NATIONAL CENTER FOR EMERGING AND ZOONOTIC INFECTIOUS DISEASES

STRATEGIC PLAN 2012-2017

National Center for Emerging and Zoonotic Infectious Diseases

Office of the Director

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CDC scientists in 2011 study bats in Uganda to learn more about their relationship to Marburg virus which, like Ebola virus, can cause a rare but deadly hemorrhagic fever in humans and other primates.

NCEZID STRATEGIC PLAN 2012-2017

The National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) was established in 2010, with a mission and scientific activities that trace back to the earliest days of the Centers for Disease Control and Prevention (CDC). This document is a strategic roadmap for the work necessary during the next 5 years to realize the Center's vision—prevent infection, protect people, and save lives.

NCEZID is responsible for the prevention and control of a wide range of infectious diseases, including rare but deadly diseases like anthrax and Ebola hemorrhagic fever, and more common illnesses like foodborne diseases and healthcare-associated infections. The Center's expert staff manages a broad portfolio of science-based programs that also promote water safety, the health of migrating populations, and the identification and control of diseases transmitted by animals and insects (e.g., rabies, Lyme disease). NCEZID works closely with the National Center for Immunization and Respiratory Diseases, the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, and other parts of CDC to fulfill the agency's commitment to protect against the spread of all infectious diseases.

VISION: Prevent infections, protect people, save lives

MISSION: To reduce illness and death associated with emerging and zoonotic infectious diseases and to protect against the unintentional or intentional spread of infectious diseases

NCEZID is one of the agency's principal sources of epidemiologic and laboratory expertise about bacterial, viral, and fungal pathogens as well as infectious diseases of unknown origin. State and local health departments, other federal agencies, and foreign ministries of health look to NCEZID to assist with wide-ranging problems—from illness and death in 28 states caused by *Listeria*-contaminated cantaloupes, to an outbreak of anthrax in hippos and humans in Kenya, to rising rates of tuberculosis among people immigrating to the United States, to new outbreaks of dengue in south Florida. And, it is primarily because NCEZID's diverse workforce includes a correspondingly broad spectrum of infectious disease expertise (*see insert, pg. 2*) that mysterious illnesses are identified, outbreaks are contained, and lives are saved.
None of this work could happen without an ever-expanding extensive network of partnerships. NCEZID collaborates with many public and private partners, most notably federal, state, and local public health departments, public health organizations, academia, industry, and global multilateral organizations and ministries of health.

About the Strategic Plan

As noted by the Institute of Medicine, the "global interconnectedness" that has evolved during the past several decades has caused infectious pathogens to "…emerge more frequently, spread greater distances, pass more easily between humans and animals, and evolve into new and more virulent strains." Fortunately, there have also been recent significant advances in controlling the spread of disease. To address opportunities and challenges brought about by vast scientific, environmental, demographic, technological, and economic changes, NCEZID developed this strategic plan to identify the Center's priority work for the next 5 years (2012–2017).

Defining "priority work" is challenging, in part because of the sheer breadth of NCEZID's work, as evidenced by its two-pronged mission—to reduce illness and death *and* to protect against the unintentional and intentional spread of infectious diseases. Current and projected economic realities require that difficult choices be made to ensure that the most essential activities and services related to the Center's mission be sustained, or where possible, advanced.

This strategic plan was created through the combined efforts of the NCEZID Office of the Director and the Center's seven divisions as well as partner engagement, both inside and outside CDC. The strategies and objectives presented here build upon the principles described in the Office of Infectious Diseases' A CDC Framework for Preventing Infectious Diseases: Sustaining the Essentials and Innovating for the Future, which serves as a roadmap for all of CDC's infectious disease work. The NCEZID strategic plan also aligns with CDC priorities to

- strengthen surveillance and epidemiology

[1]Institute of Medicine. *Infectious Disease Movement in a Borderless World*. Workshop Summary. March 12, 2010.

