

## THE CSTE WASHINGTON REPORT

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Marcia S. Mabee, MPH, PhD  
Editor  
11479 Waterview  
Reston, Virginia 20190  
mmabee@ix.netcom.com  
703-709-3001

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**EDITOR'S NOTE:** An inaugural report on public health preparedness released today by the Centers for Disease Control and Prevention (CDC) indicates states have made significant progress with respect to emergency preparedness, but that significant challenges remain. "This assessment of public health emergency preparedness is a major step forward," said Dr. Julie Gerberding, CDC director. "It illustrates the many specific ways that the investments we've been making since 2001 have increased states' capacity to quickly and effectively respond to a wide range of health hazards and emergencies. Today, for example, all states have emergency response plans, improved ability to identify and confirm public health threats, and more consistent and effective collaboration and communication between the many entities involved in responding to public health threats and emergencies." ... additional details are provided in this *Washington Report*.

The *CSTE Washington Report* is provided as an information resource for members of the Council of State and Territorial Epidemiologists on federal legislation and regulation affecting public health and epidemiology in the U.S.

**KEY GROUP RECOMMENDS TO CONGRESS \$20 BILLION ADDITIONAL INVESTMENT IN PUBLIC HEALTH** – The Coalition for Health Funding, a broad-based advocacy organization in Washington, D.C., held a Congressional Briefing on Feb. 29<sup>th</sup> entitled; *Public Health 101: The Leading Challenges for the U.S. in the Coming Decade – Prevent, Prepare, Invest*. The speakers were Georges Benjamin, MD, Executive Director, American Public Health Association and Jeffrey Levi, PhD; Executive Director, Trust for America’s Health. Dr. Benjamin gave a comprehensive review of the challenges before the nation: chronic disease, climate change, preparedness for naturally occurring and manmade disasters, health and public health workforce, the need to ensure that every American has access to health care services, and the importance of stressing prevention and supporting population health measures in any comprehensive health care reform measures. Dr. Levi described Trust for America’s Health’s “Healthier America Blueprint” which is working on a national assessment of what is needed for our federal-state-local governmental public health system to truly address the challenges outlined by Dr. Benjamin and to restore and sustain eroded investments already made. The Blueprint number announced at the briefing is an additional \$20 billion for the federal-state-local levels, excluding biomedical research (NIH). This number is likely to guide the broad array of public health advocacy groups in future budget work. Currently, the broad health community, led by the Coalition for Health Funding, is advocating a \$5.3 billion increase in FY 2009 for federal public health agencies, including +\$1.9 billion for the National Institutes of Health.

**STATES ADVANCING COMMON APPROACHES TO PROTECTING ELECTRONIC HEALTH INFORMATION, REPORT FINDS** -- Most states have made substantial progress in defining their privacy and security approaches for electronic health information exchange, according to a report released by the Office of the National Coordinator for Health Information Technology (ONC) and the Agency for Healthcare Research and Quality (AHRQ), both part of the U.S. Department of Health and Human Services. The thirty three states and Puerto Rico make up the Health Information Security and Privacy Collaboration (HISPC) formed as part of the ONC-AHRQ co-managed Privacy and Security Solutions for Interoperable Health Information Exchange contract (Privacy and Security Solutions Project).

During the past 18 months, HISPC participants have gained a greater understanding of and ability to address the variation in business practices, policies, and state laws that affect the electronic exchange of health information.

The Impact Analysis Report provides an assessment of the progress made by states since the inception of the project by comparing the current landscape for privacy and security to the baseline as reported by the state teams in early 2006. The report discusses the impact of work among and between participants in five key areas: legislation, executive orders, leadership and governance, stakeholder education and knowledge, and development of health information exchange networks. The analysis also describes the

collaborative work between states in seven key areas and it provides a state-by-state discussion of recent progress.

The report is the seventh in a series of progress reports produced by the Privacy and Security Solutions Project.

“The report released is evidence of the significant role and impact that states and territories can have in advancing health information technology while preserving and promoting privacy and security protections,” said Dr. Robert Kolodner, national coordinator for Health IT. “The broad participation of stakeholders at all levels in the HISPC has provided each participating state and territory with the foundation, awareness, and buy-in to develop comprehensive plans to protect health information in an electronic environment.”

Progress made during the past two years includes:

- 23 states cite increased awareness of privacy and security issues among stakeholders as a key component of success in the development and sustainability of statewide Health IT and Health Information Exchange (HIE) plans;
- 14 states indicated the Privacy and Security Solutions Project has served to increase support for planned HIEs;
- 11 states reported legislative activities aimed at updating and aligning privacy and security statutes to prepare for electronic health information exchange with four states having already passed some legislation;
- Three state governors have issued executive orders formalizing support for the HISPC in their state and have provided members of their state HISPC teams with leadership roles in other initiatives; and
- Seven collaborative work groups involving 43 states and 2 territories are now focused on implementing shared privacy and security solutions.

