

**MEETING OF THE CDC BOARD
OF SCIENTIFIC COUNSELORS,
OFFICE OF INFECTIOUS
DISEASES**

CLIAC Liaison
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BSC/OID MEETING ON MAY 8, 2013

- Meeting included an update on H7N9; Center-level updates from NCHHSTP, NCEZID, NCIRD, and CGH; and focused presentations on CDC's ongoing efforts to
 - monitor the health impact of the national human papillomavirus (HPV) vaccination program and
 - modernize public health laboratory capacity for detection and response to infectious diseases through the OID Advanced Molecular Diagnostics (AMD) initiative.
 - The meeting also included updates from the two BSC,OID working group

BSC/OID MEETING ON MAY 8, 2013

- Avian Influenza A (H7N9) in China:
 - The source of the human infections is presumed to be exposure to infected birds, possibly at live bird markets.
 - As of meeting date, 77% of cases reported exposure to animals (76% chickens and 20% ducks).
 - Although H7N9 causes severe disease in humans, there is no evidence of sustained human-to-human transmission.

NCEZID UPDATE

○ Beth Bell

- **Multistate outbreak of fungal infections linked to contaminated steroid injections.**
- As of May 6, 2013, the outbreak has included 741 cases with 55 deaths in 20 states. Outbreak cases continue to be identified, with about 10 new cases reported every few weeks.
- In collaboration the University of Alabama, CDC is planning a long-term follow-up study to assess clinical features and answer questions about clinical management of *Exserohilum rostratum* infection (e.g., determining the optimal duration of treatment to avoid relapses of fungal meningitis and other symptoms)

DISCUSSION

- In response to a question about regulation of compounding pharmacies, Dr. Bell noted that a Senate bill has been introduced to improve quality assurance and clarify relevant FDA authorities. A hearing on the bill will be held on Thursday, May 9.
- Dr. Robert Sautter, Director of Microbiology, Carolinas Pathology Group, noted that some compounding pharmacies have asked hospital administrators to conduct quality assessment (QA) testing of their products.

DISCUSSION CONT.

- This is difficult because hospital laboratories normally work with clinical samples only and do not have established QA protocols for testing medical products.
- He suggested that the American Society for Microbiology might develop such protocols.
- Jesse Goodman, FDA Chief Scientist and Deputy Commissioner for Science and Public Health, said that existing QA protocols for sterile drug products may suffice. He agreed that FDA needs further clarification of its authority to regulate compounding pharmacies.

DISCUSSION CONT.

- Dr. Sautter connected Dr. Jesse Goodman with Dr. Alice Weisfield and ASM to collaborate with others to develop guidelines.
- Additional late breaker! A compounding pharmacy in Texas was implicated in further infections.

<http://www.ismp.org/tools/fdasafetyalerts.asp>

FDA has received reports of 15 adverse events experienced by patients in two hospitals. The 15 patients received an infusion of calcium gluconate 2 grams in Sodium Chloride 0.9% for Injection, which was supplied by Specialty Compounding. The patients then developed bacterial bloodstream infections caused by *Rhodococcus equi*. These infections are thought to be related to the infusions. Cultures from an intact sample of calcium gluconate compounded by Specialty Compounding show growth of bacteria that are consistent with *Rhodococcus* species.

NCEZID UPDATE

- ◉ **Foodborne illness attribution report.** CDC issued its first-ever set of estimates for food source attribution of foodborne illness in March 2013
http://wwwnc.cdc.gov/eid/article/19/3/11-1866_article.htm
- ◉ The estimates build on 2011 estimates of foodborne illness in US (~48 million people / year), and include data from >1200 foods implicated in outbreak investigations, divided into 17 food categories, or “commodities.” Key findings included
 - Produce was the dominant source (46%) for illnesses, driven by norovirus and by leafy vegetables
 - Poultry and meat together were the dominant source (29%) for deaths

NCEZID UPDATE

○ **Healthcare-associated infections:**

CDC has issued a national call to action to stop carbapenem-resistant Enterobacteriaceae (CRE), whose incidence is increasing. In 2012, about 4% of U.S. hospitals reported at least one patient with a CRE infection, as described in the March 2013 issue of CDC Vital Signs, <http://www.cdc.gov/vitalsigns/hai/cre/>.

