# 2015 CDC

SAVING LIVES. PROTECTING PEOPLE.

## KEEPING AMERICA SAFE, HEALTHY, & SECURE

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

## WE INVESTIGATE.

24/7 operations center to track disease and respond to health crises

## WE FIGURE OUT WHAT WORKS.

Research that leads to the best solutions to fight disease and protect health

## WE GET RESULTS.

Proven, lifesaving ways to defend against health threats

# WE WORK 24/7 TO KEEP YOU SAFE.

# *Letter from* **The Director**

The American people trust CDC to ensure their health, safety, and security. That trust is reflected in Pew Research data that year after year ranks CDC as one of the most trusted federal agencies in the U.S.

A commitment to rigorous science and a willingness to take risks to stop health threats may explain in part why Americans are confident in our ability to keep them safe. In 2015, CDC fought dangerous diseases on many fronts. As we ended the Ebola epidemic in West Africa, our disease detectives and staff confronted outbreaks of chikungunya, dengue fever, foodborne illnesses, healthcare-associated infections, monkeypox, Rocky Mountain spotted fever, rabies, and even plague. In each case, CDC had boots on the ground to quickly identify the threat and minimize the impact.

We are experts at handling some of the world's most dangerous infectious, chemical, biological, and environmental threats. And when we uncovered concerns in our laboratories, we openly reported them and rapidly improved safety and quality. We've spread best practices, expanded biosafety training, enhanced our laboratory incident reporting process, developed a new electronic specimen inventory system, installed secondary verification cameras, inventoried more than 7 million samples, and, perhaps most importantly, developed new ways to share what we've learned with other laboratories. In 2015, we created the Office of the Associate Director for Laboratory Science and Safety. The office develops and coordinates all laboratory safety and quality management programs across CDC to ensure all of our laboratories meet the highest standards. In addition, CDC established the Laboratory Leadership Service (LLS), a 2-year program analogous to the Epidemic Intelligence Service for developing future laboratory leaders.

In 2016, CDC faces a new threat - the Zika virus. We must move quickly to change the course of this epidemic. There is still much more we must learn about the virus to stop its spread.

CDC is the frontline of health defense for Americans. We remain committed to keeping our work for the public's health on the cutting edge to ensure America stays safe.

Sincerely,

Tom Frieden, MD, MPH

CDC 24/7™

# CDC's FUNDING in Fiscal Year (FY) 2015: $6.9 Billion*

## $1.35 Billion
**Protect Americans from Natural and Bioterrorism Threats**

- $1.35 Billion—Public Health Preparedness and Response

## $481 Million
**Monitor Health and Ensure Laboratory Excellence**

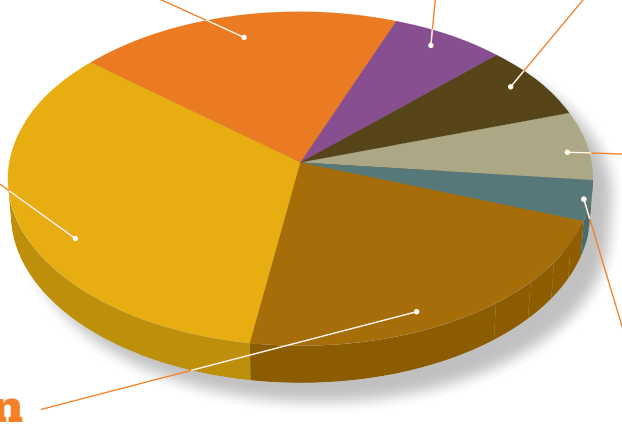
- $481 Million—Public Health Scientific Services

## $514 Million
**Keep Americans Safe from Environmental and Work-related Hazards**

- $179 Million—Environmental Health
- $335 Million—Occupational Safety and Health

## $2.32 Billion
**Protect Americans from Infectious Diseases**

- $405 Million—Emerging and Zoonotic Infectious Diseases
- $1.17 Billion—HIV/AIDS, Viral Hepatitis, STD, and TB Prevention
- $798 Million—Immunization and Respiratory Diseases



## $446 Million
**Ensure Global Disease Protection**

- $446 Million—Global Health

## $283 Million
**Cross-cutting Support and PHHS Block Grant and Buildings and Facilities**

- $273 Million—Cross-cutting Activities and Program Support
- $10 Million—Buildings and Facilities

## $1.50 Billion
**Prevent the Leading Causes of Disease, Injury, Disability, and Death**

- $132 Million—Birth Defects, Developmental Disabilities, and Disability and Health
- $1.20 Billion—Chronic Disease Prevention and Health Promotion
- $170 Million—Injury Prevention and Control

*Totals have been rounded to nearest million.

# President's 2017 Budget Request for CDC

Additional funding requests to fight new health threats that pose a serious risk to America's health security.

### COMBAT ANTIBIOTIC-RESISTANT BACTERIA

Requested an increase of $40 million in 2017 to expand the nation's ability to detect, respond to, and prevent antibiotic-resistant infections across healthcare settings and in the community in up to 50 states, six large cities, and Puerto Rico. CDC's FY 2017 funding request supports the nation's ability to better detect and track germs that resist existing antibiotics and threaten to return the U.S. to a time when simple infections were fatal.

### RESPOND to the PRESCRIPTION DRUG OVERDOSE EPIDEMIC

Requested an increase of $10 million in 2017 to fully expand CDC efforts to promote opioid prescribing guideline dissemination and uptake. The funds will be used to further support, pilot test, evaluate, and adapt the translation and dissemination of prescribing guidelines into formats accessible to providers across the nation to expand response to the alarming epidemic of prescription drug abuse in the U.S.

### GOOD HEALTH and WELLNESS in INDIAN COUNTRY

Requested $15 million to expand CDC's current investment in a five-year cooperative agreement to prevent diabetes, heart disease and stroke, and associated risk factors. The expansion will more effectively address chronic diseases, as well as depression and mental health, suicide, substance use, and alcohol-related motor vehicle injuries.

### MENTAL HEALTH—MANDATORY FUNDING

Requested $30 million as part of a new U.S. Department of Health & Human Services initiative for expansion of mental health services to ensure that mental health care systems work for everyone, increase service capacity and the mental health workforce, and engage individuals with serious mental illness in care. CDC's request will support implementation and evaluation of comprehensive suicide prevention programs.

# The Era of Global Health Security Begins…

The Ebola epidemic in West Africa is over. When the epidemic started in 2014, it quickly overwhelmed the fragile public health systems of the affected countries. But when the outbreak reached Lagos, Nigeria, something interesting happened—very little.

As the largest city in Africa, Lagos could have exploded with Ebola cases. But only 19 cases occurred, and the epidemic was quickly contained and eliminated. What made the difference? Nigeria was prepared for emerging health threats thanks to the country's polio eradication efforts and the Field Epidemiology Training Program (FETP)—both CDC-supported programs. A seasoned manager from the polio response and several FETP graduates quickly transformed into the first responders to the Ebola outbreak. They identified nearly 900 people potentially infected by close contact with an Ebola patient, made 19,000 home visits to monitor for symptoms and fever, trained thousands of staff, established an Ebola training unit in 14 days, and isolated and tested 43 people who showed symptoms. Another 150,000 travelers were screened at airports to ensure that no one who was sick would board an airplane.

Without this rapid, in-country response, Nigeria could have become Ebola's gateway to the rest of the African continent—ultimately killing hundreds of thousands of people. This nightmare scenario was prevented thanks to Nigeria possessing a core public health capacity to perform disease surveillance, laboratory testing, and emergency preparedness and response.

But there is more good news. We can help keep Americans safe by helping other countries to have the capacity to recognize and contain outbreaks of infectious disease threats—whether natural or man-made.

