Promoting Biosafety: How far have we come?

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Objectives

• Examine recent history of biosafety and biosecurity issues
• Review APHL efforts to promote biosafety
• Consider future directions
Examples of Lab Acquired Exposures

Maryland researcher acquired *Burkholderia mallei* in the lab diagnosed with glanders

California, 17 clinical lab scientists exposed to *Burkholderia pseudomallei*, all received antibiotics, no illnesses

Pennsylvania, Lab acquired zika virus through needle stick

1988
California, clinical lab scientist dies after lab exposure to *Neisseria meningitidis* MMWR 1991

2000

2002
Iowa, PHL microbiologist acquired West Nile virus through a scalpel wound when handling a dead crow

2003

2006
Indiana and Minnesota, clinical lab scientists acquired Brucellosis after lab exposures, unrelated strains

2016

Examples of weaponized biologic agents

- **1916**: Waite, a dentist, kills in-laws with diphtheria, typhoid, anthrax and others lifted from medical laboratories.

- **1966**: Dr. Mitsuru Suzuki contaminates sponge cakes with Shigella and Salmonella: 412 ill and 12 fatalities.

- **1984**: Rajneeshi cult spray salad bars with Salmonella in The Dalles, Oregon to influence the outcome of Waco County elections. 751 people sickened.

- **1992**: Phlebotomist Brian Stewart infects 11 month son with HIV in battle with mother.

- **1995**: Med Lab Tech Diane Thompson puts Shigella in muffins and 12 co-workers ill. She gets 20 yr sentence.

- **2001**: Bruce Ivins, USAMRID Researcher suspected of anthrax attacks through the mail. 5 people killed and 17 sickened.

There are other examples of biosecurity incidents but not successful uses.
National Leadership


• 2008 CDC Biosafety Blue Ribbon Panel convened

• 2011 MMWR Guidelines for Biosafety Laboratory Competencies

• 2012 MMWR Guidelines for safe work practices in human and animal medical diagnostic laboratories


• 2015 Ebola funds through CDC to improve Biosafety and Biosecurity in Public Health and Clinical Labs
Epidemiology and Laboratory Capacity (ELC) Funding for 3 years (May 2015 - 2018)

• Funding a full time biosafety officer/official
  • conduct risk assessment to assure the laboratory can safely handle and dispose of Ebola and other highly infectious agents, and providing technical assistance to strengthen biosafety practices in local clinical labs.

• CDC awarded funds to APHL to serve as subject matter experts, providing biosafety/biosecurity expertise and training to the public health laboratories
  • To develop materials to assist those laboratories with outreach and training for the sentinel, clinical labs in their jurisdictions.

Year 1 Enhance Public Health Lab Biosafety Capabilities
Year 2 Focus on Clinical Labs
Year 3 Completion
BBC Membership (2015)

• Monthly conference calls and 2 in-person meetings:
  • APHL members: Christina Egan, Andy Cannons, Leah Gillis, Dave Hill, Royden Saah, Charlene Thomas, Dave Warshauer, Mark Wade
  • ABSA representative Bill Homovec
  • ASM representative James Snyder
  • ASCP representative Kathleen Beavis
  • CDC: Dev Howerton, John Kools, Toby Merlin, Alvin Shultz, Steve Monroe, Betsy Weirich, Reynolds Salerno

• Took on responsibility of developing training tools
APHL Biosafety Position Statement

• Urging laboratories to enhance biosafety practices via “routine risk assessments and standardized training, identification of true risk and best practices, development of consensus standards and guidelines, and improved reporting of exposure events.”
APHL BBC

• **Purpose:** to provide leadership and guidance on policies and practices which impact Biosafety and Biosecurity in state and local governmental laboratories and clinical labs.

• **Vision:** every lab performing clinical lab testing be prepared to handle specimens safely for any emerging disease threat.

