2019 VOLUME 1 ISSUE 8

the EXCHANGE

ASPR
ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS INFORMATION GATEWAY

Foreword:

Supporting Hospital Surge—Meeting Patient and Staff Needs

ASPR recently released our National Health Security Strategy (NHSS), providing a vision to strengthen our nation's ability to prevent, detect, assess, prepare for, mitigate, respond to, and recover from disasters and emergencies. And while our partners include hospitals, healthcare coalitions (HCCs), biotech firms, community members, and state, local, tribal, and territorial governments, we also applaud those who work tirelessly behind the scenes to ensure effective disaster response. Just as the NHSS applies to a wide range of threats to national health security, every facet of the healthcare system must incorporate these components into their planning.

Whether a mass casualty incident (MCI) is anticipated (e.g., a hurricane) or no-notice (e.g., an incident of mass violence), the keys to a successful response are the ability to perform triage, manage patient surge, and ensure that all staff needs are addressed, during and after the incident. This is a shared goal, and calls upon a multitude of support services throughout a hospital (e.g., pharmacy, nutrition, blood labs, security, and waste management) to operate collaboratively.

The articles in this issue of *The Exchange* highlight lessons learned, trends, and future initiatives shared by support service staff in response to MCIs. Because our stakeholders represent a wide variety of fields and communities, we try to highlight varied perspectives in every issue. The professionals we interviewed represent the nutritional, pharmaceutical, and blood supply fields, and shared their experiences with specific incidents (primarily mass shootings and hurricanes). They also discussed trends in their respective fields and how they are anticipating and planning to overcome challenges, should another MCI occur.

ASPR provides proven, operationally focused resources and templates to our stakeholders through several channels, including ASPR TRACIE. Many of these resources are developed or reviewed by subject matter experts who have direct experiences with planning for and responding to disasters or public health emergencies. You can access specific ASPR TRACIE-developed resources, resources specific to mass violence, or the rest of our site from any page. Please share your own promising practices, lessons learned, or questions about no-notice incidents with us so others may learn from your experiences. As always, we welcome your feedback.

Denis FitzGerald, M.D.
Acting Deputy Assistant Secretary
Acting Director, Office of Emergency Management and Medical Operations
Office of the Assistant Secretary for Preparedness and Response

Welcome to Issue 8!

In this issue of *The Exchange*, we discuss the challenges experienced by hospital support services staff involved in recent no-notice incidents (e.g., mass shootings). ASPR TRACIE interviewed healthcare practitioners and subject matter experts from the hospital nutrition, blood, and pharmacy fields to present a snapshot for planning consideration and to highlight how these professionals overcame challenges and incorporated lessons learned into their plans and policies. We hope that these real-life experiences shared by your colleagues across the nation help you plan (and adjust existing plans) for disasters and no-notice incidents. Please visit our resource pages on Mass Violence and Drug Shortages and Scarce Resources, and visit our Topic Collections on Pharmacy and Blood and Blood Products.

In August, we completed our 57th comprehensively developed Topic Collection and we continue to respond to a variety of requests for technical assistance. Your feedback is what makes us successful—please contact us with comments, questions, technical assistance needs, and resources to share. We look forward to our continued collaboration!

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At a Glance

What's New With ASPR?

Much has happened in the months since our last issue of *The Exchange* (which focused on providing healthcare during no-notice incidents) was published. The Secretary renewed the determination that a public health emergency exists as a result of the opioid crisis and the 2018 California wildfires. ASPR released the 2019-2022 National Health Security Strategy and the Healthcare and Public Health Risk Identification and Site Criticality Toolkit. As part of an interagency work group, ASPR helped develop three resources designed to help first responders and healthcare workers protect themselves and save lives if an incident involving fourth generation nerve agents (also known as Novichoks or A-series nerve agents) ever occurs in the U.S. The Biomedical Advanced Research and Development Authority (BARDA) announced the effort to sponsor a new formulation of the world's first approved smallpox drug and to develop treatment for sulfur mustard injury. ASPR published a blog describing four ways healthcare facilities can protect patient health in a medical supply shortage. ASPR continues to develop strategies to support health and human services recovery in Puerto Rico and Texas. ASPR created a new web section to support recovery from severe storms and a new web page that includes wildfire-related information for specific professional groups and individuals, families, and communities. Visit the ASPR homepage and blog to learn more about how ASPR is working with partners to strengthen the nation's ability to prepare for, respond to, and recover from emergencies.

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Nutrition and Meal Plans: An Often Neglected Pillar of Healthcare Emergency Planning

An Interview with Lee Tincher, MS, RDN and Jo Miller, MPD, RDN, Meals for All

Abstract: *During and after a disaster, numerous challenges are placed on hospital nutrition services. Patients, family members, and providers all need food and fluids causing a surge in demand. Some may need prolonged shelter from a storm or mass casualty incident, and the facility may lack power or potable water, limiting options for feeding. In prolonged events, healthcare providers and facility support staff are often held over or have no option other than sheltering in place while new supply deliveries may be impossible. TRACIE interviewed Lee Tincher and Jo Miller to learn more about how disaster nutrition planning and response has evolved over the years, particularly in light of the Centers for Medicare & Medicaid Services (CMS) Emergency Preparedness Rule (EP Rule).*

John Hick (JH): Please give us some background on disaster nutrition planning for healthcare facilities and how it has changed over the years.

Lee Tincher (LT): The first emergency food plan I wrote in the mid-1970s basically said "Offer everyone a peanut butter or cheese sandwich and wish them luck." A decade later, diet orders would include a statement that read "In case of emergency or holiday, diet can be liberalized," thereby eliminating the need for therapeutic emergency diet planning. Extensive plans for nutritional needs were not required back then and it was assumed we would be able to rely on our food service skills to get through any disaster. Over the years, and as we have seen and been through numerous disasters, the thought process and the industry have both changed. During Y2K, 9/11, and Hurricane Katrina, I was responsible for the food and nutrition for more than 400 healthcare facilities in California and along the west coast. Over time, my thinking changed and it became my goal to find a better way to truly be prepared for any disaster.

After the major disasters over the past two decades, data shows post-disaster exacerbation of many health conditions and increased mortality and morbidity, possibly because we weren't able to deliver the therapeutic dietary care disaster victims needed.

We now know that providing a more restrictive diet may be more therapeutically appropriate for some of these patients and could save lives.

Jo Miller was one of the consultant registered dietitians I deployed to assist hospitals, and in the early years of her practice, one of her monthly responsibilities was checking on the emergency food supply in these facilities.

Jo Miller (JM): This important task generally falls on a registered

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dietitian. For example, in a 100-bed skilled nursing facility that stockpiles resources for three days, it takes about four hours per month to count emergency food supplies. Then the list is shared with the food service director who is responsible for ordering the missing and expired food supplies. Once received, everything must be recounted and stored. It's a time-consuming process when it is done properly. In California, the expectation is that food is available on site and that facilities are prepared 24/7, regardless of the nature of the disaster.

