

Centers for Disease Control and Prevention  
**Infectious Diseases**

Snapshot 2008



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## Message from the Director Coordinating Center for Infectious Diseases

On behalf of the Coordinating Center for Infectious Diseases (CCID), I am pleased to present this report on infectious disease activity at the Centers for Disease Control and Prevention (CDC). This document provides a snapshot of CCID's budget and highlights many of the policies, programs, and collaborative activities that were undertaken in 2008 to advance CDC's public health mission.

As the focal point for infectious diseases and microbial threats at CDC, CCID and its four National Centers have made significant progress in 2008. To highlight just a few accomplishments:

- We helped identify threats and quell potential outbreaks ranging from hemorrhagic fevers in Africa to food-borne diseases here at home.
- We improved our preparedness for an influenza pandemic through planning, exercises, and enhanced relationships with partners and stakeholders.
- We helped achieve a record number of people choosing to be vaccinated for seasonal influenza.
- Building on our work with avian influenza, we enhanced our relationships with colleagues in veterinary science, environmental science, and agriculture, thereby expanding the concept of "One Health".
- We continued to reduce U.S. morbidity for common vaccine-preventable diseases through the high coverage rates realized from our vaccination programs.
- We developed an improved method of estimating the onset of HIV, allowing better estimates for the scope and magnitude of the epidemic in the United States.
- Internationally, we provided critical life-sustaining antiretroviral therapy to more than two million persons living with HIV.
- We continued to enhance our infrastructure and capacity to support science, public health research, and programs, through new state-of-the-art facilities.

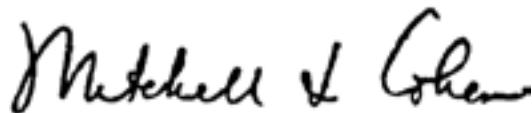
## Director's Message

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Even as we reflect on our significant progress, we realize there is still much more to achieve. With the publication of this retrospective, CDC, together with our partners here and abroad continues to respond to the worldwide outbreaks of H1N1 influenza virus. This ongoing event provides a stark reminder of the vital work ahead, the importance of continuing our vigilance, and strengthened collective efforts to prevent and control infectious disease outbreaks and other public health emergencies.

Moving forward, other serious challenges continue to impact the public's health and welfare. Changing ecosystems, population movement, and other factors fuel the emergence of new infections and drug-resistant strains of previously treatable ones. Food-borne outbreaks remain an ongoing challenge. The successes achieved in virtually eliminating some vaccine-preventable childhood diseases has resulted in complacency among some about getting children vaccinated; this couple with the fear of vaccines has provided the opportunity for the re-emergence of those threats. Healthcare associated infections (HAI) continue to place both patients and healthcare workers at unacceptably high levels of risk. Our nation's economic challenges also have significant implications for protecting the public's health, particularly those who have been disenfranchised. Clearly, there is much more to be done. Looking forward, we are committed to meeting these challenges in pursuit of our vision of a world safe from infectious disease and microbial threats.

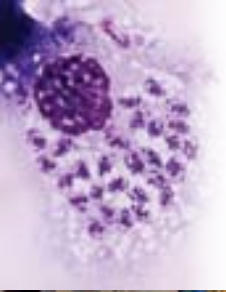
I would like to take this opportunity to thank our dedicated CDC professionals who commit their energy and talents every day in support of our mission to make a difference in the lives of Americans and people, the world across, through the prevention, detection, and control of infectious diseases. I would also like to recognize our many collaborative partners. Without their contributions and commitment, our efforts would be neither as far reaching nor as effective.



Mitchell Cohen, MD  
RADM U.S. Public Health Service  
Director, Coordinating Center for Infectious Diseases  
Centers for Disease Control and Prevention







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# Overview

## Infectious Diseases and the Centers for Disease Control and Prevention

### People and Science in Service of Public Health

The Centers for Disease Control and Prevention (CDC), first known as the Communicable Disease Center, was established in Atlanta in 1946. It had evolved from an agency called Malaria Control in War Areas, with a mission to combat the spread of this dreaded infectious disease. Much has changed in the world since CDC's founding. Science and technology have advanced exponentially, improving our ability to diagnose and treat a myriad of infectious diseases. CDC, with its dedicated people and commitment to science in the service of public health, has been at the forefront of these efforts. Today, CDC's scope and mission have grown to encompass a multitude of health issues: ranging from chronic diseases including diabetes and cancer, environmental health threats and natural disasters, injury and disability, to the threat of bioterrorism. Throughout this expansion, the prevention and control of infectious diseases and microbial threats remain at the core of CDC's public health mission, with more than half of the agency dedicated to this vital effort.

## Coordinating Center for Infectious Diseases (CCID)

The axis of CDC's efforts toward prevention, detection, and control of infectious diseases is the Coordinating Center for Infectious Diseases. CCID comprises four national centers with unique and complementary missions and capacities. CCID collectively envisions a world safe from infectious diseases and microbial threats, both naturally occurring and those that are intentionally spread.

In support of CDC's public health mission, CCID strives to protect people from infectious diseases and thereby enhance the potential for full, satisfying, and productive living across the lifespan of all people in all communities. With CCID and its four national centers committed to that end, CDC is known for:

- Working with state health departments and others to conduct disease surveillance
- Providing national leadership in times of public health crisis
- Diagnosing rare, highly dangerous, and previously unknown diseases
- Responding rapidly to requests for outbreak assistance in the United States and abroad
- Integrating epidemiologic and laboratory expertise to address infectious disease problems
- Researching public health issues and translating the findings into practical tools for disease control and prevention
- Using surveillance data to drive public health action and inform strategic planning
- Training public health workers in applied epidemiology and state-of-the-art diagnostics

CDC's commitment to science combined with public health programs, dedicated professionals, and public health partners, work to meet the challenges of infectious diseases and microbial threats— from the natural emergence of new disease strains to the intentional use of biological agents as weapons of terrorism.

CDC's unique combination of capabilities, programs, and critical scientific and laboratory infrastructure are a vitally important treasure and resource for the protection and promotion of health domestically and globally.

## Healthy People in a Healthy World: Responding to Infectious Diseases on Global Scale

Every year, infectious diseases are responsible for millions of deaths, untold suffering and hardship that can be physical, psychological, and economic.

The risk of regional epidemics and global pandemics is a very real concern facing governments and health workers the world over. New, emerging infectious diseases and microbial threats, antimicrobial resistant pathogens, and the possibility of pandemic disease—in the form of influenza or another illness—represent just a few examples of how infectious diseases pose a real and potentially catastrophic threat to human health everywhere.

**Protecting U.S. Health at Home and Abroad.** Infectious diseases do not recognize borders. Therefore, safeguarding our nation's health requires meeting disease challenges both domestically and globally. In partnership with other U.S. government agencies and private partners, CDC plays a critical role in protecting the world's health from the threat of infectious diseases on a truly global scale.



### CCID Facts

- Manages an annual budget over \$6 billion, 87% of which is used for extramural programs and activities
- Coordinates efforts across 4 national centers and their 20 divisions
- Is the organizational home for the cross-agency Influenza Coordination Unit (ICU)
- Employs over 5,000 staff in over 50 countries and 170 occupations
- Operates over 30 World Health Organization (WHO) Collaborating Centers
- Operates and oversees the 20 U.S. quarantine stations nationwide
- Responded to more than 90 international disease outbreaks and public health events and discovered 22 new pathogens in 2008 alone
- Addresses a wide range of public health issues and activities including
  - Surveillance
  - Outbreak investigation and response
  - Epidemiologic and laboratory research
  - Policy development and advocacy
  - Health behavior promotion
  - **Leadership and training**

**At the request of state, local, or foreign governments, or the World Health Organization (WHO), CDC provides assistance to areas and people impacted by infectious diseases.**

CDC programs such as those targeting polio eradication, malaria, HIV/AIDS, TB elimination, measles, influenza, and other diseases provide ongoing assistance to countries across the globe. Annually, vaccinations are provided to millions of infants and children to protect them against preventable diseases and death.

CDC's Global Disease Detection and other surveillance networks including those covering Africa, the Americas and Caribbean, Asia, Europe, and the Middle East allow CDC to help foreign governments and partners quickly detect and contain outbreaks at their source. Included in these efforts are collaborations at overseas field stations in countries such as Kenya, Thailand, and Guatemala. These programs provide CDC scientists with invaluable opportunities to contribute globally and to examine the epidemiology of emerging and other infectious diseases—their agents,

lifecycles, communicability, and prevention and control methods. In addition, CDC works with local health officials and other partners to provide training, building important laboratory capacity, infrastructure, and expertise in disease surveillance and epidemiology within host nations.

**A Vital World Resource.** Considered the premiere public health organization in the world, CDC is a vital resource to people in need across the globe. Providing international outbreak assistance is recognized as a critical and integral function of CDC.

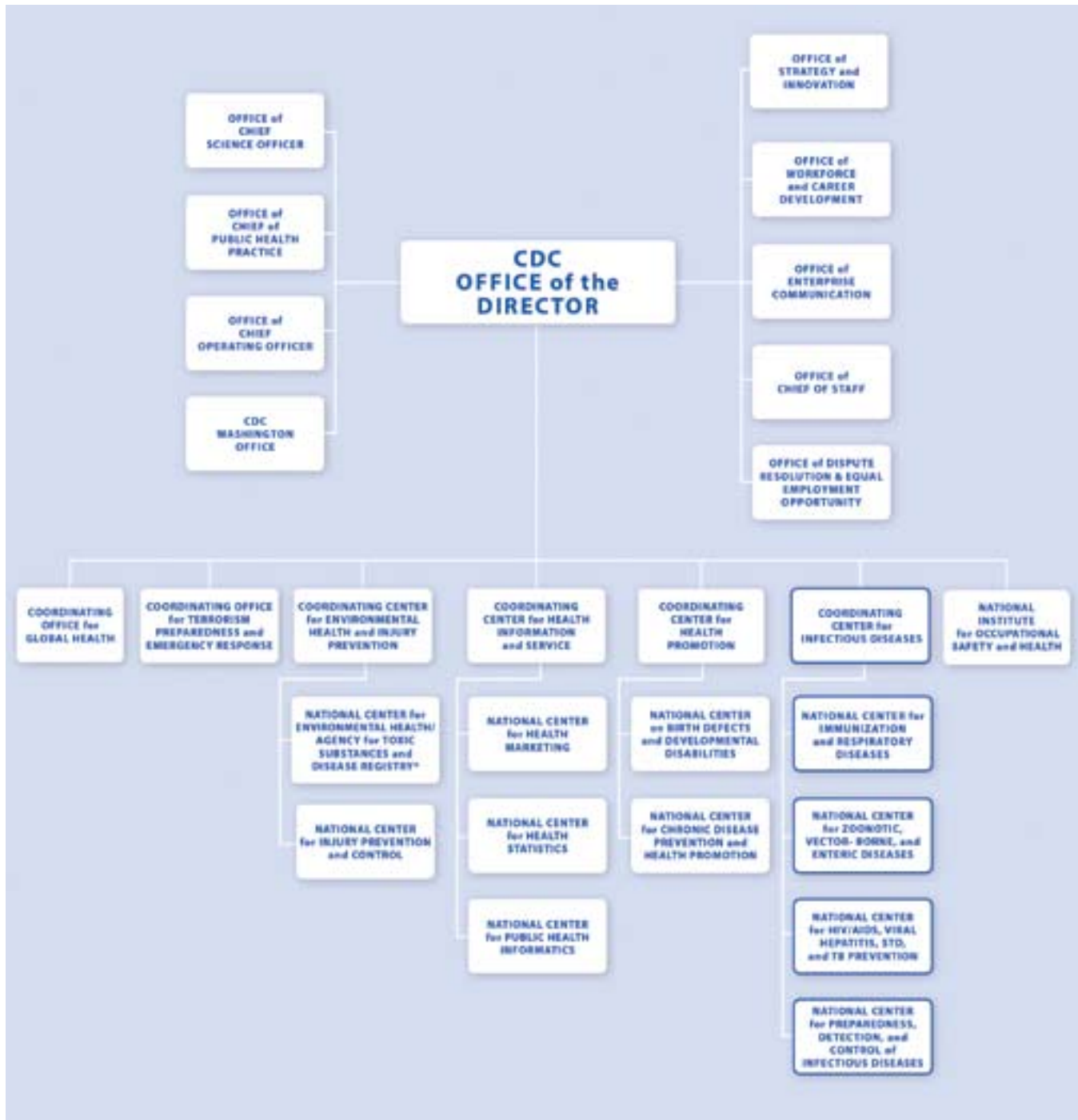
Important facets of CDC's infectious diseases capacity are the more than 30 World Health Organization (WHO) Collaborating Centers. These are most often housed in laboratories and provide WHO with technical guidance including diagnostic and epidemiologic support for numerous infectious disease agents ranging from antimicrobial-resistant agents (such as Methicillin Resistant Staphylococcus Aureas—MRSA) to viral hemorrhagic fevers (such as Ebola). As WHO does not maintain laboratory resources of its own, the CDC Collaborating Centers are crucial, and for many agents, are the only laboratories in the world with the necessary diagnostic capabilities so critical to effective prevention and control efforts.

**Health Diplomacy.** CDC's efforts in addressing the goals of healthy people in a healthy world go beyond disease prevention and control. CDC personnel at field offices and those deployed for targeted responses are ambassadors of goodwill and hope—often when people need help the most. By assisting other countries faced with dangerous diseases, CDC furthers U.S. humanitarian and diplomatic efforts. These efforts in turn help create goodwill between the U.S. and other countries, thus improving international relations and helping advance broader U.S. policy objectives.

Maintaining and strengthening CDC's domestic and global capacities and critical infrastructure are vital to protecting the health of Americans and broader national interests, now and into the future.

In the following pages, CCID offers a snapshot of CDC's infectious disease activities and accomplishments during Fiscal Year 2008, toward a vision of a world safe from infectious diseases and microbial threats, made possible through our commitment to sound science, programs, people, and partners.

# CDC Organization Chart







# CCID National Centers

## National Center for Immunization and Respiratory Diseases (NCIRD)

This Center's mission focuses on the prevention of disease, disability, and death through immunization and by control of respiratory and related diseases.

Respiratory infectious agents have captured the public spotlight based on their sudden emergence, severe clinical consequences, and the difficulty of controlling their spread. Outbreaks of Legionnaires' Disease, resurgent measles, meningococcal C meningitis in colleges, hantavirus acute respiratory syndrome in the Southwestern US, inhalational anthrax, severe acute respiratory syndrome—SARS, H5N1 avian influenza, and more recent emergence of severe type 4 adenovirus collectively provide a vivid picture of the public's concern, the public health infrastructure under strain, and the critical role of astute clinicians and other health workers as the bedrock of our nation's health protection system. For decades, CDC has been known for its role in countering urgent respiratory health threats, based on integration of laboratory and epidemiologic scientific expertise, rapid response capability, and support of local and state public health programs. More recently, CDC's expertise in risk communication has been added to the essential resources available to address this type of health crisis.



While the emergence of new or unrecognized infectious diseases traditionally requires a broad collaboration across CDC as well as across state, local, and federal jurisdictions, the formation of NCIRD provided the opportunity to strengthen CDC's approach to preparedness for infectious respiratory threats.

CDC is working on strategies that will improve prevention of and response to seasonal influenza throughout the world, in support of the President's National Strategy on Pandemic Influenza, the Department of Health and Human Services Pandemic Influenza Plan, and other initiatives, to ensure that the US is prepared for an influenza pandemic.

In the US, immunization programs are supported by CDC's infectious disease infrastructure that seeks to advance the knowledge base of disease burdens and effective strategies to prevent diseases. Immunization and respiratory disease programs, supported by this strong integrated infrastructure, improve national, state, local, and global health capacity to respond to outbreaks of vaccine-preventable and other respiratory and related infectious diseases.

## NCIRD People in Action

The National Center for Immunization and Respiratory Diseases completed 2008 with a renewed commitment to make a difference. Thanks to the hard work of CDC staff and partners, the collective efforts are paying off.

### Protecting Children

Every year in the developing world, nearly 1 million children die from pneumonia and other infections of the lower respiratory tract. In addition, new respiratory infections, such as SARS, have demonstrated their ability to travel quickly across international borders, creating a larger global threat.

NCIRD epidemiologists and laboratory scientists have been working with CDC partners to build a new overseas network of sites that are able to detect, monitor, and prevent severe respiratory diseases using state-of-the-art diagnostic methods. CDC investigators traveled to CDC collaborative sites in Bangladesh, China, Egypt, Guatemala, Kenya, and Thailand to train site investigators, analyze data, and develop system plans. They also worked with site investigators to evaluate where patients with severe respiratory infections seek care and whether those infections are identified by the program. In addition, CDC held a Global Disease Detection laboratory workshop that trained participants from each site on new diagnostic methods and addressed challenges facing scientists in developing countries. Meanwhile, NCIRD continued developing new tests to detect respiratory pathogens and began building a bank of respiratory specimens that can be used to develop new diagnostic tests and discover new pathogens.

NCIRD's polio eradication efforts contributed to a significant decline in the number of cases worldwide. In particular, there were significant achievements in India and Nigeria, two of the four countries (including Afghanistan and Pakistan) where indigenous transmission of polio continues.

Pneumonia and meningitis are major killers of young children in the developing world. For a variety of economic and other reasons, vaccines to prevent these diseases are often underutilized or unavailable. In response, NCIRD is working with partners around the world to make life-saving vaccines available to those most in need.

