

# PHARMACY INSIGHTS

BROUGHT TO YOU BY MICHIGAN PHARMACISTS ASSOCIATION

## A LOOK AT: EMERGENCY PREPAREDNESS

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OPHP Offers New Online  
Learning Modules for **CE Credit!**  
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### Upcoming Events

**Feb. 21**

**MSHP Board of Directors Meeting**  
Detroit Marriott at the Renaissance Center, Detroit

**MPA Executive Board Meeting**  
Detroit Marriott at the Renaissance Center, Detroit

**WMSHP Executive Board Meeting and Continuing Education Program**  
Lacks Cancer Center, St. Mary's Health Care, Grand Rapids

**Feb. 22-24**

**MPA Annual Convention & Exposition**  
Detroit Marriott at the Renaissance Center, Detroit

**Feb. 22**

**GCPA Get-Together at the MPA Annual Convention**  
Volt Restaurant, Detroit Marriott at the Renaissance Center, Detroit

**March 1-4**

**American Pharmacists Association Annual Meeting and Exposition**  
Los Angeles, Calif.

**March 11**

**2013 Critical Infrastructure Protection in Healthcare Conference**  
Kellogg Hotel and Conference Center, East Lansing

**March 13**

**PSI Board of Directors Meeting**  
MPA Family of Companies Headquarters, Lansing

**March 14**

**GCPA Continuing Education Program**  
Diplomat Specialty Pharmacy, Flint

**MPA Third Party Committee Meeting**  
MPA Family of Companies Headquarters, Lansing

**March 17-23**

**Poison Prevention Week**  
Nationwide



MICHIGAN PHARMACISTS ASSOCIATION

# PHARMACY INSIGHTS



## Emergency Planning

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### Region 2 North Teaching Hospital Develops Response Plan

*This article describes the efforts taken at a large university teaching hospital within Region 2 North regarding the preparations for mass dispensing of medications required for prophylactic treatment of essential personnel.*

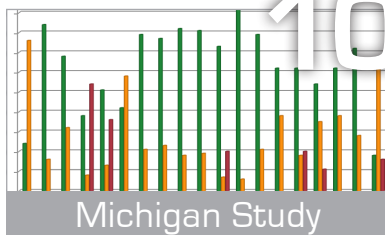


## Meningitis Outbreak

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### Ann Arbor Hospital Leads the Michigan Battle Against Meningitis

*At the forefront of treating patients impacted by the fungal meningitis outbreak in the state is St. Joseph Mercy Ann Arbor (SJMAA). Staff and volunteers have been working tirelessly to accommodate one of the largest patient populations with fungal meningitis in the nation.*



## Michigan Study

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### The Michigan PEAP Study

*The purpose of this study was to evaluate the current status of pharmaceutical emergency awareness and preparedness (PEAP) at an average-sized community hospital in Michigan. With the partnership of the Michigan Pharmacists Association, similar assessments were performed at approximately 180 hospitals throughout the state.*



## Continuing Education

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### OPHP Offers New Online Learning Modules for CE Credit

*The Michigan Office of Public Health Preparedness (OPHP) recently announced the release of two new learning modules to address components of the Michigan Emergency Preparedness Programs.*

In addition to receiving *Michigan Pharmacist* on a quarterly basis, MPA members will be e-mailed a publication between printed issues of the journal, in February, May, August and November. *Pharmacy Insights* will feature articles and resources on one topic of interest and importance to pharmacy professionals. Each edition will also include a continuing education home study article or presentation! If you have any topic suggestions or pieces you would like to share with the Association, please contact MPA Director of Communications Leah Ball at [Leah@MichiganPharmacists.org](mailto:Leah@MichiganPharmacists.org).



Use your smart phone to read this QR code for more information, or visit [MichiganPharmacists.org/calendar.php](http://MichiganPharmacists.org/calendar.php). Download a QR code reader at [www.mobile-barcode.com/qr-code-software](http://www.mobile-barcode.com/qr-code-software).



# Showcase Essential Pharmacy Practice Functions Through Emergency Preparedness Efforts

By GREG PRATT

*MPA Emergency Preparedness Coordinator*

This issue of MPA's *Pharmacy Insights* is dedicated to a subject that underlies all other pharmaceutical functions. Though not based on clinical knowledge, or savvy business sense, a solid emergency preparedness plan and level of awareness allows you and your employer to perform the important functions of pharmacy practice. It allows you to maintain "business as usual" before, during and after a major crisis event, and allows you to plan to keep patient care and safety as your primary mission.

Whether the crisis event is a biologic, chemical, radiological, pandemic or natural event, pharmacy personnel do play a critical role. As evidenced by events in Michigan over the past year, pharmacists can (and do) play a role in medical countermeasure procurement and developing guidance for

countermeasure caches is a long-term project that requires a good working relationship between these partners; however, purchasing them and placing them in the correct location is the small part of the project. Establishing a level of awareness among pharmacy professionals regarding where they are, why they are there, how to get them and when to get them are the big projects. This is our responsibility and definitely a role we can play.

Located within this issue of MPA *Pharmacy Insights* is a study conducted last year by pharmacist Christopher Brink as his residency project. He wanted to assess the level of emergency preparedness awareness by pharmacists within the state of Michigan. While the results do show positive numbers that I feel reflect a commitment by pharmacists to be aware of their role and of resources available to them, it certainly shows room for improvement as well. Some of the Regional Health-

*Though not based on clinical knowledge, or savvy business sense, a solid emergency preparedness plan and level of awareness allows you and your employer to perform the important functions of pharmacy practice.*

medical management. We are most successful in this role when we build pre-event relationships with other partners, and when we exercise processes and learn together.

Over the past 10 years, we have worked with the Office of Public Health Preparedness to build these important relationships. Communication between contacts at each hospital in the state and regional leadership has been established and continual work is done to maintain these connections. Procurement and management of medical

care Coalitions have helped this mission by sponsoring tabletop exercises that educate pharmacists and other facility response planners regarding the availability of caches within their community, region or state. If you are interested in such a presentation within your region, please contact your regional healthcare coordinator or medical director to make a request. If you need help making that contact, please let me know and I will help you coordinate the effort.

As pharmacists continue to expand their role in immunizations, I ask that you not only take

the time to register on the MI Volunteer Registry ([www.MIVolunteerRegistry.org](http://www.MIVolunteerRegistry.org)), but also be sure to indicate that you are a certified vaccinator as well. Due to the changing landscape in local public health, volunteer pharmacist vaccinators are anticipated to serve as community vaccinators if a mass vaccination campaign is ever activated. We have taken on this responsibility with this advance in our scope of practice, and so we must assume this response role as well. Having a large presence on the registry not only allows public health and other planners to reach out to us as volunteers, but also sends the message that we want to be a part of the solution and, therefore, a part of the planning.

I also want to take the opportunity to share with you in this edition of *Insights* a very exciting opportunity for Michigan pharmacists. We are currently planning a conference in June to discuss alternate distribution systems for antivirals during a declared pandemic event and will be looking for volunteers interested in having input into this process. As most of you are aware, Michigan community pharmacies played a large role in distribution of Strategic National Stockpile supplied antivirals in 2009. Many things were done well, and

some were not. It is our challenge to review that event, learn from it and hopefully improve upon it. Some new ideas are being discussed on a national level, and now is the time for us to provide our input, based on our expertise and experience to ensure that the next time this deployment is done, it is done effectively, efficiently and safely. More news will follow in the coming months regarding the conference, so please consider whether or not you would like your voice to be heard as we work together to improve this plan. Be sure to watch the event page on the MPA Web site at [MichiganPharmacists.org/eventDetails.php?x=954](http://MichiganPharmacists.org/eventDetails.php?x=954) for the latest details.

Also included in this issue are articles on the process followed by a large teaching hospital in Michigan to develop their mass dispensing preparedness plan, as well as the fungal meningitis outbreak and how pre-established connections assisted St. Joseph Mercy Ann Arbor in handling a majority of the affected patient in Michigan.

Please feel free to contact me at (517) 420-0789 or [GPratt@MichiganPharmacists.org](mailto:GPratt@MichiganPharmacists.org) if you ever need assistance with your preparedness efforts.

## WANT TO BE AN RSS PHARMACIST? GREAT, BECAUSE WE NEED YOU!



When supplies come to Michigan in response to a crisis event from the Strategic National Stockpile, they arrive first at a temporary warehouse known as a Receipt, Staging and Storage (RSS) site. These critical supplies will then be shipped from this location to various treatment centers (hospitals) and health department nodes. At this site, pharmacists will assist with some or all of the following functions:

- Mass dispensing of antibiotics to workers, law enforcement, truckers, etc. (if this is in response to a biologic event)
- Quality control over all orders leaving the facility
- Oversight of control substances

We have a short list of pharmacist volunteers now, but would like to add to it if we can! If you are interested, please contact MPA Emergency Preparedness Coordinator Greg Pratt at (517) 420-0789 or [GPratt@MichiganPharmacists.org](mailto:GPratt@MichiganPharmacists.org) to discuss.