The following categories provide a general overview of diets for patients in a hospital setting:

- Regular/normal: used for patients who do not have special needs associated with illness or injury
- Short-term liquid: can be clear liquid, full liquid, or pureed and used for patients that need foods easier to swallow and digest
- Soft transitional: typically includes foods that can be mashed with a fork
- Restricted or special: based on individual patient requirements (e.g., limited fat or salt intake)
- Therapeutic: can help treat patients (e.g., increase fluid intake or accommodate food allergies)

LT: We have also seen changes over the years with regards to regulations and survey emphasis. Planners are now questioning how much they need to stockpile. There is no "standard of practice;" different states have different standards. Some plans are very prescriptive and require a seven-day dedicated supply in a separate storage area. Others are more laissez faire.

In addition to needing to estimate how much food to have on hand, I want to know who is going to be preparing it, how it's going to be served, and what the facility's plan is when traditional food service staff are not able to report to work—will they be able to make the necessary staffing changes on the fly? Coordinating everything—from the design of the menu to the food, who is going to prepare it, how you're going to ensure food safety, can the plan be deployed easily (regardless of who is in the facility) is no easy task. For example, we had a situation in a major U.S. city where hospitals that were flooded were relying on untrained hospital staff to prepare contingency food – which was egg salad sandwiches – a poor menu choice that is labor intensive, has known food handling and safety concerns, requires a huge volume of bread, is not suitable for all therapeutic diets, and has poor patient acceptance.

JH: What percent of hospitals have backup power that can be used to supply kitchens?

In this article, Lee Tincher highlights the "EP Tags" that were published as part of the CMS EP Rule survey process with a focus on those tags that affect healthcare facility food and nutrition.

JM: The full kitchen is generally not included on hospital backup power systems, but some may have a few "red plugs" (sockets in healthcare facilities that indicate they are connected to emergency backup power). Cooking is not always considered a critical part of the facility and it's important to note that most hospital kitchen equipment may be powered by gas or steam generators versus electricity.

LT: In California, as well as other states, we have learned that there may be random interruptions of power, even if your campus hasn't been directly affected by an incident. Utilities may be discontinued while authorities verify the extent of damage and safety of restoring power throughout the community. I like the process that the CMS EP Rule mandates—having each facility create their own plan. With so many large entities overseeing healthcare systems—where the corporate office may be five states away—I really like having the team in the facility working through their

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individual plans and drilling and practicing it at the local level.

JM: Recently in California, utility providers have shut off power to select areas on days where there is a high wildfire risk; all California hospitals are expected to be able to operate without power and without trained food service staff at any time. We recently did a wide-scale disaster drill at Santa Clara Regional Medical Center, where we prepared meals for 80 people without a full staff and without electricity. It was nice to see how easily you can feed people in a matter of 20-40 minutes if you have a good plan in place and a system that includes simple, step-by-step instructions.

LT: The key factor is training and practicing the food and nutrition plan. There is nothing like actually preparing, serving and tasting some food to have people really get the sense of what it takes to accomplish disaster nutrition. And, the food should be familiar, comfort foods that are well accepted in the local population; this is especially important in behavioral health and pediatric units.

JM: Another thing that is very important to note: reading and scaling a recipe can be very difficult for people who do not have experience in this. It is so important to have people trained to understand how food service works in a disaster. Typically, dietitians, whether on staff or consultants, have limited hours and it is challenging to meet patients' various dietary needs (therapeutic, textures, puree, and other specifics) even during non-disaster times. Different diagnoses call for different diets. For example, too much sodium can negatively affect patients with congestive heart failure. After Hurricane Katrina, we found managing patients with diabetes extremely challenging. The therapeutic dietary needs associated with patients who receive renal dialysis are the most complex to manage. Ideally, with careful menu planning you can create one menu that can be tailored to account for sodium, texture, and other special diet needs and be simple to deploy in an emergency.

LT: The thought process has shifted significantly over the past two decades, with the realization that those who are critically vulnerable are likely to be in situations where they don't have access to their medication or their food, and their conditions can worsen quickly.

JH: Can you tell us more about how patients' nutritional needs are documented and tracked?

LT: Virtually every hospital and skilled nursing facility uses an electronic meal ticket to provide food to patients. For planning purposes, it's key for the facility to determine how they will handle creating tailored meal tickets in an emergency if computers are down and tray tickets can't be printed. Facilities need a backup system to help identify diets and dispense meals. Printing an extra set of tray tickets once a week, backing up diet plans on a USB device, or even printing a list of patients and their diets on a daily basis would be helpful.

LESSON LEARNED

We find that people eat a lot more and not less in these situations. When Hurricane Irma struck the State of Florida, one of our clients (a tertiary hospital) hunkered down and the dietician was well prepared to feed all 750 patients and staff. What she had not anticipated was the number of physicians who reported to support the response, accompanied by their family members who also needed food and shelter.

I recently reviewed the after-action report from the Oroville Dam evacuation (February 2017). On a Sunday afternoon, entire communities were told that the dam was going to break and 180,000 people downstream were at risk. The skilled nursing facilities dutifully printed out patients' emergency care orders, and sent them with the patients who were then evacuated to outlying areas. Unfortunately, those orders did not include diet orders, and no one noticed before the patients were evacuated.

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Dietary orders should not only include the therapeutic aspect, but also any necessary texture modifications to ensure patient safety. Conditions such as dysphagia not only do not go away in a disaster, but can be exacerbated by the stress of the event.

JH: What are some of the challenges associated with stockpiling food and how can they be overcome?

LT: Some menus call for certain foods that are not possible to purchase from grocery distributors. Some foods we had been able to purchase in the past have been discontinued by the manufacturers (e.g., salt-free tuna and pureed items).

JM: In the last decade, we've seen big swings in what our primary vendors keep in stock. Some therapeutic foods are considered special orders and not stocked or take weeks for delivery. It is important for facilities to revisit any memorandums of understanding and consider whether you should rely on a single MOU to be the backup to your disaster nutrition plan. Following Hurricane Katrina, and when CMS was working on the EP rule, they mentioned that hospitals may need to plan to be self-sufficient for longer than the previous 72-hour recommendation in widespread disasters. Some hospitals didn't receive help for five days after Katrina. During Super Storm Sandy in 2012, parts of New York and New Jersey were without power for 11 days. Current recommendations encourage facilities to have a minimum of 72 hours' worth of supplies stocked on hand, but also have MOUs in place for an extended disaster.

Section E-0015 of the CMS Interpretive Guidelines (p. 21) indicates that, "Facilities must be able to provide for adequate subsistence for all patients and staff for the duration of an emergency or until all its patients have been evacuated and its operations cease."