Building upon this effort, CDC and its partners worked to develop and deploy systems around the world to support the improvement of routine immunization service delivery. In Sierra Leone, for example, CDC worked with its partners—the national Ministry of Health, WHO, the U.N. Foundation, and DataDyne—to deploy an integrated child-survival data system in every district of the country, and also a PDA-based system to provide data on integrated, supportive supervision on the provincial level. Together, these systems aim to provide program managers with timely information on routine immunization efforts as well as malaria and diarrheal disease control.

### Immunization Action

To deliver on the promise of the recently recommended vaccines for 11- and 12-year olds – Tdap, meningococcal conjugate, and HPV vaccine (for girls) – CDC launched a preteen immunization campaign, funded adolescent



coordinators for state programs, and spotlighted new communication materials. Substantial drops in both pneumonia hospitalizations and direct medical care costs were reported due to pneumococcal conjugate vaccine use. A record number of influenza vaccine doses were distributed for the 2008 season. There were challenges, also, including selected vaccine shortages and transitioning more areas to centralized vaccine distribution.

### Vaccine Research and Development

Developing new vaccines is a critical aspect of preparing for new pandemic threats. In collaboration with the National Center for Environmental Health, NCIRD has been working to improve its method for testing the potency of pandemic and seasonal influenza vaccines, with the aim of greater speed, sensitivity, precision, and accuracy in the quantification of influenza hemagglutinin, the component critical for immune response to a vaccine. Other NCIRD research is exploring how to create vaccines that offer broader cross-reactive immunity and protection, especially for the elderly, as well as how to develop techniques to speed vaccination and extend vaccine supply. For example, preliminary results from a study led by CDC and the Walter Reed Army Medical Center indicate that during a vaccine shortage, healthcare providers might be able to stretch limited vaccine supply by immunizing healthy adults with a half-dose of seasonal influenza vaccine.

### Respiratory Disease Response

Together with state, local and international public health counterparts, CDC responded to a new strain of adenovirus type 14, and outbreaks of Legionnaires disease, *Mycoplasma pneumoniae*, pertussis, and pneumococcus. H5N1 avian influenza sustained its high virulence in human cases. In partnership with the Council of State and Territorial Epidemiologists, domestic influenza surveillance was strengthened with strategies that will improve both seasonal and pandemic influenza efforts.

### Prevention

Using historical data, CDC tallied the remarkable impact on illness and death that vaccines have had: more than 99% reductions have occurred for several of the vaccine-preventable diseases assessed. Also, exploration was

## Comparison of 20th Century Average Morbidity and Current Annual Morbidity: Vaccine-Preventable Diseases

Disease	20th Century Annual Morbidity†	2008 Reported Cases††	Percent Decrease
Smallpox	29,005	0	100%
Diphtheria	21,053	0	100%
Measles	530,217	132	> 99%
Mumps	162,344	386	> 99%
Pertussis	200,752	386	95%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	17	> 99%
Congenital Rubella Syndrome	152	0	100%
Tetanus	580	15	97%
<i>Haemophilus influenzae</i>	20,000	219*	97%

† Source: JAMA. 2007;298(18):2155-2163

†† Source: CDC. MMWR January 9, 2009;57(53);1420-1430. (Provisional, week 53 data)

\* 27 type b and 192 unknown (< 5 years of age)

continued on the reconstructed 1918 pandemic influenza virus which revealed more clues to the molecular basis of its transmissibility and virulence.

### **Training**

Strengthening preparedness was front and center. NCIRD provided pandemic and avian influenza training to international staff, rapid response teams, laboratory personnel, Epidemic Intelligence Service Officers, and partners. CDC-wide as well as tabletop exercises on pandemic influenza expanded the numbers of CDC staff and other health workers familiar with response plans. Strategic planning around CDC's health protection goals and the agency's immunization and respiratory disease efforts accelerated.

### **Global Horizons**

While vaccine-preventable diseases and respiratory infections know no borders, global cooperation led to new milestones. Measles deaths in Africa fell by 90% compared with the 2000 baseline, and continued progress is being made in polio eradication. CDC's global efforts included integrating immunizations with other health service delivery, including insecticide-treated nets for malaria control. It is truly an exciting era in immunizations and respiratory infectious disease prevention and control.

### **Vaccine Management Business Improvement Process**

In 2008, all 64 states, cities, and U.S. affiliated jurisdictions that receive federal grants for vaccines—and contribute their own funds as well—made the transition to a new centralized vaccine distribution system. This system now uses only two warehouses nationwide, as opposed to the 500 used before. With the new system, nationwide vaccine inventory is kept at appropriate levels to meet demand. In FY 2008, the one-time saving from this strategy was \$80 million.

## ***Quick CDC Response to Local Outbreaks Saves Lives***

### ***Investigating an Emerging Pathogen in Alaska***

In late September 2008, a physician on Prince of Wales Island, Alaska, noticed an unusually large number of pneumonia cases and reported this finding to the Alaska Department of Health and Social Services (AK DHSS). AK DHSS sent a team to investigate and collect respiratory specimens for testing. Preliminary tests were negative for the common respiratory pathogens. AK DHSS consulted CDC experts and shipped specimens to CDC for testing. Two days later, in several of the specimens, CDC's laboratory found adenovirus 14 (Ad14), a previously rare virus in the United States that caused an outbreak of severe respiratory disease in Oregon in 2007 and, since then, has been a common cause of illness among U.S. military recruits.



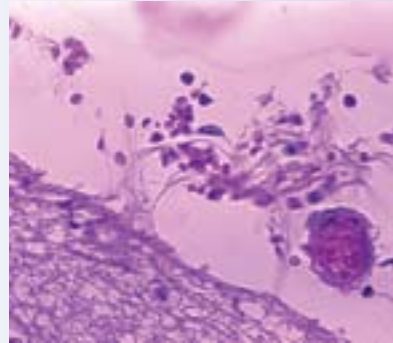
In response to the Prince of Wales Island outbreak, CDC partnered with AK DHSS to provide investigative, epidemiologic, and laboratory support. Preliminary data indicate that 39 patients met the outbreak case definition, of whom 10 were hospitalized and 1 died. The community, working with public health providers, also became involved in disseminating information about how to prevent further spread of the disease. Their efforts included an extensive hand-washing campaign in the schools and throughout the community.

## ***CDC Assists State Health Departments with Rapid Response to Life-Threatening Resistant Organisms***

### ***Drug-resistant Strain of Bacterial Meningitis***

One of every four patients contracting bacterial meningitis dies or has permanent disability. Certain drugs have been used successfully to treat this disease, if they are administered quickly. Historically, bacterial resistance to these drugs has been extremely rare in the U.S.

However, from January 2007 through January 2008, the North Dakota Department of Health (NDDH) and the Minnesota Department of Health (MDH) detected the first three North American cases of bacterial meningitis caused by a drug resistant strain.



When the third case was confirmed, the two health departments placed an urgent request for help to CDC. Within 24 hours, a team of CDC scientists arrived at the North Dakota-Minnesota border region where the cases occurred. Working with state and local officials the CDC team played critical roles in the epidemiologic investigation—including obtaining more than 500 throat cultures to assess circulation of the resistant strain. CDC's Meningitis Reference Laboratory provided further confirmation that the three cases were caused by an identical strain and further analyzed the resistance mechanism.

The timely investigation by local, state, and CDC public health staff resulted in revised prevention recommendations for the local area that were published and disseminated only weeks after the third case. To monitor the threat of increased resistance, CDC has worked to enhance routine surveillance for resistant strains and is continuing to collaborate with state health departments to perform routine testing in 15 additional states.

## ***CDC Scientists Respond to Pandemic Influenza Threats***

Over the last several years, the highly pathogenic avian influenza A (H5N1) virus—one strain of bird flu—has spread to birds in Asia, Africa and Europe. Some of those birds have passed the virus on to humans. Of the few avian flu viruses that have crossed the species barrier to infect humans, H5N1 has caused the largest number of detected cases of severe disease and death. From late 2003 through December 2008, the virus caused nearly 400 laboratory-confirmed human infections; more than 60 percent of those infected have died. Most people were infected after coming into close contact with infected birds, but health experts worry that these viruses could develop the ability to spread easily among humans, creating the potential for a pandemic.



In response to this threat, CDC researchers recently collaborated on testing an experimental drug as an alternative approach to preventing and treating avian flu in humans. The study results were promising. The novel drug (sialidase fusion protein) protected 100% of test mice from fatal disease, effectively blocked infection in 70% of them, and prevented the virus from spreading to their brains. The study also showed that with early treatment, mice that were infected had a better chance for survival—an encouraging finding for potential treatment of humans. Additionally, CDC has strengthened capability of more than 100 National Influenza Centers to diagnose seasonal and H5 avian influenza by providing diagnostic tools and training.

## National Center for HIV, Hepatitis, STD, and TB Prevention (NCHHSTP)

NCHHSTP's mission is to maximize public health and safety nationally and internationally through the elimination, prevention, and control of disease, disability, and death caused by HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome), non-HIV retroviruses, viral hepatitis, other sexually transmitted diseases (STDs), and TB (tuberculosis). NCHHSTP achieves its mission by:

- Developing, implementing, and evaluating effective science-based prevention programs for HIV, viral hepatitis, STDs, and TB;
- Developing high-quality research and translating relevant findings into a prevention policy and programs;
- Creating and strengthening strategic relationships and networks with individuals and organizations;
- Strengthening and promoting surveillance activities and findings for program planning, public health response, and evaluation.

NCHHSTP integrates epidemiology, laboratory science, and prevention initiatives related to a broad range of STDs to enhance opportunities to develop and implement collaborative public health interventions with at-risk populations. NCHHSTP is responsible for public health surveillance, prevention research, and programs to prevent and control HIV infection and AIDS, non-HIV retroviruses, other STDs, viral hepatitis, and TB. This center works in collaboration with partners at community, state, national, and international levels applying well-integrated, multidisciplinary programs of research, surveillance, risk factor and disease intervention, and evaluation.

These efforts are guided by three over-arching priorities:

- **Reducing Health Disparities**—improving the health of populations disproportionately affected by HIV, viral hepatitis, STDs, TB, and other related diseases and conditions.
- **Encouraging Program Collaboration and Service Integration**—striving to provide prevention services that are evidence-based, comprehensive, and high quality to appropriate populations at every interaction with the health care system.
- **Maximizing Global Synergies**—cultivating partnerships in prevention and research to maximize health impact around the world.

This Center is one of the largest at CDC with approximately 1,500 employees dedicated to the prevention of these infectious diseases.

The diseases addressed by NCHHSTP share a number of common indicators. They have similar or overlapping at-risk populations—including racial and ethnic minorities, men who have sex with men (MSM), and injection drug users. These diseases also have important interactions. Those who are infected with certain STDs, such as syphilis or gonorrhea, are at greater risk for HIV infection. Likewise, those who are infected with HIV are far more susceptible to TB disease because their immune systems are weakened. At risk individuals for these diseases also share similar social determinants, including poor access to health care, stigmatization, discrimination, and poverty.

In the area of prevention and control, effective, science-based interventions exist to reduce the burden of TB, viral hepatitis, most STDs, and HIV.

HIV/AIDS, viral hepatitis, STDs, and TB are among the most prevalent infectious diseases in the United States. Roughly 1.1 million Americans are living with HIV, the virus that causes AIDS. About 21% of those infected are unaware of their infection.

An estimated 18.9 million new cases of STDs (including HIV, human papillomavirus, herpes, chlamydia, gonorrhea and syphilis) occur each year in the United States. Chlamydia and gonorrhea are the two most commonly reported infectious diseases. These diseases are curable with antibiotics, but, because they are asymptomatic, people often do not know they are infected and do not seek treatment. Targeted STD screening programs are the most effective way to identify and treat them.

In 2008, a total of 12,898 cases of TB cases were reported in the United States; the TB rate declined 3.8% from 2007 to 4.2 cases per 100,000 people, the lowest rate recorded since national reporting began in 1953. Despite this overall improvement, progress has slowed in recent years. Foreign-born persons and racial/ethnic minorities continued to bear a disproportionate burden of TB disease in the United States. In 2008, the TB rate in foreign-born persons in the United States was 10 times higher than in U.S.-born persons. TB rates among Hispanics and blacks were nearly eight times higher than among non-Hispanic whites, and rates among Asians were nearly 23 times higher than among non-Hispanic whites. Among U.S.-born racial and ethnic groups, the greatest racial disparity in TB rates was for U.S.-born blacks, whose rate was seven times higher than the rate for U.S.-born whites. Intensified efforts are needed to address the slowing decline in TB incidence and the persistent disparities that exist between U.S.-born and foreign-born persons and between whites and minorities in the United States.

Hepatitis C virus is the most common blood borne infection in the United States, with an estimated 3.2 million people living with chronic hepatitis C. About half are unaware of their infection. There are also about 800,000 to 1.4 million people in the United States living with hepatitis B. Nearly 85,000 new infections of hepatitis A, B, and C have been reported annually in the United States.

## NCHHSTP People in Action

### **Domestic HIV/AIDS Prevention**

Since the beginning of the HIV/AIDS epidemic, CDC has worked to prevent HIV infections and reduce HIV-related illness and death. CDC currently funds programs that 1) help people learn their HIV status; 2) help high-risk HIV-negative persons avoid infection; 3) support prevention services for persons living with HIV infection and link them to appropriate care and treatment services; and 4) help track the course of the epidemic and identify new interventions.

CDC addresses HIV/AIDS prevention through an array of public health activities including monitoring the disease's impact, facilitating and supporting partnerships, implementing prevention programs, conducting intervention research and program evaluation, delivering technical assistance to build the capacity of organizations to offer prevention services, and developing policy and communications to support HIV prevention. These activities are conducted with public- and private-sector partners, including state and local health departments, community-based organizations and other nongovernmental organizations, universities, businesses, and the media.

Although African Americans make up less than 13% of the U.S. population, they account for approximately 50% of persons estimated to be living with AIDS in the United States. To encourage focused, collaborative action among public health partners and community leaders, CDC launched the "Heightened National Response to the Ongoing HIV/AIDS Crisis among African Americans" (HNR) in March 2007. CDC invited 89 leaders representing the media, AIDS service organizations, faith and health communities, civil/social organizations, and the arts and entertainment industry. The leaders made commitments in three activities: awareness, communications, and testing. In May 2008, CDC held a 1-year HNR anniversary event where leaders shared their accomplishments from the past year and made new commitments for 2009.

### **STD Prevention**

CDC provides national leadership toward STD prevention through research, surveillance, policy development, and assistance to states, territories, and local health departments. CDC provides federal support for a community-wide, science-based, interdisciplinary systems approach to STD prevention and conducts research to improve



prevention services and to develop and refine interventions. Focus areas include preventing STD-related infertility in women, eliminating syphilis, preventing cancers related to sexually transmitted infections (STIs), preventing STI-related HIV transmission, reducing STI-related health disparities, and addressing the effects of social and economic determinants of STDs.

### **TB Prevention**

CDC has set a goal toward TB elimination in the United States (defined as less than one case per one million population). To accomplish this goal, CDC provides leadership and assistance to domestic and international efforts to prevent, control, and eliminate TB. CDC's national program provides grants to states and other entities for prevention, control, and lab services; conducts clinical research for improving tools for diagnosing and treating TB; conducts epidemiologic and operational research to improve TB programs in the United States and globally; and supports medical consultation and training to improve awareness and clinical management of TB disease. TB priorities include interrupting TB transmission, reducing TB in foreign-born persons living or traveling in the United States, reducing TB in U.S. racial/ethnic minority populations, reducing the global impact of drug resistant TB, and reducing HIV-associated TB.

### **Viral Hepatitis Prevention**

CDC works to prevent viral hepatitis infections and their acute and chronic liver disease consequences. CDC educates health care and public health professionals to improve identification of persons at risk for chronic hepatitis C infection and ensure appropriate counseling, diagnosis, management, and treatment. CDC also conducts research and policy development to control hepatitis A and B, supports surveillance to detect new infections, and helps to ensure appropriate counseling, testing, and medical management of infected persons.

### **Communication Science, Health Marketing, and eChannels**

In FY 2008, NCHHSTP took a number of steps to increase social marketing campaigns. The STD Program awarded grants to the Centers for Excellence in Health Communication and Marketing at the University of Connecticut to study how young people might use mobile cell phone technology in viral marketing campaigns aimed at increasing awareness of the need for HIV testing.

These grants followed innovative marketing efforts in mobile media. NCHHSTP, in collaboration with the Kaiser Family Foundation and CDC's National Center for Health Marketing's eHealth Division, has been working to expand the use of mobile channels to deliver prevention messages to young people at risk. These efforts were taken a step further through an innovative partnership with the University of Georgia's New Media Center. Students developed "personal public service announcements"—short video messages about the need for HIV testing—which were distributed nationally by Verizon on its V-Cast network and through CDC's YouTube channel, CDC MySpace, and other social media channels.

This year, NCHHSTP continued to advance its use of the Web and new media by launching "Health Protection Perspectives," a blog in which CDC's partners and other interested parties can exchange ideas for the prevention of HIV, Hepatitis, STD, and TB. CONNECTIONS, an email-based newsletter for partners, also advanced program collaboration by providing updates across the center's programs.

### **Infertility Prevention**

One of NCHHSTP's key priorities for STD prevention is increasing chlamydia screening of young women outside of traditional public health settings. Annual chlamydia screening of sexually active women 25 years and younger is recommended by CDC and other professional organizations to detect and treat women before chlamydia progresses to pelvic inflammatory disease, which can lead to infertility. The National Infertility Prevention Program, a collaboration between CDC and the Office of Population Affairs, funds chlamydia and gonorrhea screening and treatment services for low-income, sexually active women attending family planning, STDs, and other women's healthcare clinics. However, a significant proportion of individuals screened or seeking medical care for STDs access services through the private or non-profit sectors.



