop poliovirus transmission.
- Reduce child mortality from other vaccine-preventable diseases including measles and rubella.
- Improve and support innovation to address strengthening key components of immunization systems (access, data systems, demand, and workforce) to achieve global goals.
- Explore how to better support vaccination efforts of epidemic-prone diseases (e.g., Ebola, Japanese encephalitis, meningitis, and yellow fever).

CGH works globally to:

Respond quickly and decisively to threats posed by infectious diseases, such as HIV, TB, vaccine-preventable diseases, and malaria.

Invest in and support immunization to decrease mortality from vaccine-preventable diseases, including polio, measles-rubella, diphtheria, tetanus, pertussis, hepatitis B, and rotoviruses.

Implement proven prevention and treatment programs for combatting global epidemics such as HIV, malaria, and TB.

Monitor and report outbreaks from leading disease threats by training public health leaders and health workers and by expanding the public health workforce.

Strengthen public health infrastructure and information systems that inform and sustain data-driven decision-making for fast, effective action.

Research, develop, and evaluate new tools and approaches to combat global health threats.

Partner with Ministries of Health and U.S. agencies to implement, evaluate, and scale up impactful, cost-effective programs to improve health worldwide.



A "Riders for Health" motorcycle courier delivers laboratory samples over rough roads in Liberia. Photo Courtesy: Nicole Hawk

SNAPSHOT

CGH ACCOMPLISHMENTS IN 2017



Supported life-saving antiretroviral treatment (ART) for 7.3 million men, women, and children living with HIV, and supported life-saving ART for more than 388,000 children under the age of 15 around the world.



Mobilized “rapid response teams” of CDC experts over 240 times to support emergency response in 50+ countries across the globe.



Monitored and stopped dangerous health threats, tracking nearly 340 events of public health importance through surveillance systems that operate 24/7.

“There is ample evidence that our work in 2017 saved lives and made Americans safer by ensuring the world as a whole is more prepared and better equipped to stop disease threats at the earliest possible moment.”

- *Dr. Rebecca Martin*



Responded to outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2) in Syria and the Democratic Republic of the Congo.



Managed the release of otherwise unavailable, life-saving medications for 150 patients in the United States with parasitic infections.



Conducted more than 6,700 diagnostic tests for parasitic diseases and responded to more than 6,300 hotline inquiries, providing advice on diagnosis and treatment to healthcare providers, blood banks, and other essential healthcare facilities, as well as advice on preventing malaria among travelers.

DIVISION OF GLOBAL HEALTH PROTECTION (DGHP)



Nigerian CDC-trained disease detectives administer questionnaires to community members to collect data about a pertussis outbreak.
Photo Courtesy: Visa Tyakaray

2017 DGHP SNAPSHOT



Trained more than 2,100 new disease detectives, who are critical to countries' abilities to quickly find and stop disease outbreaks, through DGHP's Field Epidemiology Training Program (FETP).



Mobilized "rapid response teams" of CDC experts over 240 times to support emergency response in 50+ countries across the globe.



Provided technical expertise for 25 of 39 WHO Joint External Evaluations (JEEs) that offer clear and independent assessments of each nation's health security capabilities and identify critical actions for improvement.



Monitored and stopped dangerous health threats, tracking nearly 340 events of public health importance through surveillance systems that operate 24/7.



Conducted new research to look at the dynamics of transmission and reservoirs for Zika virus in 4,726 amphibians, birds, reptiles, and mammals and 27,216 mosquitos in Peru, Brazil, and Colombia.

Year In Review

The Division of Global Health Protection (DGHP) brings science and expertise to stop potential pandemics at the source – eliminating outbreaks abroad so CDC does not have to fight them here at home. The division’s scientific and technical experts work closely with partners to strengthen vital prevention, detection, and emergency response capabilities, even in the most challenging parts of the world. From Ebola to Zika and beyond, the division plays a critical role in supporting CDC’s mission to protect the health, safety, and security of Americans.

Monitoring Threats 24/7

To detect outbreaks across the globe, DGHP has programs that work 24/7 to collect information about events that could be serious risks to public health. Scientific and technical experts in Atlanta closely monitored 30–40 threats per day worldwide and tracked nearly 340 events of public health importance in 2017.

To help countries quickly identify and respond to diseases within their region, DGHP supported ten disease detection centers around the world to help detect emerging and reemerging pathogens so that outbreaks can be stopped at their source. CDC subject matter experts within these centers supported over 150 outbreak responses and provided technical assistance to more than 40 countries.

Outbreak Detection and Responses in 2017	
Global Disease Detection Operations Center	337 unique outbreaks tracked
Global Disease Detection Centers	198 outbreak responses supported
Field Epidemiology Training Program	616 outbreaks investigated by fellows
Global Rapid Response Team	6,370 person-days of deployments for response

Faster, Smarter Response

When every second counts, a country’s ability to respond can mean the difference between a local outbreak and a global pandemic. In 2017, better emergency response capabilities in CDC partner countries led to faster



Notable Scientific Publications

1. Bell E, Tappero JW, Ijaz K, et al. Joint External Evaluation—Development and Scale-Up of Global Multisectoral Health Capacity Evaluation Process. *Emerging Infectious Diseases*. 2017; 23(13). doi:10.3201/eid2313.170949.
2. Boyd AT, Cookson ST, Anderson M, et al. Centers for Disease Control and Prevention Public Health Response to Humanitarian Emergencies, 2007–2016. *Emerging Infectious Diseases*. 2017; 23(13). doi:10.3201/eid2313.170473.
3. Cassell CH, Bamberg Z, Roy K, et al. Relevance of Global Health Security to the US Export Economy. *Health Security*. 2017; 15(6):563–568. <https://doi.org/10.1089/hs.2017.0051>.
4. Christian KA, Iuliano AD, Uyeki TM, et al. What We Are Watching—Top Global Infectious Disease Threats, 2013–2016: an Update from CDC’s Global Disease Detection Operations Center. *Health Security*. 2017; 15 (5):453–462. <https://doi.org/10.1089/hs.2017.0004>.
5. Doedeh J, Frimpong JA, Yealue KD II, et al. Rapid Field Response to a Cluster of Illnesses and Deaths — Sinoe County, Liberia, April–May, 2017. *Morbidity and Mortality Weekly Report*. 2017; 66:1140–1143. doi: <http://dx.doi.org/10.15585/mmwr.mm6642a4>.
6. Fitzmaurice AG, Mahar M, Moriarty LF, et al. Contributions of the US Centers for Disease Control and Prevention in Implementing the Global Health Security Agenda in 17 Partner Countries. *Emerging Infectious Diseases*. 2017; 23(13). doi: 10.3201/eid2313.170898.
7. Jones DS, Dicker RC, Fontaine RE, et al. Building Global Epidemiology and Response Capacity with Field Epidemiology Training Programs. *Emerging Infectious Diseases*. 2017; 23(13). doi:10.3201/eid2313.170509.
8. Rao CY, Goryoka GW, Henao OL, et al. Global Disease Detection—Achievements in Applied Public Health Research, Capacity Building, and Public Health Diplomacy, 2001–2016. *Emerging Infectious Diseases*. 2017; 23(13). doi:10.3201/eid2313.170859.
9. Tappero JW, Cassell CH, Bunnell R, et al. US Centers for Disease Control and Prevention and Its Partners’ Contributions to Global Health Security. *Emerging Infectious Diseases*. 2017; 23(13). doi:10.3201/eid2313.170946.