JH: We know that facility staff, family members, and patients might need snacks if they are sheltering in place. Do you have any suggestions for affordable snacks with longer shelf lives?

LT: I will never forget when a food service director called me, and said "I just moved here, and there are 600 cases of expired nutritional drinks in the attic—that is the total emergency plan for patients and staff to drink for the first 72 hours after an emergency." Those drinks had been stored in a non-temperature controlled attic for months. In general, items like these need to be thought of as a supplement, or an additional item, but they must always be rotated to ensure they are suitable for consumption.

Twenty years ago, nutritional bars did not exist. Today, there are many available. There is one bar with a five-year shelf life and the highest nutritional value. Facilities may or may not store supplemental drinks. Canned fruit and perishables can also be used as snacks. Freeze dried and dehydrated foods with an extended shelf life have come a long way over the past two decades, especially with the increase in individual home disaster planning. In addition to serving as snacks, with careful planning, a registered dietitian can incorporate these foods into a delicious, healthcare-friendly emergency menu plan.

JH: A hospital may have a large volume of patients who need to be tube fed; they may have to puree more foods than they are used to. Are there any preparedness tips you can offer facilities?

LT: You would be remiss to think in a disaster it would be ok to just "blenderize" a "typical" diet and get it through the feeding tube without clogging it. If a patient is already being tube fed, it is highly likely that there are significant challenges with their intestinal functions, so this is a true concern. Commercial tube feeding products would be much safer in terms of food handling, supply rotation, straining, and consistency. It is important to note that most facilities use very small tubes for

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feeding; many require a pump to be administered. Staff can use hand-cranked blenders and food mills to make puree food texture in the event of a power outage or evacuation. It is critical to incorporate these factors and any needed equipment into a disaster nutrition plan.

JM: We work with a lot of campuses that perform a significant amount of tube / enteral feeding. I often recommend they maintain a "par stock." This is a great way to meet daily operational and contingency needs by determining the par for a reasonable number of days (e.g., 7-10), and always keeping that amount of enteral feedings available. We also recommend against keeping formula in a separate storage area—it's much easier to manage inventory you can rotate before stock expires.

JH: Tell us more about evacuation scenarios. Are there lessons learned and best practices you can share?

LT: I watched Katrina unfold in New Orleans, followed by Rita in Texas. In the Gulf area, evacuees spent approximately eight hours in transport. During the recent wildfires here in California, it took some six hours to travel 39 miles. This would be trying for the average person, let alone more vulnerable populations. During the Sonoma County fires in 2017, they took a lot of patients from our nursing facilities to general shelters, and I'm not sure these

shelters are set up to meet the needs of vulnerable, older people. After wildfires in particular, survivors may have to live in shelters for weeks or longer.

JM: The CMS EP Rule indicates that facilities must have adequate sustenance for sheltering in place and/or evacuation. The overall interpretation is that this responsibility lasts until the patient is admitted to another facility. We have seen campuses set up disaster carts on wheels that include snacks on top and can be transported at the same time as other materials during evacuation.

The Paradise (CA) fires were very close to home—many evacuees came to our county. Within a week of the evacuations, shelters experienced a significant number

One thing that continuously gets overlooked in planning efforts is the use of disposable supplies and how to handle the mountains of garbage that accumulate during a disaster. Work with your facility to plan ahead for the aftermath of your large feeding operation.

of norovirus outbreaks from poor food handling processes, lack of personal sanitation facilities, and so many people in close quarters. These outbreaks can exacerbate morbidity and mortality. It all comes back to ensuring that these shelters have good handwashing

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guidelines and trained staff and volunteers. **Safe food handling practices (including signs that can be posted throughout shelters and kitchen areas) must be worked into disaster and evacuation plans.** It is important to remember that hand sanitizers are not a substitute for proper handwashing and some products are not safe for food preparation or workers. The best practice is to have disposable food handling gloves readily available.

JH: Are there any closing thoughts you would like to share with readers?

LT: I'm a huge fan of healthcare coalitions and we have both spoken with a number of them. As a single facility, you are only as prepared as the other facilities in your community. It is important to encourage healthcare facilities to work in their communities as a whole to improve resilience. Some of the very forward-thinking healthcare systems (e.g., Kaiser Permanente) accomplish this well.

JM: Surge is a very real concern and one of the biggest challenges for a medical campus. One tool that I use universally is California Hospital Association's emergency food supply planning tool. It is Excel-based and helps users cover basic needs, surge targets, and account for increases in staff, family members, and volunteers. This tool can also help the facility's safety team with their surge planning, making it an invaluable interdisciplinary tool.

Disaster nutrition planning shouldn't just be the responsibility of the food and nutrition services director, or delegated to an incident commander without training in food and nutrition. We need to build a culture of preparedness and the food service professionals must be integrated into the facility's total emergency plan. Whether we are at work or home, having a good disaster and food plan is critical for everyone's comfort and survival. ■

Check out the California Hospital Association's Hospital Emergency Food Supply Planning Guidance and Toolkit. These resources can help hospital food services directors/ dietitians plan for and track emergency food supplies and comply with regulatory requirements.

Managing Blood Supply, Demand, and Donations in a Disaster

An Interview with Chandel Ashby, Manager of Hospital Services; Liz Lambert, Marketing & Communications Specialist; Julie Scott, National Marketing Director; and Crystal Stanley, Manager of Manufacturing, Vitalant

Abstract: *Traditional mass casualty incidents (MCIs) rarely place significant stress on the blood bank or require community blood drives. However, victims of blast and penetrating trauma may require massive transfusions, and when multiple victims present at once, this may create challenges for local blood banks. In some areas of the country, blood banks may be free-standing facilities. Some hospitals have their own on-site storage and processing facilities. Regardless of the nature of the incident and location of the supply, hospitals will use the blood that is currently "on the shelf" to treat patients. ASPR TRACIE interviewed Chandel Ashby*, Liz Lambert, Julie Scott*, and Crystal Stanley* (currently with Vitalant; * signifies staff who were with Vitalant operations in Colorado, formerly known as Bonfils Blood Center, at the time of the incident) to learn about how blood was requested and transported in the aftermath of the Aurora, CO theater shooting. They also shared how lessons learned from 9/11 and more recent MCIs have been incorporated into their emergency planning efforts.*

John Hick (JH): Please give us some background on the night of the incident and how (what was then) Bonfils supported the involved hospitals.

Chandel Ashby (CA): Luckily, we had taken the time to think about and plan for this type of incident. On that particular evening, we had all the red cells, plasma, and platelets we needed to cover the hospital needs in state and around town. We also have the ability to go outside of our state to resupply our stock after an incident if necessary.

During our morning calls with our regional centers, we can request additional product as needed. We also have our own incident command system in place for local emergency response. If something were to happen elsewhere, we are a network of blood centers with collections operations in 28 states (serving nearly 1,000 hospitals nationwide) and can ship products via flight anywhere in the country.