## ***CDC Closely Monitors Surveillance Data to Identify Trends that Require Action***



### ***Study Finds One in Four Teen Girls Has a Sexually Transmitted Infection***

A CDC study released in March 2008 estimates that one in four young women in the United States between the ages of 14 and 19—or 3.2 million

teenage girls—is infected with at least one of the most common sexually transmitted diseases (human papillomavirus (HPV), chlamydia, herpes simplex virus, and trichomoniasis). The two most common STDs overall were human papillomavirus, or HPV (affecting 18 percent of teens tested), and chlamydia (affecting 4 percent of tested teenage girls).

The study is the first to examine the combined national prevalence of common STDs among adolescent women in the United States, and provides the clearest picture to date of the overall STD burden in adolescent women.

The data demonstrates the significant health risk STDs pose to millions of young women in this country every year. The health effects of STDs for women—from infertility to cervical cancer—are particularly severe. Therefore, STD screening, HPV vaccination, and other prevention strategies for sexually active women are high public health priorities to prevent the devastating effects of these diseases. The study of STDs among teenage girls highlights the significant burden of STDs among girls and women, and identifies prevention strategies for reducing the toll of STDs in the United States.

The findings also served as a wake up call to Americans concerned with adolescent and teen health. Editorials in papers across the nation called for more open discussion between parents and teens, a national campaign about the risks of STDs, adherence to screening recommendations, and recognition that STDs are a concern to everyone.

## ***CDC Responds to State and Local Health Departments' Requests for Epidemiologic and Laboratory Expertise***

### ***CDC epidemiology and laboratory staff played a critical role identifying outbreak of Hepatitis C at Nevada endoscopy clinic***

On January 2, 2008, the Nevada State Health Division contacted CDC concerning surveillance reports received by the Southern Nevada Health District regarding two people recently diagnosed with acute hepatitis C. A third person with acute hepatitis C was reported the following day. These reports raised concerns about an outbreak because this health department typically confirms four or fewer cases of acute hepatitis C



per year. Initial inquiries found that all three of these infected people had undergone endoscopy procedures at the same clinic within 35—90 days of becoming ill. Nevada officials and staff from CCID's Divisions of Viral Hepatitis (DVH) and Health Care Quality Promotion (DHQP) conducted an immediate joint investigation that identified a total of six cases among people who had undergone the endoscopy procedures within the same time period. The CCID Division of Viral Hepatitis laboratory conducted the initial molecular analysis that confirmed the association of hepatitis C virus among these patients. The joint epidemiological and laboratory investigation revealed that hepatitis C virus transmission likely resulted from reuse of syringes on individual patients and use of single-use medication vials on multiple patients at the clinic. Health officials advised the clinic to stop unsafe injection practices immediately, and approximately 40,000 patients of the clinic were notified about their potential risk for exposure to hepatitis C and other bloodborne pathogens. Following this investigation, comprehensive measures involving viral hepatitis surveillance, health-care provider education, public awareness, professional oversight, licensing, and improvements in medical devices were implemented to help ensure appropriate infection control measures were followed.



## ***CDC Scientists Continually Strive to Improve Abilities to Track and Understand Well Known and Emerging Disease Threats***

Accurately tracking the HIV epidemic is essential to the nation's HIV prevention efforts. Yet monitoring trends in new HIV infections has posed a major challenge since the beginning of the epidemic, especially since many HIV infections are not diagnosed until years after they occur. When

gathering data on infection rates, researchers could not be certain if they were detecting new infections. Breakthrough technology in the form of a new laboratory test that can distinguish recent infections from those acquired more than five months before testing, allows the clearest picture to date of new HIV infections in the U.S. CDC has applied this advanced technology serologic testing algorithm for recent HIV seroconversion (STARHS) - to develop the first national surveillance system of its kind based on direct measurement of new HIV infections.

Previous CDC estimates suggested about 40,000 people were newly infected with HIV each year. But those estimates used limited data gathered through less precise methods. Through this new technology, researchers discovered that while the annual rate of infections has not increased since the 1990s, the revised and more accurate estimated rate of new infections per year is 56,300, a 40 percent increase over the previous estimate. The data also confirm that the gay and bisexual men of all races and black men and women are most severely affected. African Americans represent nearly 50 percent of new cases.

These findings not only provide a clear indication that the U.S. epidemic in the United States is far from over, but also provides critical information for improving prevention efforts. Prevention works, but has not reached many who need it.

CDC's first estimates from the STARHS system, published in the *Journal of the American Medical Association* in August 2008, revealed that the HIV epidemic is—and has been—worse than previously thought.

## *CDC Works Around the World to Combat Disease*

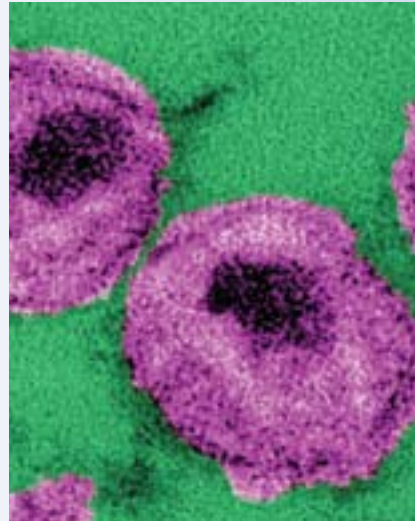
### *Global AIDS Program and PEPFAR*

CDC's Global AIDS Program (GAP) is an important partner in the President's Emergency Plan for AIDS Relief (PEPFAR), a multifaceted approach to combating HIV/AIDS in more than 120 countries around the world. Through PEPFAR, GAP works alongside other partners to provide direct scientific and technical assistance. GAP develops cutting-edge science and translates it to public health service delivery, by strengthening host country capacity to build self-reliant national public health systems. In FY 2008, PEPFAR was extended another five years, with the signing of the Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act.

In 2008, GAP strengthened laboratory networks for early infant diagnosis, developed demonstration protocols and testing algorithms, helped implement quality assurance/quality control programs, and conducted training on early infant diagnosis for laboratory technicians and healthcare providers.

The Global AIDS Program has developed training materials on pre- and post-test counseling to caregivers; worked to strengthen care, treatment, and other referral services for vulnerable HIV-exposed and infected infants; and improved data monitoring and feedback systems for early infant diagnosis. GAP also provided leadership and worked with other organizations to strengthen laboratory capacity and systems for an effective and sustainable response to HIV.

With CDC's leadership, early infant diagnosis is now being implemented in thirteen countries in Africa and two countries in the Caribbean region.



## National Center for Preparedness, Detection, and Control of Infectious Diseases (NCPDCID)

The mission of the NCPDCID is to reduce the burden of infectious diseases domestically and globally through public health leadership, partnership, science, and action. The center focuses on improving preparedness and response capacity for new and complex infectious disease outbreaks; integrating and improving laboratory services and capacity; and ensuring safe and high quality healthcare. NCPDCID works with the agency's national and global partners to conduct, coordinate, and support infectious disease surveillance, research, and prevention and to share vital information about infectious diseases. The Center has targeted programs on:

- Specific populations, such as immigrants, refugees, travelers, patients, and healthcare providers;
- Specific places, including U.S. and international borders and sites where newly emerging diseases can threaten global health; and
- Specific settings, such as laboratories, hospitals, outpatient clinics, nursing homes, dialysis centers, and other healthcare settings.

One of this Center's greatest strengths is its workforce which includes: laboratorians, infection control practitioners, information technology experts, statisticians, health economists, veterinarians, and health communication experts. The Center has nurses, medical doctors, and epidemiologists at U.S. and international sites, and health officials keeping the nation's 20 quarantine stations on alert every minute of every day.

### NCPDCID People in Action

Putting the statements above into practice is the focus of this Center—from efforts to stop the spread of staph in hospitals and the community to preventing U.S. introduction and spread of infectious disease at U.S. ports and land border crossings.

#### Preventing the Spread of Disease at Home

Drug-resistant *staphylococcus* infections are a growing problem in the U.S., and often the culprit is methicillin-resistant *Staphylococcus Aureus*—or MRSA. If not treated properly and quickly, MRSA can cause severe infection of



the bloodstream or bones and even pneumonia. Each year, about 94,000 people develop MRSA bloodstream infections, and nearly 19,000 die as a result. Most serious MRSA infections occur in hospitals and other health care settings, however, more recently, MRSA skin infections have been spread in other settings where people are in close contact with others—such as schools and athletic locker rooms. CDC partners with communities to educate the public about

ways to prevent the spread of MRSA, including frequent hand-washing, keeping cuts clean and covered, and discouraging sharing of towels and other personal items.

Another important emerging healthcare associated infection (HAI) is a new strain of *Clostridium difficile*, or C.diff. This toxic strain of bacteria can cause diarrhea and severe colitis. Ten years ago, this bacterial strain was rarely seen.

Today, it has been found in many areas of the United States, Canada, and Western Europe. More hospitals are seeing an increase in the number of patients with *C.diff* infections, that are resistant to many of the antibiotics normally used against the bacteria.

NCPDCID has worked with public and private partners to develop materials to educate hospital staff about protecting their patients from *C. diff*. Strategies include adherence to infection control measures such as frequent hand washing, contact precautions, and environmental cleaning and disinfection.

Preventing the spread of infectious diseases to healthcare workers is an important part of infection control in hospitals, nursing homes, dialysis centers, urgent care centers, and other settings where patients receive care. Healthcare workers should follow recommended practices to protect themselves and their patients.

### **Safeguarding the Nation's Donor Blood, Tissue, and Organs**

In the U.S., almost 100,000 patients are on the transplant waiting list but only 25,000 organs are available for transplant each year. Tissue transplants have also increased, with over one million implants of musculoskeletal tissue alone being performed each year. There is an urgent need to ensure the safety of donated organs. All potential risks must be considered to make sure that transplant recipients have the best possible chance for good health.

To improve the safety of organ transplants and blood transfusions, NCPDCID works with private and public groups to ensure that problems are reported and acted on rapidly. Not only have new screening processes been implemented, but numerous reporting mechanisms have been developed by CDC to share information on any adverse reactions quickly to reduce further negative consequences.

### **Monitoring the Safety of Immunizations**

CDC works closely with partners to ensure that the United States continues to have the safest, most effective vaccine supply. Serious vaccine side effects are rare and difficult to detect even with the well-designed large clinical trials that are conducted on vaccines before they are licensed. Therefore, monitoring adverse events after vaccines are licensed for use is essential. The rigorous monitoring is important for several reasons:

- To detect rare reactions;
- To protect people in higher risk groups;
- To maintain public confidence in vaccines.

The early warning system to detect problems possibly related to vaccines, Vaccine Adverse Event Reporting System (VAERS), is administered by NCPDCID in collaboration with the US Food and Drug Administration. Anyone can report a suspected problem to VAERS by phone, online, or by mail.

### **Preventing the Spread of Disease at U.S. Ports and Land Border Crossings**

CDC has legal authority to prevent U.S. importation and spread of communicable diseases. Federal isolation and quarantine are authorized for communicable diseases including cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, viral hemorrhagic fevers, SARS, and flu that can cause a pandemic.

CDC has 20 quarantine stations at U.S. port cities and land border crossings where most international travelers arrive. These stations are operated by NCPDCID staff and play a critical role in protecting public health. CDC also trains Customs and Border Protection officers and others in airports and seaports to recognize signs that a traveler may have an infectious disease which could spread from person to person.

### **Promoting Health of Refugees**

Through its Refugee Health Program, NCPDCID is working to expand the required overseas medical exam to include screening refugees for health problems before U.S. arrival. In each country, the screenings and treatments are tailored



to meet the refugees' unique needs. A recent CDC analysis estimates that immunizing more than 50,000 refugees overseas would save about \$13 million in health care costs. Improving the health of refugees contributes to their successful resettlement and decreases the risk of U.S. importation and spread of disease.

### **The Emerging Infections Program (EIP)**

Across the country, ten state health departments and a host of partners work closely with CDC to conduct surveillance and determine the best ways to prevent the spread of emerging infectious diseases.

Each EIP is coordinated by a state health department and an academic medical center in the state. In Tennessee, for example, the health department teams up with Vanderbilt University. In Connecticut, the health department partners with Yale University and the University of Connecticut. Professors and researchers collaborate to collect data on new infectious diseases, evaluate activities to prevent their spread, and to provide vital information to develop new policies to protect the public from emerging infectious diseases.



### **Preparing for a Flu Pandemic**

Since 2004, more than 350 cases of humans infected with avian influenza A (H5N1) have been reported around the world, mainly in Asia. Many of those infected have died. Because this flu has the ability to evolve into a strain that can spread easily between people, CDC and its partners around the world closely monitor any cases of person-to-person transmission of H5N1.

Until recently, diagnosing this flu was difficult, time-consuming, and costly. A new rapid diagnostic test developed by CDC changed that. This test has been distributed to Laboratory Response Network (LRN) labs across the country. Now laboratories in the public health, veterinary, military and federal sectors have this highly reliable, low-cost test to detect H5N1 virus. As a result, the United States is better prepared to detect an influenza outbreak caused by this potentially deadly virus.





### **Laboratory Response Network (LRN)**

In 1999, the Laboratory Response Network (LRN) was established by the CDC in conjunction with the Federal Bureau of Investigation, and the Association of Public Health Laboratories. The LRN's mission is to maintain an integrated national and international network of laboratories that are fully equipped to respond to acts of chemical or biological terrorism, emerging infectious diseases, and other public health threats and emergencies.

The LRN now includes approximately 160 federal, state, and local public health, veterinary, military and international labs. These labs provide public health, food, veterinary, and environmental testing capabilities. LRN laboratories conduct the necessary tests to rapidly detect threat agents and other organisms that could lead to disease outbreaks. More than ninety percent of these labs can perform tests to detect causative agents of Anthrax, Tularemia, and plague and many can test for the causative agents of other threats such as melioidosis, ricin toxins, staphylococcal enterotoxin B, non-variola orthopoxvirus, and influenza A/H5 (Avian lineage) virus. Since its inception, the LRN has significantly improved lab capacity at the state, local, federal and international levels. CDC has trained more than 9,000 clinical laboratorians in the detection, diagnostics, and reporting of public health emergencies.

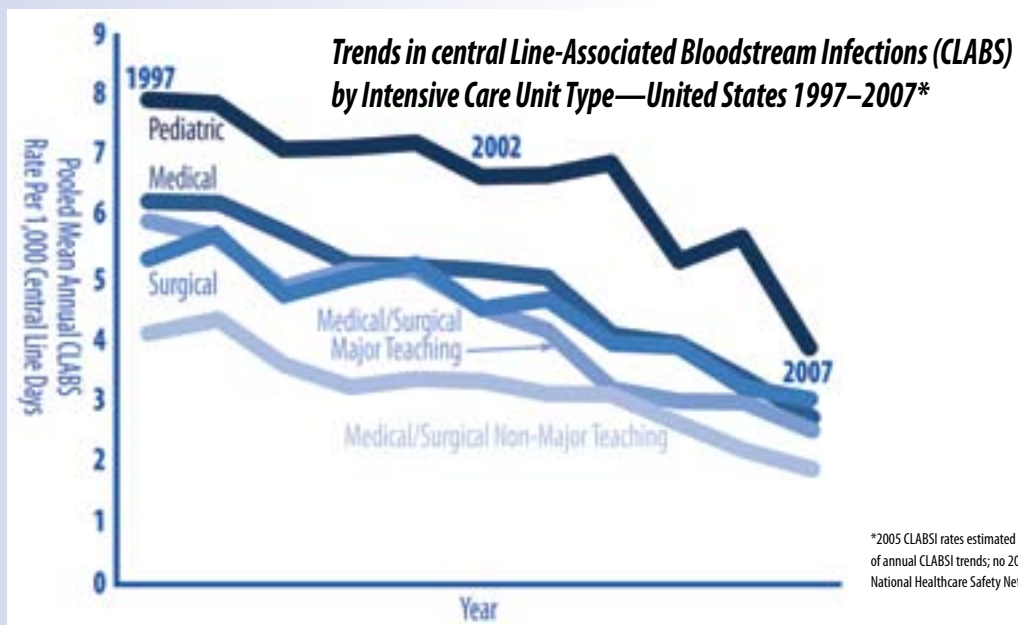
## CDC Scientists Work with Healthcare Professionals to Reduce Infections and Save Lives

**Bloodstream infections** associated with a central line, a type of venous catheter, are among the most common type of **healthcare-associated infections (HAIs)**, with an estimated 250,000 cases occurring in United States hospitals each year. The estimated attributable mortality is 12%-25% for each infection. The marginal cost to the health-care system is approximately \$25,000 per episode. In recent years, there have been successes in preventing these infections when following CDC's guidelines and recommendations. For example:

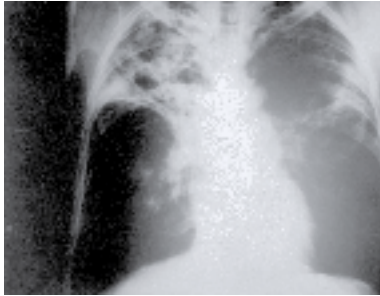
- In hospitals participating in CDC's National Healthcare Safety Network (NHSN), the rate of central line-associated bloodstream infections among patients in intensive care units decreased by 40%-50% during the last decade. In most major intensive care unit types, rates also decreased 50% for the subset of central line-associated bloodstream infections associated with methicillin-resistant *Staphylococcus aureus* (MRSA).
- Several states using NHSN for mandating reporting of healthcare-associated infections have identified prevention of bloodstream infections as a priority. For example, by adopting multiple recommended practices, infection rates in New York have declined more than 70% in intensive care units participating in the Greater New York Hospital Association Prevention Collaborative.