# The Time for Global Health Security Is Now

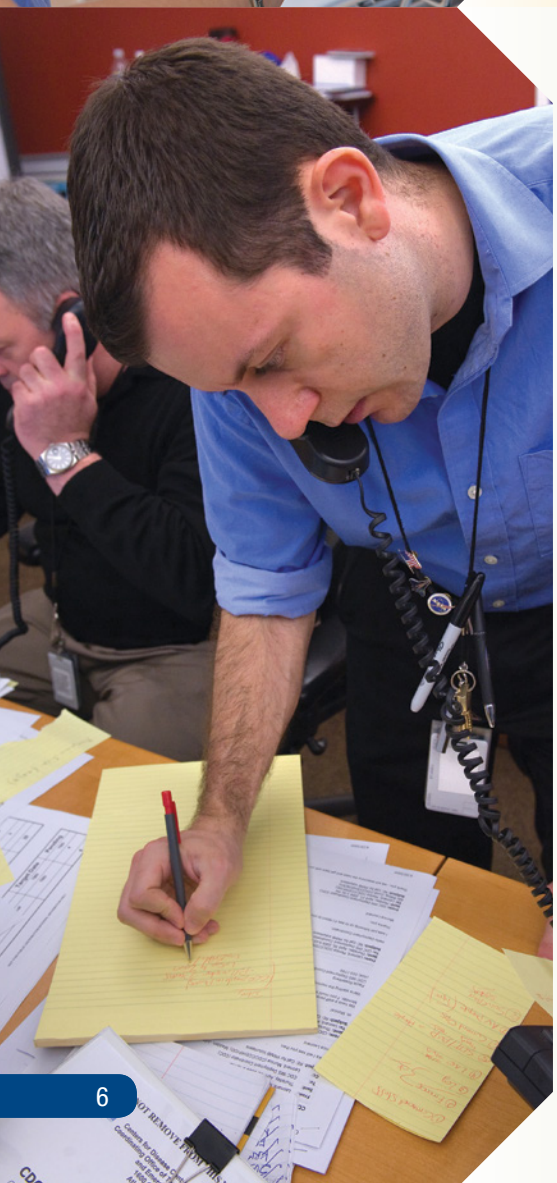
In 2014, a coalition of nearly 50 nations was formed around the Global Health Security Agenda (GHSA). GHSA provides a framework to ensure that all nations are able to prevent, detect, and rapidly respond to infectious disease threats—protecting these countries and protecting Americans from deadly global outbreaks. Already, CDC is working to:

- Expand the number of disease detectives on the ground
- Establish safe and secure lab networks to find deadly germs
- Strengthen response to public health emergencies
- Upgrade systems to track health threats

Because America's safety is linked to the health and safety of the world, GHSA has the full commitment of the United States. When it comes to finding and stopping diseases, the stronger other countries are at doing their own public health work, the safer we are here at home.

# Public Health Preparedness and Response

**A health threat can appear at any moment, and America must be ready to respond. As America's health protection agency, CDC is ready 24/7 and able to rapidly deploy disease detectives, lifesaving vaccines and medicines, and other support during a health emergency. Whether natural disasters, disease outbreaks, or deliberate attacks occur, CDC provides critical science and actions, people, funds, and training to improve state and local preparedness capabilities.**



## Key Accomplishments 2015

- Deployed 50 vials of botulinum antitoxin to Ohio in about 10 hours to treat 18 people infected with foodborne outbreak of botulism.
- Established active monitoring for 62 American jurisdictions in 10 days to check on more than 26,000 travelers from countries in West Africa with Ebola outbreaks.
- Activated CDC's Incident Management System in the Emergency Operations Center for 3 simultaneous emergency responses: Polio, Ebola, and the Department of Defense anthrax sample Investigation.
- Prepared logistics for and sent more than 1,900 staff and more than 32,000 pieces of equipment to West Africa to stop the Ebola outbreak.
- 94% of CDC's Public Health Emergency Preparedness awardees met the 45-minute target during notification drills that tested communications systems between CDC, on-call laboratorians, and on-call epidemiologists.

***Workers at Costco practice dispensing medicines to people in an emergency.***

## *Large Retailers Can Help Save Lives During Public Health Emergencies*

*In the event of a large-scale public health emergency, where would you go to get lifesaving medicines fast? How about a location you already know well—your local superstore? CDC has identified large-scale retailers as a key potential partner in helping dispense medications to the public during an emergency.*

*CDC worked with the Virginia Department of Public Health in 2015 to develop a pilot program with retail giant Costco to test dispensing medical countermeasures to the public. Costco's regional pharmacy staff exercised a local plan to dispense medication to nearly 200 public volunteers. The emergency scenario was based on a large-scale anthrax attack that would require mass distributing of antibiotics from the Strategic National Stockpile (SNS) managed by CDC. In such an emergency, states would receive the stockpiled medicines and then get them to people via pre-established "points of dispensing."*

*Anthrax exposure causes death in nearly every case if not treated quickly, making this pilot program a critical example of emergency preparedness. Costco has participated in similar programs before to protect its own employees in the event of a public health emergency. Most large-scale emergencies require effective coordination between the public health, health care, and private sectors. Part of CDC's expertise is developing large-scale public health solutions that can save lives in real world situations.*

**365 days**

CDC's Emergency Operations Center operated 24/7 all of 2015 supporting the Ebola response.

**29,000**

CDC's Emergency Operations Center received 29,000 calls from doctors, public health agencies, and the public reporting public health threats and requesting assistance.

**$7 billion**

CDC stockpiles $7 billion worth of medicines and supplies to respond to infectious diseases, pandemic influenza, radiation/nuclear emergencies, chemical attacks, and natural disasters.

**4,000**

CDC supports 4,000 state and local workers who serve as first responders during emergencies in communities throughout America.

# Emerging and Zoonotic Infectious Diseases

**Diseases can spread across communities and borders, and CDC is ready to control, contain, and eliminate infectious disease threats whenever and wherever they arise. CDC spared no effort to respond to the world's largest Ebola outbreak in 2014. We also quickly detect and stop foodborne outbreaks, and track and eliminate dangerous infections in hospitals and clinics, including infections that are resistant to antibiotics. We investigate deadly viruses and bacteria, discover new and mutated germs, and prevent diseases from spreading from insects and animals to people. We are also committed to protecting U.S. communities from infectious diseases that spread across our borders.**

## Key Accomplishments 2015

- Helped solve 10 times more *Listeria* infection cases linked to foodborne illnesses through DNA sequencing than when the *Listeria* initiative first began 2 years ago.
- Promoted a coordinated approach to stop and slow antibiotic resistance through the One Health Forum on Antibiotic Stewardship. By working with facilities and health departments, an estimated 619,000 resistant and *C. diff* infections and 37,000 deaths could be avoided in the next 5 years.
- Developed two user-friendly online tools for healthy travel: 1) TravWell, a mobile app that gives vaccine and medicine recommendations, and 2) the *Yellow Book*, updated for 2016 with information on emerging threats like Ebola, chikungunya, and Middle East Respiratory Syndrome Coronavirus (MERS).
- Discovered a new tick-borne germ that sickened nearly 70 people in the Midwest, new poxviruses in New York and Alaska, and a new strain of rabies in New Mexico.
- Kept the diagnostic field laboratory in Sierra Leone operating 421 days without interruption, testing more than 27,000 samples.

***CDC pathologists can examine scanned pathology slides from anywhere in the world to rapidly diagnose health threats.***

## *ePathology Connects CDC and World's Scientists to Detect Emerging Threats Faster*

*We live in an interconnected world where disease outbreaks can cross borders to reach pandemic proportions quickly. The faster an outbreak can be identified, the quicker public health officials can contain the threat. Thanks to a new CDC electronic platform, ePathology, scientists around the world can be connected with CDC pathologists to help quickly analyze scanned pathology slides.*

*Imagine a mysterious outbreak in a remote village where the only clue is that each victim died with swelling of the brain. Local doctors theorize about the most likely cause but lack the advanced laboratory techniques or powerful microscopes to confirm their suspicions. With ePathology, all these doctors need is an Internet connection. They submit their brain scans to CDC pathologists and then view the slides together via a video conference. In this hypothetical case, the CDC pathologists' examinations reveals a viral infection has caused the brain swelling. They strongly suspect the rabies virus. With this suspicion, local officials can fan out in the area to look for rabid animals, seek out anyone who may have been bitten by a dog or animal, administer vaccines to those bitten, and educate the community about animal vaccination and steps to prevent rabies infection.*

*Without ePathology, the entire process could have been delayed by weeks or even months—causing many more people to be vulnerable to infection.*

**37,000**

If we prevent infections and improve antibiotics prescribing, we could save 37,000 lives from drug-resistant infections over 5 years.

