WHO'S EBOLA-READY?

Labs challenged to prepare for variety of emerging infections

By Valerie Neff Newitt

Words of precaution for labs in an Ebola era: Be sure you have enough personal protective equipment (PPE) for everyone, be sure you know how to put it on and take it off correctly, be sure you conduct drills to practice your ease of use. And one other thing: If there is a suspected Ebola case headed to your facility, "Be sure someone tells the lab. Put 'Tell the lab!' at the top of your proactivity list," suggested Sheldon Campbell, MD, PhD, director of laboratories at VA Connecticut Health System and associate professor of laboratory medicine at Yale University School of Medicine, New Haven, Conn.

Campbell was making the point in the context of an early-October AACC webinar entitled "Developing a Laboratory Plan for Specimen Management and Testing of Patients with Ebola and Other Emerging Viruses." And what may have seemed like a presenter stating the obvious was offset by a horrific reality when later last month at Texas Health Presbyterian Hospital, Dallas, 26-year-old nurse Nina Pham, wearing full PPE — gown, gloves, mask and shield — contracted the deadly Ebola virus disease (EVD) while caring for Thomas Eric Duncan, the first person diagnosed with Ebola within the United States. And before the ink dried on that headline, another nurse at the same facility, Amber Joy Vinson, 29, was similarly diagnosed.

One Infection Too Many

Thomas Frieden, director of the Centers for Disease Control (CDC), decried the events, stating, "There had to be a breach in protocols." And while a retrospective glance may well prove that to be true, it is also likely these afflicted workers believed they were following procedure to the letter. It is likely that protocols were not as clear as need be. It is likely the facility was not as well-prepared as it thought.

> **'We have to rethink how we address Ebola infection control, because even a single infection is unacceptable.'**
>
> **– Thomas Friedman, director, CDC**

"We have to rethink how we address Ebola infection control, because even a single infection is unacceptable," said Frieden, as calls for his resignation were beginning to emerge. On Oct. 14 he countered with a going-forward plan: The CDC will provide Ebola response teams within hours of a confirmed case to any hospital in the United States.

National Nurses United union took direct aim at the hospital in scathing public commentary on Oct. 15, flatly stating, "The protocols that should have been in place in

3 Easy Ways to Make Your Resume as Unique as You Are

Your resume should be a clear reflection of who you are and what you have to offer. *ADVANCE* gives you flexible options to help you build a resume that does exactly that.

› Paste, type and edit text freely in an open space

› Upload a customized document of your own

› Start fresh with our step-by-step Resume Builder

Our Resume Builder is designed specifically for healthcare pros to give you a rich finished product in less time. Plus, you can customize up to 5 different versions so you have the right resume for every situation.

Create a resume with personality at AdvanceHealthcareJobs.com

advance healthcare JOBS

Dallas were not in place, and those protocols are not in place anywhere in the United States as far as we can tell."

It should come as no surprise that demand for PPE suits could see a huge jump in coming months. "Manufacturers could face capacity and logistics challenges especially in being able to get the products to the right place and right time," said Sanjiv Bhaskar, vice president of research for Chemicals, Materials & Food at Frost & Sullivan. "Wearing PPE ensembles in hot areas can be a huge challenge for healthcare workers. They can become very uncomfortable in such suits in 30-60 minutes. Cooling vests could be a solution for increasing the amount of time a worker can spend in a PPE suit. The technology is available, but making proper gear readily available is important."

Bhaskar also noted that every type of coverall is not blood resistant. "There are certain standards that must be met; general coveralls are not enough to prevent infection. Then, there is the issue of removal and disposal of infected suits."

Wasting Away

Some lack of preparedness was also seen at Atlanta's Emory Hospital when waste from two patients with Ebola was dispatched for hauling by the usual waste management vendors.