Following CDC recommendations and using standard methods of measuring success through NHSN has had a substantial impact on efforts to prevent central line-associated bloodstream infections. CDC plans to build on the successes in reducing bloodstream infections by developing and implementing similar strategies for reducing of other healthcare-associated infections.



## ***CDC Focuses on At-Risk Populations to Prevent Spread of Infectious Diseases***



***CDC is working on many programs to decrease morbidity and mortality among immigrants and refugees and to prevent disease from entering the United States.***

These efforts include implementing revised 2007 tuberculosis technical instructions (TB TI).

By the end of fiscal year 2008, 28% of U.S.-bound immigrants were being screened for tuberculosis under the 2007 TB TI. Implementation of these new TB TI may result in three times as many cases of tuberculosis being detected overseas and treated prior to arrival in the U.S. Diagnosis and treatment overseas decreases the burden of illness among persons entering the U.S. and results in estimated annual cost savings to states of over \$2 million. Additional information about the 2007 TB TI can be found at [www.cdc.gov/ncidod/dq/panel\\_2007.htm](http://www.cdc.gov/ncidod/dq/panel_2007.htm). This is one of the many ways CDC is providing leadership in the global effort to control **tuberculosis**.

## ***CDC's Arctic Investigations Program (AIP) located in Anchorage, Alaska since 1973.***

AIP's mission is to prevent infectious diseases in Arctic and sub-Arctic populations, with an emphasis on indigenous people's health. The AIP works closely with Alaska Native Tribal Health organizations to improve infectious disease prevention activities by providing health data, laboratory expertise, focused investigations, and interventions. Recent activities include detecting an outbreak of invasive pneumococcal infections among Alaska Native children due to bacterial strains not covered by current vaccines.





## *CDC is a Leader in Specialized Training Programs*

In an effort to help address a national shortage of veterinarians certified to work with laboratory animals, the Centers for Disease Control and Prevention (CDC) has begun a new residency program in laboratory animal medicine. One of about 40 such programs in the country, the CDC program combines classroom training with hands-on experience in CDC's most sophisticated high-containment laboratories to help prepare veterinarians for careers in biomedical research.

The two-year training program, which is a partnership between CDC and nearby Emory University's Robert W. Woodruff Health Sciences Center, began in July 2008 with its first two residents.

## National Center for Zoonotic, Vector-Borne, and Enteric Diseases (NCZVED)

The mission of NCZVED is to execute a multidisciplinary strategy to prevent, control, and, where possible, eliminate infectious diseases within a larger ecological context that includes humans, animals, and plants interacting in a complex, ever-changing natural environment. This center provides national and international scientific and programmatic leadership to address zoonotic (transmitted from animals to humans), vector-borne (from organisms such as mosquitoes, or ticks), food-borne, waterborne, mycotic (fungal), enteric (intestinal) and related infections to identify, investigate, diagnose, treat and prevent these diseases.

Multiple factors have come together to create a new epidemiologic era characterized by increases in emerging and reemerging infectious diseases. Recent threats such as SARS, avian influenza, and West Nile virus as well as continued resurgence of diseases such as dengue and malaria demonstrate that animals, people, and the environment are inextricably linked, that animal health strategies impact public health, and that the strategies to protect both must be coordinated.

Gaining a better understanding of these diseases and the ecologies from which they have emerged requires extensive interaction and collaboration across CDC and the traditional public health community, as well as the agricultural, wildlife, companion animal, and environmental agencies and organizations.



### NCZVED People in Action

#### **Infectious Diseases Pathology**

NCZVED's Infectious Disease Pathology Branch (IDPB) serves as the nexus of CDC's unique capacity to rapidly diagnose and respond to individual cases or clusters of unexplained severe illness or death. In the past year, IDPB has collaborated on investigations of unexplained severe illness and death at a correctional facility in Texas, cases of yellow fever vaccine-associated deaths in Peru, myocarditis in New England, and an occupationally acquired fatal case of plague in Arizona. This cross-cutting program that functions, as needed, to support multiple divisions across CDC.

#### **Development of Dengue Vaccine**

Dengue is a mosquito-borne disease affecting upwards of 50 million people annually. A dengue vaccine has the potential to greatly reduce incidence of the disease, possibly eliminating the virus from endemic regions. The pre-clinical development of a novel dengue vaccine has been completed, and commercial partnerships have been formed with manufacturers in the United States and India. The vaccine will begin phase one clinical trials in summer 2009.

#### **Launch of National Outbreak Reporting System (NORS) and Prevention of Waterborne Diseases**

The recent launch of NORS brought together, for the first time in a single system, the electronic reporting to CDC of food, water, person-to-person, and animal-to-person outbreaks. As part of NORS, the Waterborne Disease and Outbreak Surveillance System, created by CDC, the Environmental Protection Agency (EPA), and the Council of State and Territorial Epidemiologists (CSTE) in 1971, will now be fully electronic. It is expected that the transition from a paper-based to electronic surveillance system will improve the speed, accuracy, and completeness of waterborne disease outbreak reporting.

#### **Climate Change**

Climate and weather are major drivers of the distribution and incidence of vector-borne diseases. To address the influence of climate on vector-borne diseases, NCZVED created a team of ecologists, mathematical modelers, vertebrate ecologists, and entomologists. The team has already modeled effects of weather and climate on dengue virus transmission in Puerto Rico and created prediction models for West Nile virus in Colorado and for plague in the Southeastern United States and Uganda. NCZVED created operational plans with CDC's National Center of Environmental Health (NCEH) to expand climate-related activities at CDC and drafted a memorandum of understanding for future collaboration with the National Center for Atmospheric Research.

#### **Arboviral Disease and Blood Safety**

NCZVED worked with the Food and Drug Administration (FDA) and industry to implement and evaluate the impact of universal blood donor screening for West Nile virus (WNV). This system has detected and prevented transfusion of WNV from more than 1200 infected blood donors. The integrity and effectiveness of this system has been evaluated through investigation of possible transfusion transmitted WNV cases as well as by mathematical modeling of empiric screening data. The latter has resulted in major changes in screening strategy that have increased the effectiveness of the system in the most cost-efficient manner. In addition, the presence of dengue virus has been discovered in the US blood supply and strategies for other emergent arboviral threats to blood safety, such as chikungunya virus, are being examined.

#### **Unexplained Neurologic Illness among Pork Processing Plant Workers**

In 2007-2008, CDC assisted state health departments in the investigation of an unexplained neurologic illness among workers at pork processing plants in several states. The original cluster was identified by the Minnesota Department of Health among workers at a single processing plant who suffered from an illness that was later termed "progressive inflammatory neuropathy" (PIN). The investigation in Minnesota indicated that PIN was associated with having worked in close proximity to the "head table", where a process using compressed air to extract pig brains potentially exposed workers to aerosolized brain material. A follow-up survey of 25 large pork processing facilities

determined that use of this technique is uncommon and only two other plants, one each in Indiana and Nebraska, similarly extracted brains using compressed air. As of May 2008, the number of persons identified with PIN include: 18 confirmed cases in Minnesota; 6 confirmed cases in Indiana; and 1 confirmed case in Nebraska. Although the etiology of PIN remains unknown, there is no evidence that the illness is transmitted person-to-person, or that there is any risk to consumers through food-borne transmission.



### **Idaho Splash Parks Outbreak**

In 2007, two outbreaks associated with splash parks were identified in Idaho. Splash parks are recreational water venues consisting of multiple interactive fountains or spray devices that do not have above-ground standing water. The first was a cryptosporidiosis outbreak, involving 51 cases. The second was an outbreak of *E. coli* O157:H7 infections, involving in 31 cases. Human behaviors, such as swimming while ill with diarrhea, and ingesting the water, are thought to be contributing factors to the outbreaks. As part of the response, Idaho local public health districts were considering proposing legislation in August 2008, to increase oversight of splash parks. At the request of the Idaho State Epidemiologist, CDC assisted in an investigation to determine the frequency of non-hygienic behaviors occurring at splash parks. These data were needed to direct the development of the legislation. An observational study conducted at four splash parks found that children exposed their buttocks to splash features a mean of 29.4 minutes per 60 minutes of observation and placed their open mouths to splash features a mean of 9.9 minutes per 60 minutes of observation. A survey of adult supervisors of children at the splash parks conducted concurrently found that adult supervisors frequently reported never bathing their children with soap and water prior to the children's entering the water and never telling their children not to sit on top of the splash features. Educational materials have been developed to address these issues in an effort to reduce the spread of these types of diseases.





### ***CDC Responds to Requests From Foreign Ministries of Health***

In July 2008, a Dutch tourist died of Marburg viral hemorrhagic fever following her return to the

Netherlands from a vacation in Uganda. The tourist had likely acquired the infection through exposure to bats while visiting a Ugandan cave. The Uganda Ministry of Health requested assistance from CDC to help respond to the potential public health emergency. In early August, CDC sent a team to create and distribute important health messages about safe travel to Uganda. To further investigate the ecology of Marburg virus in bats in Uganda, CDC sent a second team to collect and test the specimens for analysis at CDC headquarters in Atlanta. This analysis is expected to result in more information about the virus' characteristics and lead to further public health recommendations.

The success of this collaboration between CDC and the Ugandan Ministry of Health is attributable to CDC's technical expertise and the willingness of Ugandan authorities, both public and private, to work together. The materials will be distributed broadly and authorities also plan to develop surveys to gather additional data from international travelers to Uganda, the Uganda Wildlife Authority staff, and the tourism industry about how to promote safe, healthy travel.

### ***CDC Laboratory Scientists Constantly Improving Detection Methods***

New genetic sequencing techniques developed at CDC have allowed complete genome generation of emerging Old World lyssaviruses—viruses associated with rabies. Application of a direct rapid immunohistochemical test has led to enhanced rabies surveillance in parts of Africa and Asia. And, recent development of an innovative canine vaccine offers a unique opportunity for rabies control in canine and human populations.

Poxvirus is the family of viruses that includes smallpox, monkeypox, and cowpox among others. Some of these viruses (excluding smallpox) are still affecting animal and human populations in various parts of the world. Over the past year CDC's Poxvirus program has used the recently developed 454 Life Sciences sequencing technology to address questions relevant to poxvirus, transmission, and evolution. This technology has contributed to an improved understanding of the genetic diversity of monkeypox throughout its native range in sub-Saharan Africa. This will increase our understanding of transmission of this increasingly common zoonotic disease and will help identify high risk geographic areas that may be serving as sources of human infection. This technology proved invaluable as the only method to successfully identify and provide genetic characterization of a novel, human pathogenic poxvirus isolated from upstate New York.



CDC has collaborated to produce a Botulinum Toxin ELISA Kit for use by the Laboratory Response Network (LRN) and Food Emergency Response Network (FERN)

eliminating the need for animal studies. The ELISA kit can rapidly screen foods involved in botulism. The use of this new product demonstrates the enhanced US capacity to respond to bioterrorism events involving botulinum toxin. In addition, CDC has developed a test that can be used in diagnosis and surveillance of multiple types of *Salmonella*.

## CDC Helps Solve Food-Borne Outbreak Mystery

The recent *Salmonella* Typhimurium outbreak associated with peanut butter-containing products led to more than 700 reported cases and may have contributed to nine deaths. The broad distribution of peanut butter and peanut paste shipped from a single plant to food manufacturing companies throughout the country triggered the recall of more than two thousand food products.



This outbreak demonstrates the challenge of "ingredient driven" outbreaks. The implicated product was first identified by the Minnesota Department of Health, which identified peanut butter distributed to institutions as a likely source and then isolated the outbreak strain of *Salmonella* Typhimurium from an open container of peanut butter. However, peanut butter from institutions did not account for all the illnesses. Ongoing patient interviews indicated that many patients did not eat peanut butter in institutions, but had eaten various other peanut butter-containing products. During January, a second case-control study was conducted by CDC and state and local health departments to further assess exposures. Preliminary analysis found that patients were more likely than controls to have eaten prepackaged peanut butter crackers. The associated "ingredient driven" aspect was uncovered with the recognition that contaminated peanut paste (and some of the peanut butter) from the processing plant was used as an ingredient in numerous peanut butter containing products, including cookies, crackers, ice cream, frozen meals, and dog treats.

This outbreak is an example of how contamination in one place can lead to illnesses across the country. These types of outbreaks present two major challenges:

1. It is difficult to identify the source of the outbreak when the contaminant is in a wide range of foods, and
2. It is difficult to trace and recall the many foods affected and to provide immediate guidance to the public.

This outbreak also underscores the need to detect and respond to outbreaks more quickly, including decreasing the time taken for DNA fingerprinting of *Salmonella* in state labs, rapid interviews of cases by state/local public health departments to provide vital clues about the source, and more quickly coordinating nationwide studies to confirm the source.

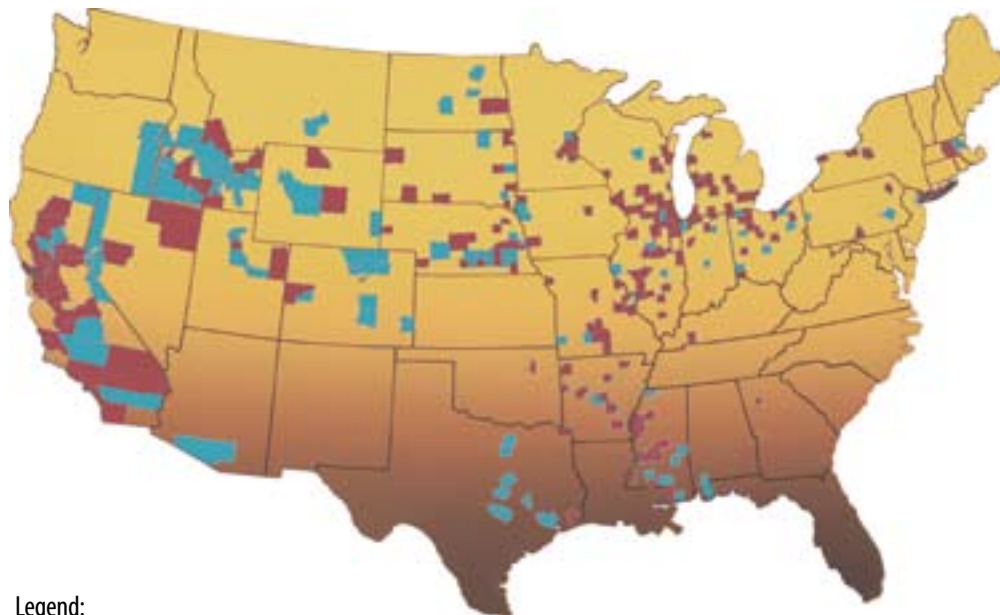
CDC will continue to focus on research, education, and training to assist local, state, and national efforts in preventing food-borne illnesses, enlist food industries into prevention, response, and information sharing; and bolster state health capacity to effectively and promptly identify and respond to outbreaks.

## ***For Vectorborne Infectious Diseases, Surveillance Must Include the Animal Hosts as well as Human Disease***



Vectorborne zoonoses like West Nile virus (WNV), plague, and Rocky Mountain spotted fever (RMSF) exemplify the complex ecologies that impact public health. Surveillance programs intended to predict the risk of these diseases must monitor zoonotic as well as human epidemiology. ArboNET is an example of such an integrated surveillance system. It captures human case data, blood donor data, as well as environmental surveillance indicators (virus identified in mosquitoes, dead birds, horses, sentinel chickens) for WNV and other domestic arboviruses (such as St. Louis encephalitis and eastern equine encephalitis). It can also capture information about imported zoonoses, such as chikungunya and Japanese encephalitis.



### ***Timing of WNV-Positive Mosquito Pool Collection and Human WNV Case Onset, By County, United States, 2006***



Legend:

-  Counties reporting human cases before mosquito collection yielding WNV-positive mosquitoes
-  Counties reporting mosquito collection yielding WNV-positive mosquitoes before human cases reported

In 2006, WNV-positive mosquitoes were collected in 180 counties before reports of human cases, raising the possibility that enhanced control measures and encouragement for people to use personal protection could have prevented illnesses. Over 50% of counties that have positive mosquito pools report at least one human case, so the finding of WNV-positive mosquitoes may serve as an early warning indicator.