# Region 2 North Teaching Hospital Develops Response Plan

By ANNETTE KARAGEANES

*MS, R.Ph.*

By GAIL JULEFF

*MSN, RN, HACCP*

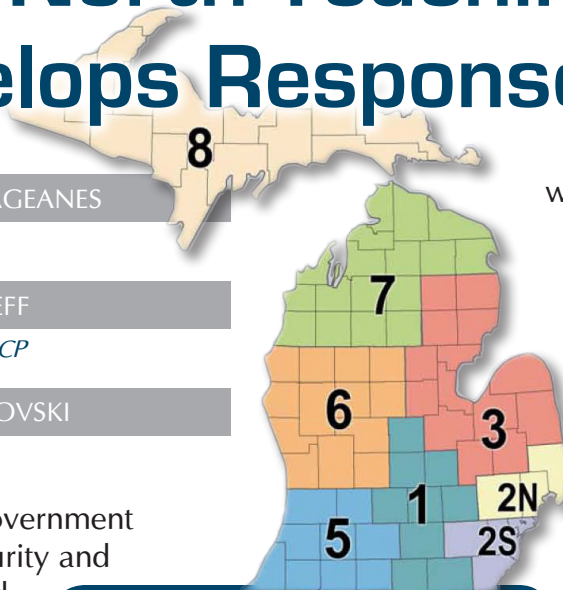
By MICHAEL VASOVSKI

*Pharm.D.*

In June 2002, the federal government passed the Public Health Security and Bioterrorism Preparedness and Responses Act of 2002 to improve the ability of the United States to prevent, prepare for, and respond to bioterrorism and other public health emergencies.<sup>1</sup> Under this law, the state of Michigan received grant money and created a Healthcare Coalition with eight regions across the state dedicated to developing bioterrorism and public health emergency response plans for each region (see Figure 1). Region 2 North Healthcare Coalition (R2N) supports all hazard medical response plans for a three county region (Macomb, Oakland and St. Clair Counties) and developed their plan through the participation, collaboration and coordination among the key stakeholders in the region. This article describes the efforts taken at a large university teaching hospital within R2N regarding the preparations for mass dispensing of medications required for prophylactic treatment of essential personnel.

Each hospital in the region is required to maintain a pharmaceutical cache for essential personnel and is requested to develop an emergency preparedness plan in the event of a bioterrorism event or public health emergency. The plan for this organization was initially developed in 2008 and stated that upon notification of a bioterrorism threat, all essential personnel and their dependents would receive prophylactic therapy for said threat

**Figure 1. Michigan Healthcare Coalition Regions**



within 48 hours of notification. The plan, however, did little to define the magnitude of the required emergency mass dispensing activities or a process to effectively dispense 14,500 courses of therapy within 48 hours. As a result, the pharmacy department in collaboration with the emergency preparedness officer for the hospital created a Mass Dispensing Task Force (MDTF) charged with defining and testing a process to provide the services needed for mass dispensing.

The MDTF met monthly for approximately one year to critically evaluate and design an effective plan. Initial steps for this task force began with the development of forms needed at the time of the bioterrorism incident. These forms included a health and history consent form, health history tracking form, essential personnel household prophylactic antibiotic kit/label, and patient education forms for ciprofloxacin and doxycycline. All documents were designed to maintain state laws, rules and regulations related to the dispensing of pharmaceuticals.

Upon completion of these forms, the MDTF began developing a flow chart analyzing the movement of product from the cache to the dispensing area, the distribution and collection of employee health forms, the preparation of prescriptions, and the delivery of the medication to the employees. As mentioned previously, the institution has more than 14,500 essential personnel and to effectively distribute prophylactic medication to that number of employees will require more than 300 prescriptions to be processed, per hour, for 48 hours.

As the group worked through the flow analysis, it became apparent that additional supplies and

documents were needed to improve efficiency and reduce variability in the process. For example, a Prophylactic Antibiotic Selection Flowchart was developed to guide practitioners in selecting appropriate therapy for each family based on data provided on the health and history consent form. The process was designed so that each household would receive one type of medication to maximize dispensing efficiency and limit medication errors in the home.

Another consideration for the group was how to create a process that would not interfere with daily hospital workflow and maintain security of medication. It was ultimately decided that a decentralized distribution model would be used and that health history and consent forms would be collected in a separate location away from the medication preparation area.

A prescription dispensing flow was also designed and personnel needs were identified. During this process, it became evident that additional staffing would be needed and that alternative providers would have to be used to fulfill these functions. Again, state laws were reviewed and job functions were matched based on scope of practice. For example, advanced practice nurses or physician assistants were identified as alternatives for screening patient history information and determining therapy.

Upon completion of the plan, a tabletop drill focusing on the feasibility of executing the plan was completed. Approximately 20 participants from various disciplines throughout the hospital provided feedback during a two-hour session. The group concluded that the plan appeared possible and offered several areas for additional development. These areas included:

- Expanding the communication plan to include scripted messages and an employee hot-line
- Purchasing supplies such as paper, bags, etc. and storing them with the pharmaceutical cache to stream-line the process
- Developing a separate process for medical staff and off-campus employees
- Activating the labor pool to help sustain the

process over 48 hours

- Performing a functional drill to fully evaluate the process and assess the organizations abilities to dispense more than 300 prescriptions per hour

## Conclusion

Emergency dispensing to essential personnel is an extremely complex issue. It deals with dispensing of large volumes of medication in a short period of time during a highly stressful situation. Performing this task effectively while minimizing disruptions to daily workflow requires a tremendous amount of planning and collaboration among many disciplines within the hospital. Every institution will have different requirements and complexities associated with the processing of prescriptions and delivery of medication, therefore it is critical to develop a detailed, site specific plan based on the organization's needs.

*If you would like to receive copies of the forms discussed in the article as an example for developing your own mass dispensing plan, please contact Annette Karageanes at [Annette.Karageanes@Beaumont.edu](mailto:Annette.Karageanes@Beaumont.edu).*

*Watch the April issue of Michigan Pharmacist journal for a follow-up to this article! The facility performed a drill of their plan on Jan. 29. Read the future article to find out how their plan went, what they learned from performing a drill and more! The issue will be mailed to members the first week of April.*

*If you'd like to share information about a drill or emergency preparedness effort at your facility, please contact MPA Director of Communications Leah Ball at [Leah@MichiganPharmacists.org](mailto:Leah@MichiganPharmacists.org).*

## Reference:

- P.L.107188, June 12, 2002. This law authorizes funds under Section 319C1 of the Public Health Services Act (42 U.S.C. 247d-3a) to build capacity to identify, detect, monitor, and response to threats to the public health, [www.FDA.gov/RegulatoryInformation/Legislation/ucm1155733.htm](http://www.FDA.gov/RegulatoryInformation/Legislation/ucm1155733.htm).



# Ann Arbor Hospital Leads the Michigan Battle Against Meningitis

By LEAH BALL

*MPA Director of Communications*

For nearly half a year, the nation has been responding to a fungal meningitis outbreak that has affected 704 and caused 46 deaths as of Feb. 11. The greatest impact has been seen in Michigan, with 244 cases and 13 deaths.

At the forefront of treating patients impacted by the fungal meningitis outbreak in the state is St. Joseph Mercy Ann Arbor (SJMAA). Staff and volunteers have been working tirelessly to accommodate one of the largest patient populations with fungal meningitis in the nation. "This started out as a sprint and turned into a big marathon," said Chris Cook, pharmacy director at the hospital. "We knew it would escalate and would last a while, but we initially didn't expect it to continue for as long as it has."

At SJMAA, they've experienced crises before, but nothing quite like this. The facility lived through the electrical blackout in 2003, and they have experienced situations where oxygen lines

health-system works closely with Region 2 South, a medical bio-defense network consisting of Livingston, Monroe, Washtenaw and Wayne counties, to organize drills and develop plans to respond to disasters throughout the region.

## Early Response

Starting Oct. 4, people who were notified by the Centers for Disease Control and Prevention (CDC) that they had received a contaminated steroid injection were referred to St. Joseph Mercy Ann Arbor to centralize treatment in one location. In the beginning, emergency departments at the health-system's Ann Arbor, Brighton and Livingston locations were filled with patients experiencing symptoms. The Ann Arbor facility administered more than 370 Lumbar Puncture tests in one month, which is more than they typically perform in an entire year.

The facility started off following treatment recommendations directly from the CDC. As the situation escalated, SJMAA started helping the CDC

*"This started out as a sprint and turned into a big marathon. We knew it would escalate and would last a while, but we initially didn't expect it to continue for as long as it has." — Chris Cook*

and water supplies had been cut off. But the meningitis outbreak has been 18 weeks long and ongoing, putting facilities in a situation that is much less predictable with a condition that presented new clinical situations to these health professionals.

