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Educational Opportunities for Health Professionals at the ISDH Laboratories

By Ellie Carter

Part of the Indiana State Dept. of Health Laboratories (ISDH Labs) outreach efforts in the past year has been to partner with academic health programs (also see related story on a visit to Martin University). Among these are the Indiana University and Clarian Health's joint Clinical Laboratory Science (CLS) undergraduate program and several medical residency programs in the Indianapolis area. Although the ISDH Labs provide both clinical and environmental testing services, these educational partnerships have focused primarily on the clinical realm due to the nature of the participants' careers.

In the last six months of their program, the CLS students go through a set of rotations to various clinical laboratory settings. Amidst their busy schedule, groups of students spent a full day at the ISDH Labs to tour the lab facility and receive in-depth demonstrations in the clinical lab areas including virology, serology, bacteriology, emergency preparedness, blood lead, and food microbiology. They also visit the Indiana State Toxicology Lab, housed in the Indiana Forensic and Health Sciences Building. The CLS students have already

learned much of the methodology employed by ISDH Lab procedures but are able to see it used in public health application compared to a clinical diagnostic setting.

Medical residents from a variety of residency programs and at various stages in their residencies also come once a month for in-depth afternoon tours of the ISDH Labs and spend time in the clinical laboratory areas. They receive the opportunity to learn about the testing involved in public health surveillance for diseases they would report should they see a patient with a suspected or confirmed reportable disease or condition.

These educational outreach activities serve to demonstrate how these medical professionals are inextricably linked to public health and how their careers impact and can further contribute to public health overall. Partnerships such as these have also greatly enhanced the visibility of the ISDH and our efforts towards protecting the health of Hoosiers.



Students get instruction during laboratory tour.

ISDH Labs State Training Coordinator Visits Martin University

By Shelley Matheson

On July 1, Shelley Matheson visited Martin University, located in Indianapolis. Martin University is a college whose mission is to serve low-income, minority, and adult students. Shelley spoke to Martin University's students preparing for careers in science.

During her visit, Shelley delivered a presentation entitled "Public Health Careers" in which she revisited her own career in public health and also explored other public health career paths with the students. She emphasized the current public health workforce shortage and how it is projected to progressively worsen due to a great percentage of public health workers

nearing the age of retirement. It is expected that 20percent of this workforce will be eligible for retirement in three years, with the percentage eligible by 2012 nearing 50 percent.

In addition to her presentation, Shelley played a game entitled "Did You See That?" with the students. "Did You See That?" is an electronic game exploring pathways to careers in the public health laboratory and was created by the University of Iowa's Hygienic Laboratory. It combines video clips of scientists talking about their jobs with a board game and provides the students with information regarding various educational

tracks that can lead to careers in public health.

Shelley's presentation and interactive game were well-received and generated much discussion and questions about how to get involved with ISDH Labs. Many students expressed interest in internships with ISDH Labs and also in applying for lab positions at ISDH Labs once they complete their degrees. During her visit, Shelley met with Dr. Nancy Munson, a Martin University chemistry professor, and Dr. Gloria Ameny-Dixon, the Martin University Dean of Students.

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Indiana Sentinel Laboratories Prepare with the CAP Laboratory Preparedness Exercise

By Ellie Carter

Many of the clinical microbiology laboratories throughout the U.S. are classified as Sentinel Laboratories. This is done by the Laboratory Response Network (LRN), a joint effort between the U.S. Department of Health and Human Services (HHS) and the The Centers for Disease Control and Prevention (CDC). Laboratories analyzing or referring specimens that may contain microbial agents or toxins and assay these specimens for microbial agents are, by default, categorized as Sentinel Labs.