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Julie Scott (JS): One of our first actions in this type of incident is to pull an inventory report. Based on past experience with responding to these types of tragedies, we prepared "disaster packages" comprised of 25 units of O-positive red blood cells (RBCs), 10 units of O-negative RBCs, and 4 units of platelets. The rest of the units we sent were based on patient type and need.

JH: How are you typically notified about events? Does someone from the hospital reach out, are you notified as part of an area system, or is there a 'push' agreement in place with specific hospitals?

CA: We fill orders as they come in. We don't have push agreements with particular hospitals, but sometimes we hear directly from emergency responders that a majority of patients are being routed to a specific hospital. The hospitals do a good job letting us know where they are and we can triage orders as they come in.

Access ASPR TRACIE's Blood and Blood Products Topic Collection and Blood and Disasters: Frequently Asked Questions tip sheet for more information.

Approximate Numbers of RBC's, Platelets, and Fresh Frozen Plasma (FFP) Sent from Bonfils in Response to the Shooting

7/20/12	600 RBCs, 50 Platelets, and 100 FFP
7/21/12	100 RBCs, 31 Platelets, and 100 FFP
7/22/12	400 RBCs, 34 Platelets, and 130 FFP

JH: How did management learn of the Aurora shooting?

Crystal Stanley (CS): That night, Vitalant (formerly Bonfils) hospital services staff started getting orders and called the on-call senior manager who activated our internal incident command system. This was followed by several conference calls. We also received clear and consistent communication about the number of patients our hospitals were expecting to receive.

JS: This was not the first time a community in Colorado experienced a tragedy like this. We learned a lot of lessons from the Columbine High School shooting regarding distributing product and managing donor surge. With these lessons and those learned from 9/11, we were able to create our own internal incident command system and the blood product disaster packages.

Liz Lambert (LL): Vitalant utilizes a communication tree when there is an event. Hospital Services puts out internal alerts any time it receives orders that are beyond routine. Our Marketing and Communications team is constantly monitoring media and alerts staff when a local or national news story has the potential to cause a donor surge.

JH: If you hadn't had enough product, how long would it take you to get it from a regional distributor?

CA: As part of the Vitalant system, we have other facilities in our region. We can pull from Cheyenne, WY and have product here in a couple of hours. We could also pull from another facility in Rapid City, SD which would take between six and eight hours to reach us. We can pull from hospitals within the state, too, as needed.

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JH: Are there ever challenges associated with security issues and getting product into facilities?

CA: As part of our process, we use a "bill of lading" type of packaging, which includes insert information. The boxes are security-sealed and well-marked with our name on them. In these types of situations, we routinely use the same couriers; the hospitals and blood bankers know these couriers and the trust is already established. After the theater shooting, the couriers called ahead and the hospitals knew when to expect them. Hospital security recognizes the boxes as well.

JH: Can you comment on any trends in use of never-frozen products and whole blood?

CA: We strive to keep a significant amount of plasma available for use and can turn on collection if needed to keep our levels high. We don't distribute whole blood at present. The platelet situation for these incidents becomes tricky if inventory is low somewhere in the area. Some challenges we are working through include platelets, and how the new blood bank draft guidance relates to bacterial detection testing—the effect that has on the turnaround time of our platelet products is significant. Being part of a larger system does allow us to be a phone call away from quickly getting product from another facility.

We are entering a new age of new products. We've got liquid plasma that is being stocked for emergencies and trauma, which eliminates the thawing time. Trying to compute the plasma to red cell ratio can get tricky if you're doing a lot of transfusions. While I would prefer not to see another mass casualty incident, I think we will eventually find out how much easier it is to use liquid plasma versus thawing plasma.

JH: Tell us about some of the challenges you faced with donor flow after the incident. For example, how did you manage messaging about donations?

JS: At the time of the Aurora shooting, we had hundreds of first-time donors after the news broke. As Vitalant's National Marketing Director, I traveled to Las Vegas after the mass shooting to support our media effort there. In that instance, you had the sheriff's office making public calls for donors. While the largest mass shooting in US history, and we knew there would be a need for product, it was difficult to anticipate the need. People came out in droves and within 24 hours, we shifted the message to the hundreds of media outlets we communicated with from "Donate now" to "The needs have been met, and we need people to schedule appointments going into the holidays," because that is a time when donations decline. The Aurora theater shooting happened in the summertime, another traditionally slow blood donation period. We did experience a surge in donations in Denver, which helped us get through the summer months.

LL: In similar, more recent situations (e.g., the Pulse nightclub shooting in Orlando), we've seen a surge in donations in the Denver Metro area following MCIs elsewhere in the country. When we have a figurative "megaphone," after an MCI, we do try to raise awareness with the local media and the public that it's the blood already on the shelf that is key in an emergency. We welcome donors who are compelled to donate in response, but when it's evident the blood supply has more than been replenished, we also put out messaging encouraging prospective donors to consider staggering their donations, waiting a few days or weeks to help ensure we can continue to meet the blood needs that will come up in the near future.

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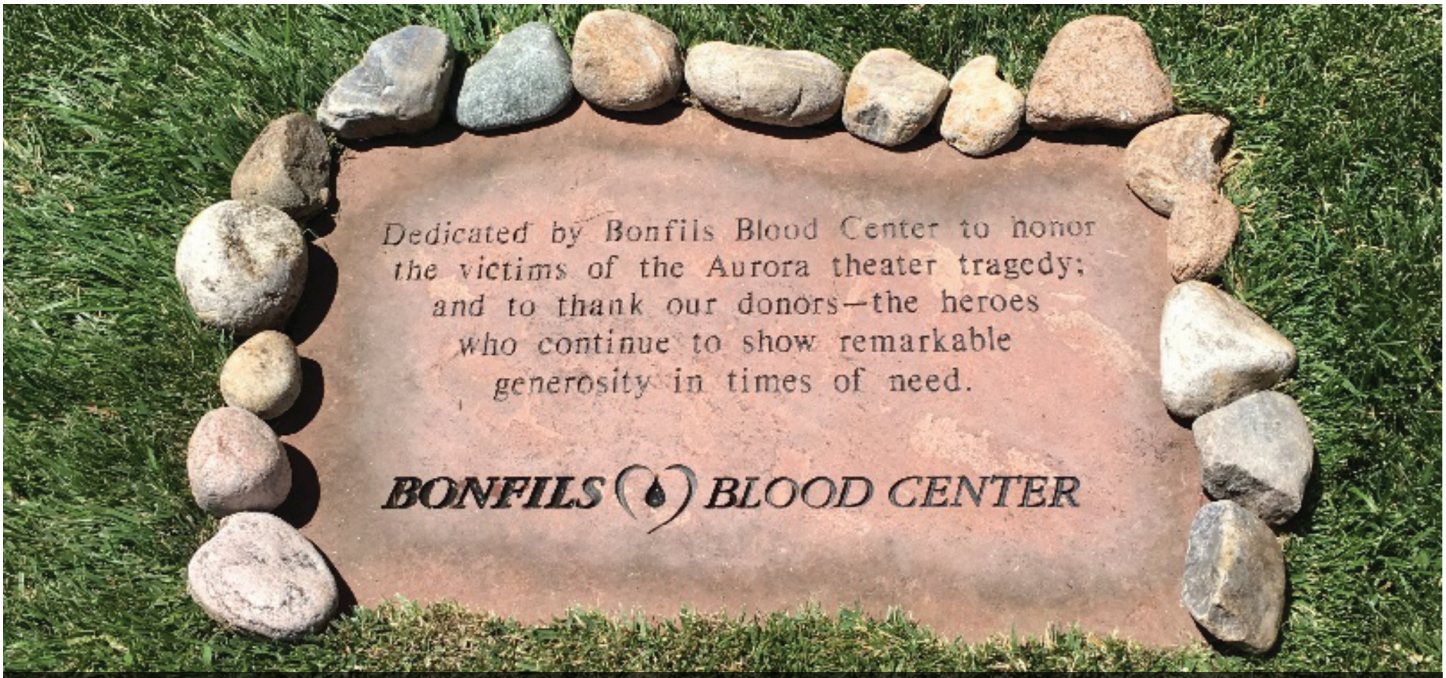