Because the situation is unconventional, it highlights the importance of being ready to respond and developing connections that can assist in situations of need. SJMAA has many different preparedness plans that they practice regularly. The

write treatment algorithms and the agency started looking to them because they developed expertise treating these patients.

"As we started to really develop the algorithms, the CDC was asking us for input, and this treatment was different than you typically would expect," Cook said. "You're using voriconazole and liposomal amphotericin B (AmBisome®) at higher doses than you would normally see. And



Chris Cook,  
pharmacy director,  
St. Joseph Mercy Hospital  
Ann Arbor



all of that caused very significant, unique practice issues for everyone, including the patients.”

When the outbreak began, they were also challenged because voriconazole was on allocation from the manufacturer (and it still is). SJMAA was able to acquire the intravenous product, but it was the oral they were concerned about. Pfizer, which runs a Reimbursement Solutions, Verification, and Payment (RSVP) program to offer reimbursement support services and patient assistance to help them gain access to specialty medicines, including voriconazole, didn’t have any in their possession when the health-system began discharging patients. So, SJMAA worked with Greenstone, a generic manufacturer owned by Pfizer. Greenstone agreed to supply the RSVP program with voriconazole, and they began dispensing the generic product through their assistance program. “It was never really easy to get,” Cook recalls. “We always had to buy unusual quantities whenever they were available just to have them on hand and make sure we had the inventory to treat our patients.”

Clinical order sets were developed and uploaded to the hospital’s electronic health records in collaboration with the CDC, giving clinicians access to the most appropriate treatment guidelines. Depending on the type of fungal infection that patients have, their voriconazole therapy could be long-term. The hospital developed a Fungal Outbreak Clinic to provide ongoing outpatient care to those who received tainted injections, had been tested and treated, and were discharged from the hospital or emergency department.

### Outbreak Develops into Second Illness

Beginning in mid-October, SJMAA was faced with a second wave when a new problem arose called epidural abscess, which is an infection near the spine at the site where the medication was injected to treat neck or back pain. These abscesses can form even when a patient is taking anti-fungal medications, so some people who had already been discharged needed to come back for more treatment, and sometimes surgery.

St. Joseph Mercy Ann Arbor launched an MRI initiative to test all 643 affected patients who received the contaminated steroid injections from the outside clinics that administered the tainted

steroid between Aug. 9 and Oct. 2. To date, all patients have been contacted, and those not responding to the initial e-mail received a letter. The facility was doing MRIs at capacity, according to Cook. They petitioned for a Certificate of Need to have a mobile MRI unit at the hospital, and the Michigan Department of Community Health helped expedite it. Many patients with no symptoms and some who didn’t have meningitis still tested positive for epidural abscesses, so the hospital decided to test every affected patient.

In addition to the shortage of voriconazole, they faced a shortage of propofol as well. “As we started to bring patients in to surgically drain those abscesses, propofol was being used,” Cook recalled. “That was putting an even bigger strain on that already short-supply drug. That was another shortage issue that concerned me at the time because that was a drug the anesthesiologists were using during surgery.”

### Seeking Out Help

The amphotericin B (AmBisome®) that SJMAA has used comes with unique dispensing and preparation criteria. For example, to prepare one vial or one dose would take anywhere from a half hour to an hour. At the height of the crisis, the facility added on 23 additional personnel hours a day just to prepare AmBisome® alone. Nearly everything took more time, including the MRIs. At SJMAA, Cook said it would take two hours to do an MRI versus the half hour it would typically require. “The need for labor wasn’t really linear,” according to Cook. “The amount of care required per patient was disproportionate to just the typical labor metrics that you would use.”

St. Joseph Mercy Ann Arbor had some assistance from their sister hospital in Mount Carmel, Ohio. The reciprocation process for nurses was expedited so that they could get licenses with a quick turnaround time, which Cook credits to the Board of Nursing. But the hospital was in need of pharmacy technician labor in a huge way to help with the extensive medication preparations and other tasks to ensure that these patients were properly cared for.

“The importance of being in a registry and being able to be called upon as a volunteer is



really, really important,” Cook expressed. SJMAA is fortunate to belong to Trinity Health, so they were able to glean some resources from them. They also have ties to the Southeastern Michigan Society of Health-System Pharmacists, who put a call out for help amongst their membership and via their Web site and social media. The facility utilized MPA as a resource, too, working with Emergency Preparedness Coordinator Greg Pratt to contact Region 2 North and Region 2 South Healthcare Coalitions to seek out additional volunteers.

Michigan’s Volunteer Registry, launched in January 2006, aims to provide a secure, electronic environment for volunteers to indicate their interest(s) and provide contact information. In the event of an accidental, natural or intentional public health emergency, or other public or health care disaster, the registry functions as the central location for volunteer information.

SJMAA had many connections established to get help, which is a great example of preparing for potential emergencies because the MI Volunteer Registry had limited pharmacy technician volunteers

When asked about lessons learned from this situation thus far, Cook stressed the importance of communication, and that it’s important to never assume that other people (especially externally) know what’s going on. “I just assumed that because we were living it, other people in the industry knew the significance of it and were following it,” said Cook, “But many professionals, I think, weren’t necessarily following it because it wasn’t affecting their world.” SJMAA worked hard to initiate incident command, have daily huddles and inform people internally and externally to make sure they knew the significance of this outbreak. They’ve communicated with the CDC, their advocacy team, Rep. John Dingell’s office and other health-systems in the area so they knew exactly what was being dealt with.

According to Cook, communicating with payers was important, too. “Voriconazole at very high doses like we were giving are typically not covered,” he said. “The crisis was explained and we got prior authorizations approved quickly, but initially we were getting rejected claims. You really

*“The importance of having volunteers readily accessible – it’s huge. Especially since this escalated so fast. I don’t think I was prepared in understanding how much labor help I was going to need, but having those resources at the ready was great.” — Chris Cook*

available to be called upon. “The importance of having volunteers readily accessible – it’s huge,” said Cook. “Especially since this escalated so fast. I don’t think I was prepared in understanding how much labor help I was going to need, but having those resources at the ready was great.”

### Long-term Preparation

Administrative and clinical leaders at the hospital are prepared for the outbreak to carry on for several more months. After 17 consecutive weeks of daily incident command update calls, the fungal outbreak leadership team now connects on a weekly basis to discuss the latest updates among patients receiving ongoing treatment for fungal infections.

need to communicate these disasters very clear and plain so that people know what you’re dealing with and on what scale.”

He also recommended that practice sites work with their region to practice disaster preparedness, including holding drills and having simulations often, and stressed the importance of having a network that you can rely on. “Belong to a professional association, locally and statewide,” Cook said. “Have those communication lines pre-established so when something like this happens you don’t have to try and open new ones up.”

# THE MICHIGAN PEAP STUDY

## Evaluation of the Current Status of Pharmaceutical Emergency Awareness and Preparedness for Michigan Hospitals

*By Christopher M. Brink, B.A., Pharm.D.; Gregory A. Pratt, R.Ph., MPA emergency preparedness coordinator; and Shaun W. Phillips, Pharm.D., M.B.A.*

Emergency situations can occur at any time and include chemical, biological, radiological, nuclear and explosive (CBRNE) threats. Since 2001, increased efforts to establish emergency preparedness plans for these threats have been put into place in order to minimize and/or prevent their occurrences. While the Centers for Disease Control and Prevention (CDC) has repeatedly published assessments of bioterrorism and mass casualty preparedness over the past decade, original research relating to specific statewide assessment of pharmaceutical emergency awareness and preparedness (PEAP) remains limited. The purpose of this study was to evaluate the current status of PEAP at an average-sized community hospital in Michigan. With the partnership of the Michigan Pharmacists Association (MPA), similar assessments were performed for the approximately 180 hospitals throughout the state.

### Background

During this randomized cross-sectional study, an electronic survey was distributed via e-mail to pharmacy directors, pharmacy managers and pharmacists with active Michigan pharmacy licenses within the state. Prior to distribution, invitation e-mails were sent to announce the survey. In addition, survey non-responders received once-weekly e-mail reminders until the survey was complete. The primary outcome measure was to evaluate the current clinical quality of PEAP for an average-sized community hospital in Michigan and all participating Michigan hospitals. Secondary outcome measures, as assessed via a 2012 MPA Annual Convention & Exposition continuing education session and a Region 5 MPA-directed educational session, included the following: (1) individual pharmacist training regarding Michigan PEAP; (2) individual pharmacist growth in PEAP; (3) improved pharmacy personnel communication with

designated contacts in the event of a CBRNE incident; and (4) the financial impact of increasing PEAP for Michigan hospitals. Statistical testing included the chi-square test and statistical significance was determined at  $p < 0.05$ .

