Meeting of the CDC Board of Scientific Counselors, Office of Infectious Diseases

CLIAC Liaison

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Conference Call August 19, 2014

- The meeting included reports from the
- BSC/OID Antimicrobial Resistance Working Group,
- Food Safety Modernization Act (FSMA) Surveillance Working Group, and
- Infectious Disease Laboratory Working Group,
- followed by updates on the Ebola outbreak in West Africa, the spread of chikungunya fever in the Americas, and the humanitarian crisis involving thousands of unaccompanied children entering the United States from Central America.
- A presentation was also provided on CDC's intensified efforts to improve laboratory safety, following the recent laboratory incidents involving improper handling, transfer, and storage of select agents at CDC and other federal agencies

OPENING REMARKS

BSC Chair Ruth Berkelman, Rollins Professor, Emory University, called the meeting to order..

- Dr. Berkelman welcomed four new BSC members: Mike Brady, MD, Associate Medical Director, Nationwide Children's Hospital, Columbus, Ohio; Tim Jones, MD, State Epidemiologist, Tennessee Department of Health; Ruth Lynfield, MD, State Epidemiologist and Medical Director, Minnesota Department of Health; and Lee Riley, MD, Professor and Chair, Division of Infectious Diseases and Vaccinology, School of Public Health, University of California, Berkeley.
- For complete details see BSC OID website

Working Groups

Antimicrobial Resistance Working Group (ARWG)

- *A slide set provided by BSC member Dr. Robert Weinstein, the AR Working Group chair, is posted at* http://www.cdc.gov/oid/docs/arwg_bsc_report_slides.pdf

- Dr. Weinstein provided an update on the May 6th meeting of the ARWG, which included presentations on the development of a framework for prevention of carbapenem-resistant Enterobacteriaceae (CRE), on judicious use and antibiotic stewardship activities, on AR funding in the President's FY 2015 budget, and on drug-resistant gonorrhea.

Working Groups Continued

- Following discussions of each topic, the ARWG drafted a working plan for FY 2014–16 with three focus areas: Laboratory Capacity and Surveillance; Improving Antibiotic Use and Stewardship; and Promoting Evidence-based Prevention Practices. The working group will hold conference calls for each focus area on a monthly or bi-monthly basis.

Laboratory Capacity and Surveillance

- The aim of the Laboratory Capacity and Surveillance focus area is to identify gaps in laboratory testing and consider how they might be filled. The ARWG discussed the need for new methods to identify patients colonized with multidrug-resistant organisms (MDRO) like CRE
- Conduct molecular typing of MDRO (e.g., to provide outbreak data and better understand transmission dynamics)
- Detect resistance mechanisms for MDRO pathogens such as CRE
- Identify extreme-drug-resistant (XDR) or pan-drug-resistant (PDR) pathogens and determine their susceptibility to new drugs or older drugs like polymyxin B and fosfomycin.
- The aims of the Antibiotic Use and Stewardship focus area are to promote adoption of

Food Safety Modernization Act (FSMA) Surveillance Working Group

A slide set provided by BSC member Dr. Harry Chen, the FSMA Surveillance Working Group chair, is posted at http://www.cdc.gov/oid/docs/fsma_bsc_report_slides.pdf

- Dr. Chen provided an update on the May 5–6 meeting of the FSMA Surveillance Working Group, which included review and discussion of CDC initiatives to address gaps in foodborne disease surveillance, with special emphasis on foodborne diseases caused by antibiotic-resistant bacterial pathogens. Updates were provided on initiatives to improve 1) culture-independent diagnostic testing for foodborne pathogens and 2) surveillance for foodborne cyclosporiasis.

FSMA

- The working group also discussed areas for growth and enhancement of the National Antimicrobial Resistance Monitoring System (NARMS; http://www.cdc.gov/narms/) which is a collaboration among CDC, USDA, and FDA.
- In 2013, data from the NARMS retail meat surveillance program helped identify multidrug-resistant *Salmonella* Heidelberg associated with frozen chicken as the cause of a multistate outbreak

  (http://www.cdc.gov/salmonella/heidelberg-10-13/timeline.html).

