

Roles and Regulations for Pharmacists in State-Level Disaster Relief Efforts

By

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DEDICATION

My thesis is dedicated to my parents, Steve and Cheri Lowe. I would not be where I am today without their constant guidance and support.

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ABSTRACT

Roles and Regulations for Pharmacists in State-Level Disaster Relief Efforts

Objective: The purpose of this study is to determine what expanded roles have been identified for pharmacists by the states in disaster relief efforts, what regulations currently exist for pharmacists in disaster relief efforts in each state, and whether or not disaster relief and public health training should be added to the pharmacy school curriculum. **Methods:** A cross-sectional, descriptive design was used to survey fifty-three boards of pharmacy via email and Qualtrics Survey Software. **Results:** Analysis of the survey results showed that most states lack a disaster preparedness plan and expanded roles for pharmacists in disaster relief efforts, and most states do not anticipate changes in regulations for pharmacists in disaster relief efforts in the near future. Furthermore, the boards of pharmacy are discordant concerning general pharmacy regulations, renewal of temporary/mobile pharmacy permits, out-of-state licensure, length of license reciprocity, multiple prescription refills during a state of emergency, Board of Pharmacy (BOP) representative involvement and assistance in disaster areas, and the necessity for disaster relief and public health training for pharmacy students. Fortunately, most BOPs do allow the establishment of temporary/mobile pharmacies and at least a one-time emergency prescription refill during declared emergencies. **Discussion:** Pharmacists have the ability to make a positive impact on disaster relief effort management and success and should be recognized as an essential part of the first responder team. Pharmacists must work to attain well-defined and cohesive roles and regulations in disaster relief efforts.

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LIST OF ABBREVIATIONS

BOP	Board of Pharmacy
CDC	Centers for Disease Control
CERT	Community Emergency Response Team
EMS	Emergency Medical Services
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FIP	International Pharmaceutical Federation
FMS	Federal Medical Stations
IRB	Institutional Review Board
MMRS	Metropolitan Medical Response System
NABP	National Association of Boards of Pharmacy
NACDS	National Association of Chain Drug Stores
NCPA	National Community Pharmacists Association
OTC	Over The Counter
POD	Point of Dispensing
SARS	Severe Acute Respiratory Syndrome
SOP	School of Pharmacy
SNS	Strategic National Stockpile

INTRODUCTION

Background and Purpose

The pharmacist's traditional role includes tasks such as compounding and dispensing prescriptions. However, pharmacists today are seeking to expand their responsibilities beyond these mechanical tasks. Community pharmacies seek to offer patients comprehensive medical care including services such as patient counseling, medication therapy management, immunizations, and preventative health screenings. Pharmacists have also accepted expanded roles in the clinical setting. Interdisciplinary and rapid response teams are becoming prevalent in hospitals around the country. These clinical groups incorporate physicians, nurses, pharmacists, and other health care personnel to provide patients with the fastest and most well-rounded medical care available. In the past decade, pharmacists have emerged as a critical part of the healthcare team. Their unique knowledge base and skill set allow them to work well with other professionals to promote patient care. Specifically, pharmacists have been identified as an instrumental part of disaster relief efforts.^{6, 12, 14}

Disaster relief efforts include all medical and non-medical personnel that work to overcome the effects of a natural or manmade disaster. These personnel are known as first responders. Natural disasters include earthquakes, extreme heat, floods, hurricanes, landslides/mudslides, power outages, tornadoes, tsunamis, volcanoes, wildfires, and winter weather. Each geographic region is prone to different threats.³ Manmade disasters include bioterrorism, chemical emergencies, radiation emergencies, and

bombs/explosions. These events can be either intentional or unintentional. Infectious disease outbreaks, such as SARS, are also categorized as disasters that require the assistance of first responders.¹⁸ Natural or manmade disasters have the ability to devastate an entire geographic area. Each may partially or completely destroy the infrastructure. As a result, citizens often are forced to leave their homes, and those who do not may become injured or stranded.

Disaster response strategies exist at the local, state, and federal levels depending on the extent of the damage. As local officials prepare the initial response to a disaster, they must first identify the problem. Damage from an earthquake or a hurricane may be obvious, but events such as chemical leaks or toxic gasses are usually more difficult to detect. Once an emergency has been confirmed, officials must assess local resources and determine what essential supplies and personnel are needed. The nature of the threat, the quantity and location of needed medicines and supplies, the projected number of casualties, and the capacity of the local health care system must all be taken into consideration during this planning step.¹⁸ If a local disaster area decides that the scale of the disaster is going to overcome their available resources, they may request assistance from the state. Each state governor has the power to declare a state of emergency. If state resources alone are not enough to counter the effects, support from the federal government may be requested, and either the president or the Secretary of the Department of Health and Human Services may declare a state of emergency.² If the response remains within the local or state level, each state is subject to the rules and regulations of

its BOP. If the response requires federal assistance, state legislature is generally suspended and the federal is responsible for issuing rules and regulations to govern first responders in disaster relief efforts.²³

Once a federal state of emergency has been declared, stockpiled assets are deployed. These assets include the Strategic National Stockpile (SNS), CHEMPACK, and the Metropolitan Medical Response System (MMRS) Program. The SNS includes 12-hour push packages, Managed Inventory, and Federal Medical Stations. 12-hour push packages contain pharmaceuticals, antidotes, and medical supplies that can be delivered anywhere within twelve hours following federal approval. Each package contains over fifty tons of supplies whose contents are rotated to ensure they remain current. The Managed Inventory composes 90 to 95% of the SNS. Anything needed to supplement the 12-hour push packages is available from this inventory. The third component of the SNS is Federal Medical Stations (FMS). FMS provides medical supplies and equipment to set up a temporary medical facility suitable to care for 250 people for up to three days. FMS includes temporary or mobile pharmacies. CHEMPACK is a program designed to provide chemical antidotes in a timely manner. Often, 12-hour push packages would not arrive in time to save lives. If this is the case, CHEMPACKs are deployed; each container treats about 1,000 patients. Finally, the MMRS Program may be activated in heavily populated cities to enhance the existing emergency preparedness systems.^{18, 23}

The affected area must be prepared to receive, store, and manage the medical assets once they are received from the state and federal government. As stated by the

Northwest Center for Public Health Practice, “Large-scale distribution of medications, vaccines, and other medical supplies (known collectively as pharmaceuticals), is called mass dispensing of pharmaceuticals”.¹⁸ The most effective way to execute mass dispensing is to establish Points of Dispensing, or PODs. POD locations should be determined long before the onset of an emergency and can be either “push” or “pull”. If the medications or supplies are taken to the citizens’ location, it is a “push” POD. If the citizens travel to the medication center, it is a “pull” POD. In order to manage a POD effectively, it is necessary that the public be notified that it exists and the appropriate personnel are acquired for its staffing.