**46%**

Almost half of multistate foodborne outbreaks in America result in product recalls.

**500,000**

Infections from *Clostridium difficile* (known as *C. diff* or deadly diarrhea) cause close to half a million illnesses in the U.S. in a single year.

**2015**

Responded to contain and control many dangerous disease outbreaks, including chikungunya, dengue, foodborne illnesses, Ebola, healthcare-associated infections (such as *C. diff*), monkeypox, Rocky Mountain spotted fever, plague, rabies, and tularemia.

# Global Health

**In today's highly mobile and interconnected world, germs threaten everyone. CDC protects Americans by rapidly detecting and containing health threats anywhere in the world before they can come to the U.S. CDC has a staff of nearly 1,700 in 62 countries supporting strong, effective public health systems, and training for health professionals to identify outbreaks in their own countries to prevent threats from crossing borders. We also work to make sure people have access to safe water and sanitation around the world, which is a critical step to prevent disease and stop other health threats.**

## Key Accomplishments 2015

- Completed 5-year strategic planning for 17 countries designated as Phase I under the Global Health Security Agenda so that we can help develop health systems that prevent avoidable epidemics, detect threats early, and respond rapidly and effectively.
- Established a Global Rapid Response Team that contributed to 5 outbreak responses in Gabon, Indonesia, Sierra Leone, and Tanzania.
- Reached the United Nation's Millennium Development Goal of starting 15 million people on lifesaving HIV treatment by 2015 (nine months ahead of schedule) through CDC's work with PEPFAR.
- Reached World Health Organization's milestone of having zero cases of polio in Africa after Nigeria marked a full year without a new case of naturally occuring polio. Now, only Pakistan and Afghanistan still have naturally occurring polio cases.
- Launched the Field Epidemiology Training Program (FETP) Surveillance Training for Ebola Preparedness (STEP) in West African high-risk countries without Ebola to improve their ability to rapidly collect and analyze health data. FETP now reaches more than 60 countries.
- Prevented 1.2 billion malaria cases and 6.2 million malaria deaths since 2001 through efforts of CDC and partners in the President's Malaria Initiative, the Global Fund, and Roll Back Malaria.

***Dr. Eric Brenner, senior epidemiologist consultant, works through real-world disease monitoring exercises with FETP-STEP trainees in Cote d'Ivoire.***

## *A STEP Against Ebola: CDC Works to Prevent the Next Outbreak*

*As efforts progress to eliminate the largest Ebola epidemic in history, CDC is working to ensure West Africa has the ability to prevent future outbreaks as well. CDC launched the Field Epidemiology Training Program (FETP) Surveillance Training for Ebola Preparedness (STEP) in high-risk countries like Cote d'Ivoire, Guinea Bissau, Mali, and Senegal before these countries are affected.*

*FETP-STEP targets surveillance officers in high-risk districts who are often the first point of contact for hearing about people becoming sick with a disease, compiling data and reporting on who is affected, outbreak detection, and response. The training not only improves Ebola prevention, but the prevention of other infectious diseases as well.*

*STEP includes an interactive workshop with group exercises, three weeks of field work in the participants' home districts, and another intensive workshop in which participants present their work. CDC will soon have nearly 200 public health workers trained in Ebola preparedness throughout West Africa. Trainees indicate the course has helped them better understand their role in collecting data and, most of all, has strengthened their ability to analyze and share health data that could make the difference in catching the next outbreak before it becomes an epidemic.*

**4 billion**

The Global Health Security Agenda aims to build the in-country capacity for response to protect 4 billion people over 5 years in more than 30 countries.

**425,000**

CDC, through the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), supports 21 countries and provides about 425,000 HIV-positive pregnant women with antiretroviral drugs for HIV treatment to prevent mother-to-child transmission.

**93%**

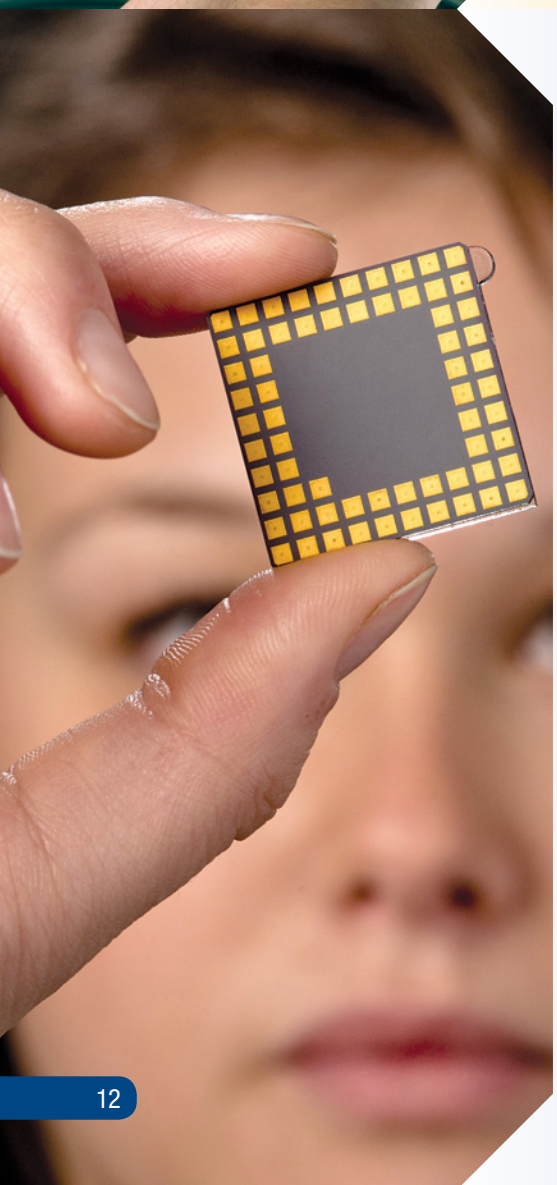
CDC conducted mass drug administration for lymphatic filariasis in 93% of the communes in Haiti, reducing cases to below 1% and proving how it could be stopped in these areas.

**1,700**

CDC has more than 1,700 staff working in more than 60 countries to promote global health and protect against the spread of global health threats such as Ebola.

# Immunization and Respiratory Diseases

**CDC protects all Americans from disease, disability, and death through immunization and by controlling respiratory and other related diseases. Vaccination is one of public health's most successful tools for saving lives and protecting people. CDC provides domestic and international leadership for seasonal and novel influenza control, as well as laboratory and epidemiology expertise to respond to bacterial and viral disease threats.**



## Key Accomplishments 2015

- Developed five candidate vaccine viruses that could be used against emerging and novel flu viruses with pandemic potential.
- Helped investigate and control a Middle East Respiratory Syndrome (MERS) outbreak in Korea—the largest known outbreak outside the Arabian Peninsula. Worked with disease experts in Saudi Arabia, Jordan, the United Arab Emirates, and Korea to better understand MERS transmission routes.
- Used Advanced Molecular Detection (AMD) methods to identify the type of measles virus in a large, multi-state outbreak linked to an amusement park in California. Found that the virus was identical to one that caused another large outbreak in the Philippines in 2014.
- Responded to serogroup B meningococcal disease outbreaks on college campuses. Evaluated new vaccines and worked with state and local health departments and universities as part of the response.
- Helped Niger investigate and respond to an unexpected outbreak of meningitis C that caused more than 8,500 cases and 570 deaths.