Photo credit: Vitalant

JH: Is there any data about existing donors being prompted by disasters to donate again?

JS: Because so many donors who respond to these tragedies are giving blood for the first time, we implement tactics in an effort to convert them to repeat donors. During the response to the Las Vegas MCI, we had a difficult time keeping track of those who could not be accommodated (but stood in line for hours to donate).

JH: Did a lot of people go straight to hospitals wanting to donate blood? Did you conduct any blood drives there?

JS: In Denver, we tried to funnel people to our community donor centers and existing mobile blood drives. In Las Vegas, University Medical Center reached out to us and requested a blood drive unit be available, so we placed two bloodmobiles in front of the hospital to accommodate donors for a week. While they were busy, it was the two community donation centers that saw the most traffic.

JH: Do you have any backup communication mechanisms? If the hospital phone systems are overwhelmed, for example, how do you receive requests for product?

CA: Hospitals can use an on-line ordering system to request product. There are spaces on the electronic form where users can add comments, and that is where they typically include information about the situation and directions for couriers. If they can't get to a phone, this is how hospitals request product. These electronic requests show up directly on our monitors and in our systems nearly immediately, making them easier to track.

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After both the Aurora and Las Vegas MCIs, we sent follow-up emails to donors—particularly the first-time donors—encouraging them to come back. We also communicated to those who had given blood in the few days before the tragedies, thanking them for stepping forward and allowing us to ensure that we had an adequate supply of blood to support patients.

Julie Scott

JH: Are there any other recommendations you have for hospitals to improve planning or expedite delivery?

CA: Success involves working with and involving the couriers before an incident. We've done emergency drills with our couriers and the hospitals to gauge timing. We check on our verbiage to ensure we can clearly communicate the severity of the situation; we ensure that we use certain words or phrases that activate the best possible outcome.

JH: Do you coordinate with state patrol, local law enforcement, or helicopter services to get product moved to more distant hospitals?

We do use an emergency courier that has licensing for running lights and sirens on their vehicles. They communicate with law enforcement as well. Having these emergency couriers around town has definitely been a blessing.

JS: We have partnered with state patrol in the past. A few years ago, we learned of a case involving a childbirth complication, but the mountain pass that led to the hospital treating the patient was closed. We had a courier get the product to a state patrol officer, the officer delivered the product to the hospital on time, and the surgery was a success.

JH: What future trends in your field will have an impact on disaster response?

JS: From a national perspective, across the board, the industry appears to be struggling with inventory; it is starting to reach a fever pitch. Vitalant just launched a new brand in the fall, and we are developing new strategies to reach new donors. Because the majority of our donors are baby boomers, one of our recent advertising campaigns focused on millennials. Right now, we are faced with weather challenges across much of the U.S., and cold and flu season, and while this happens every year, we still need to work very diligently to plan for those things. We must continue to educate people about the fact that making blood donation a habit will ensure a safe and adequate supply for the community. ■

The U.S. Blood Supply: Challenges and Opportunities

Interview with Ruth Sylvester, MS, MT (ASCP) SBB, Director, Regulatory Services, America's Blood Centers

Abstract: *After a mass casualty incident (MCI), particularly one involving penetrating trauma, emergency medical services and physicians often find themselves having to manage significant blood loss while triaging and treating patients. Once in the emergency room, multiple blood transfusions on multiple patients must occur simultaneously, sometimes with many unidentified patients. In this interview, we met with Ruth Sylvester who shared some challenges associated with the U.S. blood supply in general and surge events specifically.*

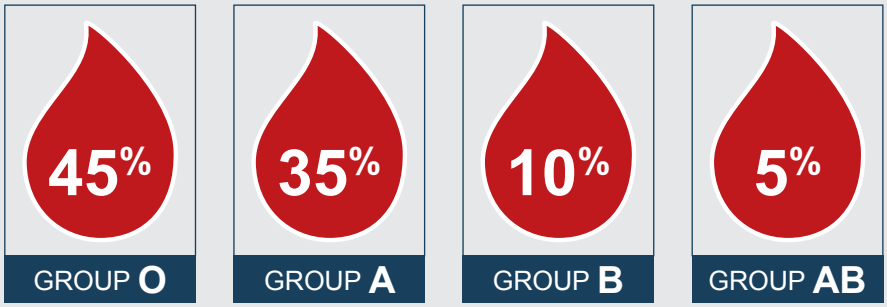
John Hick (JH): What are some of the challenges facing blood centers from a disaster preparedness standpoint?

Ruth Sylvester (RS): The biggest challenge is constant donor availability. The donor population is aging. The baby boomers (the biggest group of donors) are not being replaced long term by the younger generation. A fair number of donors are high schoolers—they like to get out of class and receive community service hours—and they're a "captured" population, but they tend not to remain donors after they graduate.

Then when a tragedy happens, everyone rushes to donate blood, overwhelming the blood centers and the supply. If we're not able to deflect some of these donors and get them to schedule later appointments, the bolus of blood that has been collected, that takes up to 48 hours to process, is not only too late to meet the immediate needs of the patients, but it can expire before it can be used to help anyone. This also has economic consequences.

Another challenge from a disaster preparedness perspective is that the industry has been shrinking for about eight years—overall blood use has gone down because we've gotten better at limiting blood loss and minimizing transfusions. This has led to a decrease in the number of units collected, and a smaller cushion for emergency needs and a greater economic challenge.