Approximately 180 Michigan hospitals were surveyed. Survey responders were estimated to provide an approximate 46 percent response rate. Statistically significant values ( $p < 0.05$ ) indicate that 24 percent of responders were familiar with CDC "Category A, B, C" biological agents and their resultant diseases; 63 percent of responders were familiar with Strategic National Stockpile (SNS)-related knowledge; 47 percent of responders were familiar with "All Hazards"-related knowledge; 77 percent were familiar with cache-related knowledge; 78 percent of responders were familiar with regional health care coordinator/medical director-related knowledge; 59 percent were familiar with mass dispensing plan-related knowledge; 73 percent of responders were familiar with Federal Emergency Management Agency (FEMA) Incident Command System training; and 51 percent of responders were familiar with Basic Disaster Life Support (BDLS) training. Additionally, statistically significant values ( $p < 0.05$ ) support the powerful role of education in increasing current pharmacist PEAP knowledge.

In order for pharmacists to become better team contributors in emergency preparedness situations, more awareness of their role needs to be created. Michigan pharmacists appear to feel somewhat confident in their awareness of PEAP and in their ability to respond to CBRNE incidents; however, much remains to be done. As continued PEAP education is provided, both through state funding and professional participation, pharmacists will become better informed and prepared to contribute in CBRNE incidents.



## Introduction

Since the World Trade Center attack in 2001, emergency medical preparedness (EMP) is something that has been taken very seriously. Heightened awareness of the need for readiness has produced critical assessments of EMP and pharmaceutical surge capabilities for CBRNE incidents at the national and, to a more limited degree, regional and state level. CBRNE incidents can occur at any time with little to no warning, so constant readiness is required. Since a response can require large amounts of pharmaceutical and medical supplies, it is imperative that coordinated efforts between government authorities, disaster planners, health care professionals and public health advocates be implemented in order to minimize potentially catastrophic outcomes. Whether being faced with terrorist attacks, quickly-spreading pandemics, or natural disasters, it is never too soon to assess current EMP. As such, even before the events of Sept. 11, 2001, the CDC emphasized in a 2000 report that investment in the public health system provides the best civil defense against bioterrorism and strengthens EMP planning and response.<sup>1</sup>

Nationally, CDC funding has been used to more efficiently detect disease symptoms from unknown agents used in possible biological or chemical attacks and to protect against the consequences of these attacks. Additionally, the CDC works with state agencies in order to help coordinate local response. On Sept. 25, 2001, the Michigan Department of Community Health outlined a bioterrorism preparedness plan that included five specific focus areas of CDC funding: (1) preparedness planning and readiness assessment, including Michigan CDC National Pharmaceutical Stockpile plans and protocols; (2) enhanced disease detection and reporting; (3) expanded training of state and local biological laboratories' tiered response for detection and control of bioterrorism events; (4) acquisition and maintenance of state of the art diagnostic capabilities for human exposure to chemical agents; and (5) the expansion of the statewide Emergency Notification System and additional training of local health departments, hospitals and health care providers in order to improve communications during a crisis situation.<sup>1-2</sup> In Fiscal Year 2000, Michigan received a three-year grant from the CDC (\$1.5 million per year).<sup>2</sup>

As the heightened awareness of the need for readiness has increased and produced assessment data in

original research, EMP has improved since 2001 in the following ways: (1) it has evolved to include public health officials and other health care professionals in addition to the foundational workforce of emergency management, paramedics, police and fire personnel; (2) increased investment in EMP by the U.S. federal government; and (3) an increasing community involvement in EMP.<sup>3</sup> Dedicated professionals are involved in overseeing important efforts mandated by Joint Commission guidelines to improve hospital EMP planning. Agencies that were once separated in 2001 are now connected via technology and communication networks, resulting in shared information and coordinated resources that have repeatedly demonstrated minimized disaster outcomes.<sup>3</sup>

Despite the advances, progress is still needed. While the management of more natural and smaller disasters has improved during the last 10 years, the management of larger catastrophic disasters such as

*In order for pharmacists to become better team contributors in emergency preparedness situations, more awareness of their role needs to be created.*

detonation of nuclear devices or bioterrorism attacks has not. The gains made during the last 10 years have been undermined by substantial reductions in the following two areas since 2002: (1) CDC public health preparedness grants have been reduced by approximately 20 percent (\$200 million) and (2) hospital preparedness grants have been reduced by 25 percent (\$100 million).<sup>3</sup> Consistent financial investment is crucial at the local, state and federal levels if continued progress in EMP planning is to be achieved. Still, regardless of the level of financial investment made into EMP, truly powerful change can only occur as personal commitments to the issue develop. It is personal commitment that produces the conviction needed to drive more efficient EMP planning. Most importantly, personal commitment starts with awareness.

Although literature pertaining to national EMP has grown since 2001, original research relating to the assessment of specific state-wide pharmaceutical EMP remains limited. This is also true for the state of Michigan. Despite having great interest in this topic for the last two years, personal awareness of many aspects of it has remained limited. As those that have a strong desire to help others around them gain more EMP awareness, stronger conviction for EMP planning and response will develop within them. Throughout the everyday shifts of compartmentalized governmental, public health and health care work, it is easy to focus more on immediate problems instead of planning for potential incidents. Disaster preparedness strategies are complex; however, current literature regarding EMP planning guidelines and operations, including health care provider communications and linkages with community, is available to help understand foundational concepts of EMP planning and response.<sup>4-16</sup> The goal of this project is in the assessment of the current EMP planning and response awareness at these hospitals. It is the authors' hope that, through the commentation of this project's results, Michigan pharmacy clinicians and other health care personnel will gain a deeper awareness of EMP at their institution and develop a stronger conviction of the roles and impact that they can make in EMP planning and response in their communities and regions.

Perhaps one of the largest contributors to current literature assessing national EMP is Richard W. Niska. In a 2005 retrospective study that provided 2003 National Hospital Ambulatory Medical Care Survey (NHAMCS) baseline data on bioterrorism and mass casualty preparedness in hospitals, Niska et al examined five measurements: (1) the content of hospital terrorism EMP response plans and whether these plans had been updated since Sept. 11, 2001; (2) collaboration of hospitals with outside organizations; (3) clinician training in the management of biological, chemical, explosive and nuclear exposures; (4) drills on response plans; and (5) equipment and bed capacity.<sup>17</sup> Collected data showed that, of approximately 500 nonfederal U.S. general and short-stay hospitals, 97.3 percent had plans for natural disaster response and that most had plans for responding to chemical (85.5 percent), biological (84.8 percent), nuclear (77.2 percent), radiological (77.2 percent) and explosive (76.9 percent) incidents. Additionally,

it was shown that 76.4 percent of hospitals were shown to be integrated into community-wide disaster plans and that 75.9 percent specifically reported a cooperative planning process with other local health care facilities. Despite these planning protocols, data showed that only 46.1 percent reported written memoranda of understanding with integrated facilities to accept inpatients during a disaster. Further data also showed the following: (1) hospitals had wide variance in their plans for re-arranging schedules and space in the event of a disaster; (2) drills for natural disasters occurred more often than those for chemical, biological, explosive, nuclear or epidemic incidents; (3) more hospitals staged drills for biological attacks than for severe epidemics; (4) drills for explosions were staged by only 20 percent of hospitals, even though explosions are the most common form of terrorist attack; and that (4) hospitals collaborated on drills most frequently with emergency medical services, fire departments and law enforcement agencies.

Niska et al also conducted a 2007 retrospective study on emergency response planning in hospitals using data from his 2005 study.<sup>18</sup> The study used 2003-2004 NHAMCS data to create a baseline assessment of hospital characteristics associated with better disaster preparedness. This study is interesting because, like his 2005 study, surveys were fielded at a time when federal funding was not yet well established at the hospital level. Collected data showed that, of 739 responding hospitals with emergency or outpatient departments, approximately 92 percent had revised their EMP plans since Sept. 11, 2001. Even with this high review rate, only 63 percent had actually addressed natural disasters and chemical, biological, radiological and explosive terrorism incidents in their plans. Additionally, hospital bed capacity was the factor most consistently associated with emergency response planning and availability of resources.