***Vaccination of health and frontline workers in Sierra Leone is helping to find a safe and effective vaccine against Ebola.***

## *CDC and Partners STRIVE Toward an Ebola Vaccine*

*After several months of intense preparations, the Sierra Leone Trial to Introduce a Vaccine against Ebola (STRIVE) launched in April 2015 to study the safety, efficacy, and immunogenicity of the Merck rVSV-ZEBOV vaccine in healthcare and frontline Ebola response workers. The trial takes place in five of the districts heavily affected by the deadly outbreak in Sierra Leone and could have a far-reaching impact on preventing future outbreaks.*

*Before launch, CDC and its partners strengthened infrastructure to support the trial by renovating vaccination sites and establishing the best process for storing, handling, and transporting vaccines. They expanded research capacity by providing training on clinical trial processes and data collection procedures for about 400 local staff. To support potential participants in making an informed decision about participating, the STRIVE team conducted approximately 175 information sessions. Additionally, they established strong relationships with community leaders, health officials, and health facility leadership to ensure open communication about the trial and address questions and concerns.*

*The effort resulted in more than 8,000 health and front-line workers being vaccinated. In a short period of time, STRIVE has not only collected data that will be valuable to inform decisions on licensure of a vaccine, but it is helping lay the foundation for future vaccine and infectious disease research in Sierra Leone.*

**60%**

60% of adolescent girls and 42% of adolescent boys received one or more doses of the cancer-preventing HPV vaccine, an increase of 3% for girls and 8% for boys.

**3,500**

CDC completed genome sequencing on more than 3,500 influenza viruses from all U.S. states and 67 countries, a 35% increase in sequencing.

**322 million**

The Vaccine for Children (VFC) program will prevent 322 million illnesses, 732,000 deaths, and save $1.4 trillion in societal costs for uninsured children born between 1994 and 2013.

**55,000**

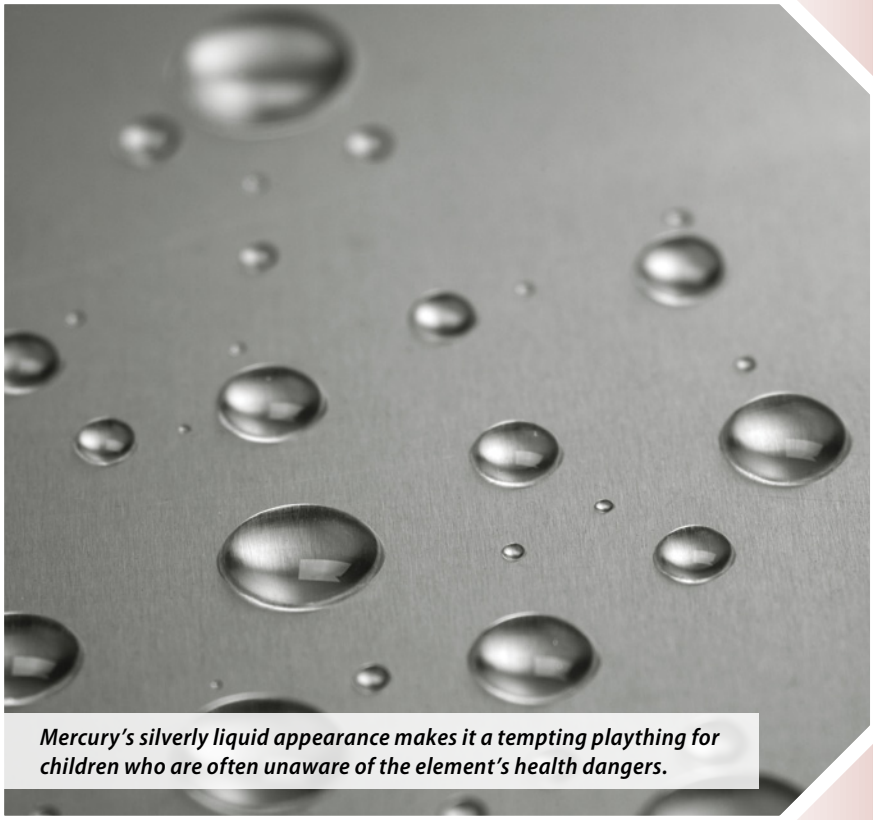
The *pneumococcal* vaccine prevented an estimated 55,000 cases and 4,000 deaths from invasive *pneumococcal* disease in 2014.

# Environmental Health and Toxic Substances

**CDC protects people from environmental hazards in the air we breathe, the water we drink, the food we eat, and the world that surrounds us. We investigate the relationship between environmental factors and health, conduct scientific investigations, develop guidance, and build partnerships to support healthy decision making. In the laboratory and the field, CDC's world-class scientists investigate the effects of the environment on health. We track and evaluate related health problems, and we help U.S. and international organizations respond to natural, technological, and terrorism-related environmental emergencies. Our vision is healthy people in a healthy environment.**

## Key Accomplishments 2015

- Documented that restaurants with certified kitchen managers in kitchens are less likely to have foodborne disease outbreaks than restaurants without them. Findings influenced FDA to revise certification recommendations in the model Food Code. Now, nearly 30 states and District of Columbia require restaurants and other permitted institutions to have these staff.
- Recorded an average 49% decrease in trans-fatty acid levels in all racial and ethnic groups in the U.S. population between 1999 and 2000 and 2009 and 2010, showing progress toward heart-healthy diets.
- Investigated sicknesses and deaths associated with the use of "fake marijuana." During January to May 2015, U.S. poison centers received more than 3,500 calls related to fake marijuana use, up 3 times from the same period the previous year. CDC published information and provided technical assistance to states dealing with the outbreak.
- Worked with state grantees to assess exposures from unregulated drinking water sources and implement treatment actions to protect more than 610,000 private well users.
- Measured more than 300 chemicals and nutritional indicators in the U.S. population through the National Health and Nutrition Examination Survey and in studies that assessed environmental exposures or nutrition status.



***Mercury's silverly liquid appearance makes it a tempting plaything for children who are often unaware of the element's health dangers.***

## *"Don't Mess with Mercury" Initiative Protects Kids from Heavy Metal*

*Middle school students can come across mercury in thermometers, thermostats, electrical switches, and science labs. Mercury's silvery liquid appearance makes it tempting for children to play with—but it is poisonous! Breathing mercury vapors can affect the nervous system, damage the kidneys, and harm other parts of the body. In some cases, schools closed for months to remove mercury contamination. Cleanup costs for large mercury spills in schools have ranged from $100,000 to over $1 million.*

*The "Don't Mess with Mercury" initiative is giving kids, their parents, and their teachers the information they need to stay safe. The key messages of the initiative are:*

- *Don't Mess With Mercury. If you see mercury don't play with it. Don't touch it. Find an adult.*
- *Mercury looks cool, but it's not! It is poisonous. It can make you sick.*

*The Initiative includes educational materials to teach school children about mercury. Those materials include a 30-second animated public service announcement, an informative video game, an interactive model of the human body that demonstrates the harmful effects of mercury poisoning, and materials for teachers.*

**50%**

Every year, more than 1 in 6 U.S. residents gets a foodborne illness. More than 50% of all U.S. foodborne illness outbreaks are associated with restaurants.

**25%**

Environmental factors contribute to more than 25% of all diseases worldwide, including cancer, asthma, and heart disease.

**40,000**

About 40,000 people have enrolled in the Amyotrophic Lateral Sclerosis (ALS) Registry and completed an ALS risk factor survey that will greatly increase our knowledge of this crippling disease.

**50**

CDC's Newborn Screening Quality Assurance Program ensures accurate detection of more than 50 disorders in newborn babies.

# HIV/AIDS, Viral Hepatitis, STDs & Tuberculosis

**HIV, viral hepatitis, sexually transmitted diseases (STDs), and tuberculosis (TB) cause substantial illness and death in the U.S. at considerable cost to the healthcare system. The lifetime healthcare costs for Americans who are infected each year may total more than $19 billion for STDs and HIV alone. More than 20 million STDs and tens of thousands of HIV, hepatitis C, and TB cases occur each year. CDC focuses on high-impact prevention to make sure actions are directed where most needed to reduce infections, prevent illness, decrease disparities, and save lives.**

## Key Accomplishments 2015

- Reported that HIV diagnoses declined by 9% during 2010–2014, attributed in part to increased testing, treatment, and prevention efforts.
- Used genotyping to identify 14 large TB outbreaks in the United States TB sickens nearly 10,000 people in the U.S. every year.
- Released new *Sexually Transmitted Disease (STD) Treatment Guidelines* in June, which were viewed or downloaded 350,000 times in the first six weeks.
- Issued an annual state-by-state progress report for HIV impact indicators that showed 87% of Americans knew their HIV status in 2012. Five states reached the national goal of 90% awareness.
- Helped continue the decline since 1991 in the percentage of female high school students who ever had sexual intercourse—from 51% to 46%.