The Approximate Breakdown of Blood Types in the U.S.:



Nearly 10% of the population has Rh negative blood.

JH: What is the timeframe to get a donated unit from the donor's arm to the patient's?

The process takes a minimum of 24 hours, and for platelets, it can take up to 48 hours. The unit is collected, then processed into different components. The samples are shipped to a testing center (and many of those have been consolidated—you have to account for the shipping time, too). Once they arrive at the testing centers, up to 16 tests are run (including typing and for infectious disease depending on location and time of the year). The results

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are transmitted back, then have to be reviewed. The units are then labeled, released, and transported to a hospital.

JH: What is the approximate cost per unit by type of product and how long are they good for?

RS: The current average sale price for a unit of red blood cells is approximately $225 give or take.

- **Platelets sell for $550 plus depending on how they are processed; they are only good for 5 days (some are good for as many as 7 days with specialized testing).**
- **Plasma units sell for between $50 and $70, depending on the type**
- **Red cells last for 42 days**
- **Plasma remains good for a year**

JH: What are some trends in your field specific to emergency preparedness that hospital staff should have on their radar?

RS: Another challenge we are seeing is that the use of O and O negative ("universal") red blood cells is disproportionately high to the number of donors in the population. Any time there is a trauma, patients are treated with type O until we know their blood type. There has also been an increase in pre-hospital transfusion, and many areas stock O blood on ambulances and helicopters.

JH: What about trends associated with use of whole blood or never-frozen plasma?

RS: The military has been exploring the use of whole and never-frozen blood as a trauma treatment protocol because it's believed to be better for trauma patients. There are pockets in the country with more progressive trauma units that use the whole blood.

The surgeons that have been publishing and pushing use of whole blood make a good case. Military experience has shown that the earlier you can get a patient transfused, the more likely they are to survive.

JH: Is it safe to say that one key area of weakness is related to platelets?

RS: Yes, because they're so short-dated. They're only good for five days, and this may be shortened even more, depending on draft U.S. Food and Drug Administration (FDA) guidance that suggests we should be retesting platelets for bacteria after three days in addition to early testing during storage. With pathogen reduction technology, you can extend to seven days, but this is a difficult process to scale up and only about 10% of platelets are currently so treated. There are rapid tests available for bacteria detection, but this is another process to add complexity to the difficult circumstances of an emergency. I have seen the data on the use of platelets in recent MCIs, but I haven't heard of patients not surviving because of a lack of available platelets.

JH: What are your thoughts on blood substitutes and freeze-dried plasma?

RS: The military blood program has pushed the use of freeze-dried plasma very hard with the FDA. It will be interesting to see how successfully this will be incorporated into civilian care. There's a difference in the military

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needs (e.g., longer shelf life, lighter product, less need for refrigeration and heavy freezer equipment). Cold stored and frozen platelets—which have a good hemostatic effect—have also been used successfully, but this increases the need for larger capacity, heavy weight freezers—these have not yet taken off as much in the civilian sector. Hopefully we can come up with a freeze-dried platelet product in the near future stored at room temperature with a long shelf life.

JH: In trauma situations, we often just give patients O red blood cells until we get them to the operating room.

Logistically this makes sense, but it does put pressure on available supply. Blood banks are often asked to do a type and screen, but things would be prioritized differently in an MCI. How can we facilitate and prioritize blood typing while also preventing negative transfusion reactions, particularly when multiple transfusions are being conducted simultaneously?

RS: In an ideal world, you'd give them all Group O until you get them typed. Again, ideally, you are able to get a blood sample before transfusion and label it appropriately – this is key, but this doesn't always happen.

One risk you take with running out of O-negative is with females of childbearing age, particularly if they are Rh negative. You can use O-positive for males and post-menopausal women and reserve the Rh negative for pre-menopausal women. If you transfuse them with Rh positive red blood cells, you may create a situation where they have antibodies that can attack their future Rh positive fetus.

Being able to preserve a few units of O-negative for women of childbearing age is generally done. If I were running an MCI response, I'd give everyone O-positive, and save O-negative for these women. There are ethical challenges associated with this practice, however. In the blood bank, you might know the age of the patient, but you may not know the gender of the patient. It's those working the trauma bay with a pre-existing protocol who make these decisions.

JH: From plasma, is shifting from AB positive to A or low titer A to preserve stock appropriate?

RS: Yes, and in your big trauma centers, that switch is happening. It's clinically appropriate. I would like to see us come up with an agreement or standard about what defines low titer. The other question is what titer is clinically relevant.

JH: Are there any final tips you would like to share with our readers?

RS: For those facilities that don't deal with traumas and blood challenges every day, it's important to remember that MCI patients will go to the closest hospital, not knowing whether it's a trauma center. Every hospital needs to have a well-practiced plan for working with blood and blood banks in place for patients who have been involved in MCIs.

We also need to convince doctors and first responders to change their messaging. Instead of encouraging people to donate blood right after an MCI, we need to encourage donations in non-emergency times. We need to emphasize that if you're going to be a hero, the time to do it is before something happens. ■