To advance this effort, CDC has created a CRE

Toolkit <http://www.cdc.gov/hai/organisms/cre/cre-toolkit/>

based on CDC prevention guidelines that have been used to reduce CRE rates in healthcare facilities in Colorado and Florida. Note NC has begun an incentive on CRE also.

NCHHSTP UPDATE: RIMA KHABBAZ PRESENTED ON SEVERAL CENTER TOPICS, INCLUDING THE FOLLOWING

- ◉ **STD incidence and costs.** According to CDC's national STD estimates (updated in March, 2013), 20 million new infections occur in the United States each year, costing the U.S. healthcare system nearly \$16 billion.
- ◉ **Drug-resistant gonorrhea.** As discussed by DSTDP director Gail Bolan at the December 2012 BSC meeting, CDC is continuing to monitor drug-resistant gonorrhea through the *Gonococcal Isolate Surveillance Project* ; <http://www.cdc.gov/std/gisp/> and to collaborate with WHO to improve detection and communication about drug-resistant gonorrhea on a global basis.

NCHHSTP UPDATE: RIMA KHABBAZ PRESENTED ON SEVERAL CENTER TOPICS, INCLUDING THE FOLLOWING

- ◉ **TB Drug Shortages.** CDC is working with FDA and pharmaceutical manufacturers to address shortages of *isoniazid* and other TB drugs and introduce bedaquiline, a newly approved drug that can be used to treat multidrug resistant (MDR) TB in the U.S.
- ◉ **December 2012 CDC Vital Signs on Youth and HIV**
 - Young people ages 13-24 accounted for one quarter of new HIV infections in 2010, with about 1000 young people becoming infected every month. Most of these young people do not know that they are infected.
 - Young MSM were more likely to engage in HIV-related risk behaviors than other males and females, and too few of them have been tested for HIV.
- ◉ **National Youth HIV/AIDS Awareness Day.** The first National Youth HIV/AIDS Awareness Day was held on April 10, 2013, and Dr. Wechsler participated in a Capitol Hill Event

**NCIRD UPDATE: DR. DAVID SWERDLOW,
NCIRD ACTING DEPUTY DIRECTOR,
PRESENTED ON SEVERAL CENTER TOPICS,
INCLUDING THE FOLLOWING**

- ◉ **2012-13 influenza season.** The end of this year's flu season was overshadowed by news about human cases of avian influenza H7N9 in China. The intensity of influenza activity in the two seasons following the 2009-10 H1N1 pandemic was low; however, the 2012-3 influenza season started 4 weeks earlier than usual and involved high rates of hospitalization, an increase in deaths attributed to pneumonia and influenza in seniors, and an increase in pediatric deaths. Most influenza isolates were either H3N2 or B, with few cases of H1N1; H3N2 seasons tend to be more severe. Although about half the population was vaccinated this year, vaccine effectiveness estimates were low for people over 65 years of age.

NCIRD UPDATE:

- ◉ **New coronavirus in the Middle East.** A novel human coronavirus causing severe disease in humans was identified in the Middle East in 2012. Human coronaviruses, which were first isolated in the 1960s, include five that cause mild disease (HCoV-229E, HCoV-OC43, HCoV-NL63, and HCoV-HKU1). In 2003, a human coronavirus that causes severe disease (SARS-Co-V) was identified as the causative agent of the global outbreak of severe acute respiratory syndrome. The current outbreak includes 30 laboratory-confirmed cases, 18 of them fatal, with onsets between April, 2012 and May 1, 2013. New guidance is suggested for severe acute respiratory disease. Laboratory testing is suggested and can be obtained by contacting your state DOH; <http://www.cdc.gov/coronavirus/mers/>
- ◉ **Impact of the Introduction of the 13-valent pneumococcal conjugate vaccine (PCV13) on invasive pneumococcal disease in the United States.** The PCV13 vaccine was licensed in February 2010, on basis of immunogenicity data, without studies with clinical endpoints. Between 2010 and 2012, the Active Bacterial Core surveillance (ABCs) system documented a decrease of 59% in invasive pneumococcal disease in children less than two years, as well as a decrease of 28% in adults over 65 years that was apparently due to the indirect effects of the childhood immunization program. The ABCs study focused on 5 serotypes present in both the PV13 and PV5 vaccines (19A, 7F, 3, 1, and 5) and excluded 2009 data to avoid artifacts due to the H1N1 pandemic.