***Injecting drugs prepared from opioid prescription painkillers is on the rise and linked to other health threats.***

## *At the Crossroads of Injection Drug Use: HIV and Hepatitis C*

*When an unusual spike in HIV infections occurred in a small rural town of 4,200 in Indiana, a public health emergency was quickly declared. This spike triggered an investigation by the Indiana State Department of Health (ISDH), and CDC was asked to help them determine the source and extent of the outbreak and to respond rapidly with disease control measures.*

*More than 90 staff from CDC worked with Indiana colleagues to control the outbreak of HIV and Hepatitis C (HCV) infections. CDC data found almost 100% of cases were linked to injection drug use of the prescription opioid oxymorphone and sharing drug equipment such as syringes.*

*CDC and ISDH worked to trace contacts, analyze epidemiologic data, give technical assistance on testing and treatment, and research what was contributing to the outbreak. By the end of the investigation, 188 people were diagnosed with HIV, and most of them were co-infected with Hepatitis C. CDC and its partners worked together to ensure those infected received treatment not only for HIV and HCV, but also for drug use. CDC continues to work on the long-term capacity needed to help prevent future infections and respond quickly if they do occur.*

**1 in 4**

About 1 in 4 new HIV infections occurs in people ages 15–24 years.

**320,000**

A CDC analysis shows that *Hepatitis C* testing and medical care and treatment for people born 1945–1965 could prevent more than 320,000 deaths.

**1 in 6**

Almost two thirds of new *chlamydia* infections occur in people aged 15 to 24 years.

**13M**

Up to 13 million people in the United States are infected with the bacteria that cause TB. Without treatment, they are at risk for developing active TB disease.

# Birth Defects and Developmental Disabilities

**For the millions of Americans with birth defects, disabilities, and blood disorders, a happy, healthy life can be challenging to realize. CDC investigates the causes of birth defects and identifies ways to save babies. CDC researches autism and other developmental disabilities and monitors changes in their occurrence, prevents and manages complications from blood disorders, and improves health services and programs for people with disabilities throughout their lives.**

## Key Accomplishments 2015

- Advanced global efforts to prevent neural tube defects (serious birth defects of the brain and spine) through Birth Defects COUNT, a partnership to improve tracking for birth defects in nine countries. Published a study on red blood cell folate concentrations to predict population risk of neural tube defects, which received the prestigious Shephard Award.
- Initiated work with academic and professional health organizations to plan new ways to change how healthcare providers prevent, identify, and treat fetal alcohol spectrum disorders, including the promotion of alcohol screening and counseling.
- Helped develop guidelines to test everyone with hemophilia at least once a year for inhibitors, a medical problem that occurs when a person with hemophilia has an immune response to treatment. CDC's monitoring program, Community Counts, offers annual inhibitor screening for participants at no cost to Hemophilia Treatment Centers.
- Published a new report on adults living with disabilities to recognize the 25th anniversary of the Americans with Disabilities Act (ADA) and a new website to increase awareness about disability and inclusion.

***Caden, who was born with a heart defect, is a happy and healthy 6-year-old child.***

## *A Heartbeat Away from Answers: CDC Investigates Heart Defects*

*After two normal pregnancies, Dawn was surprised to find out in her third pregnancy that her infant had a congenital heart defect (CHD). Her son Caden was diagnosed with hypoplastic left heart syndrome toward the end of her second trimester.*

*Three open-heart surgeries and many hospital visits later, Caden—now 6 years old—is enjoying a happy, normal childhood. His mother is pleased with his progress but believes continued research is critical to better preventing and treating heart defects.*

*Heart defects are the most common type of birth defect in America, affecting nearly 1% of births each year. Thanks to improved medical care and treatment, an estimated 2 million children and adults are living normal lives with a heart defect. CDC is using disease tracking and research to develop recommendations and policies to help prevent heart defects and improve the lives of those living with these conditions.*

*This is important because, as Dawn says, "Caden may look normal and play soccer like any other child—but at any point, the other shoe could drop. Regardless of what he looks like on the outside, he only has half a heart working for him on the inside. And that's why research is so important. If not for the research that's been done, Caden wouldn't even have a story. He wouldn't be here with us today."*

**5.4 million**

5.4 million pregnant women take medications each year, and some can be harmful to the developing fetus.

**5 months**

Children with Autism Spectrum Disorder (ASD) are being identified five months earlier, according to a pilot project of preschool children in five communities.

**1 in 5**

1 in 5 Americans lives with a disability.

**1 in 6**

1 in 6 children ages 3–17 years has one or more developmental disabilities such as autism or Attention Deficit Hyperactivity Disorder.

# Chronic Disease Prevention and Health Promotion

**Chronic diseases, such as heart disease, stroke, cancer, and diabetes, are responsible for 7 of 10 deaths each year, and treatment of chronic diseases accounts for 86% of our nation's health care costs. CDC works to reduce the risk factors that cause these diseases, such as tobacco use, obesity, physical inactivity, poor nutrition, and alcohol abuse, and to detect diseases early and keep them from progressing. Chronic disease prevention saves lives, reduces disease and disability, and helps save billions in unnecessary healthcare costs.**

## Key Accomplishments 2015

- Completed fourth year of CDC's highly successful "Tips from Former Smokers" campaign. Ads featuring real people who suffer from smoking-related illnesses, including vision loss and colorectal cancer, resulted in 145,000 quitline calls and more than 1.7 million visits to the Tips websites for information on quitting smoking.
- Updated the Public Health Service's recommendation for the optimal fluoride level in drinking water to prevent tooth decay. The new standard establishes a single level of fluoride for all water systems in the nation.
- Issued the first study to provide population-level estimates of heart age with nearly 3 in 4 adults in America having a heart age that is older than their chronological age. On average, men have a heart age 8 years older than their chronological age, compared to 6 years older for women.
- Launched STAT™ (Screen, Test, Act Today), a multi-year program in partnership with the American Medical Association, to reach more Americans with prediabetes and stop the progression to type 2 diabetes—now one of the nation's most debilitating chronic diseases.
- Reported that nearly 90% of teens used birth control the last time they had sex, but rarely choose the most effective types, such as intrauterine devices and implants. CDC is urging parents and teens to learn more about types of birth control, including long-acting reversible contraception (LARC).

***The "Tips" Campaign has inspired millions of smokers to quit.***

## *"Tips from Former Smokers" Campaign Saves Lives*

*CDC's "Tips From Former Smokers" campaign has already saved tens of thousands of lives and inspired millions of smokers to quit. The hard-hitting ad campaign features compelling stories of Americans suffering from smoking-related diseases and disabilities and the toll smoking-related illnesses take on smokers and their loved ones.*

*CDC is expected to release a full evaluation of the campaign's impact in 2016. But, preliminary estimates indicate the campaign has already helped save at least 50,000 lives. Since 2012, at least 5 million Americans tried to quit smoking cigarettes because of the Tips campaign, and at least 400,000 cigarette smokers quit for good. Additionally, millions of nonsmokers have talked to their friends and loved ones about the dangers of smoking. Tips has also proven to be extremely cost effective. For every $2,800 spent on the 2012 campaign, a death was prevented; and for every $400 spent, a life was prolonged for at least a year.*

*In 2015, the Tips campaign introduced a new series of powerful ads featuring vision loss and colorectal cancer. The campaign had an immediate and strong impact. When the ads were on the air, about 62% more people called the national quitline, 1-800-QUIT-NOW. These ads, along with previously aired ads featuring stroke, heart disease, COPD, birth defects, gum disease, tooth loss, and complications in smokers with HIV, helped educate the public about the devastating effects of smoking on the body.*

**17%**

Cancer deaths declined 17% from 201 deaths per 100,000 persons in 1999 to 169 deaths in 2012.