For more information regarding the Impact Analysis Report, visit:

<http://healthit.ahrq.gov/privacyandsecurity>. The ONC-AHRQ-sponsored report was prepared by RTI International, which is implementing the Privacy and Security Solutions Project

**CDC STATE PREPAREDNESS REPORT HIGHLIGHTS PROGRESS AND CHALLENGES** -- An inaugural report on public health preparedness released today by the Centers for Disease Control and Prevention (CDC) indicates states have made significant progress with respect to emergency preparedness, but that significant challenges remain.

“This assessment of public health emergency preparedness is a major step forward,” said Dr. Julie Gerberding, CDC director. “It illustrates the many specific ways that the

investments we've been making since 2001 have increased states' capacity to quickly and effectively respond to a wide range of health hazards and emergencies. Today, for example, all states have emergency response plans, improved ability to identify and confirm public health threats, and more consistent and effective collaboration and communication between the many entities involved in responding to public health threats and emergencies."

More than \$5 billion of federal funding has been distributed to the nation by CDC to improve public health preparedness and response since 2002.

"As a nation, we are better prepared today to respond to public health threats but the reality is that these efforts must be ongoing," said Richard Besser, M.D., director of CDC's Coordinating Office for Terrorism Preparedness and Emergency Response.

The CDC report, *Public Health Preparedness: Mobilizing State by State*, presents data that illustrate the progress state health departments have made in disease detection and investigation; laboratory testing capabilities; and planning, exercising and responding to public health emergencies. Key improvements from the report include:

- **Disease detection and investigation.** All state public health departments can now receive urgent reports about disease 24 hours a day, seven days a week. In 1999, only 12 states could do so. In addition, all states share information using the Epidemic Information Exchange (Epi-X), a secure, CDC-based communications system that helps track disease outbreaks. The number of users of this network nationwide has increased from 1,366 in 2001, to 4,646 in 2006.
- **Public health laboratories.** The number of laboratories that can test and analyze samples has nearly doubled since 2001.
- **Response plans.** All states have developed detailed emergency response plans to address all hazards, including an influenza pandemic. All states also now have plans to distribute the Strategic National Stockpile's federal caches of pharmaceuticals, antidotes, and medical supplies used for an emergency.
- **Training.** All public health departments now systematically and routinely train their workers in a wide range of crucial emergency response areas.

### **Work needs to continue**

According to Besser, CDC's preparedness report is an important part of the agency's focus on measuring and documenting results, systematically using data to continuously improve programs and increasing accountability regarding the country's investment in preparedness activities.

"We recognize that CDC's report presents important data on some preparedness activities

but does not provide information on all areas of preparedness,” said Dr. Besser. “The nation’s public health preparedness information and measures need to improve and CDC continues to engage with states and others to identify and incorporate effective public health emergency preparedness systems that enhance the nation’s ability to respond.”

CDC's approach has been to support public health preparedness for all hazards, including natural, biological, chemical, radiological, and nuclear events. This work falls under one of the agency's overarching health protection goals: "People prepared for emerging health threats - people in all communities will be protected from infectious, occupational, environmental, and terrorist threats.”

CDC’s report also provides a better understanding of where the major national and state challenges lie, and the areas where more progress needs to be made. Preparedness challenges include:

- Improving the ability to quickly dispense medicines and vaccines in an affected community
- Increasing the use of electronic health data for preparedness and response by networking surveillance systems
- Improving legal preparedness by helping states and other jurisdictions implement public health mutual aid agreements, which enable sharing of supplies, equipment, personnel, and information during emergencies
- Exercising public health systems to continuously improve capability and demonstrate readiness

CDC released the report during the annual Public Health Preparedness Summit in Atlanta today. The summit is coordinated by the National Association of City and County Health Officials. The report and state specific information is available on CDC's Web site at <http://emergency.cdc.gov/publications/feb08phprep>.

**SMOKING’S EFFECTS ON GENES MAY PLAY A ROLE IN LUNG CANCER DEVELOPMENT AND SURVIVAL** - Smoking plays a role in lung cancer development, and now scientists have shown that smoking also affects the way genes are expressed, leading to alterations in cell division and regulation of immune response. Notably, some of the changes in gene expression persisted in people who had quit smoking many years earlier. These findings by researchers at the National Cancer Institute (NCI), part of the National Institutes of Health, appeared in the Feb. 20, 2008, issue of *PLoS ONE*.