Similar to his previous studies, Niska et al conducted a recent 2011 retrospective study using 2008 NHAMCS data.<sup>19</sup> Collected data included percentage measurements far beyond the scope here; however, pertinent results show that nearly all hospitals had response plans for chemical releases, natural disasters, epidemics and biological incidents. Secondly, preparedness for explosive or incendiary incidents was observed less frequently than preparedness for other



types of incidents and, while most hospitals had plans for cancellation of elective procedures and admissions, only two-thirds had plans for alternate care areas with beds, staffing and equipment. Thirdly, one-half of hospitals either planned for alternate care areas in inpatient hallways and decommissioned ward spaces or conversion of inpatient units to augment intensive care. Additionally, one-half had adjusted standards of care for allocation of mechanical ventilators for mass casualties, planned for advance registration of health care professionals and staged epidemic drills. Furthermore, only one-third of these hospitals included mass vaccination or medication distribution in their epidemic drills. Finally, while most hospitals had memoranda of understanding with other hospitals to transfer adults during an epidemic, fewer hospitals had them for pediatrics and burns as less than one-half accommodated the needs of children and persons with disabilities during a public health emergency.<sup>19</sup>

*Current literature indicates that, although improvements are being seen, many gaps still exist at state and national levels*

While improvements in EMP and responses are being seen at a national level, original research relating to the assessment of specific state-wide pharmaceutical EMP remains limited; however, two studies were found to be of interest. In 2006, a cross-sectional state-wide study was performed by Hsu et al that included all 45 acute care hospitals in Maryland.<sup>20</sup> Responses from 80 percent of these hospitals provided data that showed 92 percent of hospitals had assessed pharmaceutical inventory with respect to biological agents, 92 percent for chemical agents and 67 percent for radiological agents; however, only 64 percent of the hospitals reported an additional dedicated reserve supply for biological agents, 67 percent for chemical agents and 50 percent for radiological incidents. Additionally, more than 60

percent of these hospitals expected SNS assistance within 48 hours. Hsu et al concluded that “from a pharmaceutical perspective, hospitals generally remain under-prepared for CBRNE threats and that many expect SNS support before it realistically would be available.”<sup>20</sup>

Additionally, in 2006, Hsu et al conducted a cross-sectional regional study that included 22 acute care hospitals in Maryland.<sup>21</sup> Responses from 86 percent of these hospitals provided data that showed that 84 percent of hospitals had implemented an exercise with pharmacy personnel in the year prior to the study. Data also showed that 74 percent of the hospitals reported an additional dedicated reserve supply for biological agents, 74 percent for chemical agents and 58 percent for radiologic incidents. Similar to the state-wide study, more than 50 percent of these hospitals also expected SNS assistance within 48 hours. Hsu et al stated that, although many hospitals in the studied metropolitan region had taken important steps toward enhancing pharmaceutical preparedness, conclusions remain the same for this study as with the state-wide study. Additionally, it was concluded that the hospitals in this study “collectively have limited supplies of antibiotics to provide prophylaxis or treatment for hospital staff, their families and patients in the event of a significant biological incident.”<sup>21</sup>

In conclusion, current literature indicates that, although improvements are being seen, many gaps still exist at state and national levels. Thus, it is the hypothesis of this study that Michigan hospitals are not exempt from this fact. In addition to the lack of physical and pharmaceutical preparedness, it is also hypothesized that there is a lack of awareness and familiarity with the processes that can lead to more efficient planning and response.

## Methods

### The Michigan PEAP Study Collaboration

The Michigan PEAP Study served Michigan pharmacists through a partnership that included the collaborative efforts of Bronson Battle Creek (BBC) and MPA. Between the months of August 2011 and March 2012, representatives from BBC and MPA met on several occasions to discuss the most efficient method of determining baseline PEAP data that could be used for subsequent studies.

It was determined that the project would include a primary outcome measure that evaluated the current level of PEAP for BBC and the estimated 180 hospitals located in the state of Michigan. Additionally, the study included four secondary outcome measures: (1) individual pharmacist training regarding Michigan PEAP; (2) individual pharmacist growth in PEAP; (3) improved pharmacy personnel communication with designated contacts in the event of a CBRNE incident; and (4) the financial impact of increasing pharmaceutical emergency awareness and preparedness for Michigan hospitals.

Isabella, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola and Otsewa counties; Region 7 encompasses the upper northwestern cities and is comprised of Manistee, Wexford, Missaukee, Roscommon, Benzie, Leelanau, Grand Traverse, Kalkaska, Crawford, Oscoda, Antrim, Otsego, Montmorency, Alpena, Presque Isle, Cheboygan, Emmet and Charlevoix counties; and Region 8 encompasses the Upper Peninsula which is comprised of Chippewa, Mackinac, Luce, Schoolcraft, Delta, Alger, Marquette, Dickinson, Menominee, Baraga, Iron, Gogebic, Ontonagon, Houghton and Keweenaw counties. There is currently no

Healthcare Coalition Region 4 in the state of Michigan.<sup>23</sup>

Each region has a regional coordinator that manages health care preparedness activities and each county has a local emergency manager that is responsible for the assessment and measurement of a local jurisdiction's capability to diminish, prepare for, respond to, and recover from emergency and disaster events. Additionally, each local public health department has a full-time emergency preparedness coordinator that manages the CDC cooperative agreement activities for their jurisdiction.<sup>23</sup>

### Study Design

Throughout this randomized cross-sectional study, the primary outcome measure of assessing the current level of PEAP for BBC and all Michigan hospitals was accomplished via the development of a standardized survey instrument. This survey included questions that focused solely on (1) each pharmacist's personal awareness and knowledge of pharmaceutical emergency preparedness; (2) pharmaceutical emergency preparedness resources and contacts available to each pharmacist in their region; and (3) mass dispensing plan responsibilities of that pharmacist in the event of a CBRNE incident. Specifically, eight foundational categories were included in the survey: CDC definitions of "Category A, B, and C" biological agents and their resultant diseases; SNS knowledge; "All Hazards" knowledge; internal/external knowledge; regional health care coordinator/medical director knowledge; mass dispensing plan knowledge; FEMA "Incident Command System" training knowledge; and BDLS training knowledge. Additionally, the survey was designed to be

*Each Michigan Healthcare Coalition region has a regional coordinator that manages health care preparedness activities and each county has a local emergency manager that is responsible for the assessment and measurement of a local jurisdiction's capability to diminish, prepare for, respond to, and recover from emergency and disaster events.*

### Michigan Regional Characteristics

Michigan has an estimated population of 9,883,640 and is separated into eight Healthcare Coalition Regions that help to ensure a more efficient planning and response effort in the event of a CBRNE incident.<sup>22-23</sup> Region 1 encompasses the Ann Arbor area and is comprised of Clinton, Eaton, Gratiot, Hillsdale, Ingham, Jackson, Lenawee, Livingston and Shiawassee counties; Region 2N/2S encompasses the metro Detroit area and is comprised of Oakland, Macomb, St. Clair, Monroe, Washtenaw and Wayne counties; Region 3 encompasses the middle eastern cities and is comprised of Saginaw, Alcona, Iosco, Ogemaw, Arenac, Gladwin, Midland, Bay, Genesee, Tuscola, Lapeer, Sanilac and Huron counties; Region 5 encompasses the southwest cities and is comprised of Allegan, Barry, Calhoun, Branch, St. Joseph, Cass, Berrien, Van Buren and Kalamazoo counties; Region 6 encompasses the middle western cities and is comprised of Clare, Ionia,



completed within 10 minutes.

In order to ensure maximum success in survey distribution, the survey was sent via e-mail to all Michigan Healthcare Coalition Region directors who forwarded the survey to all known emergency preparedness contacts, including pharmacy directors and managers. These contacts forwarded the survey to all pharmacists within their respective systems. Invitation e-mails were mailed in advance to announce the survey and responders were given a link within the survey through which to submit their survey results. Survey nonresponders received once-weekly e-mail reminders until the survey was complete or until the survey deadline was completed.

As a secondary measure, individual pharmacist training regarding Michigan PEAP was assessed via two methods. The first method took place at the 2012 MPA Annual Convention & Exposition and included an emergency preparedness CE session. In order to maximize participation, pre- and immediate post-session questions were limited to three questions. In addition, pre- and post-session questions were designed to be different from each other. This allowed for a true measurement of existing pre-session PEAP knowledge and a true measurement of PEAP post-session knowledge. The second method included a Region 5 non-CE educational session. This session included 10 pre- and immediate post-session questions. As with the 2012 MPA Annual Convention, pre-session questions were designed to test existing PEAP knowledge. However, unlike the Convention, post-session questions were kept identical to the pre-session questions in an attempt to observe immediate knowledge gained after the session was given. Individual pharmacist growth was also assessed via posttests that were administered four weeks after the Region 5 educational session to assess retention of PEAP knowledge provided. Re-assessment at four weeks for the Convention CE session was not possible due to lack of participant contact information.

Additionally, the financial impact of improving PEAP was considered. It is the authors' view that a positive financial impact pertaining to increasing PEAP

for Michigan can be attained via increased individual pharmacist PEAP familiarization and growth. It is challenging to assign a quantifiable monetary value when assessing financial impact in the arena of emergency preparedness because many aspects are intangible and unforeseeable. As such, for the purposes of this study, positive financial impact was defined as justifiable use of Assistant Secretary for Preparedness and Response-Hospital Preparedness Program (ASPR-HPP) funding. In 2003, ASPR-HPP funding was approximately \$6.2 million.<sup>24</sup> This value increased to an average of \$16.8 million in 2004-2007 and has decreased to an average of \$13.4 million in 2008-2011.<sup>24</sup> This decline in funding may be the result of a perceived lack of need for emergency preparedness funding brought about by unawareness of what ASPR-HPP funding actually provides. As pharmacists are made more aware of emergency preparedness services and opportunities brought about by ASPR-HPP funding, positive financial impact is possible, as continued and increased funding is justified through continued individual pharmacist education and training.