These labs play an important role in being ready at any time, to recognize, rule-out, report, package, and ship suspected agents of bioterrorism that may appear on their lab benches. In order to help these labs be as prepared as they possibly can, the College of American Pathologists (CAP) together with the CDC, the American Society for Microbiology (ASM) and the Association of Public Health Laboratories (APHL) have developed the Laboratory Preparedness Exercise (LPX) as an educational product for clinical microbiology laboratories to test their abilities in detecting potential agents of bioterrorism from patient samples.

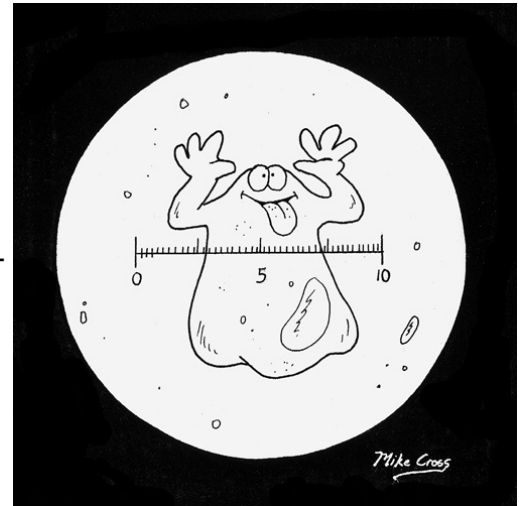
One of the components of the LPX is communicating directly with the ISDH Lab when Sentinel Lab personnel cannot rule out threatening agents from the exercise isolates. The goal of this activity is to streamline communication between our laboratories so that if a patient isolate cannot be "ruled out" as representing a terrorist exposure, we are all confident that it can be rapidly and appropriately referred and shipped for further testing at the ISDH Lab.

In order to meet this critical goal, our system of laboratories in Indiana must rely on the support of all labs eligible in the State to participate. There are approximately 60 labs in the State of Indiana that have the equipment and personnel available to participate in the LPX, yet we only have about half of these labs currently participating (table 1). Labs need only a certified class II biological safety cabinet, PPE including protective lab clothing, gloves, and respiratory protection available if necessary. Labs should also be familiar with the ASM Sentinel Level Clinical Microbiology Laboratory Guidelines which explain in detail how to perform rule out testing.

Table 1

Number of labs participating *			
2007 LPS-B	2008 LPX-A	2008 LPX-B	(2009 LPX-A)
17	17	21	28

* Out of approximately 60 labs in IN eligible to participate



Cartoon provided by Mike Cross, ISDH Laboratory

Over the last three rounds of the LPX survey, Indiana labs have significantly improved in two areas: making referral calls to ISDH Labs, and accuracy of results from rule-out testing (tables 2 and 3). We are pleased to see that performance has continually improved as sentinel labs become used to communicating with ISDH Lab staff and more comfortable with performing rule out testing. These are two key elements in improving our overall laboratory system, and we will strive to maintain this level of performance.

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Table 2

Sentinel Lab Referral Calls			
	2007 LPS-B	2008 LPX-A	2008 LPX-B
Expected referrals	17	17	21
Referrals received	9 (53%)	7 (41%)	20 (95%)

Table 3

Correct LPX Reporting				
2007 LPS-B		2008 LPX-A	2008 LPX-B	
<i>F. tularensis</i>	<i>Brucella spp.</i>	<i>B. anthracis</i>	<i>Y.pestis</i>	<i>F. tularensis</i>
29%	35%	73%	86%	95%

While improvement has occurred in some areas, proficiency in packaging and shipping of category A infectious substances remains an area in need of improvement (table 4). The ISDH Labs have been working to address this in two ways. When we receive a shipment that has been incorrectly packaged, our ISDH Lab State Training Coordinator, Shelley Matheson, will follow up with the lab and work with the shipper to clarify why the shipment was improperly sent and provide any additional needed resources. The ISDH Lab has also begun hosting and will continue to offer live packaging and shipping trainings delivered by NLTN (the National Laboratory Training Network) where lab personnel can become trained and certified to package and ship category A infectious substances. We are planning on holding several more trainings throughout Indiana in 2009 and 2010. As always, we are available to help answer questions you may have about packaging and shipping.