The success of NCEZID's strategic plan will require continued leadership and excellence in a wide-range of diverse but interrelated areas such as:

- Healthcare-associated infections
- Foodborne and waterborne diseases
- Vector-borne diseases
- High-consequence/low-incidence infectious diseases (e.g., anthrax)
- Diseases of special and vulnerable populations (e.g., Alaska Natives, refugees)
- Infectious disease public health, epidemiologic, and laboratory science
- Detection of and response to disease outbreaks caused by specific bacterial, viral, and fungal organisms
- Domestic and global health safety and security, including preparedness against emerging infections and biothreats
- Discovery of new pathogens and investigation of undefined illnesses
- The interaction of pathogen, host, and the environment, including the complex interplay between human health, animal health, and the environment (i.e., One Health).
- State-of-the-art laboratory services and support for CDC's infectious disease laboratories
- Trend analysis, health economics, and predictive science
- Health communication, education, and behavioral science

At any given time, about 1 in every 20 patients has an infection related to their hospital care.

- enhance the agency's ability to support state and local public health
- provide leadership in global health
- promote effective public health policy
- address the causes of death, illness, and disability

This document is not intended to be a comprehensive catalog of the plans for all NCEZID activities. Rather, it provides an outline of essential work that must be done to fulfill the Center's mission, as well as emphasizing special, urgent initiatives and activities that could have a significant impact on the health of the nation going forward. The strategic plan provides clear, consistent, and carefully considered guidance focusing on key Center activities that will most efficiently and cost-effectively prevent infections, protect people, and save lives.

The strategic plan is divided into four overall strategies. Each strategy includes a set of selected strategic objectives for the next 5 years, which are supported by specific actions listed in bulleted form beneath. The first strategy, strengthen fundamentals, ensures a solid foundation of laboratory, surveillance, and epidemiologic investigation necessary for public health action to continue. The second strategy, implement interventions, defines the strategic direction for addressing the first part of the Center's mission, "to reduce illness and death" associated with infectious diseases. The third strategy, enhance preparedness, focuses on the direction needed for the second part of the mission, "protect against the intentional and unintentional spread of infectious diseases." The fourth and final strategy, support the NCEZID workforce, is essential to make the first three strategies happen. Ultimately, the success of the Center is dependent on the exceptional public health professionals who are dedicated to achieving the objectives outlined in the strategic plan. Finally, as NCEZID successfully implements this plan to inform and shape its work during the next 5 years, it will continue to maintain an unwavering commitment to these core values that have been guiding the center since its inception:

- Build programs on a foundation of quality science to reduce illness and death associated with emerging and zoonotic infectious diseases and protect against the unintentional or intentional spread of infectious diseases.
- Translate and disseminate specific pathogen-related expertise in support of all infectious disease-related federal, state, local, and global health activities.
- Address the distinct needs of vulnerable populations by promoting health equity.
- Engage in meaningful and transparent relationships with a wide range of public and private sector partners at the federal, state, local, and global levels.
- Promote fiscal and program efficiencies for all public health-related activities within CDC and all other agencies of the U.S. government.
- Ensure that communications about the Center's work are accurate, timely, and consistent.
- Champion the professional growth and development of the Center's workforce and create a high-quality, professional, and rewarding work environment.

NCEZID STRATEGIC OBJECTIVES

STRATEGY 1: STRENGTHEN PUBLIC HEALTH FUNDAMENTALS

Advance and increase effectiveness of infectious disease laboratory science, surveillance, epidemiology, information technology, communications, and strategic partnerships to support high-quality public health programs

Objective 1.1 Improve infectious disease surveillance, outbreak response, and epidemiology

- Apply advances in scientific methodologies for surveillance, outbreak investigations, program evaluations, and applied research in order to improve early disease detection and response.
- Provide leadership for programs and platforms (e.g., National Healthcare Safety Network, Emerging Infections Program) that can be used by CDC as well as public health and clinical partners for conducting high-priority work to prevent and control infectious diseases.
- Lead efforts to ensure that priority cross-cutting disease areas are addressed (e.g., vulnerable populations and health disparities).
- Move toward seamless integration of epidemiologic and laboratory data.
- Engage global partners in improving capacity to detect, respond to, and control infections.
- Use evolving health information technology (IT) tools (e.g., electronic health records and portable digital information-capturing and -transmittal devices) to improve timely reporting and use of public health data at federal, state, and local levels.