The Pharmacy Response to Patient Surge

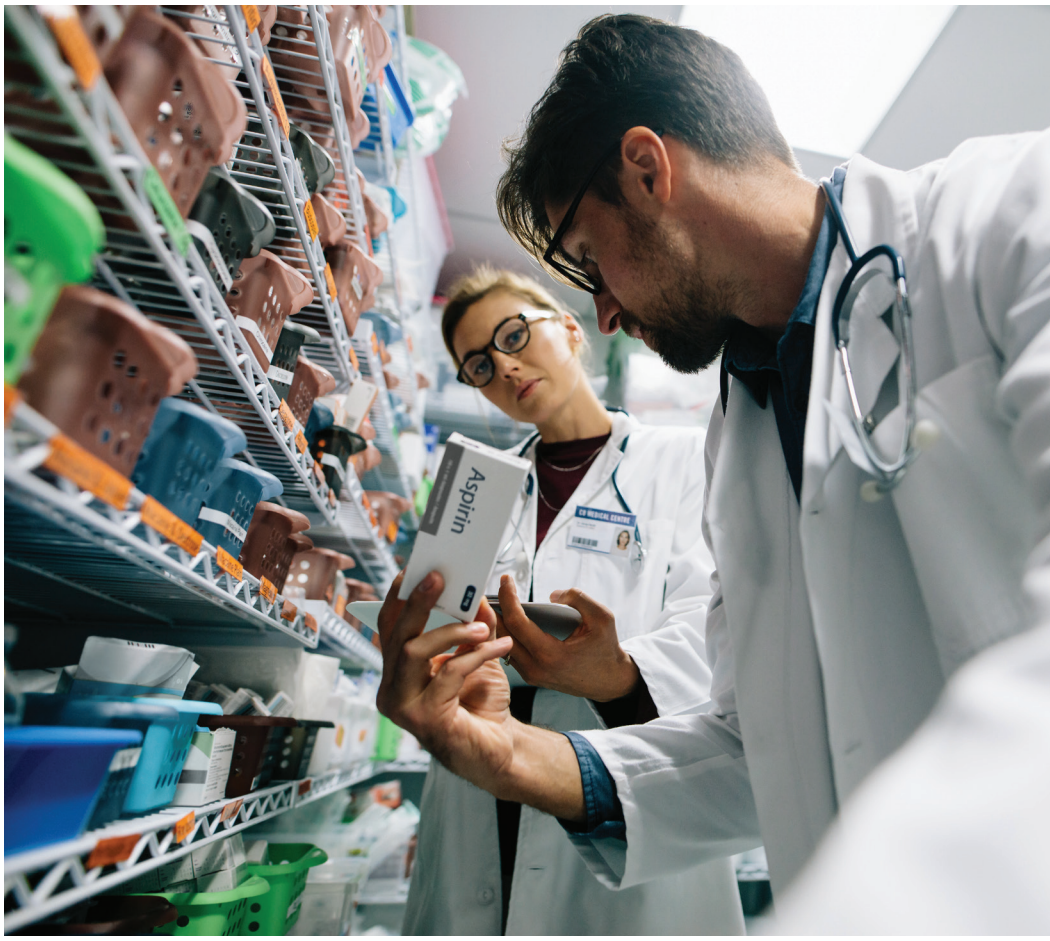
Interview with Al L'Altrelli, PharmD, Administrative Director of Pharmacy, UPMC Presbyterian, Adjunct Professor, University of Pittsburgh School of Pharmacy; and Lynsee Knowlton, PharmD, Clinical Pharmacy Manager at Sunrise Hospital

Abstract: When disaster strikes, hospital pharmacists are critical to ensuring providers and patients have the medications they need to manage airways, treat pain, injuries, and illness. For this article, we interviewed staff from two hospitals that recently managed significant patient surge as a result of mass casualty incidents. They share their experiences, how the incidents affected staff, and how they are incorporating lessons learned into preparedness efforts.

John Hick (JH): Lynsee, please share with us your experience from a pharmacy perspective after the Route 91 (Las Vegas) shootings.

Lynsee Knowlton (LK): Obviously our biggest hurdle was patient surge. A huge number of patients came through our emergency room (ER), many with very serious injuries. The biggest functional hurdle we had to overcome was location. Where are the patients?

Check out ASPR TRACIE's Pharmacy Topic Collection, Hospital Pharmacy Disaster Calculator, and Select Materials on Drug Shortages/Scarce Resources page.



Where are we bringing the drugs? From a pharmacy perspective, we were really using a limited number of drugs, mainly analgesia, pressors, and rapid sequence intubation drugs. We actually ran out of seizure prophylaxis. We learned that there are tons of items on a crash cart that can be useful. We relied heavily on our technicians to run medications to patients.

We ran out of stocked crash carts in house and techs were basically emptying out our automated medication dispensing systems, filling buckets with various medications, and running to the ER.

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We do have 24-hour ER pharmacist coverage. On this night, we called another pharmacist in to serve as a backup. We had two primary "stations:" our main pharmacy and an ER "satellite" which helped us get medications to patients as quickly and efficiently as possible. One of our techs was scrubbed and stationed in the operating room (OR), and another was outside the OR and served as a "runner" between the pharmacy and OR. We really were so fortunate to have a cohesive team that night who did an amazing job at communicating. We were also able to contact some of our sister facilities in town to get some of the medications we were running out of.

JH: Did you have any challenges with the automated medication dispensing system? I know stocking the crash carts is something we should plan for more—was there an effort to restock the carts in real time or were you focused on meeting more immediate needs?

LK: When we transferred patients out of the ER and into beds, we had a lot of movement to various units house wide. To help with that, we put the system on critical override throughout the entire hospital. Nurses could pull whatever they needed to in their units to manage the surge.

In the ER and OR, we focused on immediate needs and had a lot of accounting to do after the fact. We sent all of the available, pre-made crash carts and pre-stocked, pre-checked medication trays down. Restocking came later, once we had a moment to catch our breath.

JH: Did the OR experience any shortages on general anesthetics or drugs like propofol?

LK: Luckily we are a large, level 2 trauma center and have a decent inventory. We did have to borrow to keep up with intubations, but we had enough succinylcholine in stock. We did send some techs to other units to pull from their supplies, and we had to borrow etomidate from a sister facility at the end of the incident. In this case, our size really helped—we have approximately 130 automated medication dispensing systems for our 700 bed facility.

JH: Were there any supply-related issues related to local anesthetics?

LK: Not that I heard of. We have a competent and proactive buyer who prepares us for surges and stays ahead of the shortages. We didn't see shortages in those substances until after the incident.

JH: How did you manage controlled substances in such a large incident?

LK: That was one of the more problematic issues because you are taking care of patients, and a lot of them are in pain. We tracked what went where, and we did have a bit of amnesty from the state board on accounting for the amount based on the severity of the situation. We worked very closely with regulatory bodies to explain the situation and account for whatever product we could through paper records, electronic health records, and documentation from the system. It might be helpful to have pre-stocked disaster kits, even though they are challenging to handle. This would certainly help with chain of custody information and inventory tracking of controlled substances.

JH: Al, what was your experience with managing controlled substances after the Tree of Life synagogue shooting?

AL: As part of our response plan, we focus on the mantra "Right drug, right place, right time." This led us to a different model where we deployed a mobile satellite pharmacy to serve the response needs. With regards to controlled substances, the response plan triggers a narcotic technician or pharmacist to pull controlled substances from our electronic vault into our mobile response trays for the carts. This is tracked manually—for now, we feel like this works best for us in a hectic, time-sensitive environment.

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JH: Is this an automatic response when an MCI has been declared?

AL: Yes, the goal is to get the carts and an additional pharmacist down to the ER before patients arrive (we already have one ER pharmacist as part of our normal service model). We have smaller boxes that are "kit-i-fied" (made into ready-to-go response kits) for other areas within the hospital where patients also receive surge care (e.g., surgical holding areas) to enable staff to respond quickly there, too. We immediately begin a restock process to ensure that the ER, trauma and surgical areas are well stocked. We have two full OR satellite pharmacies, one in each of our towers, to support the perioperative space that have a pharmacist and technician as part of normal pharmacy service that allows for responsiveness during events like this.

Along with the mobile pharmacy, we have an infectious disease prophylaxis cart we can deploy during a biological response. We also have a cart designed for use in a radiation exposure event. We also formed a pharmacy emergency response team ("P.E.R.T.") that allows us to notify initial pharmacy responder staff at the time of the event and supports staff recall to ensure a more robust response.