Additionally, the ISDH Lab has begun holding hands-on workshops to help train sentinel lab staff to recognize and rule out agents of bioterrorism. ISDH Labs is planning on conducting additional workshops in the spring of 2010. Please contact Shelley Matheson for more information.

Table 4

Performance of isolate shipments			
	2007 LPS-B	2008 LPX-A	2008 LPX-B
Isolates requested	16	7	15
Correctly shipped	7 (44%)	3 (43%)	8 (53%)

The LPX continues to play an important role in preparing the sentinel labs and ISDH Lab for emergency events requiring rapid communication and competency for ruling out agents of bioterrorism. The ISDH Lab will continue to provide training and resources to help sentinel labs to prepare themselves. Please do not hesitate to contact the ISDH Lab regarding any questions your lab may have in this or other areas.

The Laboratory Response Network (LRN):

<http://www.bt.cdc.gov/lrn/>

Sentinel Level Clinical Microbiology Laboratory Guidelines: http://www.asm.org/?option=com_content&view=article&Itemid=9999&id=6342

ISDH Lab Employees Attend Biothreat “Train-the-Trainer” Workshop By Shelley Matheson and Jim Hogan



Shelley Matheson, State Training Coordinator, Training Indiana Sentinel Laboratorians during the Wet Lab Training this past August.

A critical concept taken from the workshop was the recognition of the need for Indiana sentinel laboratories to get biosafety training along with the biothreat agent identification training from ISDH Laboratories.

On July 30, Shelley Matheson and Jim Hogan attended a one-day training in Richmond, VA entitled “Agents of Bioterrorism: Designing and Conducting Training for the Sentinel Laboratory”. This “Train-the-Trainer” workshop was jointly sponsored by the National Laboratory Training Network (NLTN) and the Commonwealth of Virginia Division of Consolidated Laboratory Services (DCLS). The majority of participants for this training were State Training or Bioterrorism Coordinators for state public health laboratories. During this training, participants were provided with the materials and in-

formation required to design and implement a sentinel laboratory training program focused on bioterrorism preparedness. The training included presentations on potential biothreat organisms and the characteristics and laboratory protocols associated with each. Biothreat agents focused on during this training included *Bacillus anthracis*, *Yersinia pestis*, *Francisella tularensis*, *Brucella canis*, *Burkholderia mallei*, and *Burkholderia pseudomallei*. Participants were familiarized with the Laboratory Response Network (LRN) and its structure and were presented with an overview of laboratory safety. Hands-on exercises in Virginia’s state training laboratory were demonstrated based on case studies using mimic organisms that can be safely used to instruct sentinel laboratory staff. Participants were also able to discuss with each other how best to organize and tailor these hands-on trainings for sentinel laboratories.

Shelley and Jim’s attendance to this training was essential to organizing and development

of the ISDH Laboratories sentinel laboratory training program and considerably enhanced the success of the first-ever hands-on workshop for sentinel laboratories held on August 25. In addition to reviewing the necessary laboratory protocols and background required to conduct such a training program, Shelley and Jim brought back materials they could use for Indiana’s sentinel trainings. They were also able to network with other laboratory training professionals, and learn from prior trainings conducted by other states.

A critical concept taken from the workshop was the recognition of the need for Indiana sentinel laboratories to get biosafety training along with the biothreat agent identification training from ISDH Laboratories. Also noted was that sentinel laboratories need training that emphasizes that suspicious specimens should not be treated like a routine specimen. For example, automicrobic identification instruments should not be used to identify biothreat agents due to their lack of specificity for these agents and have the potential for creating aerosols which pose a danger to the lab staff.