The first responders used to staff PODs include trained medical professionals as well as disaster relief organizations and volunteers. Volunteer first responders typically undergo some form of training before entering a disaster area. Many states maintain an organization known as Community Emergency Response Team, or CERT. CERT involves a basic training course and is available to anyone. The goal is to promote disaster awareness and preparedness within one’s local area. Citizens involved in CERT are often called upon to provide disaster relief in their local area.^{21, 26} Volunteers also come from disaster relief organizations. One such organization, the American Red Cross, aids in both national and international disaster relief efforts. It also supports military families, organizes blood drives, and offers health and safety certification courses. It is largely funded by private donations but also receives federal reimbursements and grants. The American Red Cross is an extremely well known organization that has responded to

almost every disaster in the United States since its founding in 1881. In addition to independent organizations, the Federal Emergency Management Agency (FEMA) exists to provide federally funded disaster relief.⁵ FEMA responds to natural and manmade disasters, including terrorist attacks. In order to meet its mission, the agency divided the country into regions; each region containing its own regional office as well as a comprehensive list of the disaster types that the area is prone to experience. Consequently, first responders in each zone are trained specifically for these risks. Additionally, FEMA keeps a record of every nuclear power facility and chemical weapons stockpile in the country, and regions with these facilities have plans of action in case a natural disaster strikes or the security of either type of facility is breached.^{5, 23} A final resource that is available and is used during emergencies is Rx Response. Established by PhRMA and the American Red Cross in 2008, Rx Response collects data from news reports and personal reports to generate a map of the closest, open pharmacies during an emergency. The program (Rx Open) allows patients to identify the fastest and simplest way to get their medications.²⁷

During initial disaster relief efforts, every available person in the local area is needed. Volunteer citizens, firefighters, police, and rescue personnel all serve vital roles in helping a community address its needs following a disaster. However, it is ideal for trained medical professionals to be responsible for the mass dispensing of pharmaceuticals. Physicians, nurses, pharmacists, and technicians must work together to create a unified team and to optimize the resources available.

While the activities of each member of the team are important, pharmacists serve multiple, essential functions in disaster relief efforts. These professionals are a critical junction in coordinating the influx of pharmaceuticals into a disaster area that may or may not have power outages and a destroyed infrastructure. Because of their background and training, pharmacists are uniquely positioned to ensure that these incoming medications are stored and dispensed properly. They are also able to consult with other clinicians to reconcile patient medication problems; for example, they can provide expertise on generic substitution and potentially therapeutic substitution if a needed drug is not available. Pharmacists are also able to provide immunizations. This is critical during infectious disease outbreaks because you must treat (and possibly quarantine) the affected individuals and provide prophylactic treatment to as many susceptible individuals as possible.^{3, 12} The International Pharmaceutical Federation (FIP) summarizes the three main purposes of pharmacy expertise commonly utilized in disaster relief areas as follows: “to select medicines and related supplies that are needed; to ensure proper packaging, storage, handling, labeling, and dispensing of emergency medical supplies; and to ensure the appropriate deployment of emergency medicines.”⁶ These responsibilities often require pharmacists to test their ability to maintain the federal standards in non-ideal situations. For example, the tetanus vaccine must be refrigerated for storage. It cannot be frozen or it loses its potency, and it becomes ineffective at room temperature. Thus, pharmacists face a tough decision when attempting to store tetanus vaccines in a disaster area with power outages. They cannot place it in a cooler of ice

because it will freeze, and they cannot leave it at room temperature. These types of situations provide pharmacists with the opportunity to use their ingenuity to solve real problems related to medication use in disaster areas.

Another quality that makes pharmacists prime candidates for disaster relief efforts is their wide distribution across the country. This makes it relatively easy to integrate them into a local disaster relief effort. In addition, because most pharmacists interact with patients routinely and are trained and experienced in providing basic psychological support, they possess a skill set that is beneficial in the aftermath of a disaster.⁶

Current roles and regulations for pharmacists in state-level disaster relief efforts are, generally, poorly organized and appear to lack consistency between states.^{15, 16} Issues of inter-state licensure, emergency prescription refills, and the establishment of temporary/mobile pharmacies are defined rigorously by some states and completely ignored by others in their practice acts. As such, it is possible that the states' failure to recognize pharmacists as capable and desirable first responders and have sufficient regulations governing this activity may be putting the citizenry of states at a greater risk during disaster relief efforts than they would be exposed to if pharmacists had a clear framework to which they may refer and practice within during disaster relief efforts.

Also important is our understanding of the training and education regarding disaster relief and public health training that is contained in our current pharmacy curriculum. Disaster relief training can be defined as training that prepares a person/volunteer to respond to a disaster. Public health training can be defined as

training that prepares healthcare providers to prevent disease, prolong life, and promote public health; examples include vaccinations, regulation of prescription drugs, safety standards, nutritional programs, and accessing clean water and air. Both disaster relief and public health training prepare people to respond to emergency situations.

In this study, we will focus on state-level pharmacist involvement in disaster relief efforts, specifically what expanded roles have been identified for pharmacists in disaster relief efforts, what regulations currently exist for pharmacists in disaster relief efforts in each state, and whether or not disaster relief and public health training should be added to the pharmacy school curriculum. To answer these broad questions, the following 10 objectives formed the focus of this study.

1. Determine the percentage of states with general regulations regarding pharmacy operations during disaster relief efforts.
2. Determine the percentage of states that have regulations regarding the establishment of a disaster preparedness plan.
3. Determine the percentage of states that allow the establishment of temporary/mobile pharmacies during disaster relief efforts, and determine the regulations for such an establishment.
4. Determine BOP regulations regarding out-of-state pharmacists during disaster relief efforts.
5. Determine the percentage of states that have regulations regarding emergency prescription refills during a disaster.

6. Determine each state's BOP involvement or participation in disaster relief efforts.
7. Determine the percentage of states that anticipate the implementation of new regulations regarding disaster relief efforts.
8. Determine if BOPs have any expanded roles for pharmacists in disaster relief efforts.
9. Determine the percentage of states whose SOPs currently provide disaster relief training and how it should be provided to students.
10. Determine the percentage of states whose SOPs currently provide public health training and how it should be provided to students.

METHODS

Research Design and Instrumentation

The study objectives were met by employing a descriptive, cross-sectional design. Responses were gathered using a self-administered survey that was distributed electronically through Qualtrics Survey Software (APPENDIX A). After agreeing to participate, but before seeing the first question of the survey, “respondent” boards of pharmacy were instructed to use the following definitions when completing the survey.

For the purposes of this survey, the following operational definitions will be used:

Disaster - A natural, man-made, or technological event or catastrophe that disrupts normal life, causes great damage, or results in the loss of life. Examples include tornadoes, hurricanes, fires, bombings, and utility outages. We are not referring to personal health emergencies (i.e. heart attacks). For the purposes of this survey, bio-terrorism will also be excluded from this definition.

Disaster Relief Efforts - A task performed after a disaster with the goal of returning those affected to normal life, restoring damaged infrastructure or facilities, and providing those in need with healthcare.