Emergency Public Health Epidemiologist Emilio Dirlikov labels dengue samples in Burkina Faso in 2017
 Photo credit : Anselme Sanou (DGHP/Burkina Faso country office).

containment of deadly outbreaks. From involving communities in reporting illness, to finding better ways to get laboratory samples safely delivered and accurately tested, to more efficient management of resources and people, DGHP helped reduce emergency response times in partner countries like Uganda and Cameroon from weeks to days – or even hours.

GHSA Investments Yield Results In Uganda



Responding to global outbreaks, natural disasters, and other emergencies when and where they occur is critical to stopping health threats before they reach U.S. shores. CDC’s Global Rapid Response Team (GRRT) is an agency-wide resource managed by DGHP with over 400 CDC experts ready to deploy in response to a public health emergency anywhere in the world at any given time. In 2017, the GRRT mobilized staff over 240 times to more than 50 countries to support outbreak response and to provide public health expertise, logging over 6,370 person-days of deployments in response to emergencies including Lassa fever in Nigeria, plague in Madagascar, and Hurricanes Irma and Maria.

To eliminate outbreaks at the source, DGHP trains “boots on the ground” disease detectives in other countries through the Field Epidemiology Training Program (FETP). This year, CDC-trained disease detectives investigated more than 570 threats across the globe. To expand detection and response capabilities at the local level, the FETP-Frontline program trained more than 1,800 new frontline responders who were among the first on the scene to identify and contain outbreaks of international concern like yellow fever, Ebola, and Marburg virus.

Strengthening Global Health Security

CDC advances global health security by building public health systems that work hand-in-hand to help countries prevent, detect, and respond to public health threats. DGHP leads the agency’s efforts to implement the Global Health Security Agenda (GHSA) in close partnership with other CDC divisions and centers, U.S. agencies, and global partners.

As of 2017, DGHP and its partners noted more than 675 significant achievements across CDC’s global health security partner countries, including expanded surveillance systems, new diagnostic equipment and capabilities, and more and better-

What Lies Ahead

Strengthening health security:

Building on 2017 accomplishments, it is critical that CDC remains vigilant and continue to address major health risks, recognizing that weak health systems in any country directly impact the health and security of communities in the United States. Global health protection requires focus beyond one country, one issue, or one pathogen, as well as strong collaboration with internal and external partners around the globe.

National Action Plans: DGHP will continue to provide technical expertise and support for countries as they develop National Action Plans for Health Security. These plans clearly articulate the steps necessary to address the gaps identified through Joint External Evaluations and help countries direct domestic and external resources to their most critical gaps in health security.

trained frontline responders. Putting the right systems and people in place across the globe is our country's best chance for stopping a future pandemic or bioterrorist event and for protecting our well-being.

CDC also works to strengthen global health security through prevention and control of noncommunicable diseases (NCDs) and their risk factors. NCDs (including cardiovascular disease and hypertension, cancer, diabetes, and chronic respiratory disease) place additional strain on already fragile health systems and undermine their ability to handle large outbreaks. Building upon lessons learned from CDC's communicable disease efforts, DGHP's global NCD programs support critical partnerships, create healthier populations, and build more robust health systems that can help recognize potential epidemics early.

To bolster public health capacity at the national level, CDC is supporting 25 countries in developing or strengthening their national public health institutes (NPHIs). Like CDC in the United States, NPHIs serve as homes for countries' public health systems and expertise. In 2017, CDC worked with partners to fully launch the NPHI Staged Development Tool that countries are using to define critical next steps for protection.

Global health security work is closely connected to U.S. economic security; health protection helps ensure stable markets and steady demand for U.S. goods and services. For example, a hypothetical model shows that an outbreak in Asia that spreads to 9 countries could put more than 1.6 million export-based U.S. jobs at risk, even if it never reaches American shores. Preventing and responding to outbreaks abroad protects these jobs in sectors like agriculture, manufacturing, and natural resource extraction.

Identifying Gaps and Setting Future Priorities

Finding and addressing gaps in the world's health systems is critical to protecting America from epidemics. In 2017, DGHP worked closely with other CDC colleagues, the World Health Organization (WHO), and partners from other international organizations to help countries identify the most urgent needs within their health systems through the WHO Joint External Evaluation (JEE) process. Based on the requirements of the International Health Regulations, the JEE is a voluntary, multisectoral, and comprehensive process to assess a country's capacity to prevent, detect, and rapidly respond to public health risks. As of December 2017, nearly 70 countries had completed JEEs, with CDC experts participating in over 60% of these.

CDC worked closely with partners in 2017 to conduct large-scale exercises that challenged countries' abilities to efficiently and effectively coordinate an emergency response. These exercises tested the performance of public health emergency operations centers, real-time information sharing, laboratory capabilities, exchange among national public health institutes, and other critical systems that identify and contain disease outbreaks.

DGHP: What We Do

DGHP works to protect the health and safety of Americans and people around the world. We:

- Monitor public health threats 24/7, lead CDC's Global Rapid Response Team, conduct disease surveillance, and build emergency and laboratory systems to better respond to crises.
- Work with countries to prevent, detect, and respond to global health threats and address chronic or systemic gaps in local capabilities.
- Provide unique technical and leadership expertise that is underpinned by science and evidence and is far reaching, not limited to a single pathogen.
- Protect Americans by responding immediately to public health threats and by helping countries and partners contain emerging threats at the source.



Laboratorians in Thailand trained in the safe handling of pathogens.

DIVISION OF GLOBAL HIV & TUBERCULOSIS (DGHT)



CDC-supported life-saving antiretroviral treatments for more than 388,000 children under the age of 15.

2017 DGHT SNAPSHOT



Developed the evidence base through CDC-supported Population-based HIV Impact Assessments (PHIA) data to show HIV epidemic control is within reach in 5 African countries.



Supported life-saving antiretroviral treatment (ART) for 7.3 million men, women, and children living with HIV, with more than half of those on PEPFAR-supported treatment.*



Supported life-saving ART for more than 388,000 children under the age of 15 around the world.*

**As of September 30, 2017; U.S. President's Emergency Plan for AIDS Relief*



Used findings from the CDC-supported PHIA conducted in 9 countries to assess national HIV incidence, treatment coverage, and viral suppression, and measure impact of HIV programs.



Led a robust laboratory quality improvement and accreditation mentoring program -- building strong networks across Africa and Asia.