At the conclusion of the training, JoAnn Jellison, Virginia’s Bioterrorism Training Coordinator, offered Shelley and Jim a tour of their laboratory facility which was used as a model during the design of the Indiana’s state laboratory. The Virginia state laboratory building houses not only the state public health microbiology and chemistry laboratories, but they also house Newborn Screening, Weights and Measures, Consumer Protections, and a laboratory that measures fuel octane content.

In summary, Shelley and Jim will use what they learned at this training to enhance the ISDH Laboratories sentinel laboratory training program. Their goal is to develop a training program that will instruct each of Indiana’s more than eighty sentinel laboratories how to recognize and rule out these biothreat agents in their laboratories.

Local High School and College Outreach

By Jim Hogan and Shelley Matheson

Over the last year, the Indiana State Department of Health (ISDH) Laboratories has had the opportunity to host both high school students from Crispus Attucks Medical Magnet School and college students from Martin University for tours of the Laboratory.

Crispus Attucks is a historically significant high school in the history of sports integration, and currently is a Medical Magnet school in the Indianapolis Public School System, located near the ISDH Labs. In addition, several staff members at the Lab were once students at Crispus Attucks. Once a month, during the 2008-2009 school year, eight sophomore students from the school were escorted by Crispus Attucks chemistry teacher Ryan Beavers for a half day tour of the labs. While the students greatly enjoyed the actual tours of the lab floors, the tour coordinators

also tried to provide the students with take home materials showcasing cool Science Websites and summer science lab internship possibilities in the area.

Martin University is a historical higher-learning African-American institution on the east side of Indianapolis. In July, the ISDH Laboratory hosted nine upper-level Medical Science chemistry students, escorted by Martin University chemistry professor, Dr. Nancy Munson. Initially, supervisors from all four divisions of ISDH Laboratories spoke to the students regarding the skills and qualities they look for in a new hire. Then, the students got a tour of all three lab floors in the building. The supervisors who spoke to the students did

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ISDH Laboratories Hosts Hands-On Workshop for Sentinel Laboratories

By Shelley Matheson

ISDH Laboratories hosted its' first "Hands-On Workshop for Sentinel Laboratories: Biothreat Agents 101" workshop on August 25. Participants represented 14 different Indiana sentinel laboratories. A sentinel laboratory is defined as any laboratory capable of analyzing or referring specimens or samples that may contain microbial agents or biological toxins. In conjunction with reference laboratories, these sentinel laboratories form the nation's Laboratory Response Network (LRN).

The workshop provided sentinel laboratorians with an overview of their role in the presumptive identification of biothreat agents including *Bacillus anthracis*, *Yersinia pestis*, *Brucella canis*, *Francisella tularensis*, *Burkholderia mallei*, and *Burkholderia pseudomallei*. Hands-on laboratory exercises outlining the microbiology of these agents were demonstrated in our "state-of-the-art" training laboratory. The safety implications of handling these suspect organisms were emphasized as well as select agent policies, and packaging and shipping rules and regulations. Ellie Carter, ISDH Laboratory Program Advisor, presented "The Role of the Sentinel Lab." Shelley Matheson, ISDH Laboratory State Training Coordinator, presented "Select Agents, CDC/APHIS Forms, and USDA Permit Information for Sentinel Labs" and "Packaging and Shipping of Category A Infectious Substances." Mark Glazier, ISDH Laboratory Supervisor of Emergency Preparedness and Molecular Virology, presented "Agents of Bioterrorism: An Overview of Sentinel Laboratory Protocols" and "Biosafety Decisions in the Clinical Microbiology Laboratory."

Additionally, other ISDH Laboratory staff members were essential to the success of the training. Other staff that assisted with the workshop included Jim Hogan, ISDH Laboratory Assistant Training Coordinator; Katie Masterson, ISDH Laboratory Supervisor of Emergency Preparedness and Virology Isolation; Brent

Barrett, ISDH Laboratory Microbiologist, and Renee Dreher, ISDH Laboratory Administrative Assistant.