State of Emergency - A situation of local danger or disaster in which the state governor (or possibly the government at a national level) suspends normal legislative procedures in order to coordinate a response.

Disaster Relief Training - Training which prepares a person/volunteer to respond to a disaster.

Public Health Training - Training which prepares healthcare providers to prevent disease, prolong life, and promote health. Examples include vaccinations, regulation of prescription drugs, safety standards, nutritional programs, and accessing clean water and air.

The first section addressed the demographic characteristics of each board of pharmacy representative (the BOP with which they are currently affiliated, what title/position they hold, and what pharmacy-related degrees they have obtained). Additionally, each was asked whether they had experience working in disaster relief in the capacity of a pharmacist.

The second section asked questions concerning each state or district's Pharmacy Practice Act. Participants were asked to identify which regulations appear in their BOP's Pharmacy Practice Act. Questions in this section concerned general guidelines, establishment of a disaster preparedness plan, and establishment of temporary/mobile pharmacies. If the establishment of temporary/mobile pharmacies was allowed, participants were directed to answer how long (how many days) it is allowed to operate and if they are allowed to renew an emergency permit/license for an extended number of days.

Next, participants were asked about inter-state licensure reciprocity and emergency prescription refill regulations during disaster relief efforts. If emergency prescription refills are permitted, participants were asked to specify whether or not controlled substances are allowed and for how many days' supply is permitted. Moreover, BOP support for disaster relief efforts by pharmacists was determined (does the BOP send representatives into disaster areas to provide assistance).

Anticipated additions/changes to the rules and/regulations governing a pharmacist activity in disaster relief appeared in the next section of the survey instrument.

Additionally, in a series of related questions respondents were asked whether the BOP identified any expanded roles for pharmacists in disaster relief efforts.

The final section of the survey attempted to identify whether or not the representative considered disaster relief training and public health training a necessary addition to the current pharmacy school curriculum. Participants were asked whether or not students in their state currently received this training and whether or not they believe it is in the best interest of the public for students to receive this training. At the end of the survey a space was provided for participants to leave any additional comments or information about pharmacists' roles in disaster relief efforts.

Pretesting the Survey Instrument

Because of the nature of the population under investigation (a finite population n=53), a true pretest was not possible. As an alternative, the survey instrument was assessed by graduate students (n=17) enrolled in the Department of Pharmacy Administration at The University of Mississippi. The assistance of these individuals was believed to be appropriate because, with a few exceptions, each was a School of Pharmacy graduate, thus providing a similar base of experience from which to draw upon. Also, all but two had at least two years of training in research methods and techniques at the graduate level. Additionally, the survey instrument was reviewed by personnel at the National Association of Boards of Pharmacy (NABP). In addition to staff who were informed about pharmacist involvement in disaster relief, several staff with a background and expertise in survey design, psychometrics, and statistics provided

comment about the survey instrument and the plans for the execution of the project.

Lastly, a local content expert evaluated the instrument to evaluate its realism with respect to disaster-related issues.

The objectives of this activity were to assess the adequacy of the data collection materials, to assess the appropriateness of the data collection methods, to assess the time commitment to participate in the investigation, verify the operationalization of terms, and to elicit general impressions about the survey instrument. The first two groups of evaluators were asked to complete the survey as it was constructed originally. Once completed, each subject was asked to report the time necessary to complete the instrument as well as provide detailed comments about the instrument with respect to content and organization. Because of this effort, slight changes in the wording of items in the survey and the length of the invitation message were changed, as were some of the operational definitions used (e.g., disaster, disaster relief efforts, state of emergency, disaster relief training and public health training).

Sampling and Data Collection

The study sample consisted of the boards of pharmacy from each state in the United States, as well as the District of Columbia, Puerto Rico, and Guam. Each board of pharmacy was sent an invitation on March 3, 2014 to participate in the study (APPENDIX B). The cover letter explained the purpose of the investigation, asked for their participation, and contained the link to the survey (housed on the UM Qualtrics servers). A reminder contact was sent (APPENDIX C) to all non-respondent boards of

pharmacy on March 12, 2014. A third and final reminder (APPENDIX D) was sent to non-respondent boards of pharmacy on March 25, 2014; this reminder included details about the closing of the survey instrument on March 28, 2014 at 8:00 pm EST.

Prior to distributing the survey to the boards of pharmacy, an Abbreviated IRB Application was submitted to the University of Mississippi IRB for approval to begin data collection. The University of Mississippi IRB approved the application as Exempt under 45 CFR 46.101(b)(#2).

Data Management and Data Analysis

Prior to placing the survey in the field, the questionnaire was coded using the features available in Qualtrics. After the survey closure, the data was downloaded directly into SPSS for Windows Version 21 and inspected for completion. Frequencies were run to determine if responses were within normal limits.

Because of the nature of the project and its associated goals, descriptive statistics were performed in order to describe the sample and to describe the current state of regulation regarding pharmacist activity in disaster relief. Descriptive statistics were used also to explore knowledge about and attitude toward pharmacy curriculum addressing disaster relief and public health.

RESULTS

Response Rate

Following the data collection period, participants representing 24 BOPs responded to one of the three email invitations to participate in the survey (45.28% response rate). Of those 24, only 18 respondents completed enough questions to be considered “complete”. As such, the effective response rate for the survey was 34% (18 of 53). Although this response rate is lower than was hoped, it is higher than or consistent with other recent non-incentivized, non-endorsed studies that have been conducted using BOP as the study population.²²

Description of the Sample

Tables 1 and 2 contain a description of the sample based on key demographic characteristics. Despite the low overall response rate, respondent BOPs came from each of the five geographic regions of the United States (Table 1); no responses came from the boards of pharmacy from the two territories or the District of Columbia. As for the qualifications of the persons responding for the BOPs, nearly 85% possessed a pharmacy practice-related degree, and most held an Executive title with their respective BOP (Table 2). Moreover, of the pharmacists who responded to the survey, nearly half had past disaster relief experience as a pharmacist. The characteristics of the representatives of the BOPs are such that the sample contains knowledgeable persons about practice acts in the states that they represent and in disaster relief efforts, and this is consistent with the fact that the request for participation asked to have the survey request forwarded to the

most appropriate person at the BOP. However, given the response rate, caution should be taken if one is using these results to represent all BOPs.

Table 1 Respondent Board of Pharmacy Characteristics	
Region	N (%)
Northeast	2 (11.1)
Southeast	4 (22.2)
Midwest	4 (22.2)
Southwest	4 (22.2)
West	4 (22.2)
US territories	0 (0.00)

Table 2 Board of Pharmacy Representative Characteristics		
	N	%
Practice-related degree earned		
B.S. Pharmacy	14	77.80
Pharm.D.	1	5.55
No pharmacy degree earned	3	16.67
Position		
Executive Director	11	61.11
Executive Officer	2	11.11
Executive Secretary	1	5.55
Compliance Officer/Inspector	1	5.55
Director	1	5.55
Pharmacist Consultant	1	5.55
Past President	1	5.55
Past disaster relief experience as a pharmacist		
Yes	7	46.7
No	8	53.3

Examination of Research Objectives

Objective 1: *Determine the percentage of states with general regulations regarding pharmacy operations during disaster relief efforts.*

The information received back from the survey appears to support the assertion that Pharmacy Practice Acts contains different regulations regarding pharmacy operations during disaster relief efforts. Table 3 supports the premise that there are no current, universal regulations; the regulation concerning drugs exposed to deteriorating conditions is the mostly widely used at 61.1%. Some regulations are implemented in only a few states (11.1%), such as the authorization of non-pharmacy designated personnel to withdraw medicines during a state of emergency.