Objective 1.2 Improve NCEZID core laboratory capacity and accelerate development and application of novel diagnostic methods

- Apply new laboratory methods and information technology to advance infectious disease detection and response (e.g., whole genome sequencing, bioinformatics).
- Create innovative, practical, and cost-effective laboratory tests (e.g., culture-independent and point-of-service laboratory tests) to provide more rapid diagnoses, especially in outside-of-health care settings.
- Improve the ability to rapidly translate diagnostic laboratory information into effective public health interventions.
- Embrace a culture of continuous quality improvement to NCEZID laboratories to secure their identity as national and int national centers of high-quality reference diagnostics.

CDC scientists track antimicrobial-resistant pathogens around the globe. Antimicrobial resistance is one of the world's most pressing health problems.

Each year, roughly 1 in 6 people in the United States gets sick (and 3,000 die) from eating contaminated food.

Objective 1.3: Strengthen state and local public health systems

- Serve as effective steward for the Epidemiology and Laboratory Capacity for Infectious Diseases Cooperative Agreement to support epidemiologic investigations, laboratory infrastructure and expertise, and surveillance for state and local health departments.
- Improve capacity of state and local health departments to develop metrics for assessing their impact and to enhance their ability to communicate objectives and accomplishments.
- Strengthen collaborations with CDC public health partners to bolster state and local public health program fundamentals and program delivery.

Objective 1.4: Leverage partnerships, policy, and effective communication messaging to protect the health of the public.

- Bring together multidisciplinary and private sector experts to identify broad-based solutions to public health problems at the local and state levels (e.g., public-private collaborations on healthcare-associated infections).
- Conduct high-level policy analysis and forecasting necessary to develop and guide targeted public health actions.
- Employ principles of clear communication and new communication channels (e.g., social media) to ensure that NCEZID science is effectively translated to promote broad public awareness and action.

STRATEGY 2: IMPLEMENT HIGH-IMPACT INTERVENTIONS

Develop and apply the science to support and implement new and proven approaches to prevent and control infectious diseases in NCEZID programmatic priority areas

Objective 2.1 Use targeted strategies to reduce the burden of foodborne and waterborne diseases

- Enhance capacity to detect and respond to foodborne and diarrheal disease outbreaks to reduce the incidence of common, but preventable, infections.
- Expand scientific information on the incidence, trends, burden, source attribution, and characteristics of foodborne pathogens and infections.
- Use what is learned from outbreaks, inspections, and monitoring systems to develop new and improve existing strategies for preventing foodborne disease.
- Strengthen efforts to prevent water-, sanitation-, and hygiene (WASH)-related diseases domestically and globally.

Objective 2.2 Promote improved healthcare quality and patient safety

- Work aggressively toward reaching the goal of eliminating healthcare-associated infections.
- Promote the prevention of blood-, tissue-, and organ-associated infections and other adverse events to prevent the unintentional spread of infectious disease.
- Strengthen monitoring and evaluation of adverse events following immunization in order to enhance vaccine safety.
- Monitor and promote the prevention of common adverse events from the use of medications to prevent, for example, accidental overdoses.

Objective 2.3 Use established and innovative methods and tools to better prevent and control zoonotic and vector-borne diseases domestically and globally

- Develop and validate prevention measures to prevent Lyme disease and other tick-borne infections.
- Improve integrated surveillance, diagnosis, and case management of vector-borne diseases to improve rapid response and treatment.
- Develop new methods and recommendations for surveillance, prevention, and control to help stop the spread of dengue.
- Improve rapid diagnostic capacity for zoonotic diseases in humans and animals (e.g., developing and validating point-of-service diagnostic tests).
- Advance efforts domestically and globally to prevent rabies through improved advocacy, surveillance, diagnostics, and biologics.
- Develop innovative methods to reduce morbidity and mortality associated with vector-borne diseases globally (e.g., assessing novel rat-proof food storage containers to prevent the spread of plague in Uganda).
- Advance One Health approaches to prevent the emergence and spread of zoonotic diseases.

CDC scientists investigate an outbreak of Rocky Mountain spotted fever caused by an unusual type of tick, the brown dog tick.

Producing posters for display in airports is one way that CDC helps international travelers stay healthy.