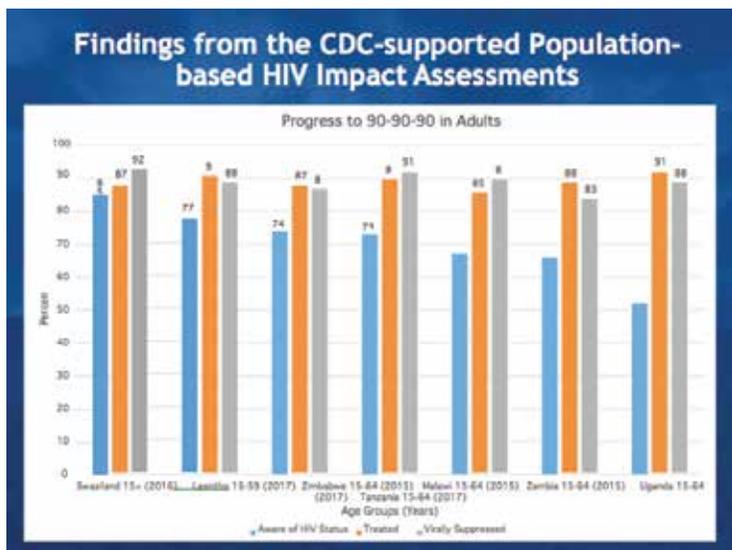
Year In Review

DGHT's global leadership ensured progress toward HIV epidemic control as part of PEPFAR, as well as improvements in finding, curing, and preventing TB worldwide. By applying rigorous scientific and technical expertise, and persistently using data and technical know-how in program planning and assessment, DGHT increased HIV and TB program impact and cost effectiveness.

In partnership with Ministries of Health (MOH) around the globe, DGHT collaborated peer-to-peer in translating country-specific data into real-world solutions to affect positive health outcomes. Our partnership approach demonstrated that countries can develop the capacity needed to respond to infectious disease, ultimately protecting Americans and minimizing future U.S. government investment.

Approaching HIV Epidemic Control

As seen through CDC-supported Population-based HIV Impact Assessments (PHIA) data, HIV epidemic control is within reach in Lesotho, Swaziland, Malawi, Zambia, and Zimbabwe. However, attention to continuing ARV therapy is central to reaching epidemic control goals. Epidemic control seemed unthinkable in 2003 when PEPFAR started, but now is seen as an achievement within reach. To have done so without a vaccine or a cure for HIV/AIDS demonstrates the tenacity and will of the PEPFAR program and our implementing partners.



As of September 30, 2017, CDC supported life-saving ART for over 7.3 million people living with HIV – which is one-third of all people on treatment worldwide and more than half of those on PEPFAR-supported treatment. As part of PEPFAR, we supported life-saving ART for more than 388,000 children under the age of 15 around the globe. To curb the spread of HIV, CDC supported voluntary medical male circumcision procedures for 7.2 million men in Southern and Eastern Africa cumulatively – nearly half of all procedures supported by PEPFAR to date through September 30, 2017.

Notable Scientific Publications

1. Aberle-Grasse J and Hader. S. Status and methodology of publicly available national HIV care continua and 90-90-90 targets: A systematic review. *PLOS Medicine*. 2017. <http://dx.doi.org/10.1371/journal.pmed.1002253>.
2. Agolory S, Auld A, Odafe S, et al. High rates of loss to follow-up during the first year of pre-antiretroviral therapy for HIV patients at sites providing pre-ART care in Nigeria, 2004-2012. *PLoS ONE*. 2017; 12(9): e0183823.
3. Auld A, Shiraishi R, Oboho I, et al. Trends in prevalence of advanced HIV disease at antiretroviral therapy enrollment – 10 countries, 2004-2015. *MMWR*. 2017; 66(21):558-563.
4. Bicego G, Bock N, Parekh, B, et al. Swaziland HIV Incidence Measurement Survey (SHIMS): a prospective national cohort study. *The Lancet, HIV*. 2017; 4(2): e83-e92.
5. Bock, N. Could Circumcision of HIV-Positive Males Benefit Voluntary Medical Male Circumcision Programs in Africa? Mathematical Modeling Analysis. *PLoS One*. 2017. 24;12(1):e0170641.
6. Jobarteh K, Shiraishi R, Malimane I, et al. Community ART Support Groups in Mozambique: The Potential of Patients as Partners in Care. *PlosOne*. 2016. <http://dx.doi.org/10.1371/journal.pone.0166444/>
7. Pathmanatha,I, Date A, William Coggin,W, et al. Rolling out Xpert MTB/RIF® for tuberculosis detection in HIV-positive populations: An opportunity for systems strengthening. *African Journal of Laboratory Medicine*. 2017; 6(2):pii:a460.
8. Pathmanathan, I, Dokubo, E, Shiraishi, R, et al. Incidence and Predictors of Tuberculosis Among HIV-infected Adults After Initiation of Antiretroviral Therapy in Nigeria, 2004-2012. *PLoS One*. 2017; 12(3):e0173309.
9. Shah N, Auld S, Brust J, et al. Transmission of Extensively Drug-Resistant TB in South Africa. *New England Journal of Medicine (NEJM)*. 2017; DOI: 10.1056/NEJMoal604544.

What Lies Ahead

Attaining HIV Epidemic Control and Sustainability:

Having moved from an emergency response to HIV to mature programs, many PEPFAR-supported countries are now positioned to assume greater financial, management, and program implementation responsibilities. DGHT will concentrate on sustaining in-country partners' momentum in combating HIV and building sustainable public health systems. We will transition from supporting direct service delivery to a technical assistance role.

Tracking Global Progress and Target Programs:

PEPFAR, CDC, and our partners plan to expand the number of PHIA studies from 9 to 23, while revisiting those partner countries with more significant PEPFAR investments every three to four years with a PHIA. This effort will build stronger data and will hone precise decision-making in HIV programming, and the efficient use of resources to provide treatment to those living with HIV and to identify those "most difficult to find."

Sustained Strategy to Find, Control, and Prevent TB:

3 critical milestones -- the release of WHO's End TB Strategy and its bold targets for decreased TB morbidity and mortality; the momentum gained through the first Ministerial Meeting on TB in Moscow in November 2017; and the additional momentum from the first High Level TB Meeting in conjunction with the 2018 United Nations General Assembly. We will capitalize on this momentum by intensifying efforts, including employing proven diagnostic and treatment tools to strengthen in-country programs, developing innovative strategies in high-burden TB countries, and leveraging funding sources in select priority high-burden countries.

DGHT introduced and made available a Rapid Incidence Test that simultaneously diagnoses HIV infection and identifies recent infection. This important information allows programs to identify and target those who are newly HIV-positive and at highest risk for transmitting HIV while strengthening partner notification efforts. CDC is currently performing a field evaluation of Rapid Incidence Testing in Guatemala with the goal of increasing the number of those undiagnosed and to prevent transmission to uninfected partners.

These achievements represent significant progress toward a 2020 global goal of HIV epidemic control, and demonstrate that our efforts to increase access to effective HIV prevention programs -- as well as to HIV treatment, are working.