Table 3	
General regulations regarding pharmacy operations following a disaster	
	N (%)
The board reserves the right to make exceptions to any of the regulations in the Pharmacy Practice Act during an emergency.	7 (38.9%)
The pharmacy shall report to the board the date of any natural or man-made disaster that adversely affects the potency, efficacy, safety, or security of drugs, devices, or biologicals in the pharmacy.	7 (38.9%)
The pharmacy may not dispense any drug that has been exposed to extreme temperatures, smoke, or other conditions that may have caused deterioration.	11 (61.1%)
One member of the pharmacy/business may possess a key to the pharmacy that is maintained in a tamper-evident container for the purposes of access in case of emergency.	4 (22.2%)
Designated supporting personnel (i.e. Registered Nurses) may withdraw doses from behind the pharmacy counter during a state of emergency.	2 (11.1%)
The state may collect and maintain information from volunteers for emergency and disaster assistance.	6 (33.3%)
N=18	

Objective 2: *Determine the percentage of states that have regulations regarding the establishment of a disaster preparedness plan.*

Fourteen out of eighteen respondent boards of pharmacy reported that their state has no required disaster preparedness plan for pharmacies. As was noted in the introduction to this project, pharmacies are susceptible to a variety of manmade disasters such as power outages, floods, electrical fires, and chemical or gas leaks. They can also be affected by natural disasters such as hurricanes or earthquakes. In the aftermath, it would appear helpful if pharmacy personnel knew the chain of command, who is responsible for securing the pharmaceuticals, and how to properly preserve and manage any remaining or displaced pharmaceuticals. Preserving all available medical resources is critical during a disaster. In addition, pharmacy personnel are essential first responders

and should be prepared to handle emergency situations. As Table 4 shows, only 22.2% of states sampled require a disaster preparedness plan. Furthermore, only half of that 22.2% requires that the plan specify how drugs should be stored or how patient records will be maintained, and only 16.7% discuss how drugs will be secured from the public.

Table 4 Pharmacy regulations regarding a disaster preparedness plan	
	%
No disaster plan is required	14 (77.8%)
Yes, disaster plan is required	4 (22.2%)
The pharmacy must establish a disaster preparedness plan	11.1%
The plan must include how drugs will be stored at the proper temperature	11.1%
The plan must include how drugs will be disposed	5.6%
The plan must include how drugs will be secured from the public	16.7%
The plan must include how patient records will be maintained	11.1%
The plan must include how inventory records will be maintained	11.1%
N=18	

Objective 3: *Determine the percentage of states that allow the establishment of temporary/mobile pharmacies during disaster relief efforts, and determine the regulations for such an establishment.*

Nearly all (88.9%) of the boards of pharmacy that responded to the survey allow for the establishment of temporary/mobile pharmacies following a disaster (Table 5). The creation of temporary/mobile pharmacies allows citizens in the surrounding area access to needed prescriptions or OTCs in the midst of a disaster. They may also serve as PODs in extreme cases such as Hurricane Katrina.^{8, 24} 77.8% of states require that

temporary/mobile pharmacies notify the BOP of their location change, and 61.1% specify that a licensed pharmacist must oversee all operations and drug dispersions. These two regulations are critical to maintain the standard of care. Moreover, none of the respondents indicated that the temporary/mobile pharmacy must be located within the declared disaster area. The omission of this regulation allows for neighboring areas to support those in need if their resources are overwhelmed.

Table 5 Pharmacy regulations covering temporary/mobile pharmacy operations following a disaster	
	N (%)
No temporary/mobile pharmacies are allowed	2 (11.1%)
Yes, temporary/mobile pharmacies are allowed	16 (88.9%)
The pharmacy must notify the board of pharmacy after any change in address (including a temporary location or a return to the permanent location)	77.8%
The temporary/mobile pharmacy must be located within the declared emergency area	0.0%
A board of pharmacy representative must conduct an on-site inspection at the new location	33.3%
A licensed pharmacist must oversee all operations and drug dispersions from a temporary/mobile pharmacy	61.1%
The temporary/mobile pharmacy must cease operations within a set amount of time after the termination of the state of emergency	5.6%
If the temporary/mobile pharmacy maintains its temporary location for longer than the set amount of time, the pharmacy must apply for a new and separate facility license	0.0%
N=18	

Table 6 shows that the BOPs are have mixed approaches about whether or not to allow temporary/mobile pharmacy to renew their permits. 42.9% do not allow permit

renewals, but 57.1% do allow permit renewals. Of the latter, the majority (75%) do not indicate a time restriction for the reissuance of temporary permits.

Table 6 Are temporary/mobile pharmacies allowed to renew an emergency permit/license	
	N (%)
No temporary/mobile pharmacy permit/license renewals	6 (42.9%)
Yes, temporary/mobile pharmacy permits/licenses are renewable	8 (57.1%)
Time limits?	
None specified	75.0%
Varies according to Governor's proclamation	12.5%
Permit is moved and allowed to continue operations	12.5%
N=14	

Objective 4: *Determine BOP regulations regarding out-of-state pharmacists during disaster relief efforts.*

Table 7 shows that the majority of the states address out-of-state licensure in some manner in their Pharmacy Practice Acts. Only 2 respondent boards of pharmacy indicated that it was not addressed at all. Unfortunately, this component of defined roles and regulations for pharmacists in disaster relief efforts also fails to display any uniformity amongst the various state BOPs. 38.9% require an out-of-state pharmacist to apply for a temporary license to aid in disaster relief. 27.8% waive the requirement of in-state licensure during an emergency and that same percentage states that the license reciprocity will end with the termination of the state of emergency. Finally, only 16.7% and 22.2%, respectively, address the regulations regarding out-of-state pharmacy technicians and pharmacy interns. As a result, pharmacists wishing to aid in major

disaster relief efforts in a neighboring state may experience confusion and difficulty determining what is required to practice across state lines. Consistent license reciprocity regulations are needed to ensure aid can be supplied quickly and efficiently when needed during a multi-state disaster.