They assisted in the coordination and planning of the training, the production of the workshop, and also as technical experts in the hands-on laboratory portion.

In addition, Pam Moleta, Product Line Specialist with the Association of Public Health Laboratories (APHL), spent the day with us and assisted with administration duties.

Overall, the workshop was a successful training experience for all staff and participants in attendance. A pre-test and post-test were given to each participant to evaluate the educational value of the training. We are pleased to announce that there was an average of a 28 percent increase in test scores between the pre-test and the post-test for participants. According to the participant evaluations, ISDH Laboratories were 100 percent successful in meeting the objective of teaching participants to recognize the microbial characteristics of the primary agents of bioterrorism.

We plan to take our next hands-on workshop "on the



Students of the Hands On Training listen to Ellie Carter.

Hoosier Science Teachers Coming to ISDH Labs, Why That's Evolutionary!

By Jim Hogan

February 4-6, 2009 the ISDH labs hosted two dozen high school teachers who were in town for the Hoosier Association of Science Teachers, Incorporated (HASTI) annual meeting. The tours were a collaborative project between us, the IU school of Medicine Toxicology program and, to a lesser extent, the Indiana State Police (ISP) Forensics Lab.

While the ISDH labs have a strong cohort of Lab Scientists, it is important both from a Public Health perspective and an ISDH labs perspective in this rapidly evolving world that new scientists be nurtured for future lab careers. The plan was that more students could be reached about the virtues of a lab career via their science teachers than we could possibly accommodate through hosting tours for all those teachers and their students. This plan was more than just an intelligent design. It evolved from the observation that in February

2008, the State Police Labs hosted HASTI tours in their area. Seeing the good public relations that the State Police received from their tour program, the ISDH labs, with the generous help of IU school of Medicine Toxicology, decided to conduct their own tours at the same time as the State Police.

The tours consisted of a short presentation session where HASTI members were presented with teaching material developed in Iowa and Massachusetts that introduced Lab

Cartoon provided by Roger Sieloff, ISDH Laboratory



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Local High School and College Outreach- Cont.

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an outstanding job, as reflected in the student's interest in applying for positions at ISDH Labs once they have finished their education. Even though the tour was late in the day, ISDH Lab employees stopped to share their knowledge and lab stories. Dr. Munson received the same information regarding the science Websites and college internship possibilities that Crispus Attucks students received. To satisfy the students' interest in ISDH Lab employment opportunities after graduation, Dr. Munson also received a web link to the Indiana State Job Bank.

At this time there are no scheduled tours with these two institutions for this coming school year, however, we are continually pursuing educational institutions in the state of Indiana that might be interested in learning more about what the laboratory does for the health and well being of Hoosiers in our great state.

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CONGRATULATIONS

The editorial and production staff of the LAByrinth would like to congratulate Mr. Ray Beebe on his recent win of the Commissioners' Cup Golf Tournament held at Eagle Creek Golf Course, on Sept. 18, 2009. Other lab staff that participated were Mark Glazier who had the best lab player score of 85 and Mark Starzinski who won the Sportsmanship of the year award.

Hoosier Science Teachers-Cont.

(Continued from page 5)

and Public Health concepts into the classroom. In addition, they were given a tour of the labs by several lab staff members who showed them the working floors of the ISDH labs. The HASTI members also received a CD that was a collaboration of ISP, ISDH Labs, and IU Toxicology with material from both the ISP tour and the ISDH Labs/Toxicology tours. The ISDH portion included material developed by Massachusetts, Iowa, and ISDH labs so that the teachers could take back and give their students a taste of the ISDH Labs and a Public Health experience.

The most popular part of the HASTI visit was the actual tour of the lab areas. We may evolve the tours for next year to include more time for that purpose. Science teachers seem really interested in our "toys". However, we would like to make sure that the message is getting back to the students, so we may have to create a "virtual tour" part for the CD. This would include pictures of the