Finding, Curing, and Preventing TB Worldwide

DGHT focused on those countries with high TB burden, including countries that have strong U.S. business and community ties, are directly connected to the U.S.-based TB epidemic, and have PEPFAR's commitment to TB as a key component of a global HIV response.

By developing innovative program strategies, leveraging PEPFAR platforms, and using proven diagnostic and treatment tools to find, cure, and prevent TB, DGHT addressed technical and operational challenges in high-burden TB countries that undermine progress toward achieving global TB targets.

However, challenges remain. Two billion people -- or one-quarter of the world's populations -- are infected with TB worldwide. Multi-drug-resistant TB and extensively drug-resistant TB are now reported in 105 countries -- underscoring the urgent need to find, cure, and prevent future person-to-person, airborne transmission. Current estimates suggest that, by 2050, multi-drug-resistant TB alone will cost the global economy \$17 trillion in lost productivity.

Our global leadership in research, technical expertise, and engagement in on-the-ground programs combine to help detect the most vulnerable to TB infection, to break the cycle of transmission, to lower the mortality rate of those living with HIV through TB treatment, and to protect Americans living around the world.

Strong Labs Save Lives

Reliable laboratory systems are critical to the delivery of quality health care services. By strengthening and improving laboratory systems for HIV and TB platforms, country partners enhance their capacity and further their abilities to better respond to these and other diseases. Yet many parts of the world continue to struggle with fragile lab systems. With our partners' support, we have built the capacity of more than 700 labs, accredited to international standards, in more than 40 countries. This increased capacity enables our partners to identify and prevent the spread of HIV and other diseases that threaten health and safety across the globe.

The Power of Data

Data provide powerful insights that allow us to target HIV prevention and treatment to those needing it most and to measure our impact. DGHT plays a leading role in designing and enhancing surveillance systems that enable countries to understand which populations and geographic areas require urgent HIV attention and services, and to make fast course corrections if need be.

For example, CDC-supported Population-based HIV Impact Assessments currently provide the clearest picture to-date of the HIV epidemic in several sub-Saharan countries. They offer critical information on the state of the HIV epidemic. PHIA data inform planning and the decisions surrounding real world, real time public health solutions, as well as future programs responding to people and places with unmet needs.

PHIA are implemented under the leadership of MOHs and by PEPFAR, CDC, and ICAP at Columbia University. CDC lends its expertise in epidemiology, laboratory science, and data analysis to help our partners design and implement the surveys, and then to rapidly implement the results for program improvement. In 2017, CDC and our partners were in various stages of PHIA collection, analysis, and program application across nine countries.



Building strong laboratory networks across Africa and Asia
Photo Courtesy: ©David Snyder/CDC Foundation

DGHT-Supported Impact



Source: U.S. President's Emergency Plan for AIDS Relief (PEPFAR) *Other USG agencies may have also contributed to some of the achievements**As of Sept 30, 2017 ***FY2017

DGHT: What We Do

DGHT is focused on two epidemics of global importance – the threats of HIV and TB. We:

- Work on the frontlines in over 50 countries, where our “experts in action” are positioned to respond to in-country health threats. Over 1,500 preeminent CDC public health experts -- including epidemiologists, medical officers, and health economists – live and work in-country to support program efforts.
- Use scientific rigor in data collection and analysis to put the clearest focus on the most vulnerable populations by identifying those at highest risk, as well as advising on the means for improved treatment and sustainable preventative efforts. CDC-supported PHIA is a critical tool measuring global progress and the precision targeting of human and financial resource.
- Maintain long-standing relationships with MOHs and engagement with a variety of global partners that are instrumental in mission success. While CDC is relied upon to provide deep subject matter knowledge, our partnership approach ensures that countries develop the capacity needed to respond in their own way to infectious disease outbreaks, minimizing future U.S. government investment.

DIVISION OF PARASITIC DISEASES AND MALARIA (DPDM)



During the Haiti pilot of the new vector surveillance app, vector surveillance technicians learned quickly that if they showed members of the community exactly how information was entered into the app, heads of households were more eager to participate and volunteer their homes for vector surveillance.

Photo Courtesy: CDC Photo by Rebecca "Bex" Levine

2017 DPDM SNAPSHOT



Conducted more than 6,700 diagnostic tests for parasitic diseases and responded to more than 6,300 hotline inquiries, providing advice on diagnosis and treatment to healthcare providers, blood banks, and other essential healthcare facilities, as well as advice on preventing malaria among travelers to improve diagnosis and treatment of parasitic diseases.



Managed the release of otherwise unavailable, life-saving medications for 150 patients in the United States with parasitic infections.



Led or assisted with 14 investigations of parasitic infections associated with organ transplantation involving 20 organ recipients.



Provided, through the U.S. President's Malaria Initiative (PMI), technical expertise to benefit 480 million people at risk of malaria across sub-Saharan Africa and in communities in the greater Mekong sub-region, including on vector control, appropriate diagnosis and treatment, surveillance, and monitoring and evaluation.



Received 88.5% of all visits to the CGH website to DPDM pages, as according to web metrics, visitors sought information on topics such as the treatment of malaria, lifecycles of various parasites, or other parasitic diseases.

Year In Review

Providing expert technical advice to providers in the U.S. and around the world on parasitic diseases

DPDM staff provided expert technical advice on the prevention, diagnosis, and treatment of parasitic diseases through its 24-hour hotlines, responding to more than 6,300 inquiries in 2017. DPDM also facilitated the release of otherwise unavailable life-saving medications for 150 patients in the United States with parasitic infections including Chagas disease (71) and severe malaria (41).

Developing novel approaches to vector surveillance

In response to the Zika virus outbreak, DPDM's Integrated Vector Management team developed a field-friendly tool for monitoring mosquito populations based on CDC's open source program, Epi Info™ 7. The tablet-based app will save time, improve data quality, and help vector control programs standardize information across geographical areas for better comparisons. In 2017, the team conducted targeted hands-on training on the new app to 138 surveillance and vector control staff in Haiti, Sierra Leone, Dominican Republic, and Trinidad & Tobago. Staff conducted additional international hands-on trainings in Sierra Leone, where participants represented 12 West African countries, and again in Thailand.

Refining preventive chemotherapy for lymphatic filariasis

DPDM has a long history of fighting lymphatic filariasis (LF), a debilitating neglected tropical disease (NTD) spread by the bites of mosquitoes. Over the past several years, DPDM staff have provided key technical assistance to the Ministry of Public Health and Population in Haiti to ensure proper monitoring of a study to determine the frequency, type, and severity of adverse reactions following triple-drug LF therapy, compared to the standard two-drug therapy. In October 2017, WHO revised recommendations for preventive chemotherapy of LF, changing the recommendation to a three-drug regimen based on the results of this and other completed studies in Fiji, India, Indonesia, and Papua New Guinea. In 2017, DPDM staff also continued to support the implementation of triple-drug LF therapy to help achieve the elimination of LF in American Samoa.