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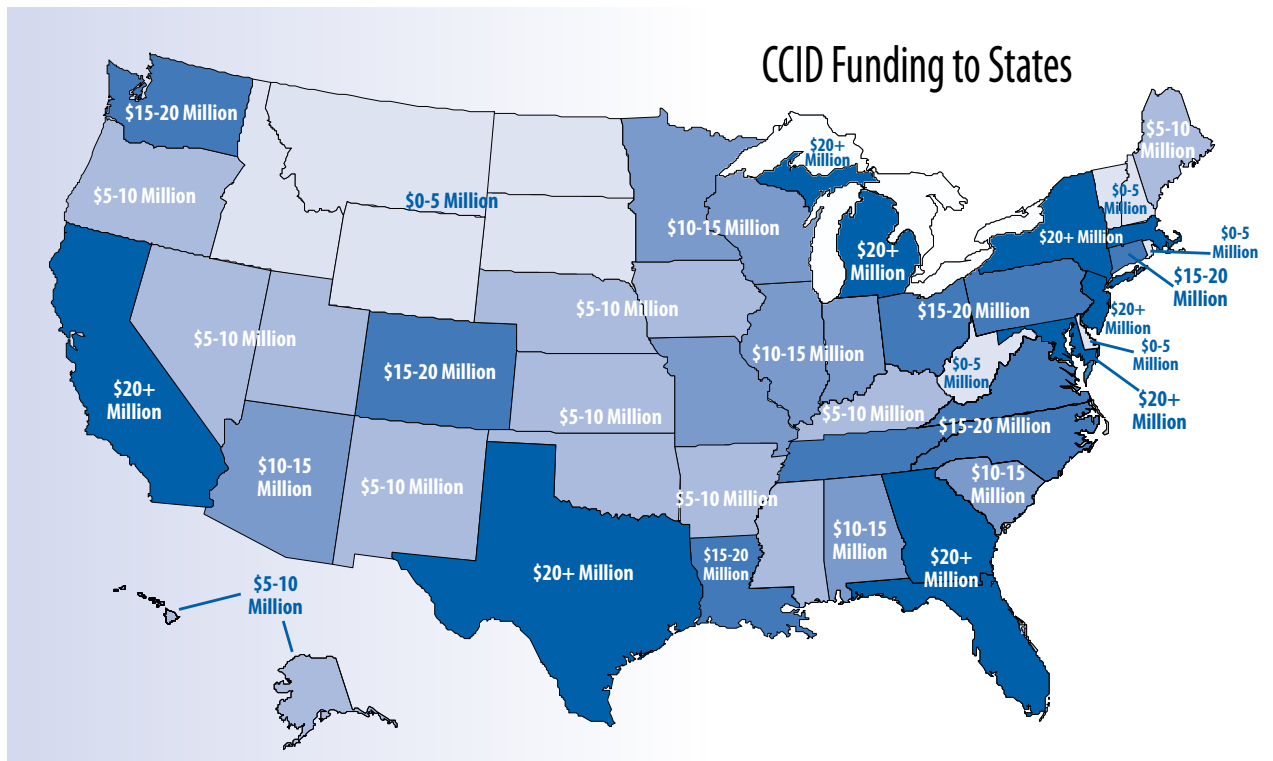
# CDC Collaborative Partners

The success of the CDC's efforts to combat infectious diseases depends upon sharing innovations, science, research, vaccines, surveillance and information between a vast array of partners, nationally and around the globe. The knowledge shared goes both ways—into and out of the CDC. Partners are individuals, schools, colleges and universities, private laboratories and pharmaceutical companies, local, state, and federal labs and health departments, foreign governments, organizations involved in the myriad of activities focused on public health as well as each member of the general public. CCID allocates 87 percent of its annual budget to supporting external partners and programs.

## Supporting States and Territories

Much of the CDC Infectious Disease annual budget is used to assist state and local public health departments. CDC regards the cooperation and collaboration between the agency and its state and local partners as crucial to the success of public health measures. Every state and each U.S. territory receives funding from CDC to support their local public health programs. In addition, CDC directly funds initiatives in thirteen major metropolitan areas: Baltimore, Chicago, Cincinnati, Detroit, Houston, Los Angeles, Monroe County, NY, New York City, Oakland-Alameda County, Philadelphia, San Antonio, San Diego, and San Francisco.





## Supporting Collaborative Partnerships

CCID also funds numerous international public health programs and collaborates with foreign public health departments and universities while striving to improve public health throughout the world. A list of these organizations appears in the Appendix.

Funding a variety of programs through grants and cooperative agreements allows CCID to assist with a myriad of cutting edge research, outreach and development programs that work collectively to expand that nation's and the world's health.

CDC is especially proud of the work it does funding and fostering relationships between CCID, its national centers and various institutions of higher learning throughout the country. In 2008, CCID gave nearly \$370 million to 56 academic organizations in the U.S.

### Reference Labs

CDC laboratories are uniquely positioned to provide reference diagnostic services to other public health laboratories. CDC laboratories have the capability of identifying virtually all the bacteria, viruses, fungi, and parasites that infect humans, a claim that that is unique to CDC. Additionally, CDC scientists have the tools to characterize subspecies and subtypes of organisms using assays that are not readily available commercially. Thus, public health laboratories send specimens to CDC for identification or characterization when they either cannot perform these tests or confirm their results of unusual organisms. CDC has a unique relationship with public health department laboratories in all the states. The state public health departments are required to monitor the presence of important infectious diseases (nationally notifiable diseases—NND) and to serve as the reference point of contact for clinical laboratories in their jurisdictions. With the data shared from all the states, CDC serves as a consolidated national reference laboratory for the states.

### WHO Collaborating Centers

The World Health Organization, WHO, is a specialized agency of the United Nations with 191 member states including the U.S. WHO promotes technical cooperation for health among nations, carries out programs to control and eradicate disease, and strives to improve the quality of human life.

WHO has four main functions:

1. to give worldwide guidance in the field of health;
2. to set global standards for health;
3. to cooperate with governments in strengthening national health programs; and
4. to develop and transfer appropriate health technology, information and standards.

WHO works in partnership with other organizations in the United Nations system, including UNICEF, UNDP, UNFPA, UNESCO, World Bank, ILO, UNEP, FAO and cosponsors UNAIDS. WHO also works with bilateral agencies, intergovernmental and nongovernmental organizations (NGOs), and has designated nearly 1,200 leading health-related institutions around the world as WHO Collaborating Centres. These collaborating centers work with WHO on areas such as nursing, occupational health, communicable diseases, nutrition, mental health, chronic diseases and health technologies. In line with the WHO policy and strategy of technical cooperation, a WHO collaborating centre must also participate in the strengthening of country resources, in terms of information, services, research and training, in support of national health development. Of the 35 CDC/WHO Coordinating Centers located on CDC premises, most of them are engaged in activities relating to infectious diseases.

The WHO/CDC Collaborating Centers are:

- Dengue and Dengue Hemorrhagic Fever Reference and Research
- Control and Elimination of Lymphatic Filariasis in the Americas
- Prevention and Control of Malaria
- Production and Distribution of Malaria Sporozoite ELISAs
- Surveillance of Human African Trypanosomiasis, Treatment Failure and Drug Resistance
- Quality Control for Pesticides and Evaluation of Insecticides
- Research, Training and Eradication of Dracunculiasis
- Complex Emergency Preparedness and Response
- Environmental Epidemiology
- Reference and Research on Rabies
- Physical Activity and Health Promotion
- Reference and Research in Blood Lipids
- Prevention and Control of Epidemic Meningitis
- Research and Reagents for Human Immunoglobulin Subclasses
- Applied Biosafety Programs and Training
- Reference and Research on Viral Hepatitis
- Viral Hemorrhagic Fevers
- Reference and Research on Rickettsial and Bartonella Associated Diseases
- Injury Control
- Acquired Immunodeficiency Diseases
- Reference and Research in Syphilis Serology
- Shigella
- Rotavirus and the Agents of Viral Gastroenteritis
- Arthropod-Borne Viruses
- WHO Family of International Classifications for North America
- Global Public Health Workforce Development
- Surveillance, Epidemiology and Control of Salmonella and other Food-borne Diseases
- Surveillance, Epidemiology and Control of Influenza
- Smallpox and Other Poxvirus Infections
- Global Tobacco Surveillance
- Reference and Research on Plague Control
- Reproductive Health
- International Monitoring of Bacterial Resistance to Antimicrobial Agents
- Insecticide Resistance
- Borrelia Reference





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## CCID At Work Abroad— Global Health

Since 1946, beginning with CDC's work in malaria control, and subsequent focus on cholera and smallpox outbreaks, the scope and nature of CDC's global engagements have been dramatically enhanced. CCID's global health mandate has expanded to include other diseases and conditions, and has been broadened to include the goal of protecting the US and world population from emerging global threats. CCID provides leadership expertise and collaborates with partners around the world to increase life quality and expectancy, especially among those at highest risk for premature death— particularly vulnerable children and women. CDC is also committed to increasing global preparedness to prevent and control naturally occurring and man-made threats to health.

Evidence of this commitment is demonstrated by the fact that CDC has 224 staff assigned to 54 countries, 40 staff detailed to international organizations, 1,200 locally employed staff and 6,000 temporary duty assignments for technical assistance. CDC's areas of particular expertise that are shared with our global partners include: surveillance, disease detection, epidemiology, laboratory support, training, intervention, care and operations research.

## International Emerging Infections Program (IEIP)

The International Emerging Infections Program is a very important and critical program to Global Health activities across the CDC. IEIP, modeled in part on the U.S. Emerging Infections Program, is comprised of six centers of excellence around the world.

This program aims to lessen the burden of infectious diseases by providing expert technical assistance: detecting and investigating outbreaks to control them sooner; monitoring disease emergence and trends so that policymakers can make more informed and effective decisions about prevention measures; and, strengthening global public health infrastructure. The first IEIP was established in Thailand in 2001, and as of 2008, IEIPs are also located in Bangladesh, China, Egypt, Guatemala, and Kenya.

## Global Immunization Division

CDC supports global immunization initiatives to protect American children from vaccine-preventable diseases (VPDs) imported into the United States or acquired abroad, for humanitarian reasons, and to protect against the medical costs of morbidity and mortality associated with VPDs. CDC is one of the spearheading partners for global polio eradication, measles mortality reduction, and Global Immunization Vision and Strategy initiatives along with a substantial network of partner agencies.

Pneumonia and meningitis are major killers of young children in the developing world. For a variety of economic and other reasons, vaccines to prevent these diseases are often underutilized or unavailable. In response, CDC is working with partners around the world to make life-saving vaccines available to those who need them most.

While a vaccine targeting *Haemophilus influenzae* type b (Hib) disease has been available for years, uptake in developing countries has been slow until recently. CDC epidemiologists and laboratory scientists are supporting efforts in a number of these countries to establish the burden of Hib and pneumococcal diseases, documenting the impact of vaccination, and evaluating vaccination strategies.

In the “meningitis belt” of sub-Saharan Africa—extending from Ethiopia in the east to Senegal in the west—bacterial meningitis is caused by *Neisseria meningitidis* serogroup A, a strain that rarely causes disease in industrialized countries, and for which there is not yet a vaccine to effectively protect young children. As part of its work with global partners to encourage the adoption of new vaccines, CDC has been collaborating with the Meningitis Vaccine Project (MVP) to create and test a *Neisseria meningitidis* serogroup A vaccine for Africa and other low-income regions.

CDC has collaborated with WHO and other international health partners to develop training curricula to guide the development and implementation of national pandemic plans. In addition, CDC is helping countries threatened by avian influenza to develop rapid response teams, enhance their flu surveillance systems, and implement advanced laboratory diagnostic techniques.

## Global AIDS Program

HIV/AIDS continues to be one of the most severe health challenges today. In 2000, CDC created the Global AIDS Program (GAP). Currently, the program supports national HIV/AIDS programs in more than 80 countries in Africa, Asia, Central and South America, and the Caribbean through its country and regional offices. GAP assists resource-constrained countries to prevent HIV infection, improve treatment, care and support for people living with HIV. The program also continues to build vital capacity and infrastructure to address the global HIV/AIDS epidemic.

The Global AIDS Program (GAP) is a partner in the President’s Emergency Plan for AIDS Relief (PEPFAR), a multifaceted approach to combating the HIV/AIDS epidemic in over 120 countries around the world. GAP works with partners to



provide direct scientific and technical assistance and translates this science into public health service delivery. GAP also works with other countries' Ministries of Health to build their public health systems.

CDC's contributions to PEPFAR, in partnership with ministries of health and its U.S. Government colleagues, have helped to achieve the following results:

- 2.1 million men, women and children have received antiretroviral therapy.
- 16 million pregnant women have participated in preventing mother-to-child transmission of HIV.
- 240,000 infant infections have been prevented.

### **During the first five years of PEPFAR, CDC:**

- Provided leadership on over 125 studies, ensuring scientifically sound interventions;
- Helped build sustainable laboratory infrastructure to respond to HIV and other diseases;
- Helped implement innovative surveillance systems and data for epidemiologically driven decision-making;
- Spearheaded HIV Prevention in Care and Treatment Settings for HIV-infected individuals;
- Partnered with HRSA to support massive scale-up of antiretroviral treatment to adults and children and increase pregnant women's participation in programs to prevent mother-to-child transmission; and
- Researched and developed the Basic Care Package, a package of interventions that is designed to minimize the susceptibility of HIV-positive persons to common opportunistic infections and illnesses spread by unsanitary water.

## International Tuberculosis Control Technical Assistance

Because TB kills 1.6 million a year worldwide and because most cases of TB in the United States are among foreign-born persons, it is critical for the United States to assist in international TB control. CDC's NCHHSTP provides leadership and technical assistance in controlling TB internationally for PEPFAR and GAP-related activities. In FY 2008, CDC staff provided technical assistance in 40 countries. CDC's global technical assistance for TB includes:

- Deploying outbreak response teams
- Improving access to TB drugs
- Developing TB testing standards
- Building capacity of health care providers
- Collaborating with other international partners to develop and implement the global plan to combat XDR TB
- Providing technical assistance to expand program capacity
- Supporting TB communication and education efforts.

In addition to working closely with ministries of health in other countries, CDC works with other federal agencies and with multilateral organizations such as WHO and the International Union Against Tuberculosis and Lung Disease; foundations, including a Bill and Melinda Gates Foundation-funded collaboration and the Foundation for Innovative Diagnostics; and non-governmental organizations. CDC is a founding member of the WHO Stop TB Partnership, a global effort of more than 500 governmental and non-governmental organizations.

## Global Malaria Program

In 1946, CDC was established, descending from the wartime agency, Malaria Control in War Areas (MCWA). More than 60 years later, CDC, through CCID, continues to support the prevention and control of malaria throughout the world in partnership with state and federal agencies, national and international organizations, and foreign governments. Having conducted key research that has informed the current generation of malaria control interventions, CDC's strategic and applied research efforts seek to refine these interventions as well as develop new ones to stay ahead of the curve—and to contribute to achieving ambitious global goals of malaria elimination and ultimately eradication. CDC also conducts domestic activities, among them, providing U.S. malaria surveillance and consulting with clinicians on management of cases.

## President's Malaria Initiative

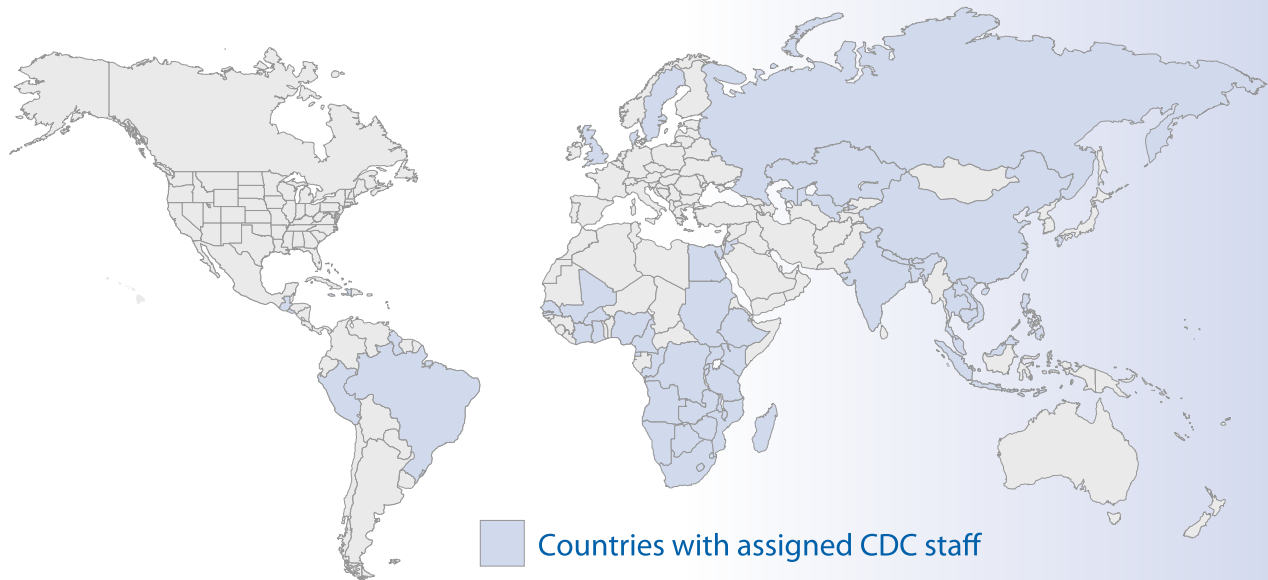
The President's Malaria Initiative (PMI) is led by the U.S. Agency for International Development (USAID) and together USAID and CDC jointly implement the initiative, a 5-year, \$1.2 billion program to cut malaria deaths in half in 15 African countries. PMI focuses on implementing proven prevention and treatment measures on a national scale. CDC lends particular expertise to PMI in monitoring program implementation and documenting outcomes and impact, as well as in entomological assessment. By the end of 2008, PMI had provided more than 30 million people with lifesaving interventions. PMI has:



- Procured more than 2.3 million doses of intermittent preventive treatment for pregnant women;
- Procured more than 28 million treatment courses of highly effective artemisinin-based combination therapy (ACTs);
- Distributed approximately 9 million long-lasting insecticide-treated mosquito nets (LLINs);
- Supported spraying the inside of homes with insecticides in 14 countries, covering nearly 25 million in 2008 alone; and
- Trained more than 29,000 health workers in the correct use of ACTs.

More importantly, we are starting to see results: data from Malawi, Mozambique, mainland Tanzania, Rwanda, Zambia and Zanzibar show that major reductions in the malaria burden are possible, sometimes more quickly than anticipated.