FSMA

- In terms of future directions, the Working Group noted that whole genome sequencing (WGS) may supplant multiple testing methods now in use (e.g., serotyping, PFGE, and culture-based susceptibility testing).
- In the future, WGS could enhance many aspects of disease surveillance, providing information on gene sequences, resistance mechanisms, virulence profiles, phage-typing of *Salmonella*, and genetic markers for source attribution.
- Use of WGS may lead to a better understanding of emerging trends and may also provide cost savings.

Infectious Disease (ID) Laboratory Working Group

- *A slide set provided by BSC members Drs. Jill Taylor and Susan Sharp, ID Laboratory Working Group co-chairs, is posted at* http://www.cdc.gov/oid/docs/idlwg_bsc_report_slides.pdf

- The May 7 meeting of the ID Laboratory Working Group focused on the CDC Advanced Molecular Detection(AMD) initiative (http://www.cdc.gov/amd/index.html) .
- The meeting included an overview of CDC's AMD activities; updates on AMD activities conducted by FDA, NIH, and state health laboratories; and a review of federal data-sharing policies and data-sharing issues that require additional discussion (e.g., ensuring data quality and addressing privacy issues related to the use of metadata).

ID

- **Collaborations.**
- Some state health departments are already using AMD techniques, most often in partnership with academic institutions or as part of the FDA GenomeTrakr network. CDC should be involved in these collaborations as soon as possible.
- NIH supports development of new cutting-edge AMD tools and should work with FDA to create a framework to facilitate their evaluation and approval
- Clinical laboratories are rapidly transitioning from culture-dependent to PCR-based tests. In the near future, they are likely to transition to other non-traditional and closed-system technologies.
- **Future directions** Over time, AMD testing will provide more accurate knowledge of the "universe" of microbes
- Data standards and reference databases developed today may still be useful in a few years, although they will have evolved
- Cloud bioinformatics is likely to become an important AMD tool, making it unnecessary to purchase new software and hardware. In the near future, cloud-based surveillance data on reportable diseases may help us identify outbreaks by automatically flagging possible disease clusters.
- Over time, AMD databases may incorporate additional types of metadata (e.g., immunologic data, environmental data, and data on microbiomes)

ID

- **Staying ahead of the curve.** In view of the rapid rate of technologic change, by the end of 2018, CDC needs to be poised to lead into the future (not plateau or become obsolete).
- CDC should Work with academic, clinical, state, and industry partners to make the best possible public health use of this evolving technology
- Ensure that the CDC Core Bioinformatics Program benefits from the experiences of others and avoids obstacles already overcome by others
- Consider staggering its purchases of hardware to ensure that each purchase involves the most current technology

Discussion

- In response to a question about sharing data with academic partners—who could provide CDC with valuable feedback and assistance on AMD projects—Dr. Khabbaz noted that CDC is working to overcome barriers to data-sharing, including privacy issues related to sharing state-level public health data.

- In response to my question about the lack of PCR-based tests for resistance markers, Dr. Sharp agreed that this is a major issue. The working group will continue to consider how to work with industry partner

SELECTED OID PRIORITY ACTIVITIES

- **West Africa Ebola Outbreak.**
- This outbreak is the largest Ebola outbreak in history as well as the first in West Africa. The number of cases (2,200 as of the date of the teleconference) is larger than the total number of cases detected since Ebola was first identified in the 1970s, and half of the cases have been fatal. Three countries are affected—Liberia, Sierra Leone, and Guinea—and there is a cluster of cases in Nigeria. The outbreak has been designated by WHO as a Public Health Emergency of International Concern (PHEIC) under the 2005 International Health Regulations (IHR). Therefore, all member countries are required to report Ebola cases and conduct response planning.