### Statistical Analysis

Because the subjects chosen to participate in this study represented Michigan pharmacists residing in the United States, they were considered as one sample. Also, because the primary objective survey questions and the secondary objective education session test questions were nominal data-driven, the chi-square test was chosen as the statistical analysis test for the Michigan PEAP Study. All descriptive and



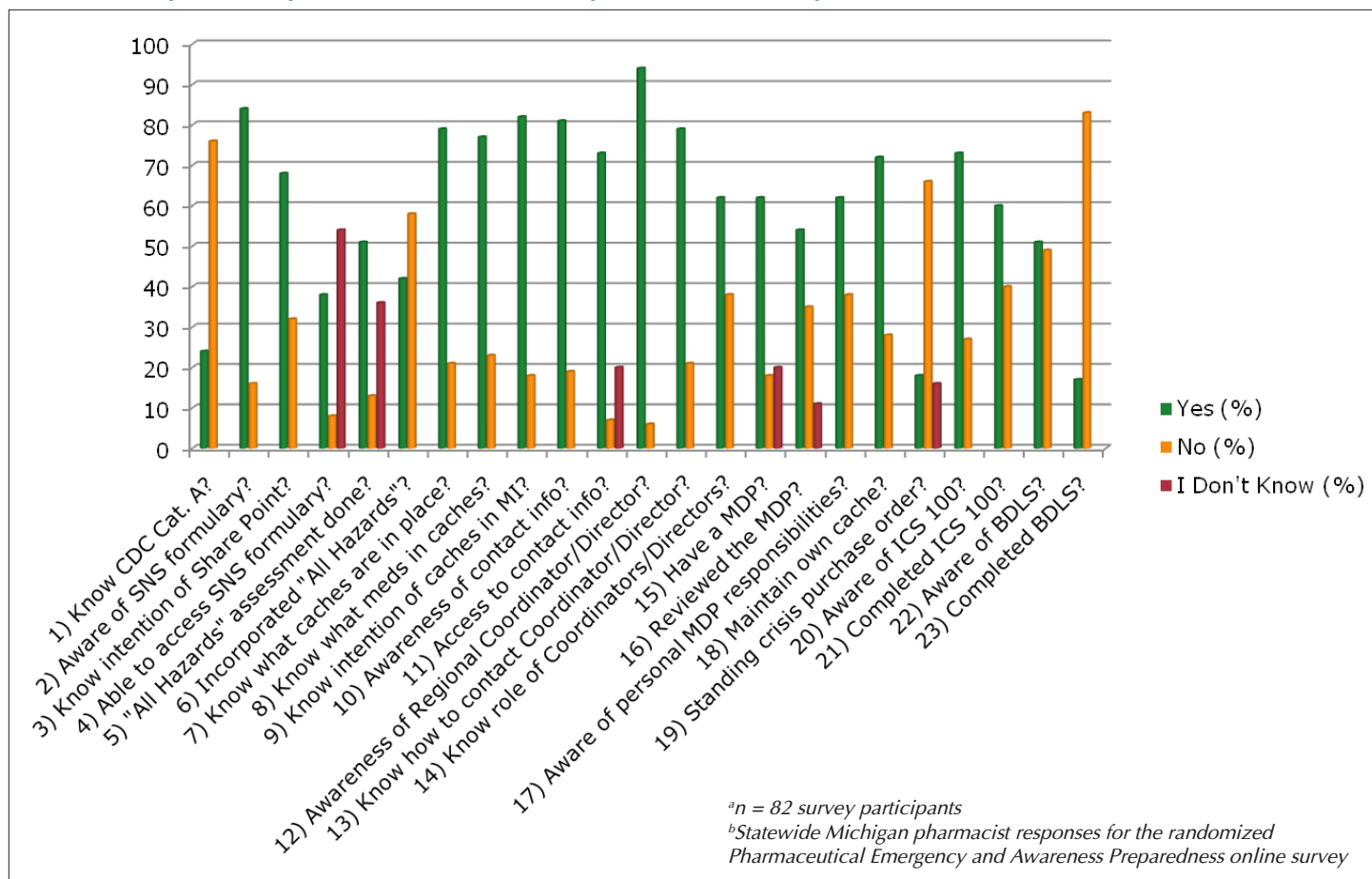
**Table 1. Primary Objective Survey Questions and Resultant P-Values<sup>a,b</sup>**

Survey Question	Answer Percentage	P-Value
Do you know what the CDC defines as “Category A, B, and C” biological agents and what the resultant diseases are?	Yes: 20; No: 62	< 0.0001
Do you know what the Strategic National Stockpile (SNS) is?	Yes: 69; No: 13	0.3173
Do you know what the SNS “Share Point” site is intended for?	Yes: 56; No: 26	0.0027
Are you able to access the SNS formulary through your facility’s Share Point site?	Yes: 31; No: 7; I Don’t Know: 44	< 0.0001
Has your facility conducted an “All Hazards” assessment to determine the most likely crisis event to affect your facility?	Yes: 42; No: 11; I Don’t Know: 29	< 0.0001
If so, have you incorporated that information into your department response plans?	Yes: 34; No: 48	< 0.0001
Do you know what the state/federal pharmaceutical countermeasure caches are currently in place and available for deployment?	Yes: 65; No: 17	0.9170
Do you know what medications are in the state/federal pharmaceutical countermeasure caches in Michigan?	Yes: 63; No: 19	0.7063
Do you know the intended purpose of each state/federal pharmaceutical cache in Michigan?	Yes: 67; No: 15	0.8473
Do you have awareness of the contact information needed in order to request the state/federal pharmaceutical countermeasure caches in Michigan?	Yes: 66; No: 16	0.9263
Do you have access to the contact information needed in order to request the state/federal pharmaceutical countermeasure caches in Michigan?	Yes: 60; No: 6; I Don’t Know: 16	< 0.0001
Are you aware that you have an emergency preparedness Regional Healthcare Coordinator and Medical Director?	Yes: 77; No: 5	0.0022
Do you know how to contact your Regional Healthcare Coordinator and/or Medical Director?	Yes: 65; No: 17	0.9170
Do you know what role the Regional Healthcare Coordinators serve in support of your facility and its level of preparedness?	Yes: 51; No: 31	< 0.0001
Does your facility have a Mass Dispensing Plan?	Yes: 51; No: 15; I Don’t Know: 16	< 0.0001
Have you reviewed your facility’s Mass Dispensing Plan?	Yes: 44; No: 29; I Don’t Know: 9	< 0.0001
Are you aware of your specific responsibilities in your facility’s Mass Dispensing Plan?	Yes: 51; No: 31	< 0.0001
Does your facility maintain its own emergency cache of pharmaceuticals?	Yes: 29; No: 23	0.1226
Does your facility have a standing purchase order to be placed with your wholesaler in response to an anticipated crisis event?	Yes: 15; No: 54; I Don’t Know: 13	< 0.0001
Do you know what the FEMA Incident Command System (ICS) level training is?	Yes: 60; No: 22	0.1973
Have you completed the FEMA Incident Command System (ICS) level training?	Yes: 49; No: 33	< 0.0001
Do you know what Basic Disaster Life Support (BDLS) training is?	Yes: 42; No: 40	< 0.0001
Have you completed Basic Disaster Life Support (BDLS) training?	Yes: 14; No: 68	< 0.0001

<sup>a</sup>n = 82 survey participants<sup>b</sup>Statewide Michigan pharmacist responses for the randomized Pharmaceutical Emergency and Awareness Preparedness online survey



**Table 2. Graphical Representation of Primary Objective Survey Questions<sup>a,b</sup>**



inferential statistics were verified on QuickCalcs™ (GraphPad Software, San Diego, Calif.) and data values were considered statistically significant at  $p < 0.05$ .

## Results

From the approximate 180 hospitals receiving the Michigan PEAP Study primary objective online survey, 82 complete responses were received, indicating a possible 46 percent response rate for Michigan hospitals. Resultant responses and P-values propose that many Michigan hospitals appear only somewhat confident regarding PEAP knowledge (Tables 1 and 2). Specifically, responses gathered from within the eight specific foundational categories included in the survey yielded the following approximate results: 24 percent of responders were familiar with CDC "Category A, B, C" biological agents and their resultant diseases; 63 percent of responders were familiar with SNS-related knowledge; 47 percent of responders were familiar with "All Hazards"-related knowledge; 77 percent were familiar with cache-related knowledge; 78 percent of responders were familiar with regional health care coordinator/medical director-related knowledge; 59 percent were familiar with

mass dispensing plan-related knowledge; 73 percent of responders were familiar with FEMA Incident Command System training; and 51 percent of responders were familiar with BDLS training.