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2. Gutman J, Kovacs S, Darsey G, et al. Safety, Tolerability, and Efficacy of Repeated Doses of Dihydroartemisinin-piperazine for Prevention and Treatment of Malaria: A Systematic Review and Meta-Analysis. *Lancet*. 2017; 17(2):184-193. doi.org/10.1016/S1473-3099(16)30378-4.
3. Gwyn SE, Xiang L, Kandel RP, et al. Prevalence of *Chlamydia trachomatis*-Specific Antibodies before and after Mass Drug Administration for Trachoma in Community-Wide Surveys of Four Communities in Nepal. *American Journal of Tropical Medicine and Hygiene*. doi:10.4269/ajtmh.17-0102.
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5. Karanja DMS, Awino EK, Wiegand RE, et al. Cluster Randomized Trial Comparing School-Based Mass Drug Administration Schedules in Areas of Western Kenya with Moderate Initial Prevalence of *Schistosoma mansoni* Infections. *PLoS Neglected Tropical Diseases*. 2017; 11(10):e0006033. doi.org/10.1371/journal.pntd.0006033.
6. Messenger LA, Shililu J, Irish S, et al. Insecticide Resistance in *Anopheles arabiensis* from Ethiopia (2012-2016): A Nationwide Study for Insecticide Resistance Monitoring. *Malaria Journal*. 2017; 16(469). doi:10.1186/s12936-017-2115-2.
7. Rogier E, Plucinski M, Lucchi N, et al. Bead-Based Immunoassay allows sub-Picogram Detection of Histidine-Rich Protein 2 from *Plasmodium falciparum* and Estimates Reliability of Malaria Rapid Diagnostic Tests. *PLoS ONE*. 2017; 12(2):e0172139. doi:10.1371/journal.pone.0172139.
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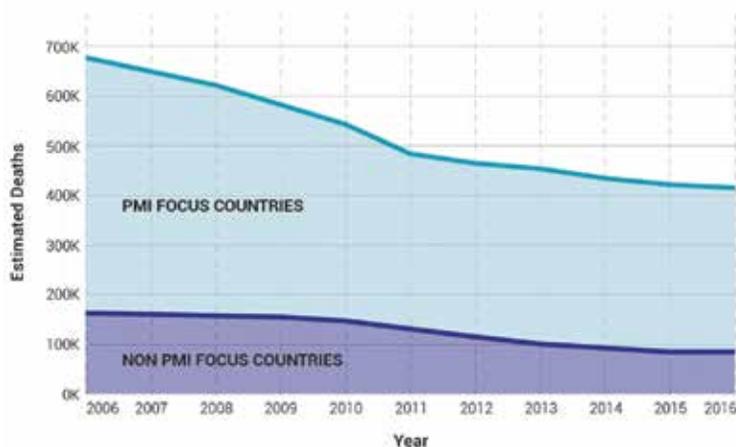


Staff in DPDM's Parasitic Diseases Reference Diagnostic Lab examine worms collected from humans and animals to confirm infections with *Drancunculiasis medinensis* (Guinea worm disease) and preserves samples for education and training. In 2017, only 30 human cases of Guinea worm disease were reported from 2 countries.
Photo Courtesy: ©David Snyder/CDC Foundation

Proving that malaria interventions work in sub-Saharan Africa

In September 2017, DPDM staff led the publication of a special supplement in the *American Journal of Tropical Medicine and Hygiene*, "Evaluating the Impact of Malaria Control Interventions in Sub-Saharan Africa," which demonstrated that over the last decade global malaria control efforts have saved millions of children's lives in the areas most affected by malaria. In nine novel articles, the authors, including those from PMI and other partner agencies, presented real-world evidence of declining trends in malaria infection and illness as well as improved child survival across sub-Saharan Africa. For example, the authors noted that between 2000–2015 malaria deaths declined by 60 percent, and almost seven million lives were saved.

Decreasing malaria deaths in sub-Saharan Africa



NOTE: This figure reflects data from 19 PMI focus countries and 24 non-focus countries in sub-Saharan Africa. Source: WHO World Malaria Report, 2017, Annex 3 - F.a. Estimated malaria cases and deaths, 2010–2016.

What Lies Ahead

Protecting Americans: Working with healthcare providers to deliver life-saving diagnosis and treatment of parasitic diseases in the United States, and to disseminate up-to-date, data-driven guidelines and recommendations for public health partners and the public.

Eliminating the Global Burden of Malaria and NTDs: Reducing the global deaths, illnesses, and risks of malaria and NTDs by providing scientific support to ensure data-driven, effective disease control and elimination programs.

Advancing Research: Conducting research to develop tools and approaches to better detect, prevent, and control parasitic diseases, mitigate drug and insecticide resistance, and accelerate progress towards elimination.

Integrating elimination efforts across diseases

In 2015, CDC, the Nigeria National Malaria Elimination Programme (NMEP), the Nigeria Field Epidemiology and Laboratory Program (NFELTP), and the National Stop Transmission of Polio (NSTOP) program initiated the NSTOP/ Malaria Frontline Project to improve malaria control in Nigeria by strengthening the capacity of the public health system to reduce malaria, as well as to improve the prevention, detection, and response to epidemics and other high-impact diseases. The project builds on the experience gained from polio eradication efforts and the Ebola response to strengthen capacity at the facility, local government area, and state levels to analyze and use malaria surveillance data for decision making. In 2017, the Malaria Frontline Project provided training, onsite mentorship, and technical support to more than 5,000 local government health officials across Kano and Zamfara States. Now community healthcare workers can carefully monitor the stocks of malaria prevention and treatment supplies and trends in local illness cases diagnosed and

treated in each of the health facilities. They are also able to use data to spot early trends and to target emergency supplies and outreach efforts at the time and place they are most needed.

Partnering to eradicate Guinea worm disease

In January 2017, WHO redesignated the Parasitic Diseases Branch in DPDM as a PAHO/WHO Collaborating Centre (WHOCC) for Dracunculiasis Eradication, continuing CDC's longstanding commitment to eradicating Guinea worm disease (GWD) globally. One of DPDM's critical contributions to the global program is aiding in the proper diagnosis of GWD from suspect cases. In 2017 DPDM staff examined 111 individual worm specimens received from humans and animals with suspected GWD.

Innovating diagnosis of NTDs

Since 2012, DPDM laboratories have been working on the development of antibody-based testing for post-elimination surveillance for the eye disease trachoma, an NTD, with a focus on the *Chlamydia trachomatis* antigen, Pgp3. Historically the only primary method for diagnosis was physical examination of the eye and/or examination of stained conjunctival scrapings of the eye. By the end of 2017, DPDM-developed tests had been evaluated by laboratories in three African countries, and more than 60,000 blood samples from 29 districts in 11 countries had been tested using the new test.