Table 7 Regulations covering out-of-state pharmacy personnel	
	N (%)
Not addressed	2 (11.1%)
An out-of-state pharmacist must apply for a temporary license in order to participate in disaster relief efforts.	7 (38.9%)
The pharmacist licensed in another state may dispense prescription medications in disaster relief efforts; the requirement of in-state licensure is waived during an emergency/disaster.	5 (27.8%)
A pharmacy technician licensed in another state may dispense prescription medications under the supervision of a pharmacist in this state.	3 (16.7%)
A pharmacy intern licensed in another state may dispense prescription medications under the supervision of a pharmacist in this state.	4 (22.2%)
The recognition of nonresident licensure will end with the termination of the state of emergency.	5 (27.8%)
Pharmacists who have been inactive/retired for 2 years or less may temporarily have their license reinstated in order to participate in disaster relief efforts as a pharmacist.	1 (5.6%)
N=18	

Table 8 lists the free responses provided by BOPs who identified regulations not presented as options for Table 7 due to their infrequent appearance in Pharmacy Practice Acts. Table 8 demonstrates two major concepts: when the governor declares a state of emergency state laws can be suspended, and temporary state licensure can be granted to pharmacists, interns, and technicians.

Table 8 Other regulations covering out-of-state pharmacy personnel described
State licensure is required unless the Governor were to declare an official emergency and suspend the laws.
The Governor's office is allowed to set aside Board rules and regulations as necessary in a declared state of emergency.
We check their home state license and give them a temporary, RPh, Intern or Tech.
These waivers are under another state law that allows the Governor to waive certain license requirements during a state of emergency, but these waivers are not in the pharmacy practice act.
State licensure is required unless the Governor were to declare an official emergency and suspend the laws.

When asked the length of time pharmacists are allowed to assist in disaster relief efforts, the BOPs presented a range of responses as shown in Table 9. Again, the regulations for pharmacists are not consistent across boards of pharmacy.

Table 9 Length of time pharmacists from other states are allowed to operate to assist in disaster relief efforts	
	%
Until the end of the disaster	6 (37.5%)
For a specified period, not to exceed 6 months	1 (6.23%)
Not specified	4 (25.0%)
N=16	

Objective 5: *Determine the percentage of states that have regulations regarding emergency prescription refills during a disaster.*

Table 10 shows that 33.3% of states do not allow controlled substances to be dispensed for emergency prescription refills. On the other hand, 66.67% do allow

controlled substances to be dispensed during an emergency if the pharmacist considers the drug essential to life (22.2%) or essential to the continuation therapy (38.9%). Only 27.8% stipulate that the pharmacist must create a written record of the prescription. Maintaining patient medication records and inventory of prescription drugs during a disaster is essential to preserving order and transitioning smoothly into normal pharmacy operations after the effects of the disaster are resolved.

Table 10 Regulations covering dispensing a controlled substance as an emergency prescription refill	
	N (%)
Not allowed	6 (33.3%)
Yes, emergency prescription refills of controlled substances are allowed	12 (66.7%)
The pharmacist considers the drug essential to the maintenance of life	22.2%
The pharmacist considers the drug essential to the continuation of therapy, especially for a chronic condition, and that interruption in therapy may produce undesirable health outcomes	38.9%
The pharmacist creates a written order containing all possible prescription information	27.8%
N=18	

Table 11 shows that even within the BOPs that allow emergency prescription refills there exists differences about whether or not to allow multiple refills. 38.9% of the boards responding to the survey do not allow multiple refills, 33.3% allow multiple refills, and 16.7% only allow multiple refills for non-controlled substances.

Table 11	
May an emergency prescription refill be made more than once under a declared state of emergency	
	N (%)
No	7 (38.9%)
Yes	6 (33.3%)
Yes, but only for non-controlled substances	3 (16.7%)
N=16	

Objective 6: *Determine each state’s BOP involvement or participation in disaster relief efforts.*

Ten of seventeen (58.8%) boards of pharmacy indicated that representatives from their BOP actively provide assistance to pharmacists during disaster relief efforts (Table 12).

Table 12	
BOP representatives at disaster areas providing assistance to pharmacists	
	N (%)
No	7 (41.2%)
Yes	10 (58.8%)
N=17	

Objective 7: *Determine the percentage of states that anticipate the implementation of new regulations regarding disaster relief efforts.*

Only 22.2% of respondents anticipate their BOP changes the regulations that govern pharmacist activity in disaster relief efforts. 77.8% anticipate no changes in the near future. Hopefully, studies such as this one will prompt the BOPs to identify the need for defined roles and regulations for pharmacists in disaster relief efforts.

Table 13	
Anticipated changes to regulations that govern pharmacist activity in disaster relief efforts	
	N (%)
No	14 (77.8%)
Yes, it is being discussed with no time table for its implementation	4 (22.2%)
N=18	

Objective 8: *Determine if BOPs have any expanded roles for pharmacists in disaster relief efforts.*

82.4% of respondents do not identify any expanded roles for pharmacists in disaster relief efforts. The 17.6% that do identify expanded roles for pharmacists allow their governor to define expanded roles as he discovers disparities in relief efforts.

Table 14	
Expanded roles for pharmacists in disaster relief	
	N (%)
No	14 (82.4%)
Yes	3 (17.6%)
Roles as defined by Governor proclamation or based on needs of State Health Officer	
N=17	

Objective 9: *Determine the percentage of states whose SOPs currently provide disaster relief training and how it should be provided to students.*

In Table 15, the majority of respondents (77.8%) indicated that they are unsure whether or not disaster relief training is currently a part of pharmacy school curriculum in their state. Surprisingly, two states (11.1%) do require that all of their pharmacy students be trained in disaster relief.

Table 15	
Disaster relief training in the pharmacy schools in your state	
	N (%)
No	1 (5.6%)
Yes, all of the students	2 (11.1%)
Yes, some of the students	1 (5.6%)
Unsure	14 (77.8%)
N=18	

Table 16 indicates that the majority of respondents (55.6%) believe that disaster relief training should be offered as a required supplemental training session in pharmacy schools. Only one respondent (5.6%) believes it should be a required course.

Table 16	
Is it in your state's best interest for student pharmacists to receive disaster relief training	
	N (%)
Yes, as a required course	1 (5.6%)
Yes, as an elective course	0 (0.0%)
Yes, as a required supplemental training session	10 (55.6%)
Yes, as an optional supplemental training session	2 (11.1%)
No opinion	5 (27.8%)
N=18	

Objective 10: *Determine the percentage of states whose SOPs currently provide public health training and how it should be provided to students.*

In Table 17, the majority of respondents (61.1%) indicated that they are unsure whether or not public health training is currently a part of pharmacy school curriculum in their state. Surprisingly, four states (22.2%) do require that all of their pharmacy students be trained in public health.

Table 17	
Public health training in the pharmacy schools in your state	
	N (%)
Yes, all of the students	4 (22.2%)
Yes, some of the students	3 (16.7%)
Unsure	11 (61.1%)
N=18	

Table 18 indicates that the largest consensus of respondents in this category (44.4%) believe that public health training should be offered as a required supplemental training session in pharmacy schools. Only two respondent boards of pharmacy (11.1%) believe it should be a required course.