FOCUSED DISCUSSION

- Dr. Lauri Markowitz, Team Lead,
Division of STD Prevention, NCHHSTP
- **U.S. HPV VACCINE PROGRAM AND MONITORING EFFORTS** (Note: Much of the data was published in the July 25th MMWR)

CGH UPDATE: DR. *PATRICIA SIMONE*, DEPUTY DIRECTOR OF THE *CDC* CENTER FOR GLOBAL HEALTH (CGH), PRESENTED ON SEVERAL CENTER TOPICS, INCLUDING THE FOLLOWING:

- ◉ **PEPFAR:** Between 2004 and 2012, the President's Emergency Plan for AIDS Relief (PEPFAR) has scaled up services for treatment and care, services for orphans and vulnerable children, and prevention of mother-to-child transmission (PMTCT) in countries with a significant burden of HIV/AIDS. Substantial progress has been made in reaching targets established in 2010 for provision of PMTCT and antiretroviral therapy (about 6 million patients).
- ◉ **President's Malaria Initiative (PMI).** As reported in the Seventh Annual PMI Report, submitted to Congress in April 2013, all-cause mortality in children under five decreased significantly (by 23% to 50%) in malaria-endemic countries between 2002 and 2011. Use of insecticide-treated nets has increased in these countries, moving towards achievement of the PMI target of bednet use in 85% of all children under age 5 years. Progress made in FY2012 also includes increased provision of intermittent malaria treatment for pregnant women.
- ◉ **CDC Global Health Strategy.** CDC is developing targets and measures to monitor implementation of the *CDC Global Health Strategy 2012-15*
<http://www.cdc.gov/globalhealth/strategy/>

ADVANCED MOLECULAR DETECTION AND RESPONSE TO INFECTIOUS DISEASES

- Dr. Duncan MacConnell, Lead, OID Core Bioinformatics, described the AMD initiative as combining traditional epidemiology with genomic sequencing and bioinformatics. He noted that the speed of DNA sequencing has gone from 500 base pairs a day in 1993 to about 50 billion per day in 2013. Because each human genome includes 3 billion base pairs, one machine can now sequence 16 human genomes per day. Moreover, the cost of DNA sequencing began to drop around 2008, decreasing from \$10,000 per megabase in 2001 to \$100 in 2012. Instrumentation also got much smaller.
- Although workflow procedures are increasingly standardized--no matter which pathogen's genome is being sequenced--the hardware and software involved in analyzing and making sense of this huge amount of DNA data ("Big Data") is rapidly evolving. There are many bioinformatics software programs but few consistent standards. A new workforce and skillset is needed to address Big Data.

ADVANCED MOLECULAR DETECTION AND RESPONSE TO INFECTIOUS DISEASES (CONT.)

- ◉ **The Blue Ribbon Panel.** In June 2011, OID convened a panel of external expert consultants to review the current state of bioinformatics resources across CDC's infectious diseases laboratories, to identify critical gaps, and to provide recommendations for improvement. The panel found that CDC's ability to meet its public health mission was threatened by not keeping up with growing bioinformatics requirements that have paralleled major advances in laboratory technology (e.g., high-throughput genomic sequencing).