"Smoking, we are well aware, is the leading cause of lung cancer worldwide," said NCI Director John E. Niederhuber, M.D. "Yet, a mechanistic understanding of the effects of smoking on the cells of the lung remains incomplete. This study demonstrates an

important piece of this complicated puzzle. Greater understanding of the genetic alterations that occur with smoking should provide greater insight into the development of cellular targets for treating, and possibly preventing, lung cancer."

"We were able to look at actual lung tissue, tumor and non-tumor, taking into account the differences by gender, verifying the smoking status by measuring levels of cotinine, a metabolite of nicotine, in participants' plasma, and confirming results in independent samples," said Maria Teresa Landi, M.D., Ph.D., in NCI's Division of Cancer Epidemiology and Genetics, the first author of the study report.

To investigate the effects of smoking on gene activity in lung tissue, the researchers examined the gene expression profiles — patterns of gene activity — in early-stage lung tumors and non-tumor lung tissue of smokers, former smokers, and people who had never smoked cigarettes. Gene expression was measured in 58 fresh-frozen tumor and 49 fresh-frozen non-tumor samples from 74 participants of the Environment And Genetics in Lung cancer Etiology (EAGLE) study, a large lung cancer study that was conducted in the Lombardy region of Italy. Adenocarcinoma tumor samples were evaluated in this study because adenocarcinoma is the most common type of lung cancer, and it occurs in both smokers and people with no history of smoking. The participants were 44 to 79 years of age, and 28 were current smokers, 26 were former smokers, and 20 had never smoked. The researchers also obtained detailed medical information about the participants (for example, whether individuals had previous lung diseases or chemotherapy) and biochemically confirmed participants' smoking status.

Using microarray techniques, which allow researchers to look at the activity of thousands of genes simultaneously, they identified 135 genes that were differently expressed in tumors of smokers vs. people who had never smoked. Among these genes, 81 showed decreased expression and 54 showed increased expression in tumor tissue.

Most of the genes showing significantly increased expression, e.g., TTK, NEK2, and PRC1, are involved in cell cycle regulation and mitosis. The cell cycle is a step-wise sequence of events in which a cell grows and ultimately divides to produce two progeny, or daughter, cells. During the cell cycle, the chromosomes of the parent cell are duplicated and then, in a step called mitosis, divided equally between the daughter cells, ensuring that each daughter cell inherits a complete set of chromosomes. The cell apparatus responsible for the proper division of chromosomes is called the mitotic spindle.

"Our results indicate that smoking causes changes in genes that control mitotic spindle formation," said Jin Jen, Ph.D., in NCI's Center for Cancer Research, a senior author of the study report. "Irregular division of chromosomes and chromosome instability are two common abnormalities that occur in cancer cells when the chromosomes do not separate equally between the daughter cells. Therefore, changes in the mitotic process are very relevant in the development of cancer." Several of the identified genes have been suggested in the past as potential targets for cancer treatment.

The researchers also found similar expression of many genes among current smokers and

former smokers in tumor tissue. Several of these genes, such as STOM, SSX2IP, and APLP2, remained altered in participants who had quit smoking more than 20 years before the study. Therefore, smoking seems to cause long-lasting changes in gene expression, which can contribute to lung cancer development long after cessation.

Looking at non-tumor lung tissues, the team found decreased activity for 73 genes and increased activity for 25 genes in current smokers. The genes most affected by smoking play a role in immune response-related processes, possibly as a lung defense mechanism against the acute toxic effects of smoking. However, non-tumor tissues seem to be able to recover from the effects of smoking. The researchers did not identify significant changes in the immune response-related genes in former smokers.

To gain a better understanding of the impact of smoking-related changes in gene expression on lung cancer survival, the researchers compared the overall gene expression smoking profile in lung tumor and non-tumor tissues with survival. They found that the altered expression of the cell cycle-related genes NEK2 and TTK in non-tumor tissues was associated with a three-fold increased risk of lung cancer mortality in smokers. "Our data provide clues on how cigarette smoking affects the development of lung cancer, indicating that the very same mitotic genes known to be involved in cancer development are altered by smoking and affect survival. More studies are needed to confirm that the gene expression changes are due to smoking and affect tumor development or progression," said Landi. "If confirmed, these genes could become important targets for preventing and treating lung cancer."

About 90 percent of lung cancer deaths among men and almost 80 percent of lung cancer deaths among women can be attributed to smoking. In 2006, approximately 20.8 percent of U.S. adults were cigarette smokers. Cigarette smoking remains the leading preventable cause of death in the United States, causing an estimated 438,000 deaths, or about one out of every five deaths each year.