OID- EBOLA

- The scale-up of the outbreak response includes
- Detection, which requires adequate laboratory facilities and testing capabilities in each country.
- Treatment, which requires adequate healthcare facilities. This is an acute issue in Liberia and Sierra Leone, where many areas lack facilities to isolate and care for patients. There is also a lack of personnel and capacity for managing cases, for providing supportive care, and for conducting contact-tracing and follow-up.
- Prevention, which requires 1) improving hospital infection control, 2) preventing transmission during burial practices, and 3) preventing transmission when handling bush meat.

EBOLA

- The CDC Emergency Operations Center (EOC) has been activated at the highest level, which has only been done a few times before (e.g., for the H1N1 pandemic). CDC is sending more than 50 personnel overseas to help with case identification, contact-tracing, and data management; to provide laboratory support; and to train healthcare workers to improve infection control in hospitals. CDC personnel are also providing assistance with exit screening, in accordance with IHR requirements.
- The risk of Ebola transmission to the United States is very low, although we might see a few imported cases. In past years, imported cases of other viral hemorrhagic fevers—including Marburg (which is very similar to Ebola) and Lassa–were managed effectively in U.S. hospitals using well-established protocols. CDC has posted guidance on laboratory detection and infection control for state and local partners.

My thoughts

- MANY, MANY thanks to all those that have given their time and efforts to controlling and preventing this infection.
- US citizens abroad- a special kudos to those that have travelled to these countries in an effort to help.
- POINTS for DISCUSSION: My questions at the meeting
  - Laboratory Safety- main lab vs POC
  - PPE how do we make it work-
  - Classification of patients?

My Thoughts Continued

- As troops return they are sequestered for 30 days, I believe, similar to what occurred outside Charlotte with Samaritan's Purse volunteers. Kudos to Mecklenburg County, NC state and CHS.
- Is this planned for all volunteers returning from high risk areas?? Controversial at this present time…….. "when experts can't decide, let common sense prevail" anonymous 2014

UPDATE ON CDC LABORATORY SAFETY IMPROVEMENTS

Michael Bell, the interim CDC Director of Laboratory Safety, reported that CDC has released reports of its internal investigations into the recent laboratory incidents involving select agents (http://www.cdc.gov/about/lab-safety/)

- CDC has also established an external advisory group of 11 laboratory safety experts (http://www.cdc.gov/about/lab-safety/workgroup.html), as a workgroup under the CDC Advisory Committee to the Director (ACD) (http://www.cdc.gov/about/advisory/advCharter.htm).
- The Laboratory Safety Workgroup is co-chaired by Joseph Kanabrocki, Associate Vice President for Research Safety and Professor of Microbiology, University of Chicago, and Kenneth Berns, Distinguished Professor Emeritus, Department of Molecular Genetics and Microbiology, College of Medicine, University of Florida, Gainesville.
- The workgroup is reviewing current protocols and advising CDC through the ACD on which ones to adopt.

LABORATORY SAFETY IMPROVEMENTS

Continued

- Dr. Khabbaz noted that CDC's reports on the anthrax and influenza incidents have been sent to the BSC and are available online (http://www.cdc.gov/about/lab-safety/)
- An update on laboratory-safety lessons learned can be provided at the next BSC meeting.

Final Thoughts- blowing CHS Horn

- Kudos to Joanne Asmis Sitaras one of our Great Infection Preventionists discussing care for suspect Ebola cases

http://www.nytimes.com/2014/10/19/jobs/on-the-lookout-for-ebola-.html?smid=fb-share&_r=0

- Also Kudos to Dr. Katie Passaretti seen in the video on Ebola. Catherine.Passaretti@carolinashealthcare.org

http://www.youtube.com/watch?v=Uoke8IS9auo&sns=em

- And also Kudos for handling suspect Ebola case to Carolinas Health Care- from the Secretary of Health

http://www.wsoctv.com/news/news/local/white-house-praises-health-system-addressing-ebola/nhbsl/