## Countries with CDC Staff (2008)



Angola	Congo (Brazzaville)	Ghana	Laos	Philippines	Tanzania
Bangladesh	Congo DRC	Guatemala	Lesotho	Russia	Thailand
Benin	Cote D'Ivoire	Guyana	Madagascar	Rwanda	Trinidad*
Botswana	Denmark	Haiti	Malawi	Senegal	Uganda
Brazil	Egypt	India	Mali	South Africa	United Kingdom
Burkina Faso	Ethiopia	Indonesia	Mozambique	Sudan	Uzbekistan*
Cambodia	Ghana	Jordan	Namibia	Swaziland	Vietnam
Cameroon	France	Kazakhstan	Nepal	Sweden	Zambia
China	Gabon	Kenya	Nigeria	Switzerland	Zimbabwe
			Peru		

## Countries Receiving CCID Funding

Afghanistan	Congo	Haiti	Mali	New Zealand	South Africa
Angola	Cote D'Ivoire	Hong Kong	Mexico	Nigeria	Switzerland
Argentina	Denmark	India	Mongolia	Pakistan	Tanzania
Armenia	Dominican Republic	Indonesia	Morocco	Panama	Thailand
Bangladesh	Egypt	Jamaica	Mozambique	Peru	Trinidad/Tobago
Brazil	Ethiopia	Kenya	Namibia	Philippines	United Kingdom
Cambodia	France	Korea	Netherlands	Rwanda	
China	Guyana	Malawi	New Caledonia	Rwanda	





# Infectious Diseases Budget Overview

The CDC total FY 2008 budget appropriated by Congress was roughly \$10.6 billion (B). The Coordinating Center for Infectious Diseases (CCID) receives more than half of that amount—about \$6.6B. A portion of these funds is directly appropriated by Congress to a budget line item aptly named Infectious Diseases. Also, CCID receives resources from other CDC directly appropriated budget lines including: Health Information and Service, Global Health, Public Health Improvement and Leadership (PHI & L), and Terrorism.

In addition to directly appropriated funding, financial resources are also transferred to CCID from other government departments and agencies to support public health-related programs such as Vaccines for Children, President's Emergency Plan for AIDS Relief (PEPFAR), and the Congressional Black Caucus.

## Transfers To CCID

### Vaccines for Children Program—\$2.8B Transfer from Centers for Medicare and Medicaid Services (CMS)

The Vaccines for Children Program (VFC) program is an entitlement program that provides vaccines for children through 18 years of age through enrolled private providers and public health clinics. VFC eligibility includes children who meet one of the following requirements: uninsured; Medicaid-eligible; American Indian/Alaska Native; or underinsured children who receive vaccines through Federally Qualified Health Centers or Rural Health Clinics. The VFC program accounts for more than 40% of the vaccines purchased in the United States for children and adolescents.

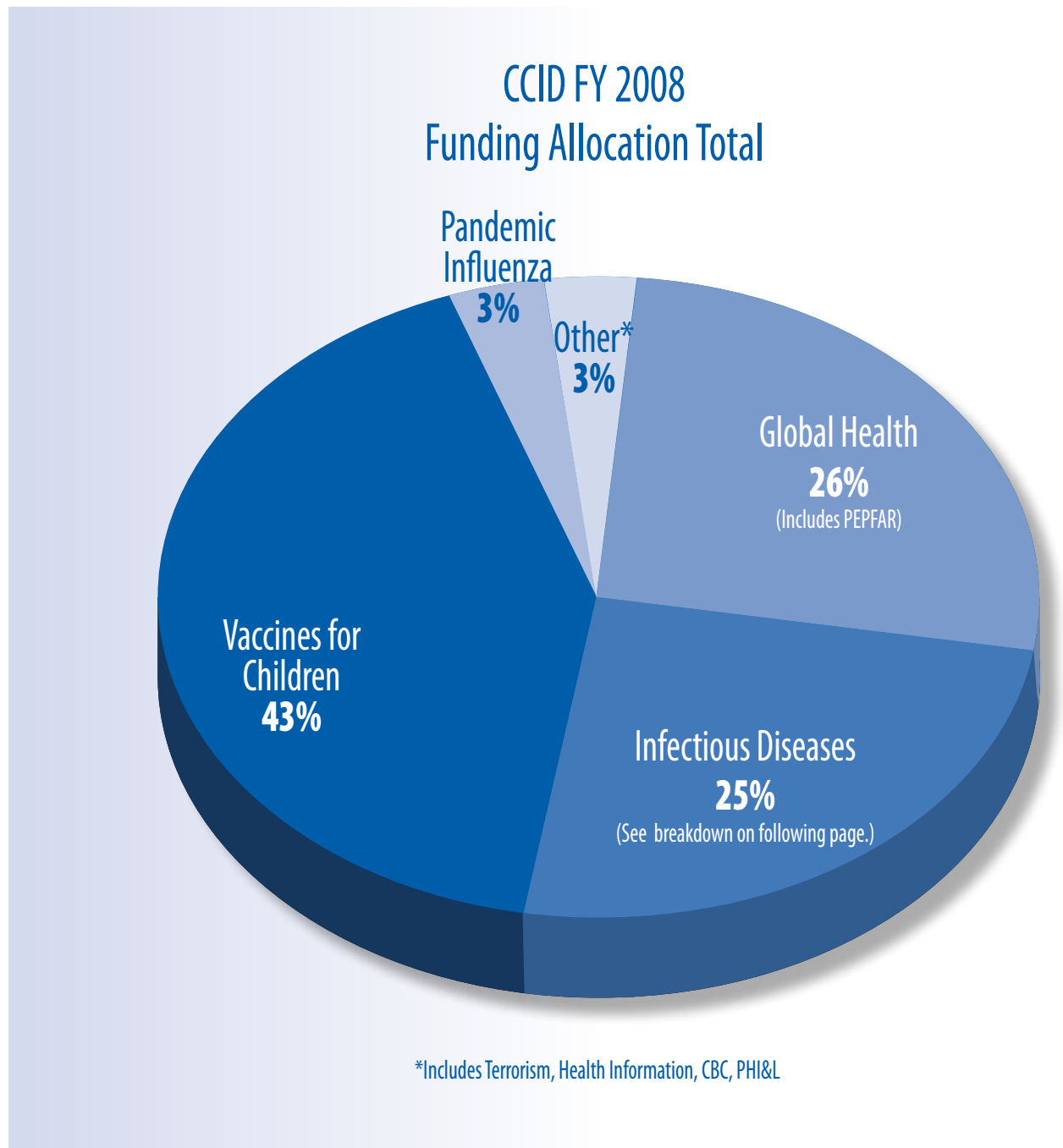
### PEPFAR—\$1.5B Transfer from the State Department

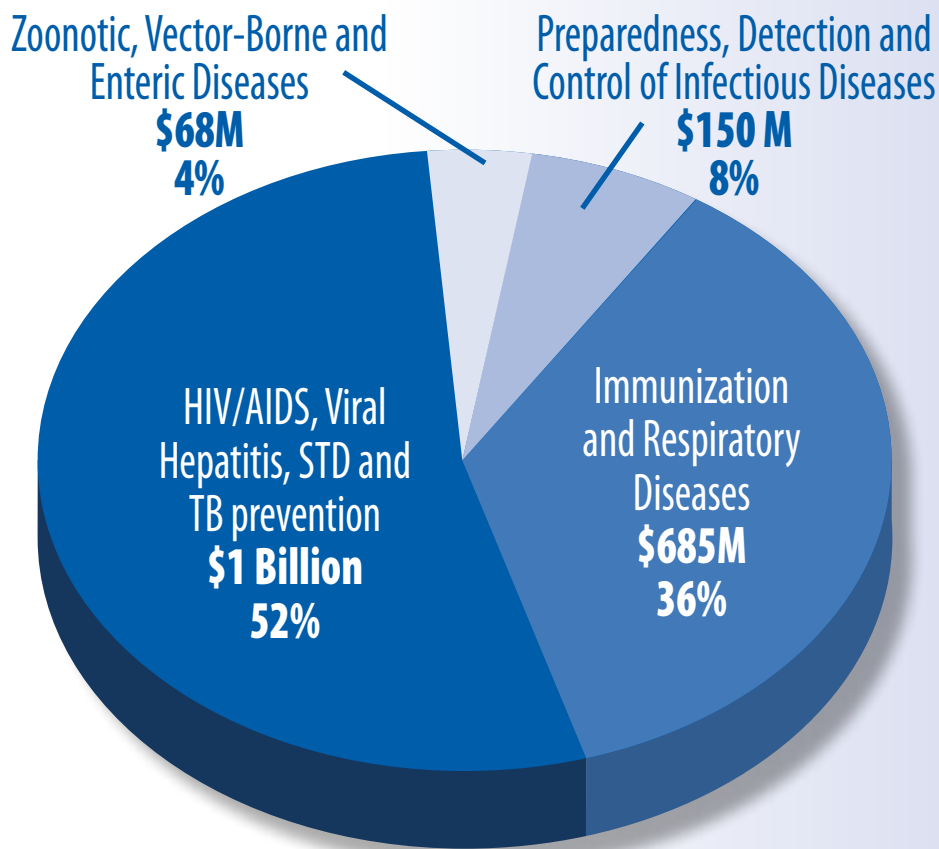
In 2003, President Bush launched the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) to combat global HIV/AIDS. This was the largest commitment by any nation to combat a single disease in history. The goals of PEPFAR include support for treatment for 3 million HIV infected people, support for prevention of 12 million new infections, and support for care for 12 million people infected or affected by HIV/AIDS including 5 million orphans and vulnerable children. Through PEPFAR, the U.S. Government is working with international, national and local leaders worldwide to accomplish these goals. To meet these goals and build sustainable local capacity, PEPFAR will support training of at least 140,000 new health care workers in HIV/AIDS prevention, treatment, and care. PEPFAR works with host nations to build capacity in-country; 87 percent of partners are indigenous organizations.



## Congressional Black Caucus (CBC)—\$7.3M Transfer from Health and Human Services

Referred to as the Minority AIDS Initiative since 2001, this funding is used to support programs that aim to reduce HIV among minority populations by focusing on high risk individuals in high prevalence settings. In FY 2008, CDC awarded money, through grants and contracts, to several programs seeking to prevent HIV/AIDS in African American and other racial and ethnic populations. A sample of some of the programs includes: development of a tool to target African American heterosexuals at risk; the African American Men’s HIV Testing Campaign; and an assessment of the determinants of HIV risk factors for African American and Hispanic women at risk for HIV infection in the Southern United States.





### Infectious Diseases FY2008 Budget Breakdown

The Infectious Disease line item of the CDC appropriations was \$1.9B for FY2008. The Coordinating Center for Infectious Diseases (CCID) coordinates and manages this budget line. CCID integrates science, epidemiology and laboratory programs, while focusing on cross-organizational activities that increase efficiency and service. Continued coordination ensures that infectious disease programs are based on the highest standards of quality, equity, and integrity, as well as ensuring excellent service to CDC's customers.

CDC's Infectious Disease activities include responsibility for:

- Investigating infectious disease outbreaks;
- Enhancing preparedness for infectious disease-prone areas/or infectious disease events, such as pandemic influenza, by building epidemiology and laboratory capacity;
- Developing domestic and global capacity for recognizing and responding to infectious diseases and protecting the health of Americans at home and abroad;
- Developing, implementing, and evaluating effective science-based infectious disease prevention programs in areas such as HIV/AIDS, sexually transmitted diseases and tuberculosis;
- Conducting surveillance activities to track infectious diseases and understand their public health dynamics;
- Evaluating surveillance findings for program planning and public health response;

- Preventing disease, disability, and death in children, adolescents, and adults through safe and effective vaccination;
- Providing technical, epidemiological, educational, statistical and scientific assistance to state and local health departments concerning infectious diseases; and
- Developing high quality research and translating relevant findings into infectious diseases prevention policy and programs.

The Infectious Disease activities above are carried out by the four National Centers specializing in particular issues and areas of expertise, as described in the previous sections. These Centers operate within the Coordinating Center for Infectious Diseases (CCID). The budgets to accomplish these tasks are dedicated to four functional areas: 1) vaccine preventable diseases; 2) routes of disease transmission; 3) sexually transmitted diseases, and 4) preparedness and response functions. The specific budget categories with Infectious Diseases are:

- Immunization and Respiratory Diseases
- Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS), Viral Hepatitis, Sexually Transmitted Diseases (STDs), and Tuberculosis (TB) Prevention;
- Zoonotic, Vector-Borne, and Enteric Diseases, and
- Preparedness, Detection and Control of Infectious Diseases.

## Extramural Funding—Funds Awarded To External Entities

CCID spends 13 percent of the funding it receives to cover the internal infrastructure and personnel. This “Intramural” funding is used to support research and epidemiological work done in CDC laboratories, surveillance activities, and provides resources for on-site epidemiological assistance when outbreaks occur.

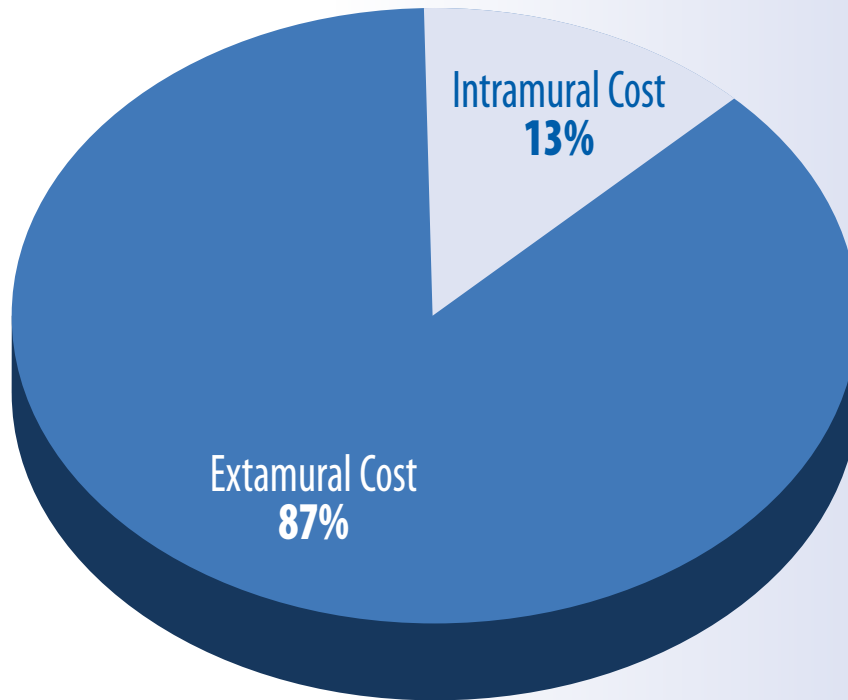
CCID’s remaining funding (87%) is used to support a wide variety of public health programs and activities externally, including, but not limited to: state and local public health departments, academic institutions, research, community activities, and vaccine purchases.

Every state and each US territory, receives funding from CCID to support their local public health departments. In addition, CCID also directly funds initiatives in several major metropolitan areas, including Baltimore, Chicago, Houston, New York City and Philadelphia.

CCID also funds numerous international public health programs and collaborates with foreign public health departments and universities as we strive to improve public health throughout the world. A list of these entities is included as an Appendix.

Funding a variety of programs through grants, cooperative agreements, contracts, interagency agreements, and other mechanisms allows CCID to assist with a myriad of cutting edge research projects, outreach and development programs that work collectively to expand the nation’s and the world’s health.

### CCID Extramural and Intramural Spending



## Funding to States and Territories

Much of the CCID annual budget is used to support state and local public health departments. CCID is aware of how crucial cooperation and collaboration between the CDC and its state and local partners is to the success of public health measures. CDC depends on these partners to report unusual numbers of cases of various disease types, as well as unusual pathogens. CCID allocated about one-third, over \$737 million, of its FY2008 budget to supporting our partners in the state and local health departments.

## Supporting Colleges and Universities

CCID is especially proud of the work it does funding and fostering relationships between CDC, the national centers and various institutions of higher learning throughout the country. CCID provides almost \$370 Million to 56 Colleges and Universities to further their research.

More detailed information regarding CDC's budget can be found at:  
<http://www.cdc.gov/fmo/Budget>

# CDC Advisors On Infectious Diseases

CDC and the Infectious Diseases areas depend on a number of advisory committees and organizations to provide important information and direction on a myriad of public health issues. Their members include those positioned on the forefront of the efforts to combat infectious diseases, whether they are public health officers, private practitioners, or academicians in areas of cutting edge surveillance and research.

## Board of Scientific Counselors

**Mission/Charge:** The Board of Scientific Counselors, Coordinating Center for Infectious Diseases, shall advise the Secretary, HHS and the Director, CDC, concerning strategies and goals for the programs and research within the national centers; shall conduct peer-review of scientific programs; and monitor the overall strategic direction and focus of the national centers. The board, after conducting its periodic review, shall submit a written description of the results of the review and its recommendations to the Director, CDC. The board shall perform second-level peer review of applications for grants-in-aid for research and research training activities, cooperative agreements, and research contract proposals relating to the broad areas within the national centers.

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## Advisory Committee on Immunization Practices (ACIP)

The Advisory Committee on Immunization Practices provides advice and guidance to the Director of CDC and the Secretary of HHS regarding the most appropriate selection of vaccines and related agents for effective control of vaccine-preventable diseases in the civilian population. ACIP meets three times each year. When making its recommendations, ACIP considers a number of factors, including a review of the evidence of safety, efficacy, effectiveness and cost effectiveness of the vaccine; morbidity and mortality associated with the disease; and the feasibility of vaccine use in existing immunization programs. ACIP recommendations provide standards of practice, but the ACIP does not have the authority to mandate vaccinations. CDC is committed to fully complying with the spirit and technical requirements of the conflict of interest provisions of the Federal Advisory Committee Act.