THE PRESIDENT'S PROPOSED FY2014 BUDGET FOR CDC INCLUDES \$40 MILLION TO SUPPORT AN AMD INITIATIVE. THE INITIATIVE IS DESIGNED TO

- ◉ Improve pathogen identification and detection by expanding capacity for rapid DNA sequencing and molecular characterization and improving capabilities for data analysis and interpretation.
- ◉ Adapt new diagnostics to meet evolving public health needs by leading public health efforts to adapt the next generation of rapid, semi-automated, point-of-need molecular tests.
- ◉ Help states meet future reference testing needs in a coordinated manner by assisting state and local public health laboratories in transitioning from culture-based methods to molecular technologies.
- ◉ Implement enhanced, sustainable, and integrated laboratory information systems.
- ◉ Develop prediction, modeling, and early recognition tools by modifying and upgrading modeling systems to facilitate the use of new kinds of laboratory data.

SOME EXTENSIVE DISCUSSION INCLUDED:

- The creation of a database on resistance mutations (with standardized definitions) could provide immediate help to hospitals coping with CRE. Dr. Bell agreed that this is priority area for public health that is not currently funded.
- In the future, state health laboratories will need to consider whether to maintain their own bioinformatics capabilities or support a regional or shared-service mechanism for DNA testing

BSC WORKING GROUP REPORTS

◎ BSC WORKING GROUP REPORTS

- **MAY 6-7 MEETING.** Topics included:
- CDC updates on foodborne illness surveillance activities
- Guidance on CDC's initiative on developing performance measures to enhance federal, state and local foodborne illness surveillance.
- Guidance on addressing CIDTs

ANTIMICROBIAL RESISTANCE WORKING GROUP

- ◉ Dr. Andrew T. Pavia, Chief, Division of Pediatric Infectious Diseases, University of Utah Health Care, reported on the May 7 meeting of the Antimicrobial Resistance (AR) Work Group
- ◉ CDC has proposed three AR threat categories: Urgent, Serious and Emerging
 - **Urgent:** These are high consequence AR threats because of significant risks identified across several criteria. These threats may not be currently wide-spread in all populations but have the potential to do so and require urgent public health attention to identify infections and to limit transmission. Example: carbapenam-resistant Enterobacteriaceae (CRE).

AR CONT.

- **Serious:** These are significant AR threats but for varying reasons are not considered urgent threats at this time. An example is XDR-*Mycobacteria tuberculosis* infections which have significant clinical and economic impact and very limited treatment options but the current and projected incidence in the U.S. is low. It is anticipated that resistance to existing recommended treatment will eventually emerge. These are threats that require public health monitoring and prevention activities. Other examples of Serious Threats include methicillin-resistant *Staphylococcus aureus* (MRSA), Non-typhoidal *Salmonella* (ceph –R, FQ-R), and multidrug resistant (MDR)-*M. tuberculosis*.
- **Emerging:** These threats include the bacterial pathogens in which the incidence of resistance is low and/or there are multiple therapeutic options for resistant infections. These bacterial are important human pathogens causing serious infections. Threats in this category require monitoring and, in some cases, rapid incident or outbreak response. Examples of Emerging Threats include *Neisseria meningitidis* (with resistance to recommended therapy or prophylaxis) and *Streptococcus agalactiae* (with resistance to recommended therapy).

CDC FRAMEWORK FOR ANTIBIOTIC STEWARDSHIP AND APPROPRIATE ANTIBIOTIC USE.

- ◉ The proposed program goal for the CDC Framework for Antibiotic Stewardship and Appropriate Antibiotic Use is to ensure the implementation of effective strategies to improve antimicrobial use in all U.S. health care settings. Proposed Program Objectives include:
 - Developing target percentages for uptake of stewardship activities in different healthcare settings
 - Developing an annual report on implementing stewardship activities in U.S healthcare settings that includes process and outcome metrics
 - Setting national, and perhaps state-level, goals for reducing inappropriate and overall use of antibiotics in outpatient settings

AR CONT.

- ◉ **NEXT STEPS.** The AR Work Group plans to hold two conference calls prior to the BSC meeting in December 2013. Topics for review and discussion will include:
 - 1) identification of evidence gaps for the development of stewardship guidelines;
 - 2) identification of infection control paradigms to prevent transmission of AR threats; and
 - 3) AR issues related to the animal/human interface.