• **Priorities:**
  • Serve as **expert resource** to public health and clinical labs
  • Build a repository for biosafety and biosecurity **tools**
  • Advise and assist in the **development of a “community of practice”** for biosafety officers in public health labs
  • Design a **core curriculum** for biosafety and biosecurity and deliver training materials & convene workshops
  • Encourage a **culture of biosafety and biosecurity** within all laboratories.
APHL: Competencies for Biosafety Officer

- Safety
- Security
- Workforce Training
- Microbiology
- Communication
- Emergency Management and Response
- Quality Management System
- General Laboratory Practice
APHL Efforts for Biosafety Officials

• APHL forms Biosafety and Biosecurity Committee 3-26-15
  • First conference call 7-2-15 and held monthly
  • First in-person meeting 1-12&13-16

• APHL Biosafety/Biosecurity Resource Website
• Baseline survey
• Biosafety ListServ
• Partners Forum meeting 9-19-16
• Biosafety Peer Network (formerly Visiting Biosafety Official Program)
• Posting of Tools
APHL Training for Biosafety Officials

• Regional Workshops
  • August 2016 – Boston
  • November 2016 – Honolulu
  • January 2017 – Tampa
  • February 2017 – Los Angeles

• Biosafe 360

• Webinars
Building the Community of Practice

• Biosafety ListServ to create an online forum to foster a community of practice around biosafety/biosecurity.
• Development of training workshops and webinars for Biosafety Officers
• Connect Biosafety Officers to other training resources such as ABSA, Eagleson Institute, and Elizabeth R Griffin Research Foundation
• Mentor the outreach to clinical labs by developing training courses, risk assessment templates and other biosafety/biosecurity tools that can be applied to clinical laboratories.
Biosafety ListServ

• APHL developed ListServ
  • Currently includes PHLs BSOs (~140), Biosafety Outreach Officers, and other pertinent Biosafety personnel

• SharePoint site to archive strings and a BSO sandbox to share large documents. 34 documents.

• Allows BSOs across the country and territories to share information, experiences, suggestions, etc.

• Ex. Of ListServ activity from 12/9/16 through 4/5/17 51 posts with 102 responses (2-1 per post)

• Typical post topics:
  • Potential Exposures
  • Decontamination/Disinfection
  • PPE
  • Procedure
  • Training/drills
APHL BBC External Efforts

• Partners Forum 9-19-16:
  • ABSA, ASCP, CAP, AACC, ASM, CLMA, AAB, JCAHO, COLA, CDC, CMS,

• Presentations
  • ASM, CLMA, AACC

• Hill Day activities

• APHL Biosafety/Biosecurity Resource Website made available to everyone

• Webinars
What do clinical labs need?

- National standards and guidance (checklist)
- Incentive to get this accomplished and recognition of accomplishment
- Training and education
- Simple, comprehensive tools to make this achievable
- Engagement of all lab sections
- Commitment from administration/leadership
- National resource to report accidents and exposures
- Assistance with difficult issues, ex. Medical waste management
APHL is helping BSO meet the need

• BSO’s can provide clinical labs tools templates and expert advice

• There needs to be more consensus building on biosafety issues, for example:
  • Wearing gloves in the microbiology lab to read plates
Template for biosafety outreach to clinical labs (www.APHL.ORG/biosafety)

- Clinical Laboratory Biosafety Risk Management Program Assessment Checklist
  - Biosafety manual
  - Risk assessments
  - Fundamental Safety Practices
  - Engineering controls implemented
  - Facilities review
  - Management of medical waste
  - Applicable to all lab sections
Webinars

- *Fundamentals of Biosafety and Biosecurity*: 781 participants from 138 sites
- *Public Health Laboratory Competencies*: 205 participants from 54 sites
- *Biosecurity in Public Health Laboratories: More than Locking Doors*: 115 total participants from 43 sites
- *Public Health Laboratories Outreach to Clinical Laboratories: Challenges and Solutions*: 160 participants from 50 sites
- *Case Studies in Biosafety and Biosecurity*: 61 sites
ABSA data base for LAI  https://my.absa.org/LAI
Upcoming activities

• BMBL 6\textsuperscript{th} edition to have section geared towards clinical labs
• NLTNC - Biosafety Competencies Workshop
• 15\textsuperscript{th} CDC International Symposium on Biosafety 2018
Future vision for biosafety in labs

• By accomplishing what is outlined in these slides, labs will have active biosafety programs
• Over time, quality indicators can be measured, for example:
  • Risk assessments completed
  • Risk assessments revised and reasons for revision
  • Reduction in exposures
  • Competencies in place

2021…..No further LAI reported in the U.S.