Testimony of Catherine L. Troisi, PhD.,
Associate Professor of Management, Policy, and Community Health Practice, and Epidemiology,
Center for Infectious Diseases,
The University of Texas School of Public Health, Houston TX.

Field Hearing: Ebola in the Homeland: The Importance of Effective International, Federal, State and Local Coordination

Committee on Homeland Security
October 10, 2014

Chairman McCaul, Ranking Member Thompson, and members of the Committee, my name is Catherine Troisi. I am an infectious disease epidemiologist at the University of Texas School of Public Health and, in addition to my years in academia, I have practiced public health at the Houston Department of Health and Human Services. I am also a member of the American Public Health Association, a diverse community of public health professionals who champion the health of all people and communities. Adequate funding at all levels of our public health system is a top priority for the association

Thank you for this opportunity to talk about public health, its role in disease outbreak detection, and recent trends in resources for these important public safety efforts. I'm delighted to remind the members from Texas that the University of Texas School of Public Health has regional campuses in Austin, Brownsville, Dallas, El Paso, and San Antonio, fulfilling our mission to improve and sustain the health of people by providing the highest quality graduate education, research and community service for Texas, the nation, and the world; to provide quality graduate education in the basic disciplines and practices of public health; to extend the evidence base within those disciplines; and to assist public health practitioners, locally, nationally, and internationally, in solving public health problems.

I'd like to start with a definition of public health, a term that is sometimes confused with medical care. Public health has been defined by the U.S. Centers for Disease Control and Prevention (CDC, the nation's public health agency) as "the science of protecting and improving the health of families and communities through promotion of healthy lifestyles, research for disease and injury prevention and detection and control of infectious diseases." There are a couple of concepts in that definition I'd like to emphasize. The first is that public health is science-based and the corollary of that is

that we should employ techniques that have been proven to be of value. The second is the idea of protection which implies action before disease occurs. Public health has two main functions – disease prevention and health promotion. As our grandmothers said "an ounce of prevention is worth a pound of cure". The last concept in this definition that I want to emphasize is that of communities. While traditional medical care is concerned with the individual, public health's "patient" is the community. Individual interventions can be the mandate of public health, e.g., immunizations, but the overall goal is to protect the community. One specific function of public health agencies, largely limited to governmental public health, is detection of outbreaks of infectious diseases and mitigation of spread.

With these definitions in mind, what are public health tasks? The Institute of Medicine has broken these into three core functions – assessment, policy development, and assurance. In simple terms, this means that public health is responsible for evaluating and responding to health problems in the community as well as prioritizing these efforts, developing policies to protect communities' health, and assuring that all populations have access to appropriate and cost-effective prevention services. I would argue that this academic and functional definition of public health puts it in the realm of public safety. Just as police protect communities from crime and fire fighters from the devastations of fire, public health protects communities from disease. Indeed, of the 30 years of life expectancy added to the average US life expectancy in the twentieth century, 25 of these are due, not to medical care, but to public health interventions, such as sanitation, immunizations, control of infectious diseases, tobacco control, etc. It's important to emphasize that we talk about the "public health system" which consists of all organizations involved in protecting and improving the health of the community, whether governmental, medical, non-profit, educational, social services, etc. However, given the scope of these hearings and the fact that it is governmental public health that is largely concerned with detecting and controlling infectious disease outbreaks, I'm going to be talking about governmental local, state, and national public health.

I hope that I have convinced you of the importance of public health efforts in maintaining and promoting the health of our nation and our world. Obviously, this cannot be done without adequate resources. Public health activities occur at the federal, state, and local level and are funded as such. However, the CDC and other federal agencies provide flow through funding for many public health activities at the state and local level. I'm sure that you are much more familiar than I with the negative effects of spending caps and sequestration on public health agencies such as the CDC over the past few years. However, in a nutshell, federal funding for public health has

been relatively flat-funded and has shown a significant decline in recent years (Figure 1).