Table 18	
Is it in your state's best interest for student pharmacists to receive public health training	
	N (%)
Yes, as a required course	2 (11.1%)
Yes, as an elective course	2 (11.1%)
Yes, as a required supplemental training session	8 (44.4%)
Yes, as an optional supplemental training session	2 (11.1%)
No opinion	4 (22.2%)
N=18	

DISCUSSION

This study sought to identify expanded roles for pharmacists in state-level disaster relief efforts, regulations for pharmacists in disaster relief efforts in each state, and whether or not disaster relief and public health training should be added to the pharmacy school curriculum. Currently, very few expanded roles for pharmacists are defined. Much is left to chance in the chaos of an emergency response, and pharmacists are expected to integrate with other first responders. The skills and expertise that pharmacists have to offer is being underutilized during disaster relief efforts. In addition, the BOPs lack a unifying vision for the regulations governing pharmacists during disaster relief efforts (Table 3). Of course, each state is allowed to create its own legislature; however, the marked discrepancy noted between states can make it difficult for pharmacists to easily transition across state lines to aid in widespread disasters. As a profession, pharmacists must actively seek defined roles and regulations in all areas, including disaster relief efforts. One way to improve our involvement is to start with the pharmacy school curriculum. Requiring or simply offering optional disaster relief and public health training to pharmacy students will increase their competence and awareness to handle a state of emergency.

Limitations

A major limitation of the study was the low response rate from the Boards of Pharmacy. A higher response rate would have allowed for comprehensive analysis of the

strengths and weakness of the BOP regulations and outlook as a whole for pharmacists in disaster relief efforts.

Areas of Future Research

While this study chose to focus on the perspectives of the Boards of Pharmacy for this topic, an area of future research would be to survey individual pharmacists to identify their perspectives on pharmacists' roles and regulations in state-level disaster relief efforts. It would be interesting to see what proportion of pharmacists actively participate in disaster relief efforts, what proportion have been trained to respond, and whether or not they think it is important for pharmacists to have clearly defined roles, regulations, and training for emergencies.

Another possible area of future research would be to research emergency prescription refills during a disaster. Some states allow multiple refills while other states allow only one refill, and the regulations for controlled substances often differ entirely (Table 5). In addition, the number of days supply for an emergency prescription refill during a disaster varies between states. Research concerning this specific regulation during disaster relief efforts could identify concerns about drug-seeking patient behavior, lack of availability to life-saving medicines during disasters, and the possible increase in medication errors and drug-interactions due to prescriptions refills without access to the original prescription.

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APPENDICES

- A. Board of Pharmacy Survey
- B. Board of Pharmacy Invitation Letter
- C. Board of Pharmacy Reminder Letter
- D. Second Board of Pharmacy Reminder Letter

APPENDIX A: Board of Pharmacy Survey

Roles and Regulations for Pharmacists in Disaster Relief Efforts

Q1 Thank you for being a part of this important research, examining pharmacists' work in disaster relief. Your thoughtful responses are very important. Although the information collected as a result of this project will be shared in presentations and publications, your anonymity and that of your Board of Pharmacy is assured as is the confidentiality of the data. I appreciate your taking the time to complete the survey; it should take no more than 10 minutes to complete. Your participation in this study is voluntary. Your choosing not to participate will not affect your relationship with The University of Mississippi or its School of Pharmacy. This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). The IRB has determined that this study fulfills the human research subject protections obligations required by state and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of this research, please contact the IRB at 662-915-7482. If you have any questions about the project, please contact Dr. David J. McCaffrey III at 662-915-7262 or davidjm@olemiss.edu. Clicking >> (next) means that you are consenting to participate in this research project. We appreciate your time and effort.

Q2 For the purposes of this survey, the following operational definitions will be used: Disaster - A natural, man-made, or technological event or catastrophe that disrupts normal life, causes great damage, or results in the loss of life. Examples include tornadoes, hurricanes, fires, bombings, and utility outages. We are not referring to personal health emergencies (i.e. heart attacks). For the purposes of this survey, bio-terrorism will also be excluded from this definition. Disaster Relief Efforts - A task performed after a disaster with the goal of returning those affected to normal life, restoring damaged infrastructure or facilities, and providing those in need with healthcare. State of Emergency - A situation of local danger or disaster in which the state governor (or possibly the government at a national level) suspends normal legislative procedures in order to coordinate a response. Disaster Relief Training - Training which prepares a person/volunteer to respond to a disaster. Public Health Training - Training

which prepares healthcare providers to prevent disease, prolong life, and promote health. Examples include vaccinations, regulation of prescription drugs, safety standards, nutritional programs, and accessing clean water and air.

Q3 With which Board of Pharmacy are you currently affiliated?

- Alabama (1)
- Arizona (3)
- Arkansas (4)
- California (5)
- Colorado (6)
- Connecticut (7)
- Delaware (8)
- District of Columbia (51)
- Florida (9)
- Georgia (10)
- Idaho (12)
- Illinois (13)
- Indiana (14)
- Iowa (15)
- Kansas (16)
- Kentucky (17)
- Louisiana (18)
- Maine (19)
- Maryland (20)
- Massachusetts (21)
- Michigan (22)
- Minnesota (23)
- Mississippi (24)
- Missouri (25)
- Montana (26)
- Nebraska (27)
- Nevada (28)
- New Hampshire (29)
- New Jersey (30)
- New Mexico (31)
- New York (32)

- North Carolina (33)
- North Dakota (34)
- Ohio (35)
- Oklahoma (36)
- Oregon (37)
- Pennsylvania (38)
- Rhode Island (39)
- South Carolina (40)
- South Dakota (41)
- Tennessee (42)
- Texas (43)
- Utah (44)
- Vermont (45)
- Virginia (46)
- Washington (47)
- West Virginia (48)
- Wisconsin (49)
- Wyoming (50)
- Puerto Rico (53)
- Alaska (2)
- Hawaii (11)
- Guam (52)

Q4 What is your title/position with this Board of Pharmacy? (please describe)

Q5 Which pharmacy practice-related degrees have you obtained? (please check all that apply)

- B.S. in Pharmacy (1)
- Pharm.D. (2)
- I have not earned a pharmacy practice-related degree (3)

Answer If Which pharmacy practice related degrees have you obtained... B.S. in Pharmacy Is Selected Or Which pharmacy practice related degrees have you obtained... Pharm D Is Selected

Q6 Have you ever participated in disaster relief efforts as a pharmacist?