Increasing provider awareness of parasitic diseases in the United States

DPDM is committed to raising awareness of five neglected parasitic infections in the United States, including Chagas disease. In September 2017, DPDM staff participated in an all-day continuing medical education (CME) symposium, "Chagas disease in the United States: Improving Patient Diagnosis and Treatment," held at Einstein College of Medicine in the Bronx, NY. The symposium, supported by DPDM's neglected parasitic infections cooperative agreement, included discussion of the epidemiology and clinical aspects of Chagas disease and how to diagnose and manage patients with Chagas disease in the United States. More than 100 health care providers were trained on general clinical management, approaches to managing chagasic cardiac disease, and the results of a trial that assessed the impact of treatment on patients with early chagasic cardiac disease.

DPDM: What We Do

DPDM protects the health of Americans, including active and retired military personnel, travelers returning to the United States, and those living abroad, as well as the global community, from parasitic diseases. We:

- Provide life-saving diagnostic, consultative, and epidemiologic and entomologic services and training.
- Prevent, track, and treat parasitic diseases in the United States.
- Prevent, control, and eliminate NTDs and malaria, including co-implementing PMI with USAID.
- Conducting innovative research to accelerate control and elimination of malaria and NTDs worldwide.



Low-tech solutions are often required in the field when collecting dried blood spots for antibody testing, including DPDM's new serology test for trachoma.
Photo Courtesy: CDC photo by Caitlin Worrell

GLOBAL IMMUNIZATION DIVISION (GID)



Children in the town of Dadaab located in Garissa County, in eastern Kenya, showing their marked fingers after being vaccinated against polio by the STOP team during the in-process monitoring following the wild type poliovirus outbreak.
Photo Courtesy: CDC foundation/ Adam Hassan Haji

2017 GID SNAPSHOT



Worked towards eradicating wild poliovirus (WPV) and improved campaign quality in the three endemic countries — Afghanistan, Nigeria, and Pakistan.



Responded to outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2) in Syria and the Democratic Republic of the Congo.



Tracked global measles deaths and illnesses through an elaborate network created by the Measles and Rubella Initiative and reported less than 100,000 measles deaths for the first time in history.



Assisted several WHO regions to achieve Hepatitis B control or elimination goals. Most notable achievements were documented in the Western Pacific and South East Asia Regions.

Year In Review

Supporting Global Polio Eradication Efforts

CDC's Global Immunization Division (GID) continues to play a key role in reducing the number of WPV cases. Substantial progress toward global polio eradication continues, with only 22 cases reported in 2017.

In Afghanistan, GID works closely with in-country contractors and the International Federation of Red Cross and Red Crescent Societies to improve case investigation and campaign monitoring to ensure every child is vaccinated.

In Pakistan, GID is deeply invested in Pakistan's NSTOP program, which recruited 65 officers to work in all aspects of polio eradication activities, including vaccination campaign microplanning and implementation, acute flaccid paralysis (AFP) surveillance, and case investigations. The work of in-country partners (e.g., WHO, UNICEF), in coordination with GID's support to the MOH, resulted in steady progress toward eradicating polio, with the number of cases at a record low of only eight WPV cases in 2017 as compared to the previously record of 20 in 2016.

In Nigeria, there were no new cases of WPV reported in 2017. However, polio surveillance and vaccination is not possible in many of the northern Nigerian communities affected by an insurgency. Despite military progress in retaking areas previously held by insurgents, an estimated 30 percent of settlements in Borno State remain inaccessible, and an estimated 130,000–210,000 children under the age of five years are beyond the program's reach.

Responding to Circulating Vaccine Derived Poliovirus type 2 (cVDPV) and other Public Health Outbreaks

On rare occasions, oral polio vaccine virus will circulate among under-vaccinated populations and develop into a form that can cause outbreaks of paralysis. In 2017, two outbreaks of cVDPV2 occurred in Syria (74) and the Democratic Republic of the Congo (DRC).

In Syria, mass polio vaccination campaigns were used to vaccinate more than 350,000 children in high-risk areas. GID provided technical assistance to the Eastern Mediterranean Regional Office of WHO with planning and implementing response activities, including:

- Deploying epidemiologists, consultants, and data managers to the regional office to support analysis of AFPs surveillance data and outbreak trends and determine the quality of surveillance in high-risk areas.
- Analyzing post-campaign coverage data and preparing a comprehensive report on Phase I of the outbreak response vaccination campaigns.
- Developing a contingency plan for Phase II of outbreak response vaccination campaigns.



Getting MCV Nigeria M&RI.
Photo Courtesy: Christine McNab



Notable Scientific Publications

1. Hagan JE, Takashima Y, Sarankhuu A, et al. Risk Factors for Measles Virus Infection Among Adults During a Large Outbreak in Postelimination Era in Mongolia, 2015. *Journal of Infectious Diseases*. 2017. doi: 10.1093/infdis/jix449. [Epub ahead of print] PMID: 29040627.
2. Scobie HM, Patel M, Martin D, et al. Tetanus Immunity Gaps in Children 5-14 Years and Men \geq 15 Years of Age Revealed by Integrated Disease Serosurveillance in Kenya, Tanzania, and Mozambique. *American Journal of Tropical Medicine Hygiene*. 2017; 96(2):415-420. doi: 10.4269/ajtmh.16-0452. PMID: 27920395.
3. Wallace AS, Willis F, Nwaze E, Dieng B, et al. Vaccine Wastage in Nigeria: an assessment of Wastage Rates and Related Vaccinator Knowledge, Attitudes and Practices. *Vaccine*. 2017; 35(48 Pt B):6751-6758. doi: 10.1016/j.vaccine.2017.09.082. Epub 2017 Oct 21.



Nigerian Field Epidemiology Training Program (NFETP) resident, Dr. Binta Bako Sule, in the process of administering the oral polio vaccine (OPV) to a previously missed child, during a National-Stop Transmission of Polio (N-STOP) posting for the National Supplemental Immunization Activity in this region. Photo Courtesy: CDC foundation/ Binta Bako Sule

In response to the cVDPV2 outbreak in the DRC, health workers initially vaccinated more than 750,000 children in two of the affected provinces. Subsequently, more than 10 million children were vaccinated as part of an immunization campaign in an expanded response area. GID deployed staff to work with partners and the government to monitor and make recommendations to improve the quality of vaccination campaigns, enhance AFP surveillance, and improve logistics and communication.

GID responded to what is estimated to be the largest global outbreak of meningitis serogroup C in 2017. GID provided technical expertise and support to the government of Nigeria during the outbreak response using the polio eradication infrastructure. GID worked with other international agency partners to plan and implement mass vaccination campaigns in the most affected states, including Sokoto and Zamfara. The vaccination campaign, which targeted 2.1 (84.4%) million persons aged 2–29 years, helped control the outbreak. Additionally, GID worked with field teams to support case detection and surveillance strengthening in all states, regardless of whether states reported cases. GID provided technical assistance in developing communication strategies for addressing the outbreak, including media and communications training for Nigeria government public health staff to help improve vaccination uptake in communities and to adopt behavioral changes that helped control the spread of the outbreak.