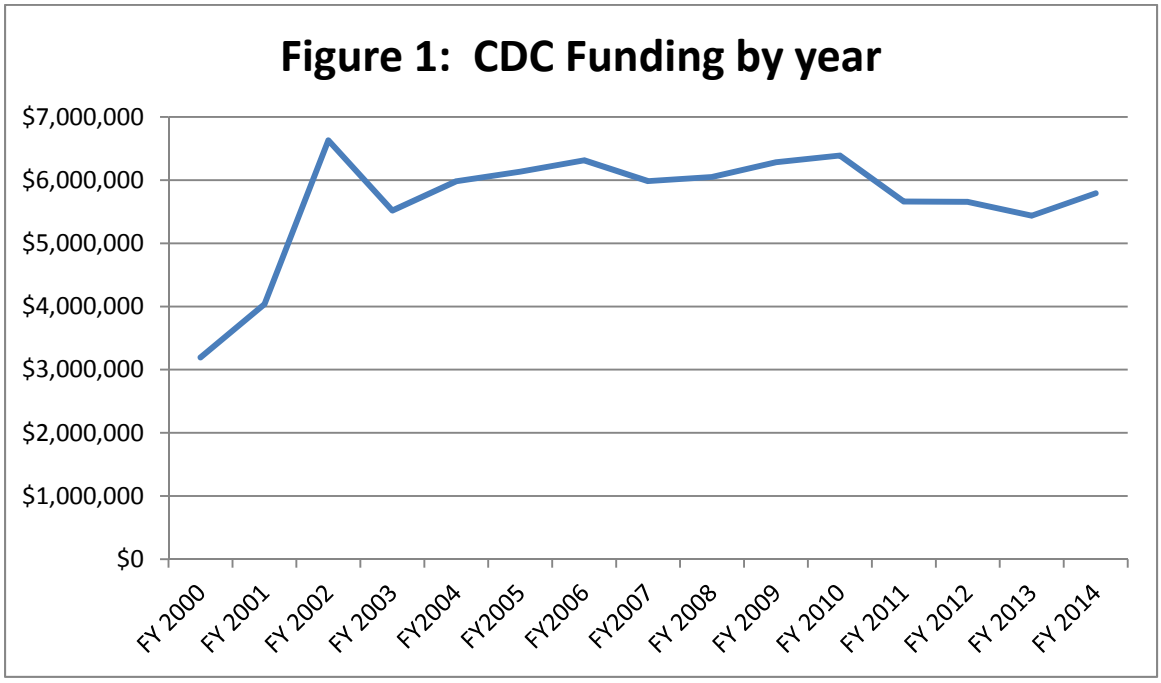
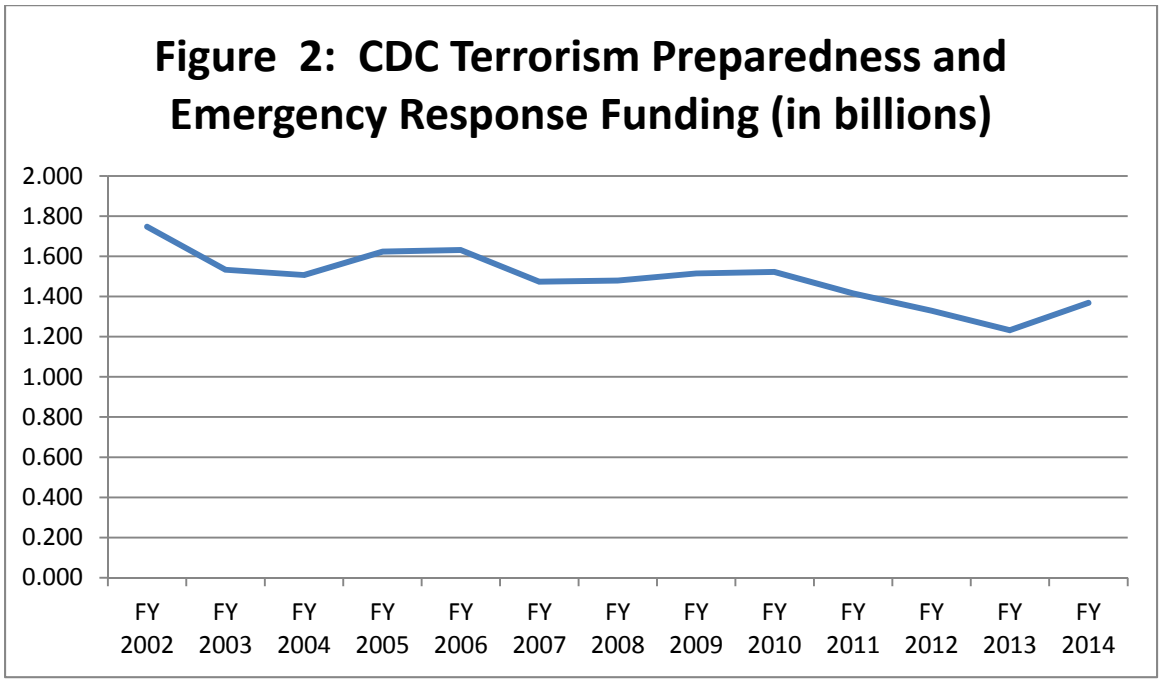