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## Advisory Council for the Elimination of Tuberculosis (ACET)

The Advisory Council for the Elimination of Tuberculosis shall provide advice and recommendations regarding the elimination of tuberculosis to the Secretary, HHS, the Assistant Secretary for Health, and the Director, CDC. The council shall make recommendations regarding policies, strategies, objectives, and priorities; address the development and application of new technologies; provide guidance and review on CDC's Tuberculosis Prevention Research portfolio and program priorities; and review the extent to which progress has been made toward eliminating tuberculosis.

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Centers for Disease Control & Prevention

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## CDC/HRSA Advisory Committee on HIV and STD Prevention and Treatment (CHAC)

The CDC/HRSA Advisory Committee on HIV and STD Prevention and Treatment advises the Director, CDC, and the Administrator and Associate Administrator for HIV/AIDS, HRSA, regarding objectives, strategies, policies, and priorities for HIV and STD prevention and treatment efforts including surveillance of HIV infection, AIDS, STDs, and related behaviors; epidemiologic, behavioral, health services, and laboratory research on HIV/AIDS and STDs; identification of policy issues related to HIV/STD professional education, patient healthcare delivery, and prevention services; agency policies about prevention of HIV/AIDS and other STDs, treatment, healthcare delivery, and research and training; strategic issues influencing the ability of CDC and HRSA to fulfill their missions of providing prevention and treatment services; programmatic efforts to prevent and treat HIV and STDs; and support to the agencies in their development of responses to emerging health needs related to HIV and other STDs.

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# Appendix

## CCID Provides Funding to the Following International Organizations and Universities

ACONDA—COTE D'IVOIRE

Expansion of HIV/AIDS Comprehensive Care & Treatment

ADDIS ABABA CITY COUNCIL HIV/AIDS

Development of Model Voluntary Counseling & Testing Services

ADDIS ABABA UNIVERSITY

Strengthening HIV/AIDS, STI & TB Prevention, Control & Treatment Activities

AFRICAN INSTITUTE OF BIOMEDICAL SCIENCE & TECHNOLOGY

AIBST Capacity Building Project for Training Private Health Care Professional

AIDS INFORMATION CENTRE – UGANDA

Tuberculosis/HIV Integration Activities under PEPFAR

AIDS PREVENTION INITIATIVE IN NIGERIA

Implementation of Programs for Prevention, Care and Treatment of HIV/AIDS

AIDS SUPPORT ORGANIZATION—UGANDA

Strengthening HIV/AIDS, STI & TB Prevention, Control & Treatment Activities

ALLIANCE NATIONALE CONTRE LE SIDA—COTE D'IVOIRE

Expansion of Community-Led, Age-Appropriate HIV/AIDS Prevention & Care

ANADER—COTE D'IVOIRE

Rapid Expansion of Access to HIV/AIDS PCT INT among Rural & Other Populations

ARMENIA MINISTRY OF HEALTH

Surveillance/Response to Avian/Pandemic Influenza by the Sea Hygiene/ Anti-Epidemiology

ASDAP

Proposal for Screening & Treatment for Sexually Transmitted Infections

AURUM INSTITUTE FOR HEALTH RESEARCH—SOUTH AFRICA

Inter-Agency PEPFAR Annual Program Statement, US Government Mission  
Strengthening Workplace Interventions in SMME's

BAPTIST AIDS RESPONSE AGENCY IN AFRICA—KENYA

The New Partner Initiative (NPI) Created under PEPFAR

BAYLOR COLLEGE OF MEDICINE CHILDREN'S FOUNDATION-UGANDA

Expansion of National Pediatric HIV/AIDS Prevention, Care and Treatment

BLOOD TRANSFUSION SERVICE OF NAMIBIA

Rapid Strengthening of Blood Transfusion Services in Selected Countries

BOTSWANA MINISTRY OF HEALTH

Rapid Strengthening of Blood Transfusion Services in Selected Countries

BUGANDO MEDICAL CENTRE & UNIVERSITY COLLEGE

Enhancement of a Continuum of HIV/AIDS PCT through Network

CARIBBEAN COALITION/NATIONAL AIDS PROGRAM COORDINATION—TRINIDAD/TOBAGO

National AIDS Program

CARIBBEAN COMMUNITY (CARICOM)—GUYANA

Program on Coordination and Harmonization of HIV/AIDS Activities

CARIBBEAN HEALTH RESEARCH COUNCIL—TRINIDAD/TOBAGO

Building National monitoring & Evaluation Capacity in the Caribbean

CATHOLIC MEDICAL MISSION BOARD, INC (CMMB)—SOUTH AFRICA

Men Taking Action

CENTRAL STATISTICAL OFFICE—ZAMBIA

Sample Vital Registration with Verbal Autopsy

CENTRE-ZIMBABWE

The Support for Civil-Society Organizations that are Responding to HIV/AIDS

CHEST DISEASES LABORATORY—ZAMBIA

Expansion of Reference Laboratory Infrastructure to Support HIV/AIDS/STD/TB

CHILD IN NEED INSTITUTE (CINI)—INDIA

Strengthening Management Support Services for CDC's Global Aids Program in India

CHURCHES HEALTH ASSOCIATION OF ZAMBIA

Enhancing the Community Response to HIV/AIDS and TB

COLLEGE OF HEALTH SCIENCES UNIVERSITY OF ZIMBABWE  
Strengthening the Masters-Level Public Health Training Programs

COLLEGE OF HEALTH SCIENCES, UNIVERSITY OF ZIMBABWE  
Improving Quality of HIV/AIDS Care under PEPFAR

COTE D'IVOIRE MINISTRY/FIGHT AGAINST AIDS  
Reinforcement of the Coordinating Role for the Ivorian Ministry for the Fight against AIDS

COTE D'IVOIRE MINISTRY/SOLIDARITY, SOC AF  
Rapid Expansion of the Capacity of the Ministry of Solidarity

DEVELOPMENT AID FROM PEOPLE TO PEOPLE—ZAMBIA  
Total Control of the Epidemic: A House-to-House Approach  
Total Control of the Epidemic: A Door-to-Door Approach to Strengthen Communities

DIRECTORATE GENERAL/DISEASE CONTROL/ENVIRONMENTAL HEALTH—INDONESIA  
Surveillance & Response to Avian and Pandemic Influenza

DRUG CONTROL COMMISSION—TANZANIA  
Implementing Comprehensive HIV Prevention Services for Injection Drug Users & Others

EASTERN DEANERY AIDS RELIEF PROGRAM—KENYA  
HIV and TB Prevention and Care

EASTERN PROVINCIAL HEALTH OFFICE—ZAMBIA  
Strengthening the Capacity of the Government in HIV/AIDS Diagnoses

EDUCATION LABOUR RELATIONS COUNCIL—SOUTH AFRICA  
HIV/AIDS Prevention Care and Treatment Access Project for South African Teachers

ETHIOPIAN HEALTH & NUTRITION RESEARCH INSTITUTE  
Expansion of PEPFAR Activities: Public Health Laboratory Support

ETHIOPIAN MEDICAL ASSOCIATION  
Human Resource Capacity Building to Accelerate Update of Anti-Retroviral Therapy

ETHIOPIAN PUBLIC HEALTH ASSOCIATION  
Improving HIV/AIDS/STI/TB Related Public Health Practice & Service Delivery

EXCELLENCE COMMUNITY ED WELFARE SCHEME  
Mobile Voluntary Confidential Counseling & Testing of HIV/AIDS, Treatment of Opportunistic Infections

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA  
Comprehensive HIV Prevention, Treatment and Care Program  
Rapid Strengthening of Blood Transfusion Services in Selected Countries

FEDERAL MINISTRY OF HEALTH ETHIOPIA  
Preparedness and Response to Avian and Pandemic Influenza  
Improving HIV/AIDS/TB Prevention & Control Activities

FEDERAL MINISTRY OF HEALTH NIGERIA  
Rapid Strengthening of Blood Transfusion Services in Selected Countries

FEDERAL POLICE COMMISSION OF ETHIOPIA  
Strengthening HIV/AIDS, TB & STI Prevention, Control & Treatment Activities

FIOTEC—BRAZIL  
Strengthening the Brazilian National AIDS Program and SOUTH Collaboration  
Expansion of HIV/AIDS/STD Monitoring, Evaluation and Other Program Support

FOUNDATION FOR REPRODUCTIVE HEALTH/FAMILY EDUCATION—HAITI  
Strengthening and Expanding HIV/AIDS Treatment, Care and Support for Prostitutes

FUNDACAO UNIVERSITARIA JOSE BONIFACIO—BRAZIL  
Administrative and Technical Support for HIV Laboratory Activities

GENERAL STATISTICAL OFFICE—VIETNAM  
Capacity Strengthening on Survey Methodologies & Implementation Regarding HIV/AIDS

GEORGETOWN PUBLIC HOSPITAL COPORATION—GUYANA  
Creation of a Center of Excellence at the Georgetown Public Hospital Corporation

GHESKIO CENTER—HAITI  
Strengthen and Expand ARV Treatment in HAITI to HIV/AIDS Infected Populations

GORGAS MEMORIAL LABORATORY OF TROPICAL/PREVENTATIVE MEDICINE—PANAMA  
Strengthening Regional Reference Lab Capacity in Surveillance Operational Research

GOVERNMENT OF BOTSWANA MINISTRY/FINANCE/ DEVELOPMENT PLANNING  
Increasing Prevention, Care and Treatment of HIV/AIDS

GUYANA MINISTRY OF HEALTH  
Implement Integrated Care and Prevention of HIV/AIDS



## Appendix

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### HAITI MINISTRY OF HEALTH

Building and Strengthening Capacity for the National Plan for the Prevention of . . .

Building & Strengthening the Development of Haiti's Central HIV/AIDS Quality Assurance

Rapid Strengthening of Blood Transfusion Services in Selected Countries

### HANOI SCHOOL OF PUBLIC HEALTH

Partnering with Schools of Public Health to Enhance Public Health Capacity

### HARAMAYA UNIVERSITY—ETHIOPIA

Strengthening HIV/AIDS Anti-Retroviral Therapy Training and Services

### HEALTH SCIENCE ACADEMY (PTY), LTD—SOUTH AFRICA

Inter-Agency PEPFAR Annual Program Statement for USG

### HIVCARE INTERNATIONAL PTY, LTD—SOUTH AFRICA

Inter-Agency PEPFAR Annual Program Statement

### HO CHI MINH CITY AIDS COMMITTEE

Strengthening and Expanding HIV/AIDS Surveillance, Prevention and Care

### HOPE WORLDWIDE—COTE D'IVOIRE

HIV Prevention and Care Services for Young People

### HUMAN SCIENCES RESEARCH COUNCIL—SOUTH AFRICA

Improve Capacity of an Indigenous Institute to Enhance M&E of HIV/AIDS

### IFAKARA HLTH RES/DEVELOPMENT CENTRE

Comparing Community and Facility Management of Malaria and Pneumonia in Tanzania

### IMPACT RESEARCH AND DEVELOPMENT ORGANIZATION—KENYA

HIV Prevention and Care Services for Young People

### INDIAN COUNCIL OF MEDICAL RESEARCH

Development of Influenza Surveillance Networks  
Addressing Emerging Infectious Diseases in the Republic of India-Influenza

### INDIAN NETWORK/PEOPLE/WITH HIV/AIDS

Strengthening Indian Network of Positive People

### INFECTIOUS DISEASES INSTITUTE—UGANDA

Building Capacity for Scaling up HIV/AIDS Services in Kibaale and Kiboga Districts

### INSTITUT HAITIEN DE L'ENFANCE

HIV/AIDS Surveillance in VCT/PMTCT Centers

### INSTITUTE FOR YOUTH DEVELOPMENT—SOUTH AFRICA

ZISA UNCEDO (Bring Help)

### INTEGRATED COMMUNITY BASED INITIATIVES—UGANDA

Provision of Full Access Home-Based Confidential HIV Counseling and Testing  
Expanding Uptake for Interventions to Prevent the Transmission of HIV from Mother-to-Child

### INTERNATIONAL CHILD CARE—HAITI

Strengthen & Expand ARV Treatment to HIV/AIDS Infected Populations

### INTERNATIONAL CENTER FOR DIARRHOEAL DISEASES

Addressing Emerging Infections in Bangladesh

### INTERNATIONAL ORGANIZATION FOR MIGRATION—SWITZERLAND

Expanding the Overseas Health Assessment of U.S. Bound Refugees  
Improving Overseas Health Assessment and Management of US-Bound Refugees

### INTERNATIONAL UNION AGAINST TB LUNG DISEASE—FRANCE

Improving Effectiveness of TB Prevention and Control Programs in Resource Limited . . .

### KAGISO EDUCATIONAL TELEVISION—SOUTH AFRICA

Improving Uptake of Prevention Mother-to-Child Transmission

### KALANGALA DISTRICT LOCAL GOVERNMENT

Provision of Full-Access Home-Based Confidential HIV Counseling & Testing

### KENYA AIDS NGOS CONSORTIUM (KANCO)

HIV Prevention and Care Services for Young People in Kenya

### KENYA MEDICAL RESEARCH INSTITUTE (KEMRI)

KEMRI/CDC Program

### KUMI DISTRICT LOCAL GOVERNMENT—UGANDA

Full-Access Home-Based Confidential Counseling and Testing Using Outreach

### LEPRA SOCIETY—INDIA

Strengthening Management Support Services for CDC's Global AIDS Program in India

### LIFELINE NORTH WEST MAFIKENG CENTRE—SOUTH AFRICA

Inter-Agency PEPFAR Annual Program Statement for USG to South Africa

### LIGHTHOUSE TRUST—MALAWI

HIV Care and Treatment Integrated Programs for Comprehensive Care

### LIVERPOOL VCT—KENYA

Voluntary Counseling, HIV Testing and AIDS Care in Stand Alone Community Centers

## LUSAKA PROVINCIAL HEALTH OFFICE

Improving Lab Infrastructure & Systems for the Care & Treatment of Patients

## MAHIDOL UNIVERSITY-THAILAND

Avian Influenza Surveillance in Thailand-Studies at Human-Animal Interface  
Avian Flu Surveillance Network in Displaced Populations on the Thai Burma Border

## MAKERERE MEDICAL SCHOOL—UGANDA

Developing National Capacity for the Management of HIV/AIDS Programs and Support  
Provision of Routine HIV Testing, Counseling, Basic Care & Anti-Retrovirals  
Expanding Tuberculosis/HIV Integration Activities

## MAKERERE UNIVERSITY—UGANDA

Expanding Tuberculosis/HIV Integration Activities

## MAKGABANENG—BOTSWANA

Age-Appropriate Behavior Change Communication through Radio & Reinforcement Activities

## MALARIA CONSORTIUM

Monitoring & Evaluation of Malaria Activities in the Greater Mekong Subregion U01

## MALAWI AIDS COUNSELING &amp; RESOURCE ORGANIZATION

Malawi HIV Counseling Testing, Training and Mentoring Program  
National Training & Mentoring Program to Strengthen VCT Programs

## MALAWI BLOOD TRANSFUSION SERVICE

Supporting the Provision of a Safe & Adequate supply of Blood and Blood Products

## MALAWI NATIONAL AIDS COMMISSION

Coordinate & Implement HIV/AIDS Surveillance, Capacity Building Activities to Supplement

## MATIBABU FOUNDATION—KENYA

The New Partner Initiative (NPI) Created under PEPFAR

## MC CORD HOSPITAL—SOUTH AFRICA

McCord/ZOE-LIFE Partnership Implementation of Comprehensive & Integrated HIV Care

## MEDIA SUPPORT PARTNERSHIP—UNITED KINGDOM

Program Implementation and Capacity Building Support for a Four Component Prevention Strategy

## MEDICAL RESEARCH COUNCIL OF SOUTH AFRICA

Preventing Maternal and Neonatal Bacterial Infections in Developing Settings  
Cooperative Agreement to the Medical Research Council of South Africa for TB

## MEDICAL UNIVERSITY OF SOUTHERN AFRICA

University Technical Assistance on Projects Aimed at Expanding the Delivery of HIV/AIDS Treatment

## MEXICO NATIONAL INSTITUTE OF PUBLIC HEALTH

Surveillance/Response to Avian Flu/Pandemic Influenza

## MILDMAY INTERNATIONAL—UGANDA

Expansion of HIV/AIDS Care & Treatment Services and Training Activities

## MILDMAY MISSION HOSPITAL—UNITED KINGDOM

Expansion of HIV/AIDS Care Training Activities in the Republic of Kenya

## MINISTRY OF HEALTH AFGHANISTAN

Surveillance and Response to Avian and Pandemic Influenza

## MINISTRY OF HEALTH ANGOLA

Surveillance and Response to Avian and Pandemic Influenza

## MINISTRY OF HEALTH ARGENTINA

Surveillance and Response to Avian and Pandemic Influenza

## MINISTRY OF HEALTH BANGLADESH

Surveillance & response to Avian and Pandemic Influenza by National Health Authority

## MINISTRY OF HEALTH KENYA

Surveillance/Response to Avian/Pandemic Influenza by National Health Authorities

## MINISTRY OF HEALTH MONGOLIA

Development of Influenza Surveillance Networks

## MINISTRY OF HEALTH MORROCO

Strengthening Influenza Surveillance Networks in Morocco

## MINISTRY OF HEALTH NIGERIA

Surveillance and Response to Avian and Pandemic Influenza

## MINISTRY OF HEALTH PERU

Support for the Plan of Preparation/Response against a Potential Influenza Pandemic