Objective 2.4 Increase public health, community, and individual action to prevent the spread of infectious disease in globally mobile populations (e.g., travelers) and in populations with increased risk for acquiring or transmitting infections (e.g., refugees, immigrants)

- Enhance CDC's ability to detect and respond to communicable diseases in U.S.-bound travelers, immigrants, and imported animals to prevent the introduction and spread of infectious disease.
- Strengthen disease screening and prevention for globally mobile populations (e.g., tuberculosis prevention).
- Promote engagement with partners to reduce cross-border disease spread.
- Provide recommendations to safeguard the health of U.S. residents traveling internationally or living abroad.
- Identify and implement infectious disease prevention strategies to help protect vulnerable populations.

Objective 2.5 Enhance strategies for reducing antimicrobial resistance

Effectively lead and coordinate activities designed to combat the complex and ever-changing problem of antimicrobial resistance (e.g., HHS interagency action plan to combat antimicrobial resistance).

- Improve domestic and international surveillance for antimicrobial resistance.
- Develop and promote the necessary tools to ensure appropriate antimicrobial use.
- Improve rapid diagnostic capacity for antimicrobial resistance to help ensure that patients receive effective treatment.

STRATEGY 3: ENHANCE PREPAREDNESS

In concert with partners, improve domestic and global public health preparedness, safety, and biosecurity, especially as related to the spread of high-consequence infectious diseases as well as to emerging pathogens

Objective 3.1 Strengthen capacity for surveillance, epidemiologic investigations, and bioterrorism prevention and response

- Enhance capacity of federal, state, local, and other partners to detect, respond to, and prevent high-consequence infections, including those associated with bioterrorism (e.g., *Bacillus anthracis*), to protect the health of all U.S. citizens.
- Improve planning and operational preparedness through lessons learned from prior emergency responses.

CDC staff member in the Biosafety Level 4 laboratory decontamination shower.

- Support infectious disease emergency response activities in collaboration with CDC and other federal partners.
- Ensure that the needs of vulnerable populations are included in preparedness.
- Develop and enhance medical countermeasures and non-medical mitigation strategies to better protect the public's health from the threat of bioterrorism.

Objective 3.2 Improve public health laboratory capacity for bioterrorism preparedness and response

- Strengthen domestic and international laboratory systems to enhance biosecurity (e.g., improve capacity of the Laboratory Response Network for timely detection and characterization of biothreat agents).
- Develop and validate new tools and tests to aid laboratory detection and identification of new, unknown, emerging, or bioterror disease threats.
- Enhance CDC's internal laboratory capacity to support preparedness, detection, and response activities.

Objective 3.3 Strengthen global capacity to detect and respond to international outbreaks of public health significance

- Improve global efforts to detect, prevent, and control emerging, high-consequence, and bioterrorism pathogens (e.g., working with international partners to strengthen epidemiology and laboratory capacity).
- Advance the 2005 International Health Regulations (IHR) and other global health policies in collaboration with other U.S. and international partners.
- Help develop capacity overseas to improve early detection of known and novel pathogens (e.g., prevention of Ebola viral hemorrhagic fever outbreaks in Africa).
- Promote effective surveillance and intervention designed to prevent the importation of infectious diseases into the United States.
- Engage with partners to help control the spread of emerging infections.

STRATEGY 4: SUPPORT THE NCEZID WORKFORCE

Continuously improve the NCEZID work environment and employees' ability to perform and grow in a way that contributes to high job satisfaction