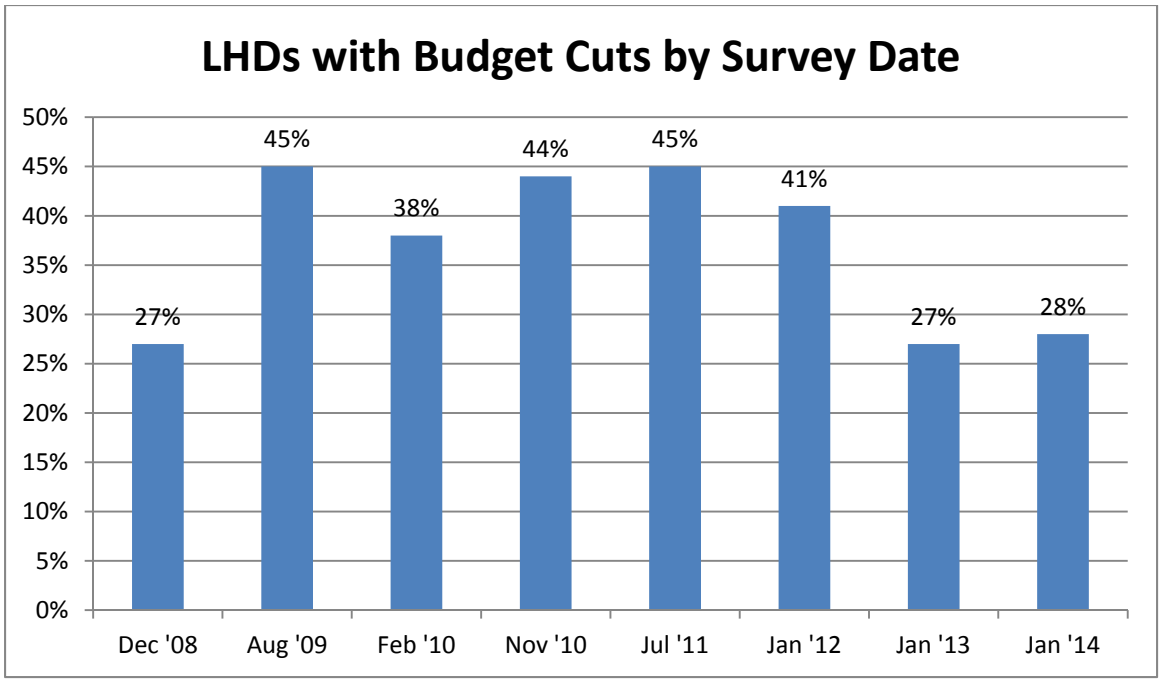
Figure 2 shows the declining level of terrorism preparedness and emergency response funding allotted to CDC for activities at the national, state and local levels and for the Strategic National Stockpile (www.cdc.gov/fmo/topic/Budget%20Information/index.html). Following infusion of after 9/11, levels have been on the decline.



This situation is also reflected at the state level. The Association of State and Territorial Health Officials (ASTHO) reported in September of this year that budget cuts continue to affect the health of Americans. Health departments in 48 states, three territories, and the District of Columbia have had budget cuts since 2008, with 95 percent of state or territorial health departments experiencing reduced services. Approximately 11,000 public health jobs have been lost in state health departments (http://www.astho.org/budget-cuts-Sept-2014/). The Trust for America's Health and Robert Wood Johnson Foundation released a report last December showing that the majority of states reached half or fewer of key indicators of policies and capabilities to protect against infectious disease threats. Texas scored 4 out of 10. One of the indicators (increased or maintained level of funding for public health services from FY 2011-12 to FY 2012-2013) was met by only 17 states (Texas was one of these 17 states), meaning that 33 states had decreased funding. Budgets in 20 states decreased two or more years in a row and 16 states had decreased budgets three or more years in a row (http://healthyamericans.org/report/114/).

Not unexpectedly, these trends in budget cuts can also be found at the local level. The National Association of County and City Health Officials (NACCHO) administers a biannual survey of local health departments (http://www.naccho.org/topics/infrastructure/lhdbudget/upload/Survey-Findings-Brief-8-13-13-2.pdf). Over 1 in 4 local health departments experienced a budget cut in the current fiscal year and, as shown in Figure 3, this has been an ongoing declining trend.

Data from the 2013 survey show that the size of the public health workforce has decreased since 2008 when best estimates were 190,000 (range of 160,000 to 219,000) to 139,000 (range of 139,000 to 185,000), representing a total of 48,300 jobs lost. Almost half (41%) of local health departments nationwide experienced some type of reduction in workforce capacity, with, 48 percent of all local health departments reducing or eliminating services in at least one program area. Overall, state and local public health departments, the "boots on the ground" purveyors of public health, have lost over 51,000 jobs since 2008, representing one in five public health jobs.