**$2.05 a drink**

Excessive alcohol consumption cost the U.S. $249 billion in 2010. That equals $2.05 a drink—up from $1.90 per drink in 2006.

**2x**

The percentage of U.S. hospitals using most of the *Ten Steps to Successful Breastfeeding* guidelines nearly doubled in 6 years, growing from 29% in 2007 to 54% in 2013.

**3x**

E-cigarette use among middle and high school students tripled from 2013 to 2014—for the first time surpassing every other tobacco product.

# Occupational Safety and Health

**America must have safe, healthy workplaces to stay competitive and productive. CDC plays a critical role in this by helping prevent illness, injury, disability, and death at work. Our research and practical tools help keep workers safe from job-related illnesses and injuries. We partner with state and federal agencies, labor, and industry to improve workplace safety and health.**

## Key Accomplishments 2015

- Designed and launched a patented, multi-functional guard rail system to protect workers when working at high elevations. This protects workers from hazardous conditions while doing residential construction and is commercially available.
- Produced the Hospital Respiratory Protection Program Toolkit, in partnership with Occupational Safety and Health Administration (OSHA), to help hospitals prevent spreading aerosol-transmissable diseases to healthcare workers.
- Established the National Center for Productive Aging and Work to address the needs of an aging workforce and identify proven actions to support workers of all ages and their employers.
- Expanded relationships with tribes and identified worker safety and health priorities within American Indian and Alaska Native communities through a series of visits to tribal communities, meetings with stakeholders, and a capacity-building workshop. These priorities will guide the development of a research agenda for this population as part of the newly established American Indian and Alaska Native Initiative.
- Led the national effort to support the use of personal protective equipment (PPE) in the Ebola response by completing initial testing on PPE ensembles used in West Africa to provide additional heat stress mitigation guidance.

*CDC helped develop innovative "through-the-earth" communications to keep coal miners safer.*

## *Communication in a Coal Mine: CDC Helps Improve Disaster Response*

*The ground shakes, machinery stops, a distant rumbling is heard, then silence. A mine worker picks up the mine phone, but it's dead. This predicament, where a mine fire, explosion, or other major event in a coal mine knocks out regular communications, can easily lead to tragedy. The miners are in danger until they can communicate with rescuers on the surface, but the emergency communication must be able to pass through the earth, which regular radio transmissions cannot do.*

*The Mine Improvement and New Emergency Response Act of 2006 (MINER Act) requires that underground coal mines develop emergency response plans that specify two-way wireless communications and electronic tracking systems. Through-the-earth communications are one aspect of these plans, but no suitable technologies existed.*

*CDC tackled this difficult technical problem, calling for innovative solutions to address this challenge. As a result, two through-the-earth communications systems were developed and made available. These systems can now be a lifeline for mine workers to communicate with rescuers on the surface during a mine emergency.*

**1 in 5**

About 1 in every 5 American workers is over age 65 today, and 1 in 4 American workers will be over 55 by 2020.

**$250 billion**

Work-related deaths, injuries, and illnesses cost employers more than $250 billion in medical expenses and productivity losses a year.

**48,000**

There have been almost 48,000 downloads of the Ladder Safety app, designed to prevent worker falls and other injuries since it was introduced.

**26,000**

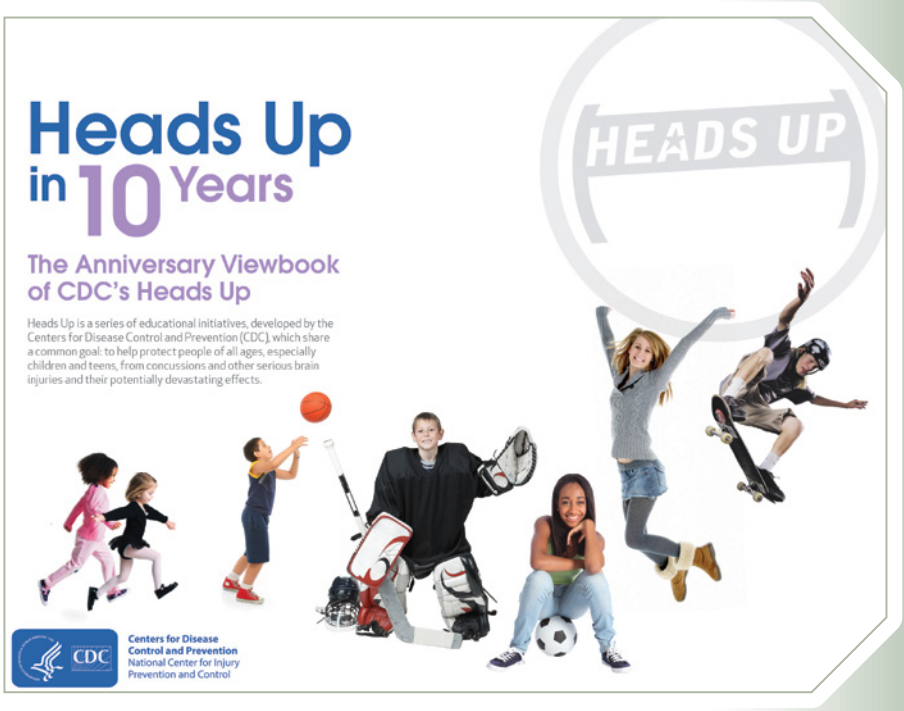
About 26,000 truck drivers or their passengers were injured in crashes in 2012.

# Injury Prevention and Control

**CDC applies the same real-world, science-based approach to reducing threats from injuries and violence as it does to preventing infectious and chronic diseases. We provide timely, accurate information and useful tools to keep people healthy, safe, and secure where they live, play, and learn. Our research and programs help states and communities develop the best ways to prevent injuries and violence.**

## Key Accomplishments 2015

- Published new findings on the significant economic impact of injury and violence: in the U.S., nonfatal injuries cost $457 billion and fatal injuries cost $214 billion annually.
- Launched a "Prescription Drug Overdose: Prevention for States" program in 16 states to strengthen their prescription drug monitoring programs, improve opioid prescribing through health systems and insurer innovations, implement effective prevention in the hardest-hit communities, and identify emerging drug overdose issues. The President's Budget for 2016 included a request for resources to expand CDC's efforts to all 50 states.
- Developed the manual, *Increasing Alcohol Ignition Interlock Use: Successful Practices for States*, to help states implement the eight key features of Alcohol Ignition Interlock Programs.
- Worked with 10 countries to conduct surveys that measure the burden of violence against children. Findings show that global rates of violence against children are high and few victims receive the help they need.
- Developed a package of state-of-the-art science to help health departments, policy makers, and other partners prevent sexual violence.




***"Heads Up" has helped to raise awareness of the need for improved prevention, recognition, and response to concussion and other serious brain injuries.***

## *Heads Up Initiative Protects Public from Concussions*

*Over the last 10 years, CDC's "Heads Up" Initiative has played a key role in protecting the public's health from concussions.*

*The "Heads Up" materials aim to increase the rate of concussion reporting and use of prevention strategies, help coaches properly identify and respond to a concussion, ensure healthcare providers follow return-to-school and play guidelines, increase patient follow-up, and ensure emergency department discharge guidelines are followed.*

*"Heads Up" successes to date include:*

- *215 million media impressions through print media and TV public service announcements*
- *6 million print materials distributed*
- *3 million coaches trained*
- *Improved overall knowledge of concussion among high school coaches*
- *Improved pediatricians' adherence to return-to-play protocols*
- *Increased patient follow-up and adherence to emergency department discharge recommendations.*

**$671 billion**

Lifetime medical and work loss costs total $671 billion for injuries and violence in the U.S.

**75%**

Among new heroin users, approximately 75% report abusing prescription opioids prior to using heroin.