- Yes (1)
- No (2)

Q7 Which of the following regulations appear in some variation in your state's Pharmacy Practice Act? (please select all that apply)

- The board reserves the right to make exceptions to any of these regulations during an emergency. (1)
- The pharmacy shall report to the board the date of any natural or man-made disaster that adversely affects the potency, efficacy, safety, or security of drugs, devices, or biologicals in the pharmacy. (2)
- The pharmacy may not dispense any drug that has been exposed to extreme temperatures, smoke, or other conditions that may have caused deterioration. (3)
- One member of the pharmacy/business may possess a key to the pharmacy that is maintained in a tamper-evident container for the purposes of access in case of emergency. (4)
- Designated supporting personnel (i.e. Registered Nurses) may withdraw doses from behind the pharmacy counter during a state of emergency. (5)
- The state may collect and maintain information from volunteers for emergency and disaster assistance. (6)

Q8 Which of the following regulations are included by your Board of Pharmacy concerning the establishment of a disaster preparedness plan? (please select all that apply)

- The pharmacy must establish a disaster preparedness plan. (1)
- The plan must include how drugs will be stored at the proper temperature (2)
- The plan must include how drugs will be disposed (3)
- The plan must include how drugs will be secured from the public (4)
- The plan must include how patient records will be maintained (5)
- The plan must include how inventory records will be maintained (6)
- No disaster preparedness plan is required in the pharmacy. (7)

Q9 According to the regulations provided by your state's Board of Pharmacy, which of the following are required by a temporary/mobile pharmacy in a state of emergency? (please select all that apply)

- The pharmacy must notify the board of pharmacy after any change in address (including a temporary location or a return to the permanent location). (1)
- The temporary/mobile pharmacy must be located within the declared emergency area. (2)
- A board of pharmacy representative must conduct an on-site inspection at the new location. (3)
- A licensed pharmacist must oversee all operations and drug dispersions from a temporary/mobile pharmacy. (4)
- The temporary/mobile pharmacy must cease operations within a set amount of time after the termination of the state of emergency. (5)
- If the temporary/mobile pharmacy maintains its temporary location for longer than the set amount of time, the pharmacy must apply for a new and separate facility license. (6)
- The establishment of temporary/mobile pharmacies is not allowed in my state under any circumstances. (7)

If The establishment of tempor... Is Selected, Then Skip To According to the regulations provided...

Q10 How long (how many days) is a temporary/mobile pharmacy allowed to operate within your state under the original emergency permit/license?

Q11 Is a temporary/mobile pharmacy allowed to renew an emergency permit/license?

- No (1)
- Yes (please report the maximum number of days available under an emergency permit/license renewal below) (2) _____

Q12 According to the regulations issued by your state's Board of Pharmacy, which of the following are required for a licensed pharmacist from another state to operate as a pharmacist in your state during disaster relief efforts? (please select all that apply)

- The requirement for in-state licensure is NOT waived during an emergency/disaster. The pharmacist must apply for a temporary license in order to participate in disaster relief efforts. (1)
- The requirement of in-state licensure is waived during an emergency/disaster. The pharmacist licensed in another state may dispense prescription medications as long as they are participating in disaster relief efforts. (2)
- A pharmacy technician licensed in another state may dispense prescription medications under the supervision of a pharmacist in this state. (3)
- A pharmacy intern licensed in another state may dispense prescription medications under the supervision of a pharmacist in this state. (4)
- The recognition of nonresident licensure will end with the termination of the state of emergency. (5)
- Pharmacists who have been inactive/retired for 2 years or less may temporarily have their license reinstated in order to participate in disaster relief efforts as a pharmacist. (6)
- Other (please describe below) (7) _____

Q13 According to the regulations or guidelines provided by your state's Board of Pharmacy, how long (how many days) are pharmacists from other states allowed to operate in your state to assist in disaster relief efforts?

Q14 According to the regulations provided by your state's Board of Pharmacy, which of the following are required when a pharmacist dispenses a one-time emergency prescription refill during a disaster relief effort? (please select all that apply)

- The pharmacist must first attempt to contact the original prescribing practitioner. (1)
- The pharmacist must notify the original prescribing practitioner of the emergency refill prescription as soon as possible. (2)
- The pharmacist may not dispense any emergency prescription refills unless the patient can present a prescription vial (or some means of determining the person has been prescribed such a medication). (3)
- It may not be a Schedule II medication. (4)
- It may not be a Schedule III medication. (5)
- The pharmacy may dispense a controlled substance under certain conditions. (6)
- Other (please describe below) (7) _____

Q15 According to the regulations provided by your state's Board of Pharmacy, under which of the following conditions may a controlled substance be dispensed as an emergency prescription refill? (please select all that apply)

- A pharmacist may NOT dispense a controlled substance as an emergency prescription refill. (1)
- The pharmacist considers the drug essential to the maintenance of life. (2)
- The pharmacist considers the drug essential to the continuation of therapy (especially for a chronic condition) and that interruption in therapy may produce undesirable health outcomes. (3)
- The pharmacist creates a written order containing all possible prescription information. (4)
- The patient must present some form of identification and a prescription vial (or some means of determining the person has been prescribed such a medication). (5)
- Other (please describe below) (6) _____

Q16 According to the regulations provided by your state's Board of Pharmacy, an emergency prescription refill may contain up to a ___ -day supply? (please report the number of days below)

Q17 According to the regulations provided by your state's Board of Pharmacy, may an emergency prescription refill be made more than once under a declared state of emergency?

- Yes (1)
- Yes, but ONLY for non-controlled substances (2)
- No (3)

Q18 Does your state's Board of Pharmacy send representatives into disaster areas to provide assistance or advising?

- Yes (please describe below) (1) _____
- No (2)

Q19 Do you anticipate your state implementing any new regulations regarding pharmacist's professional activity during disaster relief efforts?

- No (1)
- Yes, it is being discussed with no time table for implementation (2)
- Yes, within the next 12 months (3)
- Yes, within the next 6 months (4)
- Yes, within the next 30 days (5)

Q20 Does your state's Board of Pharmacy list any expanded roles for pharmacists in disaster relief efforts?

- Yes (1)
- No (2)

If Yes Is Selected, Then Skip To If yes, please select the roles that ...If No Is Selected, Then Skip To Do students in the schools of pharmac...

Q21 Which of the follow roles does your state's Board of Pharmacy currently recognize as defined roles for pharmacists in disaster relief? (please check all that apply)

- Ambulatory Care (1)
- Pharmacotherapy (2)
- Critical Care (3)
- Logistician (4)
- POD Coordinator (5)
- Case Consultant (6)
- Mobile Outreach (7)
- Psychological Support (8)
- Other (please describe below) (9) _____
- Other (please describe below) (10) _____
- Other (please describe below) (11) _____

Q22 Do students in the schools of pharmacy in your state currently receive disaster relief training?

- Yes, all of the students (1)
- No (2)
- Unsure (3)
- Yes, some of the students (4)

Q23 Do you believe it is in the best interest of the public for students in pharmacy school to receive disaster relief training?

- Yes, as a required course (1)
- Yes, as an elective course (2)
- Yes, as a required supplemental training session (3)
- Yes, as an optional supplemental training session (4)
- No (5)
- No opinion (6)

Q24 Do students in the schools of pharmacy in your state currently receive public health training?

- Yes, all of the students (1)
- No (2)
- Unsure (3)
- Yes, some of the students (4)

Q25 Do you believe it is in the best interest of the public for students in pharmacy school to receive public health training?

- Yes, as a required course (1)
- Yes, as an elective course (2)
- Yes, as a required supplemental training session (3)
- Yes, as an optional supplemental training session (4)
- No (5)
- No opinion (6)

Q26 If you have any other comments or information about pharmacists' roles in disaster relief that you would like to share, please do so here.