Reducing the Number of Measles Deaths and Preventing Rubella-Associated Birth Defects

GID plays a key role in the Measles and Rubella Initiative (M&RI), a global partnership dedicated to ensuring a world free of measles and rubella. In 2017, GID deployed 30 staff from four CDC Centers (CGH, NCEZID, OPHPR, and NIOSH) on 45 deployments to support 10 countries in preparing for and implementing measles and rubella mass immunization campaigns.

Since 2000, children received an estimated 5.5 billion doses of measles-containing vaccines through routine immunization and mass vaccination campaigns, saving an estimated 20.4 million lives. The number of measles' deaths dropped from 550,000 in 2000 to 90,000 in 2016. This drop marked the first time in history that the annual number of deaths from measles was less than 100,000.

Rubella is the leading vaccine-preventable cause of birth defects. By December 2016, 152 (78%) of 194 countries introduced rubella-containing vaccines (RCV) into their national immunization programs to prevent these adverse pregnancy outcomes. In 2017, two additional African countries introduced RCV, and India and Indonesia started to conduct vaccination campaigns to introduce RCV.

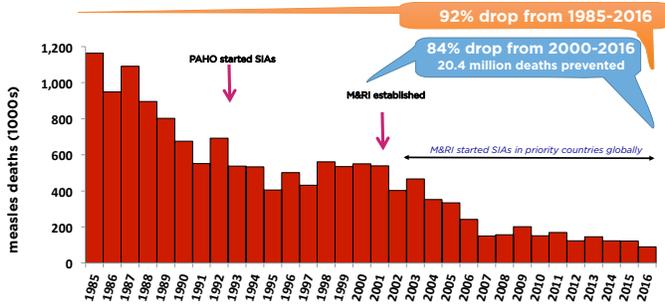
What Lies Ahead

Eradicating polio: wild polio transmission continues to circulate in three countries: Afghanistan, Nigeria, and Pakistan. GID is committed to strengthening surveillance, supporting vaccination campaigns, reaching children in inaccessible areas, preventing cross-border transmission, and responding to outbreaks.

Reducing morbidity and mortality from vaccine preventable diseases: with the specific aim of reducing measles associated deaths, cases of congenital rubella syndrome and hepatitis B infections by introducing new vaccines and strengthening surveillance will lead to decreased child mortality.

Strengthening immunization systems to achieve global goals: through innovative approaches including increasing community demand for vaccines, increasing access to immunizations, strengthening healthcare workforce, and improving data systems.

Reduction in Global Estimated Measles Deaths, 1985-2016



Source: MMWR / October 27, 2017 / Vol. 66 / No. 4

Preventing Hepatitis B through Vaccination

In 2017, GID supported several regions to achieve their hepatitis B control or elimination goals. During 1992-2014, hepatitis B vaccination prevented almost 37 million chronic hepatitis B virus (HBV) infections in the Western Pacific Region (WPR), and 16 million chronic HBV infections in the South East Asia Regions (SEAR), averting a projected 7 million deaths and 2.6 million deaths, respectively. Before the introduction of hepatitis B vaccination, the WPR had one of the highest prevalence rates (>8%) of chronic HBV infection anywhere worldwide. By 2017, WPR achieved the target of decreasing the burden of hepatitis B virus infection among children to less than 1%. In 2017, the South East Asia and Western Pacific Regions launched the integrated triple elimination of HIV, hepatitis B, and syphilis, an important step towards the elimination of hepatitis B by 2030.

Strengthening Immunization Workforce around the World

GID established a three-year program in South Sudan to build capacity. The purpose of the program is to build capacity in South Sudan for managing its national immunization program. Fifty-six South Sudanese at the national and state levels are being trained in the core areas of immunization including vaccine preventable disease surveillance and delivery of routine immunizations.

In 2017, the Stop Transmission of Polio (STOP) program celebrated the 50th training class in Uganda. The STOP program provides training to public health professionals dedicated to volunteering in the fight against polio and continues to provide programmatic support to countries that are at high risk for polio transmission. The STOP participants work to fill gaps in polio immunization campaign management, implementation, and monitoring by working with polio and immunization program staff on field epidemiology, data management, communication outreach, immunization system strengthening, and outbreak response.

GID: What We Do

GID protects the health, safety and security of Americans and people around the world by preventing disease, disability, and death from vaccine-preventable diseases (VPDs). We:

- Implement programs to eradicate polio and to eliminate measles and rubella
- Strengthen global surveillance to prevent, detect, and respond to outbreaks of VPDs
- Strengthen routine immunization programs
- Introduce new and underutilized vaccines, and promote safe injection practices
- Provide technical expertise on evidence-based research, strategies, and policy for international and government public health entities.