**1 in 5**

About 1 in 5 female and 1 in 10 male high school students were victims of physical and/or sexual teen dating violence in the prior year.

**26%**

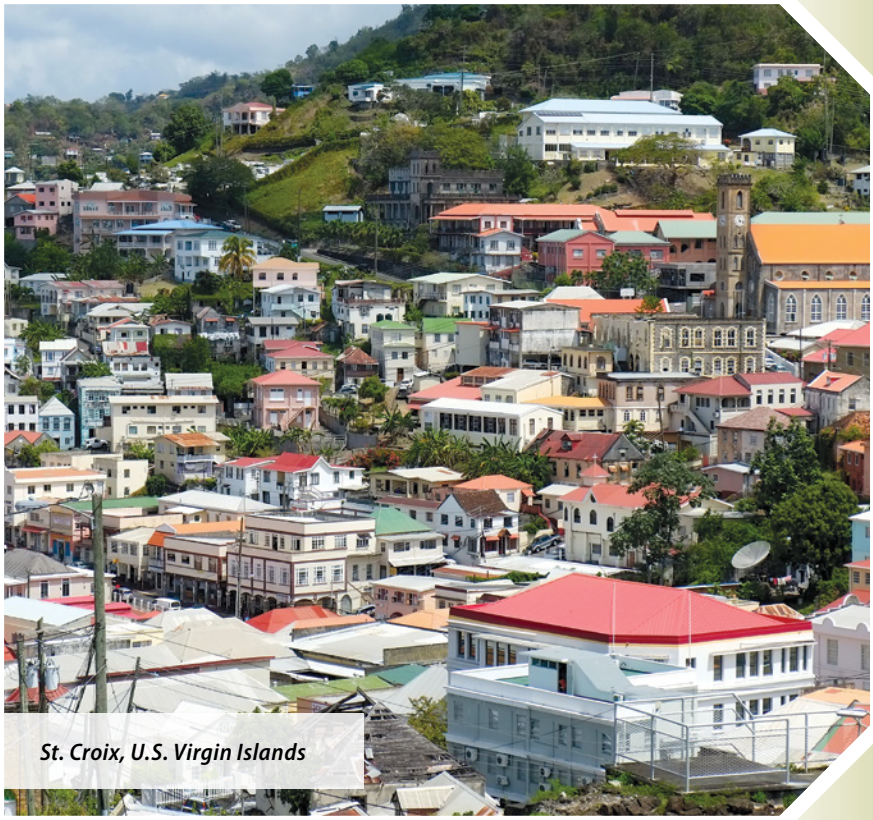
The suicide rate for young people between the ages of 10 and 24 years increased 26% between 2007 and 2014.

# State, Tribal, Local, and Territorial Support

**A core CDC responsibility is to help state, tribal, local, and territorial health departments prepare for and respond to emerging health threats where they happen. We provide public health authorities with information, tools, staff, and training. We support state and local actions to promote health and protect people in their communities. We help public health departments to improve performance, share resources, and identify and respond quickly to challenges in the evolving public health system.**

## Key Accomplishments 2015

- Increased workforce capacity with the largest class in the history of the Public Health Associate Program. Now 332 trained associates serve state, tribal, local, territorial, federal, and nongovernmental public health organizations across 44 states, one territory, and the District of Columbia through this 2-year program.
- Funded five tribes through the Tribal Public Health Accreditation Support Initiative (January–June 2015) to increase their progress toward obtaining accreditation.
- Published a *School Vaccination Laws* report that analyzed state statutes and regulations for school vaccines. Since its launch in April 2015, the corresponding web page has received nearly 18,000 site views, and the report was downloaded more than 8,500 times.
- Helped launch CDC's social determinants of health website so health departments and communities can increase understanding and access tools that address the underlying systems and environmental, social, and economic conditions that affect health.
- Hosted 2015 CDC New Health Official Orientation for 13 state and seven local health officials to give new officials a comprehensive perspective of CDC's mission and the opportunity to form relationships with CDC and other partners.



*St. Croix, U.S. Virgin Islands*

## *Rebuilding a Public Health System*

*Most people think of the U.S. Virgin Islands as a tropical paradise. But when Kenneth Mapp took office as the territory's governor, he realized the tropical paradise had a serious public health challenge.*

*"Our Department of Health remains severely understaffed and underfunded," Governor Mapp said in his inaugural address. "Chronic diseases, including diabetes, hypertension and kidney failure, have been on the rise in the territory."*

*Mapp turned to a host of partners, including CDC, to advise him on how to strengthen public health in the Virgin Islands. CDC organized a multidisciplinary team to identify real-world solutions for the territory. The result is a strategic plan to cultivate a skilled public health workforce, identify new approaches to maximize available resources, improve health promotion and prevention strategies, and gather health data to inform policy decisions.*

**862**

CDC has 862 field staff working in state, tribal, local, and territorial health agencies and other organizations.

**325**

325 public health projects currently build state, tribal, local, and territorial capacity through cooperative agreements with 25 national grantees.

**4,652**

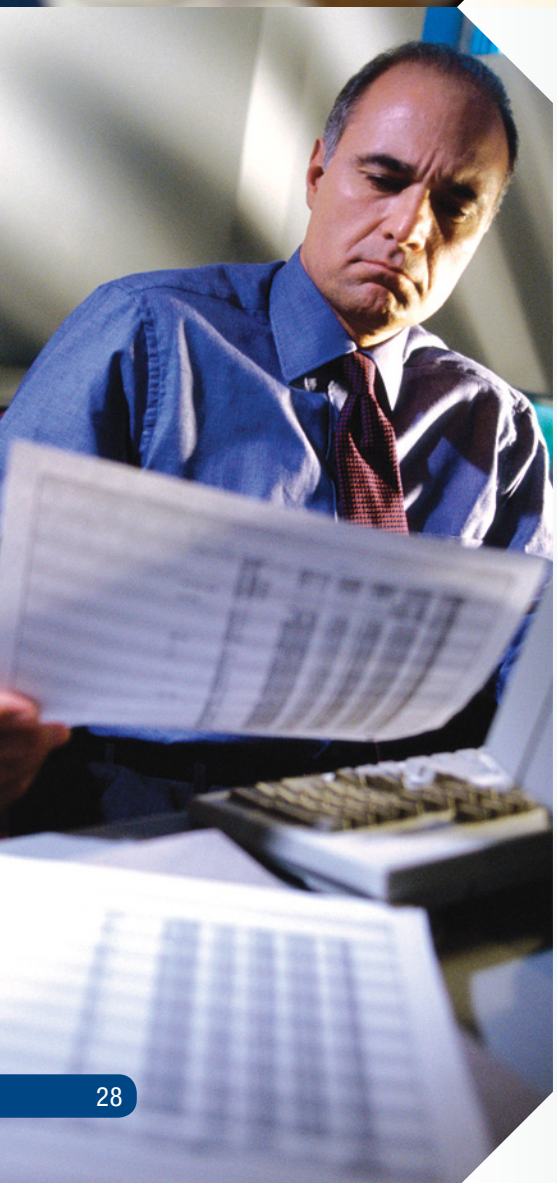
The Public Health Law Program conducted 14 webinars and 44 in-person trainings across the U.S., training more than 4,652 professionals on public health law issues.

**79**

About 39% of the U.S. population, or 121 million people, are served by 79 nationally accredited health departments.