"There were about 40 bags of waste a day coming off the EVD patients — they piled up real fast," Darrell Henry, executive director for the Healthcare Coalition for Emergency Preparedness, told *ADVANCE*. While Emory was operating under CDC waste disposal guidelines, the guidelines proved inadequate because they were not in synch with Department of Transportation regulations pertaining to the disposal of infectious biohazards. (This has since been jointly addressed by CDC and DOT.) Emory was unprepared to properly sterilize and package Ebola-related waste for haulers who were thus unable to transport the untreated Category A substances — putting healthcare workers and the public at risk. "Emory had to go out and get an autoclave to sterilize the waste so that it was no longer an infectious substance. Then they went ahead and incinerated it afterward," said Henry.

He was similarly concerned with the fact that Duncan had been taken to Texas Health Presbyterian Hospital, which had received no advance notice of his arrival. "Someone gets in an ambulance and says, 'I may have Ebola.' What hospital should they be taken to? Ambulance drivers need to know this," said Henry. "Duncan was in an ambulance and taken to Texas Health Presbyterian — not to Parkland, and not to Baylor, both of which had the ability at that time to deal with infectious waste. Texas Health Presbyterian did not have that same capability."

Keep Everyone in the Loop

Everyone in the healthcare chain — from clinicians to laboratorians and indeed even to trash haulers — must be looped in to necessary preparedness now that Ebola has arrived on our shores, advised Henry. That said, it is also important to keep a rational perspective on EVD, said Campbell. "The number of cases of Ebola in the prime outbreak area of Western Africa is still quite small in relation to other diseases

in the area, which demonstrates its somewhat non-robust nature. "In Western Africa there are just over 8,000 cases of Ebola, yet in Liberia alone there are 1.2-1.7 million cases of malaria. So your risk of having an Ebola case in your facility is about 1/200th the risk of having a malaria case from Liberia alone," he said. "What this means is most of us won't see one Ebola case, at least in this stage of the epidemic. We'll see many, many more rule-outs than patients with Ebola."

'The CDC's viral pathogens team has been working with Ebola for 25 years; we know how it works and how it is transmitted.'

– Nancy Cornish, MD

Campbell further emphasized, "It's important when developing policies to balance the risk to lab staff with the risk of compromising care for a hundred or more patients for every real Ebola case we get." With that in mind, Campbell said every facility certainly needs a plan in place, but the plan should be based on reality. "Don't plan for a hundred cases, or even five cases — plan for one," he said. "Get that up and running. Then watch what happens over the next few months and reassess as this moves forward." Such reassessment is likely to be critical, he said, noting that the CDC expects the worldwide Ebola case count to move from the thousands to a million by January.

Keep Attention on Other Risks as Well

"The CDC's viral pathogens team has been working with Ebola for 25 years; we know how it works and how it is transmitted," said Nancy Cornish, MD, medical officer in the division of laboratory science and standards at CDC. "The same cannot be said of MERS-CoV. For this reason, the CDC recommends the very highest level of safety when handling MERS-CoV. Laboratory workers should wear PPE that includes disposable gloves, lab coat/gown, respirator and eye protection when handling potentially infectious specimens." Any procedure with the potential to generate fine particulate aerosols (vortexing or sonication in an open tube) should be performed in a biological safety cabinet, and appropriate containment devices (centrifuge safety buckets, sealed rotors) should be used for centrifugation."

Amesh A. Adalja, MD, FACP, FACEP, infectious disease and critical care medicine physician and a representative of the Infectious Diseases Society of America (IDSA), agreed that laboratories must be prepared for a vast and ever-evolving variety of infectious diseases that will be represented in patient specimens in the months to come. "We've

Is Your Lab Prepared? *Prepare your lab and protect your staff with CLSI clinical lab safety documents!*

Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline—Fourth Edition | M29-A4

Clinical Laboratory Safety; Approved Guideline—Third Edition | GP17-A3

Clinical Laboratory Waste Management; Approved Guideline—Third Edition | GP05-A3

Order Today! Visit **www.clsi.org/labsafety** or contact us at **customerservice@clsi.org.** Receive **10% OFF** your purchase of these documents! Use promo code **LABSAFE2014.**

Register for This Related CLSI/APHL Webinar

CLSI's Guide to Planning Laboratory Operations During a Disaster
December 4, 2014 • 1:00–2:00 PM Eastern (US) Time
Visit **www.clsi.org/webinars** for more information.