As these results were somewhat expected, educational session development and implementation was a crucial aspect of the Michigan PEAP Study. Secondary outcome data pertinent to increasing PEAP through education displayed statistically significant values at both the 2012 MPA Annual Convention & Exposition as well as the Region 5 non-CE educational session (Tables 3 and 4). While some responders at the Convention had lower immediate post-session scores than pre-session scores, it is important to remember that pre- and immediate post-session questions were designed to be different. As such, pre-session assessments indicate already existing PEAP knowledge while the post-session assessments indicate that the educational session had the most impact on those who displayed the lowest scores before the session was given (Table 3).

The data from Region 5 may be a better representation of the effect of education. In that sample, assessment data from the Region 5 educational session yielded a baseline mean pre-session score of

Table 3. 2012 MPA Annual Convention & Exposition Educational Session<sup>a-d</sup>

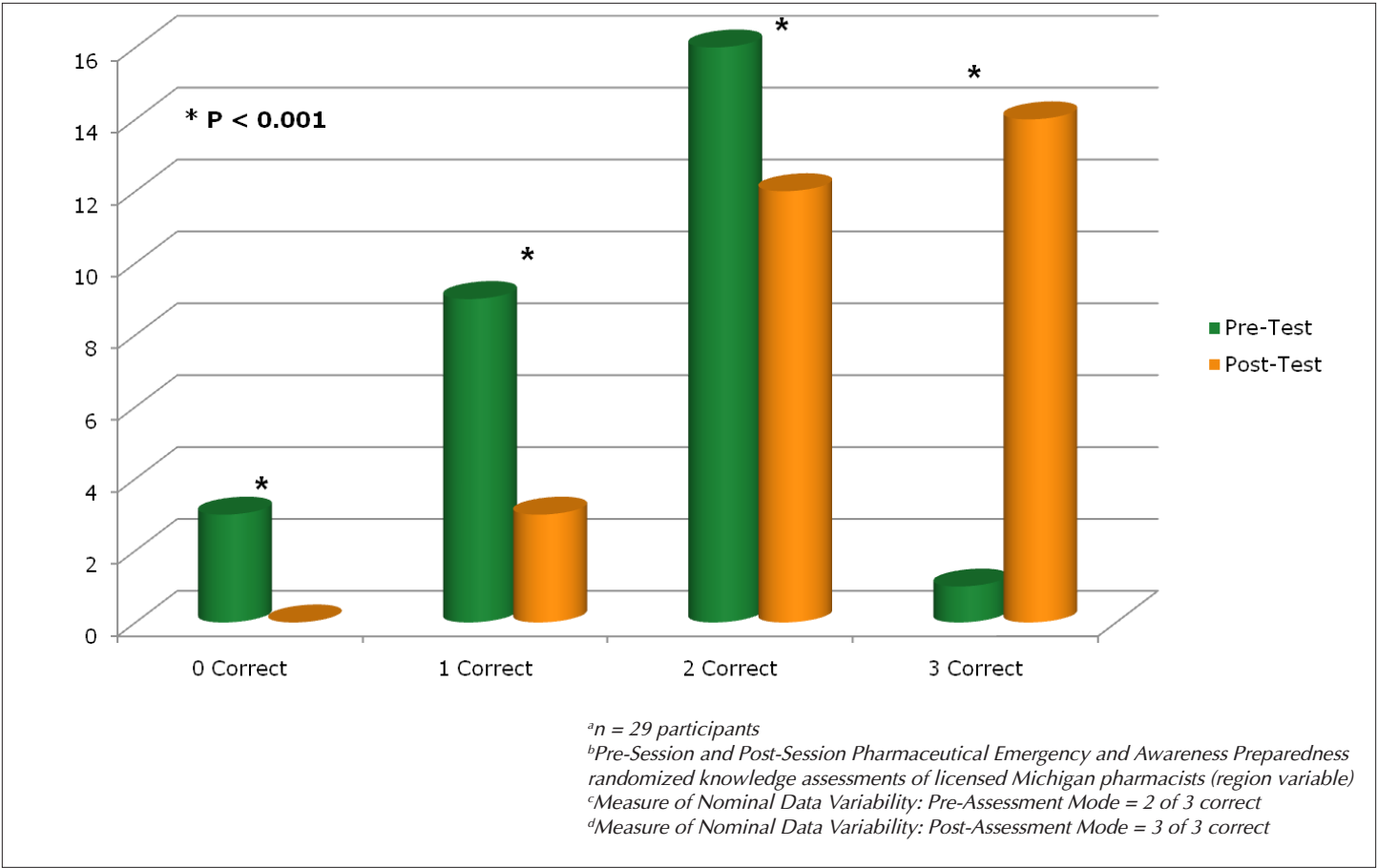
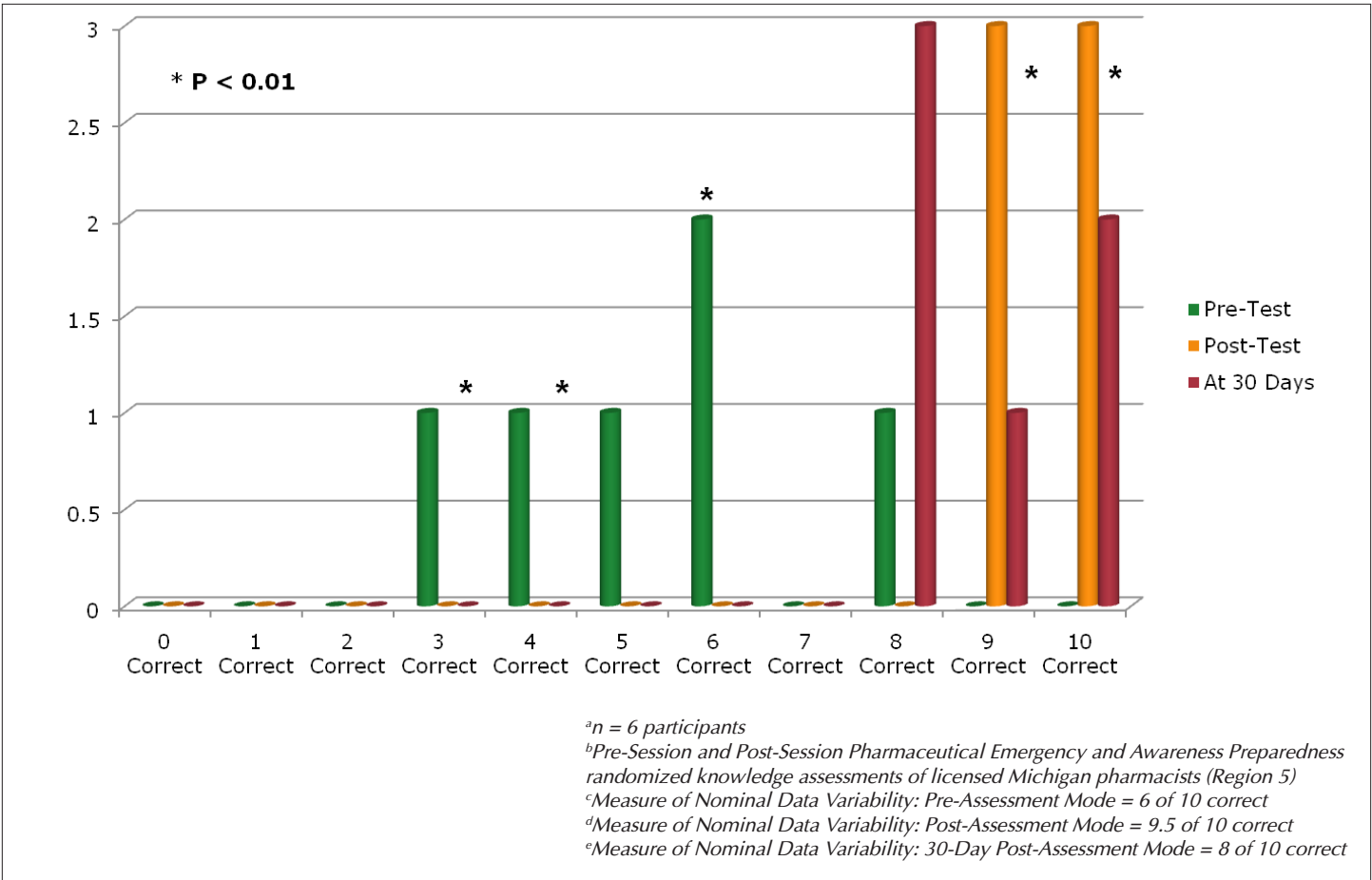


Table 4. Region 5 Educational Session<sup>a-e</sup>



53 percent correct, an immediate post-session score of 95 percent correct and a four-week follow-up retention score of 88 percent correct (Table 4). This would be more typical of the learning and retention of such information.