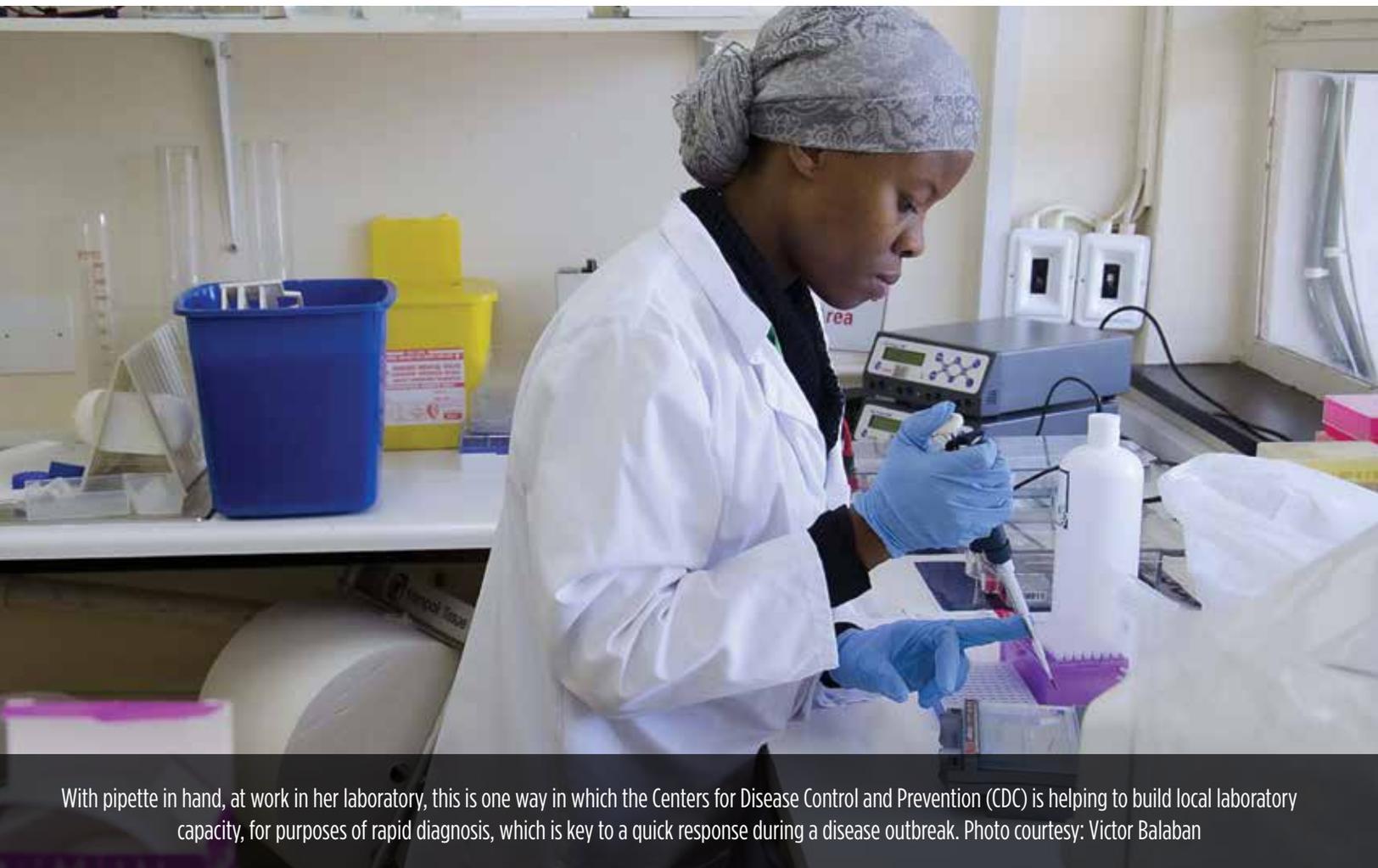


Mothers brought their young children to this vaccination post in order to have them vaccinated against vaccine-preventable diseases including polio, and measles.

Photo Courtesy: CDC Foundation/ Alan Janssen

CGH

LOOKING FORWARD



With pipette in hand, at work in her laboratory, this is one way in which the Centers for Disease Control and Prevention (CDC) is helping to build local laboratory capacity, for purposes of rapid diagnosis, which is key to a quick response during a disease outbreak. Photo courtesy: Victor Balaban

In 2017, dedicated staff across CGH worked with singular focus to protect the health of Americans and to save lives at home and abroad. This brief cross-section of work performed by CGH in 2017 provides only a hint of the fuller portrait of CDC's on-the-ground efforts and expertise worldwide over the last year.

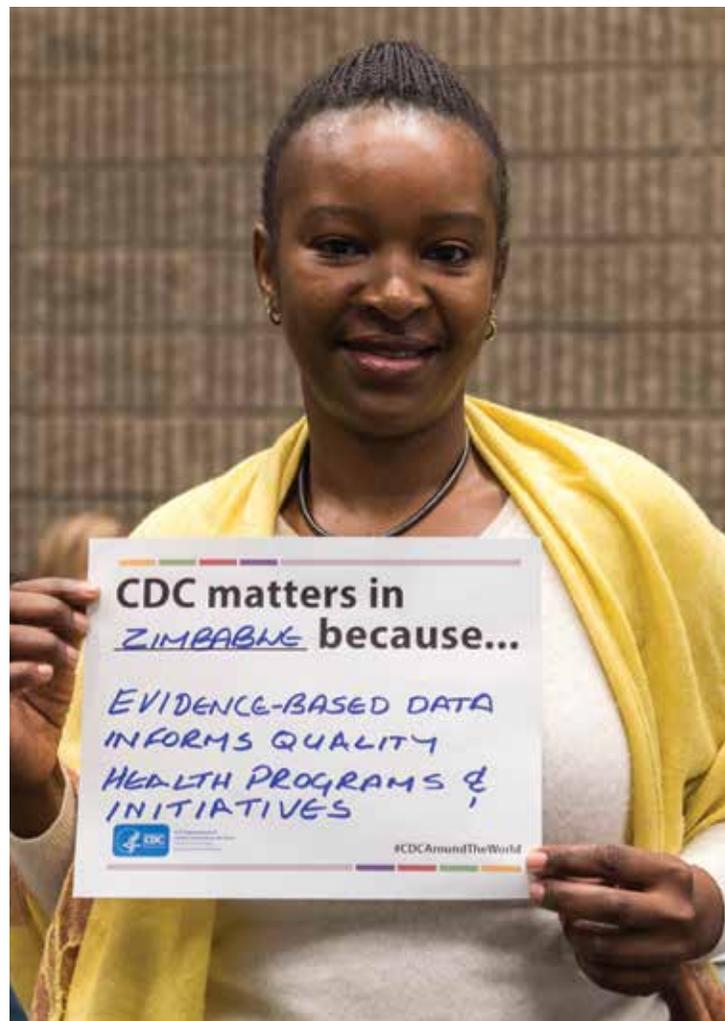
In 2018 and beyond, CGH will use proven interventions, data driven strategies, and state-of-the-art methods for detecting, responding, and preventing disease threats wherever they occur.

In 2018, CGH experts will continue to use science, deep experience, and world-recognized expertise to address key global public health challenges.

CDC's 2018-2021 global health strategic framework will drive measurable, sustained progress in the highest impact areas based on the burden of diseases, the likelihood of impact, and the economic consequences of not being adequately prepared to address a range of public health threats in the next four years.

This revised global health strategy brings us together as One CDC. Our focus on protecting Americans worldwide will lead to positive and lasting improvement in global public health in 2018.

CDC's global health mission is to **improve the health, safety, and security of Americans while reducing morbidity and mortality worldwide**. The agency does this through its unique technical skills, scientific knowledge and research, collaborative partnerships, and evidence-based, global public health action. CDC executes its global health vision and mission by focusing on three key goal areas: 1) achieving measurable **global health impact**, 2) assuring global **health security**, and 3) providing world-renowned public health science **leadership**.



All countries should have the capacity to prevent, detect, and respond to any public health event. Continuing to act on a shared purpose in 2018 moves us closer and faster to strengthening CDC's strategic and technical role in global health relationships. This One CDC approach helps us achieve and sustain CDC's global health goals and achieve success.

In 2018, CDC will continue its efforts to stop public health threats at their source to keep Americans safe at home and while traveling and living abroad - including military personnel deployed worldwide. This will improve global public health and economic stability, which protect Americans and foster safe, secure, and healthy societies worldwide.

CDC will continue to work with its partners to maximize health impact and to prevent disease among people in the United States and around the world. These collaborative partnerships combine technical skills, scientific knowledge, and research, which result in evidence-based, global public health action.

CDC fosters health diplomacy through these longstanding bilateral and multilateral partnerships. The individual strengths of the CDC's diverse partners are crucial to our shared goal of having a sustainable and measurable positive health impact around the globe.

In 2018 and beyond, CGH will work to realize disease-specific goals, such as UNAIDS 95-95-95 to fight HIV/AIDS, to eliminate TB by 2035, and to move closer to eradicating polio and Guinea worm disease. That same determination and expertise will be applied to controlling measles and rubella, malaria and other parasitic diseases, and to ensuring continued progress to strengthen global health security.

CGH will continue to be ready 24/7 to save lives and to keep Americans safe and secure, to prevent diseases from spreading in the United States, and to reduce the economic impact of disease outbreaks worldwide.



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