Join CLSI Today and Save Up to 70% Off the Cost of These Products!

Visit **www.clsi.org/membership** or contact us at **membership@clsi.org** for more information.

950 West Valley Road, Suite 2500, Wayne, PA 19087 | P: 610.688.0100 | F: 610.688.0700 | E: customerservice@clsi.org

CLINICAL AND LABORATORY STANDARDS INSTITUTE®

A Minimal **Checklist**

The plan at hand should include a checklist that Campbell aptly titled: "A Checklist for Issues (Almost) Everyone Can Agree on; Minimally:

- ☑ A well-defined system to identify suspect patients and address appropriate labeling of specimens and notification of lab personnel before the specimen is sent.
- ☑ Limit testing to essentials for acute care.
- ☑ PPE must be available in the lab and used rigorously. Are sufficient supplies available?
- ☑ Specimen transport issues: no pneumatic tubes, containment of primary specimens. Rigid specimen containers that can contain spills if they occur.
- ☑ Centrifugaton in closed protective systems, inspect for leakage before opening.

had a couple of cases of MERS imported from the Middle East, and we have seen an uptick in people testing positive for Chikungunya virus as well," he noted. The latter has long been endemic in Africa and Asia, but was found for the first time in the western hemisphere in 2013. Locally acquired cases were identified for the first time in Puerto Rico and the U.S. Virgin Islands in April of this year and in Florida in July. As of September, 758 cases were reported in the U.S.

Adalja also pointed to the current outbreak of enterovirus D68, which is causing respiratory illness — and even death—in children here in the U.S. "For the most part labs will do PCR tests to determine they are seeing the enterovirus family. But for epidemiological and health reporting purposes, they may want to forward the sample to pinpoint an exact strain for the virus and to see where it is travelling. Labs play an important part in our management of these outbreaks of infectious diseases. The lab is a crucial partner in understanding the spread of virus and bacteria."

Re-emergence and Resistance

Along with emerging infections, labs must be watchful for re-emerging infections, as well as resistant strains. "The whole vaccination

AUTOMATE YOUR
OSMO
WORKFLOW

A_2O® Advanced Automated Osmometer
Multi-sample ▪ Fully automated ▪ No manual pipetting
Positive sample ID ▪ True walkaway operation

The A_2O® Advanced Automated Osmometer is a fully automated, multi-sample osmometer for high volume laboratories. Proven technology combined with walkaway operation set the standard for analytical performance, ease of use and productivity.

www.aicompanies.com/A2O | 781.320.9000

ADVANCED INSTRUMENTS, INC.

- ☑ Removal/disposal strategy for PPE. Laboratory to drill on/off procedures per CDC training materials.
- ☑ Procedure for cleaning/disinfecting chemistry and histology equipment (if used) per manufacturer's guideline. Find and assess.
- ☑ Address microbiology and other manual processes. (Malaria smears fixed in methanol for 30 minutes is sufficient per NY guideline; [CDC has just released guidelines stating 15 minutes is sufficient]).
- ☑ Blood bank: Consider electronic cross-match and O- blood for patients without risk factors for alloantibodies to minimize manual procedures. See AABB guidelines at www.aabb.org/press/Pages/Infection-Control-for-Handling-Blood-Specimens-from-Suspected-Ebola-Patients.aspx.
- ☑ A simple plan that's well-implemented by trained staff is better than a complex plan that's badly implemented. Practice your plan. And always protect the patients."

debate has resulted in some children not being vaccinated or being under-vaccinated, allowing for some diseases to come back," said Maria Hernandez, MBA, BSMT (ASCP) of MD Buyline, an evidence-based, clinical and technology research firm that consults with major healthcare systems nationwide. "In addition, as re-emerging infections are noted, they are often changed and resistant. "*Staphylococcus aureus* was known to hospitals in the '50s and even before. But in late '80s we saw penicillin-resistant *S. aureus*, then methicillin-resistant *S. aureus* (MRSA) came along, and now vancomycin-resistant *S. aureus* (VRSA). Labs are testing to determine the resistance now." In the U.S. 13 cases of VRSA have been identified since 2002.