While the Michigan PEAP Study has shown promising data, it is not without limitations. The primary limitation in both the primary and secondary outcome measures is sample size. While 82 responses were seen from an approximate 180 online survey invitations, it is difficult to determine if 82 responses are indeed an accurate measurement of Michigan pharmacists' current level of PEAP. Additionally, due to the randomization in the online survey implementation, it is also difficult to determine whether the higher percentages of familiarity with PEAP were provided by pharmacists that are already largely involved in emergency preparedness. If so, this may result in an overestimation of current PEAP knowledge.

## Discussion

The development of PEAP relating to CBRNE incidents is essential to meeting and maintaining U.S. national preparedness goals. In order to ensure maximal and efficient implementation of patient care during CBRNE incidents, pharmacists must have a foundational knowledge of PEAP and continually strive to further their participation in emergency preparedness matters. Increased awareness and participation can lead to an increased level of CBRNE incident preparation.

Overall, there exists in Michigan a confidence regarding the basic aspects of PEAP: CBRNE incident drugs; SNS formularies, caches and Web sites; communication with regional health care coordinators/medical directors; facility mass dispensing plans/ utilization; and the FEMA Incident Command System training and certification. While this is encouraging, there still appears to be a lack of confidence regarding SNS formulary access, "All Hazards" knowledge, standing purchase order processes for crises and awareness of/completion of BDLS certification among pharmacists.

Increased education and commitment can change this. The profession of pharmacy has made great strides in recent years. More than ever, pharmacists are serving critical roles as they are included in maximizing patient care and community protection. This includes emergency preparedness. In order to increase PEAP in Michigan, pharmacists must become more involved.

## Conclusions

Michigan pharmacists appear to feel somewhat prepared in their awareness of PEAP and in their ability to respond to CBRNE incidents; however, much remains to be done. In order for pharmacists to become better team contributors in emergency preparedness situations, more awareness of their role needs to be produced. We show here that education on this topic is an effective step in getting involved but consideration must also be paid to personal and professional commitment. As PEAP education is provided, both through state funding and professional participation, pharmacists will become better prepared to contribute in CBRNE incidents.

## Acknowledgements

The work of this project was a collaborative effort between the Michigan Pharmacists Association and the Michigan PEAP Study Committee. The authors have no actual or potential conflict of interest of any kind in regard to the design and implementation of this study.

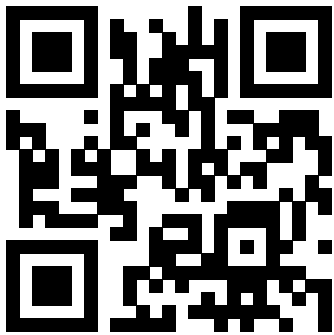
## References

1. Centers for Disease Control and Prevention, Biological and Chemical Terrorism: Strategic Plan for Preparedness and Response, Recommendations of the CDC Strategic Planning Workgroup, *Morbidity and Mortality Weekly Report*, 2000, 49 (No. RR-4): 1-14.
2. Department of Community Health Outlines Bioterrorism Preparedness Plan, 2011 September 2001, [www.michigan.gov](http://www.michigan.gov), Oct. 28, 2011.
3. Inglesby, T., Progress in Disaster Planning and Preparedness since 2001, *Journal of the American Medical Association*, Sept. 8, 2011, E1-E2.
4. World Health Organization, Risk Reduction and Emergency Preparedness, WHO Six-Year Strategy for the Health Sector and Community Capacity Development, 2007, 1-20.
5. Perry, R., Lindell, M., Preparedness for Emergency Response: Guidelines for the Emergency Planning Process, *Disasters*, 2003, 27 (4): 336-350.
6. O'Neill, P., The ABC's of Disaster Response, *Scandinavian Journal of Surgery*, 2005, 94: 259-266.
7. Everly, G., Mitchell, J., America Under Attack: The "10 Commandments" of Responding to Mass Terrorist Attacks, *International Journal of Emergency Mental Health*, 2001, 3 (3), 133-135.
8. Hites, L., Altschuld, J., Understanding Quality: A Guide for Developers and Consumers of Public Health Emergency Preparedness Trainings, *Public Health Reports*, 2010, 5 (125): 33-42.
9. Alexander, L., Horney, J., Markiewicz, M., et al., 10 Guiding Principles of a Comprehensive Internet-Based Public Health Preparedness Training and Education Program, *Public Health Reports*, 2010, 5 (125), 51-60.
10. Kgalagi, P., Chetty, M., Disaster Preparedness, *World Hospitals and Health Services*, 2003, 43 (1), 17-22.
11. Gillies, S., Zupko, K., Disaster Preparedness: Don't Get Caught Without a Plan, *American Journal of Orthopedics*, 2008, 37 (12), 632-635.
12. Keim, M., Developing a Public Health Emergency Operations Plan: A Primer, *Pacific Health Dialog*, 2002, 9 (1), 124-129.
13. Glass, T., Schoch-Spana, M., Bioterrorism and the People: How to Vaccinate a City Against Panic, *Clinical Infectious Diseases*, 2002, 34, 217-223.
14. Revere, D., Nelson, K., Thidell, H., et al., Public Health Emergency Preparedness and Response Communications with Health Care Providers: A Literature Review, *BMC Public Health*, 2011, 11, 337-344.
15. Braun, B., Darcy, L., Divi Ch, et al., Hospital Bioterrorism Preparedness Linkages With The Community: Improvements Over Time, *American Journal of Infection Control*, 2004, 32 (6): 317-326.
16. Niska, R., Hospital Collaboration with Public Safety Organizations on Bioterrorism Response, *Prehospital Emergency Care*, 2008, 12, 12-17.
17. Niska, R., Burt, C., Bioterrorism and Mass Casualty Preparedness in Hospitals: United States, 2003, Advance Data – From Vital and Health Statistics, Sept. 27, 2005, 364, 1-16.
18. Niska, R., Burt, C., Emergency Response Planning in Hospitals: United States, 2003-2004, Advance Data – From Vital and Health Statistics, Aug. 20, 2007, 391, 1-16.
19. Niska, R., Shimizu, I., Hospital Preparedness for Emergency Response: United States, 2008, National Health Statistics Reports, March 24, 2011, 37, 1-16.
20. Hsu, E., Casani, J., Romanosky, A., et al., Critical Assessment of Statewide Hospital Pharmaceutical Surge Capabilities for Chemical, Biological, Radiological, Nuclear, and Explosive Incidents, *Disaster Medicine*, 2007, 22 (3): 214-218.
21. Hsu, E., Casani, J., Romanosky, A., et al., Are Regional Hospital Pharmacies Prepared for Public Health Emergencies?, *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, 2006, 4 (3): 237-243.
22. [www.quickfacts.census.gov/qfd/states/26000.html](http://www.quickfacts.census.gov/qfd/states/26000.html)
23. [www.michigan.gov/michiganprepares/0,4621,7-232-43028-238730--00.html](http://www.michigan.gov/michiganprepares/0,4621,7-232-43028-238730--00.html)
24. Michigan Department of Community Health, Office of Public Health Preparedness, Ten Years of Healthcare Preparedness in Michigan, [www.michigan.gov/documents/mdch/Ten\\_YearsPreparednessMichigan\\_362751\\_7.pdf](http://www.michigan.gov/documents/mdch/Ten_YearsPreparednessMichigan_362751_7.pdf), Jan. 11, 2012.



# OPHP OFFERS NEW ONLINE LEARNING MODULES FOR CE CREDIT

The Michigan Office of Public Health Preparedness (OPHP) recently announced the release of two new learning modules to address components of the Michigan Emergency Preparedness Programs. These modules were developed with health care providers and first responders in mind and include detailed information about the program components as well as how they can be utilized in the event of a nerve agent incident. Access the programs below.



## **Michigan's MEDDRUN, CHEMPACK and Strategic National Stockpile (SNS) Programs Training Module**

This learning module provides introductory level information about Michigan's MEDDRUN, CHEMPACK and Strategic National Stockpile (SNS) Programs. Continuing education credit for physicians, nurses, pharmacists and one operations credit for EMS (online version only) are available for completion of this learning module. The online version can be accessed at <https://mi.train.org>, course ID number 1031785, <http://tinyurl.com/93pyabe>.



## **Michigan CHEMPACK Program Training Module**

This learning module provides an intermediate level of information about the Michigan CHEMPACK program, agency roles, nerve agent exposure treatment options and additional responder/provider information. Continuing education credit for physicians, nurses, pharmacists and one medical credit for EMS (online version only) are available for completion of this learning module. The online version is can be accessed at <https://mi.train.org>, course ID number 1034991, <http://tinyurl.com/8tezuu8>.

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