APPENDIX B: Board of Pharmacy Invitation Email

Dear Board of Pharmacy Representative/Member:

In the event of any natural, man-made, or technological disaster, first responders are called in to formulate an effective response. Among other healthcare personnel, there is evidence that pharmacists can and do serve as vital members of this first responder team. Because of their unique knowledge base, pharmacists have the ability to contribute significantly in disaster relief efforts. As such, I am interested in learning more about the existing roles that pharmacists play in disaster relief and the regulations that govern that activity. For the purposes of this research, bioterrorism has been excluded because of the unique role that the Federal Government plays in those events.

This research project serves three purposes. First, it will satisfy my desire to have answers to questions that are not found in the published literature. Second, it will partially fulfill the requirements necessary for my graduation from the Sally McDonnell Barksdale Honors College at The University of Mississippi. Lastly, it will also serve as the research component of my Pharmacy Pathway Project, a longitudinal student professional development program at School of Pharmacy at The University of Mississippi.

I know that you are very busy; however, your responses to this survey are vital to our understanding of this issue. The questionnaire is brief; I expect that it will take fewer than 10 minutes to complete.

Please be assured that your responses are anonymous and will be kept confidential. Moreover, the University of Mississippi's Institutional Review Board (IRB) has reviewed this study. The IRB has determined that this study fulfills the human research subject protections obligations required by state law and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of this research, please contact the IRB at 662-915-7482. If you have any questions about this research project, you may contact my senior thesis advisor, Dr. David J. McCaffrey III at 662-915-7262 or davidjm@olemiss.edu.

I intend fully to share my findings with the Boards of Pharmacy by providing each with a summary report from this project; moreover, I plan to share my findings with the

pharmacy community, in general, through publication and/or presentation opportunities.

Thank you in advance for your efforts on my behalf. In the event that you are not the most appropriate person to complete this survey within your organization, I would very much appreciate you forwarding this email to that person for their thoughtful consideration of my request. The following link will take you directly to the survey.

Follow this link to the Survey:

[Take the Survey](#)

Or copy and paste the URL below into your Internet browser:

http://uofmississippi.qualtrics.com/WRQualtricsSurveyEngine/?SID=SV_6QZbpV36T974f7f&Preview=Survey&_ =1

Respectfully,

Rachel A. Lowe
PY1 Student Pharmacist
Member of the Sally McDonnell Barksdale Honors College

Dr. David J. McCaffrey III
Adjunct Professor of Pharmacy Administration

The University of Mississippi
School of Pharmacy

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APPENDIX C: Board of Pharmacy Reminder Email

Dear Board of Pharmacy Member/Representative:

Early last week you should have received the request below for your Board's participation in a brief survey regarding the Roles and Regulations for Pharmacists in Disaster Relief Efforts. I know that you and your colleagues are busy; however, I cannot gather this information through any other means. Respondents have completed the survey in about 10 minute's time.

Each Board of Pharmacy in the United States and its territories received this request. Because of the limited population, it is critical that I hear from as many boards as is possible. I hope that you will be able to help.

Thank you for your thoughtful consideration of this additional request. As was mentioned in my first contact, if there is someone at your Board of Pharmacy who is the most appropriate person to complete this survey, I would appreciate your forwarding this request to him or her.

The following link will take you directly to the survey.

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

http://uofmississippi.qualtrics.com/WRQualtricsSurveyEngine/?Q_SS=5yI9zDtaFTTdrP7_6QZbpV36T974t7f&_ =1

Respectfully,

Rachel A. Lowe
PY1 Student Pharmacist
Member of the Sally McDonnell Barksdale Honors College

Dr. David J. McCaffrey III
Adjunct Professor of Pharmacy Administration
In the event of any natural, man-made, or technological disaster, first responders are

called in to formulate an effective response. Among other healthcare personnel, there is evidence that pharmacists can and do serve as vital members of this first responder team. Because of their unique knowledge base, pharmacists have the ability to contribute significantly in disaster relief efforts. As such, I am interested in learning more about the existing roles that pharmacists play in disaster relief and the regulations that govern that activity. For the purposes of this research, bioterrorism has been excluded because of the unique role that the Federal Government plays in those events.

This research project serves three purposes. First, it will satisfy my desire to have answers to questions that are not found in the published literature. Second, it will partially fulfill the requirements necessary for my graduation from the Sally McDonnell Barksdale Honors College at The University of Mississippi. Lastly, it will also serve as the research component of my Pharmacy Pathway Project, a longitudinal student professional development program at School of Pharmacy at The University of Mississippi.

I know that you are very busy; however, your responses to this survey are vital to our understanding of this issue. The questionnaire is brief; I expect that it will take fewer than 10 minutes to complete.

Please be assured that your responses are anonymous and will be kept confidential. Moreover, the University of Mississippi's Institutional Review Board (IRB) has reviewed this study. The IRB has determined that this study fulfills the human research subject protections obligations required by state law and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of this research, please contact the IRB at 662-915-7482. If you have any questions about this research project, you may contact my senior thesis advisor, Dr. David J. McCaffrey III at 662-915-7262 or davidjm@olemiss.edu.

I intend fully to share my findings with the Boards of Pharmacy by providing each with a summary report from this project; moreover, I plan to share my findings with the pharmacy community, in general, through publication and/or presentation opportunities.

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APPENDIX D: Second Board of Pharmacy Reminder Email

Dear Board of Pharmacy Member/Representative:

Over the past three weeks, your Board should have received an invitation to participate in a brief survey regarding the Roles and Regulations for Pharmacists in Disaster Relief Efforts. Each Board of Pharmacy in the United States and its territories received this request. Because of the limited population, it is critical that I hear from as many boards as is possible. To date, we have received only 15 responses. I hope that you will be able to help us understand how this area of pharmacist professional activity is addressed in your area.

In the event that you had planned to respond, but your duties at your Board took precedence, I have included the link to the survey below for your convenience. I know that you are very busy; the survey was designed with your schedule in mind. Respondents have completed the survey in about 10 minute's time.

Thank you for your thoughtful consideration of this additional request. As was mentioned before in my letters, if there is someone at your Board of Pharmacy who is the most appropriate person to complete this survey, I would appreciate your assistance in placing this in front of him or her.

The following link will take you directly to the survey. In order for us to move forward with this project, we will have to close the survey at 8:00 p.m. EST on Friday, March 28, 2014.

[Take the Survey](#)

Or copy and paste the URL below into your internet browser:

http://uofmississippi.qualtrics.com/WRQualtricsSurveyEngine/?Q_SS=5yI9zDtaFTTdrP7_6QZbpV36T974t7f&_ =1

Respectfully,

Rachel A. Lowe

PY1 Student Pharmacist
Member of the Sally McDonnell Barksdale Honors College

Dr. David J. McCaffrey III
Adjunct Professor of Pharmacy Administration

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