Dennis Matricardi, MS, SM(ASCP) DLM, also a laboratory clinical analyst at MD Buyline, said, "Labs may routinely test for 20 antimicrobials to find what a microorganism is resistant to. Those that used to be resistant to 10 now may be resistant to 15; tomorrow the number may be 20 or all of them. Labs must be careful to see what multi-drug resistant organisms (MDROs) are in their hospital so that infection control will know how to change and plan and find where and how these resistances are occurring."

The MD Buyline experts noted it is incumbent on lab managers to make sure instruments and tests are available to address this burgeoning spectrum of emerging infections. "They need flexibility for testing additional and newly introduced antimicrobials to be ready for anything that happens today. BioMerieux offers a wide variety of panels and rapid results on their Vitek family of instruments," said Matricardi. "The other standouts are the Siemens WalkAway platforms. I would estimate these two platforms hold about 90 percent of the identification and susceptibility testing market for routine testing."

Matricardi recommended that labs maintain a strong relationship with infection control at their respective facilities, "... and always assume a sample is infectious — and prepare for it." He also advised staying up on trends in public health by regularly checking CDC and WHO websites, maintaining contact with local health and state departments, reading research literature, and talking with peers to discover what technology is being used successfully. "Share results quickly," he suggested, "and keep the information flowing in both directions — in and out."

While Ebola may not be nearly as likely to be found in your own lab as the flu, even a hazy threat serves to make the entirety of healthcare more vigilant. "We are one airplane ride away from Ebola or MERS or any number of other infectious diseases that could come here," warned Henry. "Ebola is a wakeup call. It's infectious and it has a high kill rate. And if nothing else, it has shown us that we have holes in our public safety system. We must be better prepared." ■

Valerie Neff Newitt is on staff at ADVANCE.

Online

▶ We'll continue to update our Ebola coverage at **www.advanceweb.com/laboratory**.

QDxPathology SERVICES

Job Description-Medical Technologist

Microbiology

- Calibrates instruments as required by the manufacturer (Siemens Micro Scan).
- Enters test results into the laboratory computer.
- Accepts laboratory specimens from the processing section or other departments that will be utilized for testing in the microbiology department.
- Evaluates pending sheets or add-on forms to determine if testing is complete for tests performed in the department.
- Determines when reagents need to be re-ordered, if assigned by the department supervisor.
- Performs microbiology laboratory tests on quality control material.
- Performs microbiology laboratory tests on survey material, treating this material in the same manner as patient samples.
- Evaluates quality control for the systems he/she is assigned. Determines if quality control results obtained are acceptable.
- Run necessary quality control tests on plated media as required by state health department before using on patient samples.
- A working knowledge of reagent stability and storage.
- Keep testing and department areas clean including the microscope.
- Performs other related functions as requested by management.
- Possesses the skills required for performing preventive maintenance and troubleshooting procedures related to each test performed.
- An awareness of the factors that influence test results and the knowledge to avoid it.

Professional Requirements:

1. Adheres to dress code, appearance is neat and clean.
2. Wears identification while on duty, uses computerized punch time system correctly.
3. Complete annual educational requirements (Continuing Education).
4. Maintains and ensures patient confidentiality at all times.
5. Maintains current knowledge of Laboratory policy as well as other regulatory agencies requirements.
6. Reports to work on time and as scheduled, completes work within designated time.
7. Represents the organization in a positive and professional manner.
8. Attends departmental meetings and in-services as scheduled.
9. Actively participates in performance improvement and continuous quality improvement.
10. Complies with organizational policies regarding ethical business practices.

Regulatory Requirements:

- Bachelor of Science degree in Medical Technology, Chemistry or Biology from an accredited institution.
- State Licensure as a Medical Technologist (if issued) or The American Society of Clinical Pathologist Certification (ASCP).

We offer a competitive salary and attractive benefits for this role.
Please contact DEBBIE PACYNA with inquiries and interest. E-mail: admin@qdxpath.com