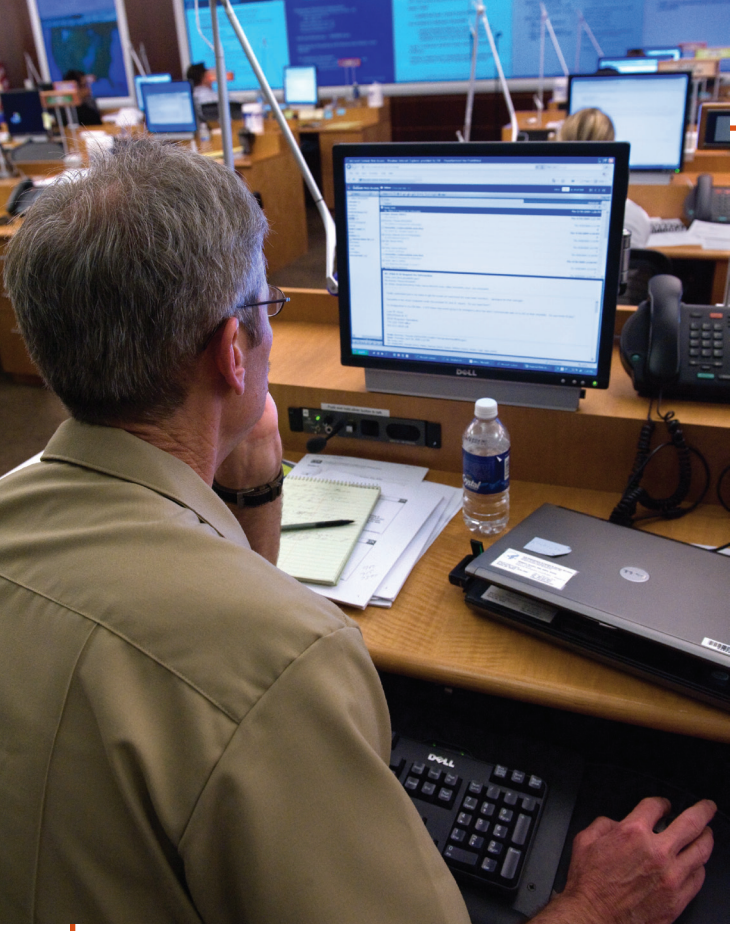
Objective 4.1 Create and sustain a work environment that contributes to high levels of job satisfaction and a healthy work/life balance that supports the professional and personal priorities of all NCEZID staff

- Promote a culture that encourages two-way communication between supervisory and nonsupervisory employees to identify what is working, new approaches, and systems improvements.
- Actively support and recognize deserving personnel, especially for innovation, critical thinking, and individual and collective contributions.
- Encourage work-life balance by establishing reasonable workload and performance expectations.
- Promote participation in employee feedback tools (e.g., the Employee Viewpoint Survey) and ensure timely and appropriate responses to concerns.
- Champion the value of NCEZID's multi-sectoral workforce and their important contributions to the Center's work environment.

Objective 4.2 Attract, maintain, and develop a highly skilled, motivated and diverse workforce to fulfill the mission of NCEZID

- Develop an NCEZID recruiting approach that emphasizes appropriate competencies, such as scientific excellence, organizational management, and cultural sensitivity.
- Ensure opportunities for recruiting and mentoring students and fellows (e.g., the Epidemic Intelligence Service).
- Support the agency's commitment to increasing diversity in the workforce (e.g., hiring initiatives for Hispanics and people with disabilities).
- Maximize the use of CDC fellowship programs.

Division of Scientific Resources staff stock laboratory supplies (such as glassware) and provide services for CDC's high-containment laboratories, where scientists study lethal infectious pathogens.



CDC staff help coordinate the agency's rapid response to bioterrorism and other infectious disease emergencies, such as the H1N1 flu outbreak.

- Actively plan for staff succession by identifying and recruiting people with appropriate skills and committing to develop competencies necessary for addressing future public health demands.

Objective 4.3 Ensure that meaningful opportunities for training, professional development, and career enhancement are available to the entire NCEZID workforce

- Encourage participation in training to promote scientific excellence, strong leadership, and effective supervisory and administrative skills.
- Ensure that supervisory and nonsupervisory staff work collaboratively to use the Individual Development Plans to maximize opportunities for career training and development.
- Support developmental detail opportunities as appropriate for staff to gain skills and experience by working in other units within NCEZID and CDC.
- Encourage employee participation in programs for education and mentoring.

Objective 4.4 Improve internal communication, performance appraisals, and other management tools to foster morale and promote a sense of teamwork which will contribute to NCEZID workforce efficiencies

- Develop and sustain effective communication mechanisms to consistently inform Center staff of priorities, progress, and the value of the work they do and its importance to NCEZID and CDC public health objectives.
- Ensure that all Center leadership and staff are effectively engaged in the CDC performance appraisal system.
- Uniformly apply standards of fairness, consistency, and accountability in performance appraisals.