Now I'd like to put on my infectious disease expertise hat. The news coming out of West Africa is alarming. Almost 7,500 cases of Ebola with almost 3,500 deaths have been reported with many more suspected. Ebola is a frightening disease with horrific symptoms and concern is naturally high that further spread may occur. Is there a possibility that the next pandemic (defined as a world-wide epidemic) will be caused by Ebola? By looking at the characteristics of viruses that can spread world-wide, we can see that while there are some viruses capable of causing pandemics, Ebola is not one of them, and our undue anxiety over spread in the U.S. is diverting attention from true public health concerns.

Characteristics of a pandemic virus include:

- many people are susceptible to becoming infected
- people can transmit the virus before they have symptoms
- the virus causes severe symptoms and deaths
- the virus is easily transmitted from person to person.

While Ebola has the first characteristic and certainly causes many deaths, it is lacking the two important ones – spread before symptoms occur and easy transmission. To become infected with Ebola, you must have physical contact with blood or bodily fluids from someone with symptoms. Unlike other viruses like influenza, people with Ebola are NOT infectious before symptoms appear. We know how to stop transmission by

using barrier nursing practices such as gloves, disinfectants, and patient isolation. Unfortunately, many countries in Africa do not have the resources to provide for these precautions in their hospitals and so spread of Ebola is occurring in the healthcare setting. Adding to the problem are cultural practices where families prepare bodies of Ebola victims for burial, inadvertently becoming exposed to the virus. The conditions for spread of the Ebola virus in the US and other resource rich countries do not exist and the only danger is that we may be fixated on this virus and not on ones that could actually cause world-wide harm.

Given these characteristics, there *are* viruses that have outbreak or pandemic potential (or have caused these in the past) that public health agencies need to be on the lookout for – viruses such as influenza, SARS (severe acute respiratory syndrome), and MERS-CoV (Middle East Respiratory Syndrome), among others. Other "common" viruses such as measles and pertussis periodically cause outbreaks due to lack of immunity among those not vaccinated. Influenza is a virus that has caused pandemics in the past and has the potential to do so again. The virus can mutate so much that it's like a new virus no one has experienced before and so no-one is immune. The great influenza pandemic of 1918 killed more people than World War I. There was concern in 2009 (when a new influenza virus appeared that looked like the 1918 virus) that we would again see a major influenza pandemic. While many people got infected, we were "lucky" that the virus did not kill more people than we typically see each flu season – although that number can be very high and the very young, seniors, and those with underlying illness are particularly susceptible. In Texas alone, over 2,300 people were hospitalized with 20 deaths in children last year. Many more were sick with the disease. Indeed, estimates are that up to 49,000 deaths occur nation-wide each year due to seasonal influenza. Scientists are carefully monitoring some new influenza viruses that have been transmitted from birds to people, killing more than half of those infected, and although so far these avian flu viruses have not spread easily from person to person, the viruses could mutate to allow this to happen. Should this occur, a pandemic, with resultant high number of deaths, is almost inevitable.

MERS-CoV is caused by a virus currently occurring throughout countries in the Middle East. Although the disease spread through the air, as of right now, the virus does not appear to transmit easily from person to person (camels and/or bats are the most likely source of infection). While the chances of Ebola becoming airborne are exceedingly small (no pathogen has changed the way in which it is spread), it is more likely that small changes in the RNA of MERS-CoV could allow the virus to spread from person-to-person in a more efficient manner. Should this happen, the likelihood of a pandemic increases dramatically.

So what can we do to prepare for potential pandemics? Public health agencies such as CDC are constantly monitoring infections around the world to determine if new viruses are appearing. State and local health departments also are involved. Ebola virus is a major concern for the affected countries and the fear and loss of life are devastating on a humanitarian level. But we do not have to fear spread of the virus to the United States or other resource rich countries. We would better spend our time preparing for diseases such as influenza which do have the potential to cause pandemics around the world, including the United States.

Congress must begin to prioritize public health funding and not just when a crisis occurs. Level or reduced funding for public health activities means that the same or less amount of money must cover prevention activities for an increased population. As recent outbreaks of foodborne illnesses, vaccine preventable diseases, hospital-acquired infections, and emerging infectious diseases have shown, the threats remain and we need our public health community adequately funded to respond to these threats. While we are appreciative of the increased funding to combat Ebola contained in the recent continuing resolution signed by President Obama, an adequate response to the initial outbreak would have mitigated spread within Africa. According to a report by the Congressional Research Service, US funding for World Health Organization (WHO) activities have decreased about one-third from 2010 to 2013. As seen in the US public health system, this decreased funding resulted in WHO job losses and the ability to respond to emergencies such as Ebola.

Thank you for the opportunity to testify before you today about public health and our ability to deal with public health threats. I am happy to answer any questions you may have.