## MINISTRY OF HEALTH RWANDA

Strengthening the Capacity of the Ministry of Health to Respond to the HIV/AIDS Epidemic  
Rapid Strengthening of Blood Transfusion Services in Selected Countries

## Appendix

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MINISTRY OF HEALTH UGANDA Strengthening HIV/AIDS Prevention, Care, Treatment, Support & Strategic Information	NATIONAL BLOOD TRANSFUSION SERVICE—KENYA Rapid Strengthening of Blood Transfusion Services in Selected Countries
MINISTRY OF HEALTH ZAMBIA Support of Government Infrastructure for HIV/AIDS/TB/STD Control Activities	NATIONAL BLOOD TRANSFUSION SRV, GUYANA Rapid Strengthening of Blood Transfusion Services in Selected Countries
MINISTRY OF HEALTH AND CHILD WELFARE—ZIMBABWE Expansion of Surveillance Care & prevention Activities for HIV/AIDS & STIs	NATIONAL CENTER FOR HIV/AIDS/DERMA/STDs—CAMBODIA Expanding HIV/AIDS Program Activities of the Ministry of Health
MINISTRY OF HEALTH AND PUBLIC HYGIENE—COTE D'IVOIRE Build Capacity at the Central 7 Decentralized Level Epidemiology and Laboratory Capacity Building for Surveillance and Response	NATIONAL CENTER/AIDS/STD CONTROL/PREVENTION—CHINA Prevention of Secondary Transmission among Most At-Risk Populations
MINISTRY OF HEALTH AND SOCIAL SERVICES—NAMIBIA Expansion of Voluntary Counseling & Testing, Prevention of Mother-to-Child Transmission	NATIONAL DEPARTMENT OF CORRECTIONAL SERVICES—SOUTH AFRICA Program to Reduce the Impact of HIV/AIDS within the Correctional Services
MINISTRY OF HEALTH AND VOCATIONAL—TANZANIA Strengthening & Expanding HIV Prevention Education among Primary School public Through Life-Planning	NATIONAL HEALTH LABORATORY SERVICE—SOUTH AFRICA Expansion of HIV/AIDS/STD and TB Laboratory Activities
MINISTRY OF NATIONAL EDUCATION—COTE D'IVOIRE Assisting the Ministry of National Education to Implement a National . . . Rapid Expansion of HIV/AIDS Prevention, Care Treatment	NATIONAL HIV/AIDS/STI/TB COUNCIL—ZAMBIA Support of Government Infrastructure for HIV/AIDS/STD/TB Control Activities
MOZAMBIQUE MINISTRY OF HEALTH Implementation of Integrated HIV/AIDS Treatment, Care and Prevention Programs Rapid Strengthening of Blood Transfusion Services in Selected Countries	NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES—SOUTH AFRICA South African Preparedness for Rapid Detection of Highly Pathogenic Avian Influenza Expansion of HIV/AIDS, STD & TB Laboratory Activities at NICD
MUHIMBILI UNIVERSITY/ ALLIED HEALTH SCIENCES Tanzania AIDS Prevention Project: HIV Risk Reduction & Care and Treatment of Drug Users	NATIONAL INSTITUTE OF PUBLIC HEALTH/ENVIRONMENTAL HYGIENE (RIVM)-NETHERLANDS Avian Influenza CRC-Studies at the Human-Animal Interface
MULLAN AND ASSOCIATES (PTY) Building Human Resource Capacity to Support Prevention, Care and Treatment Strategies	NATIONAL INSTITUTE FOR MEDICAL RESEARCH—TANZANIA Enhancement of HIV/AIDS Laboratory Training and Q/A Center
MYRADA—INDIA Strengthening Management Support Services for CDC's Global AIDS Program in India	NATIONAL INSTITUTE HYGIENE/EPIDEMIOLOGY—VIETNAM Development of Influenza Surveillance Networks Partnering with the NIHE to Enhance Public Health Capacity for HIV Prevention
NAMIBIA INSTITUTE OF PATHOLOGY Expansion of HIV/STD and TB Laboratory Activities	NATIONAL INSTITUTE OF HEALTH—PAKISTAN Development of Influenza Surveillance Networks
NATIONAL AIDS/STI CONTROL PROGRAM—KENYA Expanding and Integrating HIV Care in Kenya	NATIONAL INSTITUTE OF HEALTH OF KOREA Development of Influenza Surveillance Networks
NATIONAL BLOOD TRANSFUSION SERVICE— COTE D'IVOIRE Rapid Strengthening of Blood Transfusion Services in Selected Countries	NATIONAL INSTITUTE OF PUBLIC HEALTH—CAMBODIA Improving Laboratory Capacity and Quality for HIV/AIDS Programming in the Kingdom
	NATIONAL INSTITUTE OF VIRAL DISEASE CONTROL/PREVENTION—CHINA Development of Influenza Surveillance Networks

## NATIONAL MEDICAL STORES—UGANDA

Purchase, Distribution and Tracking of Supplies to Support HIV/AIDS Related Treatment

## NATIONAL REFERENCE LABORATORY—RWANDA

Strengthening the Capacity of the Government in HIV/AIDS Diagnoses

## NETWORK OF AIDS RESEARCHERS E&amp;S AFRICA—KENYA

Implementation of Programs for PMTCT through NGOs

## POTENTIA NAMIBIA RECRUITMENT CONSULTANCY

Building human Resource Capacity within the Ministry of Health and Social Services

## PRINCE LEOPOLD INSTITUTE OF TROPICAL MEDICINE—BELGIUM

Assessment of Youth Interventions in Asembo and Gem Nyanza Province, Kenya

## PRO-HEALTH INTERNATIONAL

Implementation of Programs for Prevention, Care and Treatment of HIV/AIDS

## PROMOTEURS OBJECTIF ZEROSIDA—HAITI

Strengthen HIV/AIDS Prevention, Care and Treatment Referral Services Targeting MSM

## PROTECTING FAMILIES AGAINST AIDS—UGANDA

Promoting Extensive Implementation of Quality Prevention of PMTCT Activities

## REACTION CONSULTING (PTY), LTD—SOUTH AFRICA

Strengthening Public Sector HIV Testing, CARE & Treatment Capacity in Mpumalanga

## REPUBLIC OF MALAWI MINISTRY OF HEALTH

Strengthening of Tuberculosis/HIV Services

## RESEARCH INSTITUTE FOR TROPICAL MEDICINE

Development of Influenza Surveillance Networks

## ROYAL GOVERNMENT OF CAMBODIA

Development of Influenza Surveillance Networks Overseas

## SACTWU AIDS PROJECT—SOUTH AFRICA

Rapid Expansion Program of SACTWU AIDS Project

## SAKH'ULUTSHA: SU LIFESKILLS EDUCATION—SOUTH AFRICA

Life Skills Education for Children & Youth Aged 10-18 Years, Dealing with Value Based

## SANQUIN BLOOD SUPPLY FOUNDATION—NETHERLANDS

Providing Technical Assistance Support for the Rapid Strengthening of Blood

## SECRETARIAT OF THE PACIFIC COMMUNITY—NEW CALEDONIA

Development of Influenza Surveillance Networks

## SHARE INDIA

Strengthening Non-Governmental Organizations and Private Sector Care Networks

Strengthening Management Support Services for CDC's Global AIDS Program in India

## SOPHUMELELA CLINIC INC.

The New Partner Initiative (NPI) Created under PEPFAR

## SOUL CITY—SOUTH AFRICA

Inter-Agency PEPFAR Annual Program Statement

## SOUTH AFRICA DEPARTMENT OF HEALTH

Expansion of HIV VCT, PMTCT Studies and HIV Surveillance

## SOUTH AFRICAN DEMOCRATIC TEACHER'S UNION—SOUTH AFRICA

HIV & AIDS Prevention and Palliative Care for Teachers, Orphans and Vulnerable Populations

## SOUTH AFRICAN NATIONAL BLOOD SERVICE

Rapid Strengthening of Blood Transfusion Services in Selected Countries

## SOUTHERN AFRICAN CATHOLIC BISHOPS CONFERENCE

Catholic Church Response to HIV/AIDS in South Africa; Care, Support & Treatment

## SOUTOURA ASSOCIATION—MALI

Proposal for Screening & Treatment for Sexually Transmitted Infections (STIs)

## ST. MARY'S CATHOLIC MISSION HOSPITAL TRUST—SOUTH AFRICA

Activities that Strengthen Services at St. Mary's Hospital

## TAMIL NADU STATE AIDS CONTROL SOCIETY—INDIA

Strengthen State AIDS Control Society Response to HIV/AIDS

## TANZANIA MARKETING AND COMMUNICATION CO

Engaging Parents in Sexual Risk Prevention Efforts Targeting Youth

## TANZANIA MINISTRY OF HEALTH/SOCIAL WELFARE

Preparedness and Response to Avian and Pandemic Influenza in the United Republic of Tanzania, Strengthening the Capacity of Tanzania Ministry of Health & Social Welfare Increasing the Capacity of the Ministry of Health to Expand Coordinated HIV Prevention

Antenatal Care Service and Blood Safety for

Preventing Transmission of HIV

Rapid Strengthening of Blood Transfusion Services in Selected Countries Enhancement of Palliative Care TB/HIV Collaboration under PEPFAR

## Appendix

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TANZANIA YOUTH ALLIANCE (TAYOA) Promotion HIV Prevention for Youth through a National HIV Hotline and BCC	UNICEF ZAMBIA Prevention of Mother to Child Transmission of HIV (PMTCT) & Pediatric HIV Care
TB CARE ASSOCIATION—SOUTH AFRICA Advancing PEPFAR Goals for Increasing Access to HIV/TB Diagnosis Care Treatment	UNIVERSITY COMPUTING CENTRE LTD—TANZANIA Software Development, Support, Training 7 technical Assistance for Care & Treatment Clinics
TEBELOPELE VOLUNTARY COUNSELING/TESTING CENTER—BOTSWANA Expanding and Enhancing HIV Voluntary Counseling and Testing Services	UNIVERSITY OF GONDAR—ETHIOPIA Strengthening HIV/AIDS, TB & STD Prevention, Control and Treatment Activities
THAILAND MINISTRY OF PUBLIC HEALTH Population-Based Surveillance for Emerging Infections in Thailand International Emerging Infections Program Surveillance in Thailand Development of Influenza Surveillance Networks	UNIVERSITY OF HONG KONG A Controlled Trial of Masks and Hand Hygiene for Reducing Influenza Transmission
THETA LTD—UGANDA The New Partner Initiative (NPI) Created under PEPFAR	UNIVERSITY OF KINSHASA Surveillance & Response to Avian and Pandemic Influenza Strengthening Infectious Disease Control
TMLIVERPOOL SCHOOL OF TROPICAL MEDICINE Institutional Collaborating Between Liverpool STM & CDC on Malaria	UNIVERSITY OF KWAZULU-NATAL—SOUTH AFRICA University Technical Assistance Projects for PEPFAR in South Africa Caprisa AIDS Treatment Program Inter-Agency PEPFAR Annual Program Statement
TOGA/INTEGRATED HIV SOLUTIONS—SOUTH AFRICA Togtainer Deployment	UNIVERSITY OF MALAWI Strengthening National Capacity in Operations Research Fellowship for Leadership in HIV Prevention, Treatment, Care & Support Research Studies to reduce Mother-to-Child HIV-1 Transmission
TRADITIONAL & MODERN HEALTH PRACTITIONERS—UGANDA Supporting the National Prevention of HIV Mother-to-Child Transmission	UNIVERSITY OF NAIROBI Training for Program Managers of Kenya HIV Treatment for Research Subjects or by Researchers Capacity Building in the Implementation of a Comprehensive Program to Prevent PMTCT
TREATMENT RESEARCH AIDS CENTER (TRAC)—RWANDA Preparedness and Response to Avian and Pandemic Influenza Strengthening the Capacity of the Government's Treatment and Research for AIDS	UNIVERSITY OF OTAGO Pandemic Influenza Control at the Border of Island Countries and in the Household
TROPICAL DISEASE FOUNDATION—PHILLIPINES Improving the Effectiveness of the Diagnosis of TB	UNIVERSITY OF PRETORIA Use of Child Healthcare Problem Identification Programs & Perinatal Problem Identification
TSHEPANG TRUST—SOUTH AFRICA Tshepang Trust	UNIVERSITY OF STELLENBOSCH—SOUTH AFRICA Pediatric-TB/HIV PEPFAR
UBUNTU EDUCATION FUND—SOUTH AFRICA Improving HIV Prevention, Care & Support for Vulnerable Populations in the Ibhay	
UGANDA BLOOD TRANSFUSION SERVICE Rapid Strengthening of Blood Transfusion Services in Selected Countries	
UGANDA VIRUS RESEARCH INSTITUTE Identification, Surveillance and Control of Vector-Borne and Zoonotic Infectious Diseases Strengthening National Capacity for Surveillance and Containment of Avian and Pandemic Influenza Provision of Quality Assurance for HIV Randomized Trial of Home or Facility-Based AIDS Care	



UNIVERSITY OF THE WESTERN CAPE  
Human Capacity Development to Address HIV/AIDS in South Africa

UNIVERSITY OF ZAMBIA  
Strengthening the Quality and Scope of the MPH Degree

UNIVERSITY TEACHING HOSPITAL—ZAMBIA  
Expansion of Reference Library Infrastructure to Support HIV/AIDS/STD/TB  
Implementation of Multi-Disciplinary HIV Care for Sexually Abused Children

VIETNAM ADMINISTRATION HIV/AIDS CONTROL  
Strengthening Coordination & Development of HIV/AIDS Prevention and Care

VIETNAM MINISTRY OF HEALTH  
Surveillance and Response to Avian and Pandemic Influenza in Vietnam

WALTER SISULU UNIVERSITY  
Increase Indigenous Institutional & Human Capacity to Provide Quality Care

WESTERN PROVINCIAL HEALTH OFFICE—ZAMBIA  
Improve Management of Care of HIV/AIDS, STIs & TB in the Western Province

WORLD HEALTH ORGANIZATION  
Addressing Emerging Infectious Diseases  
Strengthening Avian Influenza Surveillance & Pandemic Influenza Preparedness Plan  
Polio Eradication  
Support Services for the HIV/AIDS Pandemic  
Expanding Efforts and Strategies to Prevent and Control of TB and TB/HIV  
Rapid Strengthening of Blood Transfusion Services in Selected Countries  
Cooperative Agreement with the Joint United Nations Program on HIV/AIDS

WORLD HEALTH ORGANIZATION SOUTH EAST ASIA  
Proposal for a Cooperative Agreement with the CDC

WORLD HEALTH ORGANIZATION—AFRO  
Enhancing Communicable Diseases Surveillance in the African Region  
Surveillance and Response to Avian and Pandemic Influenza by Regional Offices

WORLD HEALTH ORGANIZATION-WEST PACIFIC  
Proposal for a Cooperative Agreement with the CDC

WORLD HEALTH ORGANIZATION-E MEDITERRANEAN OFFICE  
Strengthening Influenza Surveillance (WHO/EMRO)

YOUTH FOR CHRIST SOUTH AFRICA  
HIC/AIDS Prevention Program through the ABC Method

ZAMBIA NATIONAL BLOOD TRANSFUSION SERVICES  
Rapid Strengthening of Blood Transfusion Services in Selected Countries

ZAMBIA TROPICAL DISEASES RESEARCH CENTER  
Expansion of Reference Laboratory Infrastructure to Support HIV/AIDS/STD/TB

ZAMBIA-EMORY HIV RESEARCH PROJECT  
Expansion of ZEHRP's Couples Voluntary Counseling and Testing Services

ZANZIBAR AIDS PROGRAM MINISTRY/HEALTH & SOCIAL SERVICES  
Enhancement of HIV/AIDS Prevention, care and Treatment Services

ZIMBABWE NATIONAL QUALITY ASSURANCE PROGRAM  
Quality Assurance for HIV & HIV-Related Confidential Testing

# Glossary

BSC	Board of Scientific Counselors
CC/COs	Coordinating Centers/Coordinating Offices
CCID	Coordinating Center for Infectious Diseases
CMO	Chief Management Official
COTPER	Coordinating Office of Terrorism Preparedness and Emergency Response
DHQP	Division of Healthcare Quality Promotion (in NCPDCID)
EI	Emerging Infections
EISOs	Epidemic Intelligence Service Officer
ELB	Executive Leadership Board
GAVI	Global Alliance for Vaccines and Immunization
HPO	High Performing Organization
ICU	Influenza Coordination Unit
ISO	Immunization Safety Office
MoH	Ministries of Health
MRSA	Methicillin-Resistant Staphylococcus Aureus
NCHHSTP	National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention
NCZVED	National Center for Zoonotic, Vector-Borne, and Enteric Diseases
NCPDCID	National Center for Preparedness, Detection, and Control of Infectious Diseases
NCIRD	National Center for Immunization and Respiratory Diseases
OEA	Organization Excellence Assessment
OWCD	Office of Workforce and Career Development
PHIBS	Public Health Integrated Business Services
PMT	Performance Management Team
QMS	Quality Management System
SBU	Strategic Business Unit
SME	Subject Matter Expert
SNS	Strategic National Stockpile
SPO	Senior Performance Officer
SSPU	Strategic Science and Program Unit
STARLIMS	State-of-the-Art Laboratory Information Management Systems
URDO	Unexplained Respiratory Disease Outbreak
VMBIP	Vaccine Management Business Improvement Project
WHO	World Health Organization
XDR TB	Extensively Drug-Resistant Tuberculosis







U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Centers for Disease Control and Prevention