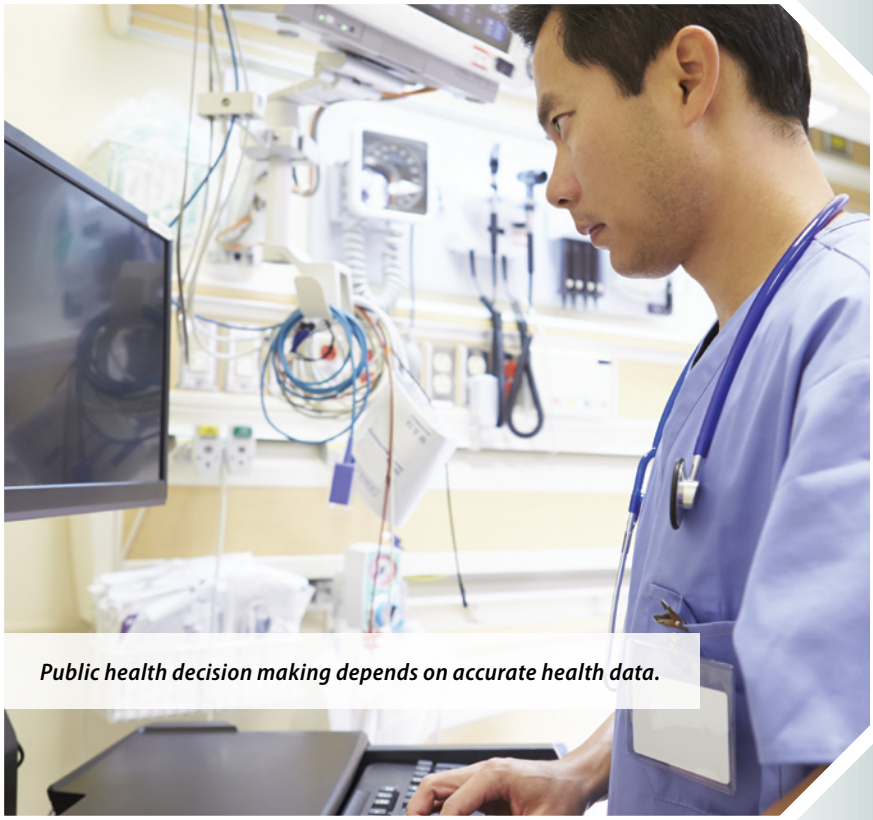
# Public Health Scientific Services

**CDC's scientific services collect, analyze, and use high quality data to protect America's health, safety, and security. CDC uses science, standards, and policies to reduce the burden of diseases in the United States and globally. We track the health of populations and provide the right data to the right people at the right time to take action. Vital information goes to doctors, health workers, and civic officials to make decisions during catastrophes. CDC also guides and supports safe, state-of-the-art laboratories across the U.S. as a key line of defense against health threats.**



## Key Accomplishments 2015

- Reached 23 million with the *Morbidity and Mortality Weekly Report* (MMWR) in 2015, which included 30 reports about Ebola.
- Generated 8,026 news stories through *CDC Vital Signs* on crucial disease topics. Electronic media reach grew to over 6.6 million.
- Developed a comprehensive way to help public health laboratories identify gaps, monitor trends, and compare themselves with other labs, in partnership with the Association of Public Health Laboratories (APHL)
- Inaugurated the CDC Laboratory Leadership Service (LLS), a 2-year postdoctoral learning program that combines public health laboratory training with applied investigations and service. The two core aspects of the LLS are biosafety and laboratory management, and the program is designed to help make CDC a national and global model for excellence in these areas.
- CDC's Epidemic Intelligence Service (EIS) deployed 138 officers to respond to Ebola domestically or internationally for nearly 580 days so far.
- *Morbidity and Mortality Weekly Report (MMWR)* received its first Journal Impact Factor in June 2015; the score was 10.588, ranking MMWR second out of 170 journals in the Public, Environmental and Occupational Health category.



***Public health decision making depends on accurate health data.***

## *Intensive Effort Underway to Modernize Disease Reporting*

*Accurate data about diseases are vital for public health specialists and other decision makers to develop better policies to save lives and protect people. CDC is working with its partners to modernize the National Notifiable Diseases Surveillance System (NNDSS) to improve the system's ability to provide more comprehensive, timely, and higher quality data than ever before.*

*NNDSS is a major part of CDC's overall disease surveillance strategy. The system is a nationwide collaboration that enables all levels of public health—local, state, territorial, federal, and international—to share notifiable disease-related health information. Public health officials use this information to prevent the spread of these diseases and conditions. CDC supports NNDSS through funding, health information exchange standards and frameworks, electronic health information systems, and technical support. CDC then prepares annual summaries of infectious and noninfectious diseases and conditions, which are published in the* Morbidity and Mortality Weekly Report.

*This intensive effort to modernize NNDSS will produce better information on a wide variety of diseases and conditions, including Ebola, sexually transmitted diseases, hepatitis, pertussis, foodborne illnesses, Hantavirus, SARS, rabies, and more.*

**63,000**

Over 63,000 visitors have viewed the NNDSS Weekly Provisional Disease Tables at DATA.CDC.GOV.

**40**

Performed 40 Epi-Aids (epidemiologic assistance from CDC's Epidemic Intelligence Service) for urgent health threats made by 17 states, 4 territories, 2 federal agencies, and 10 countries in 2015.

**588**

CDC's 588 sentinel laboratories in 47 states, Puerto Rico, and several international locations tested virtual specimens using microbiologic test procedures to identify potential biological agents.

**38%**

Improved electronic reporting of mortality records to within 10 days of the date of event, from 14% in 2012 to 38% in 2015.

# Health Statistics

**The right decisions are critical to protect the public's health and can affect millions of people. So it is vital that decision makers have accurate, relevant health information. CDC takes the health pulse of the American people. We track threats, the leading causes of death, health inequalities, and access to care according to race, ethnicity, socioeconomic status, region, and other population characteristics. CDC provides the essential information for policy making, biomedical and health services research, and other public health applications. Information can change the world, and CDC is dedicated to providing the highest quality health information to the U.S. and our public health partners around the world.**

## Key Accomplishments 2015

- Provided online access to important health indicators to public health practitioners, researchers, and health policy makers through the new Vital Statistics Rapid Release program with quarterly estimates and provisional data.
- Published information on obesity trends among young people in the U.S. and Canada through collaborative efforts of the National Health and Nutrition Examination Survey and the Canadian Health Measures Survey.
- Released data showing that about 13% of children diagnosed with autism spectrum disorder grow out of the diagnosis, documenting the challenges facing clinicians who deal with this difficult condition.
- Released new data on prescription opioid painkiller use among adults and opioid poisoning deaths (including deaths from heroin)—two key measures in America's growing struggle against opioid painkiller addiction.
- Published new 2014 data showing the first increase in the U.S. fertility rate since 2007. Rates rose for non-Hispanic white and Asian or Pacific Islander women, but were historically low for Hispanic women and American Indian or Alaska Native women.

***Hispanics are the largest racial and ethnic minority group in the United States.***

## *CDC Releases Data from First Ever Study on Hispanic Health Risks*

*The first national study on Hispanic health risks and leading causes of death in America through CDC Vital Signs shows that similar to non-Hispanic whites, the two leading causes of death among Hispanics are heart disease and cancer. Fewer Hispanics than whites die from the 10 leading causes of death, but Hispanics had higher death rates than whites from diabetes and chronic liver disease and cirrhosis. They have similar death rates from kidney diseases.*

*The CDC data are helping inform policies that could improve the health of Hispanics in the U.S. Recommendations include engaging interpreters to eliminate language barriers; providing weight control consultation for patients at risk of high blood pressure, diabetes, or cancer; asking patients if they smoke and recommending cessation; and engaging "promotores de salud" (community health workers) to educate and link patients to low-cost health services.*

*The CDC data draw from recent national census and health surveillance data to determine differences between Hispanics, whites, and among Hispanic subgroups. Hispanics are the largest ethnic minority group in the U.S. Currently, nearly one in six people living in the U.S. (almost 57 million) is Hispanic, and this is projected to increase to nearly one in four (more than 85 million) by 2035.*

**9%**

Birth rates for teenagers fell 9% from 2013 to 2014, to 24 births per 1,000 females aged 15–19 years—another record low for the U.S.

**13%**

About 13% of adults tried an e-cigarette even one time in 2014, with use differing by sex, age, and race-ethnicity.

**37%**

The percentage of opioid painkiller users who used an opioid painkiller stronger than morphine grew from 17% to 37% (1999–2002 to 2011–2012).

**27**

Deaths from influenza and pneumonia in first quarter of 2015 were 27 deaths per 100,000 people, higher than first quarter of 2014 (23.8).

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