ASPR TRACIE's Select Disaster Behavioral Health Resources page includes links to related plans, tools, templates, and lessons learned.

JH: During MCIs, we know that pharmacy techs and pharmacists are exposed to a level of trauma they are not used to. Did your staff experience any negative behavioral health effects as a result of these MCIs?

LK: Yes. Our technicians are not normally bedside, and they aren't used to seeing trauma, let alone on such a large scale. A lot of staff also knew people who had been at the festival, so they were concerned. We did a lot to support our staff; one of my main focuses was on those who were physically exposed to the incident—those who were running meds to the ER and OR. It was very traumatic for many of them. Our chief medical officer (CMO) was able to secure a mobile counseling van from the Veterans' Affairs (VA), which sat outside the hospital for about two weeks. Anyone from the hospital could go in and speak with a counselor. We also had professionals reiterate the existence and importance of our employee assistance program.

One thing I didn't realize at first was that many of the pharmacists who weren't here that night ended up following these patients clinically for days and weeks after the incident—they were affected more than I thought they would be. Also, there was some guilt and frustration experienced by some of the staff who weren't there or weren't called in (myself included). I had only recently become a manager, so I didn't even get the call. We had to ensure we were keeping an eye on our teams, sharing resources, and the like.

We urged team members to encourage their colleagues to speak to the professionals in the VA van. Sometimes I went with them myself to ensure I could support my team (and I benefited from speaking to mental health professionals, too). We can't take care of the patients if we don't take care of ourselves.

Lynsee Knowlton

AL: I agree. I think it is so important to ensure that resources are present for staff. Though our incident was on a smaller scale, people were affected more than I thought they would be. Pittsburgh has many tightknit communities and a lot of pharmacists actually had family members who were actual or potential victims; it was

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very important to keep that in our minds during the response. While it's important to make sure that staff understand what resources are available, it is critical to take that extra step to connect staff who may be in need to those specific resources that might be most helpful to them.

JH: Can you both share how you have incorporated any other lessons learned into planning for the next incident?

LK: We have worked with our regional supplier to ensure our terminology specific to on-site supplies and medication was the same. After the shooting, we had staff requesting certain devices and drugs by name and the people in the warehouses were more focused on the item number. As one of three sister hospitals in the market, we also had to be sure we are able to communicate more clearly (via a chain of command and to suppliers) regarding mobilizing centrally-located supplies. We also emphasized the importance of participating in additional drills to improve preparedness.

After the shooting, we had a lot of patients who had come in as "John Doe's" so we are working on creating a more appropriate naming system for MCIs involving a large number of patients.

AL: We had an after action review via our hospital incident command (HIC) and within pharmacy and found that our pharmacy response was quite good. In fact I am really proud of the role that our team played—we received a lot of positive feedback that helped support the value of our role. Our P.E.R.T. has drilled this response many times so it really was smooth and that helped reinforce the need to practice readiness with similar drills in the future. It also helps that our HIC and disaster and emergency response coordinator highly value pharmacy and inclusion.

JH: I worry when hospitals rely on regional pharmaceutical providers to get backfill of analgesics, RSI, and the like. Any thoughts on strategies and centralized supply?

LK: I think it's a great idea to have centralized supply. As I said, most of our response happened in 2-3 hours. If you need to go through a long chain of communications to secure a delivery, it might be too late to rely on regional supply. That said, if it's a known or pending disaster, the scenario is very different and you can bring in what you need ahead of time. I wouldn't want to rely on a centralized supply 100% in a no-notice incident or when it's impossible to deliver supply (e.g., in an extreme cold scenario when temperatures make it impossible to secure or transport supplies).

AL: I agree with Lynsee. In October, during the response to the shooting, road closures presented challenges for staff that we called in. If we were relying on drugs coming in, suppliers and couriers would also have had challenges coming in. In the past, we focused on acquiring products with the longest expiration date that we could find as a strategy to reduce waste and the associated cost. But then we would see that there were additional steps for preparation, such as reconstituting, or it was a medication that we typically didn't use, so they would all expire and require replacement (and additional budgeting). Now, we have replaced that supply with the pharmaceuticals that we commonly use and cycle them out. This required minimum investment, as supplies flow through our regular inventory and are used regularly to support our everyday patient population. We avoid waste, and in a crisis, everyone is familiar with how to prepare, dose and administer.

JH: Most of these drug categories have multiple options, whether it's narcotic analgesics or sedation. In addition to surge planning, you're also helping ensure supply in the event of a shortage. Most of these items are not that expensive, either. Have you had success convincing your administration that this is an investment that will pay off?

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The Emergency Prescription Assistance Program (EPAP) is funded by the Stafford Act and designed to help disaster survivors access prescription medicines. EPAP can also be activated by the Public Health Service Act under the authority of the National Disaster Medical System. The program uses normal business operations (e.g., electronic prescription claims processing, utilization of the normal pharmaceutical supply chain for distribution and dispensing) to pay for prescription medications for eligible persons. ASPR maintains an EPAP web page with sections that describe the program, provide information for patients, highlight information for providers, and list where and when EPAP has been activated. Information is provided in several languages. ASPR TRACIE published an overview and several fact sheets summarizing EPAP use after recent hurricanes and flooding events:

- Emergency Prescription Assistance Program (EPAP): Hurricane Gustav Data Fact Sheet
- Emergency Prescription Assistance Program (EPAP): Hurricane Ike Data Fact Sheet
- Emergency Prescription Assistance Program (EPAP): Hurricanes Irma and Maria, Puerto Rico Data Fact Sheet
- Emergency Prescription Assistance Program (EPAP): Hurricanes Irma and Maria, USVI Data Factsheet
- Emergency Prescription Assistance Program (EPAP) Louisiana Floods Data Fact Sheet
- Emergency Prescription Assistance Program (EPAP): Superstorm Sandy Data Fact Sheet

AL: Our hospital as a whole was pretty receptive when we set this up five years ago, and has remained supportive since. They understand and trust that this is how we need to prepare for an MCI, and trust that we do everything possible to be fiscally responsible. Rotating stock becomes part of the process because the supplies are part of our regular inventory. In the rare event that we need to replace expired drugs, it barely makes a dent in our larger drug budget. The one thing that helped us get to that level is using an electronic tagging and inventory system that gives us advance warning of what is expiring. This allows us to have more oversight than before. We also have a great shortage mitigation program where we work closely with our supplier to ensure that we are ahead of any impact from a shortage with alternative medication supplies.

LK: We already have great relationships with our administrators. Our CMO actually supervised our pharmacy department at one time, and we have always taken a fiscally

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responsible approach to emergency planning. They know we are the experts and they support and trust us.

JH: When there is a callback, how are pharmacists assigned in your hospital incident command systems (ICS)? Do you have job action sheets?

AL: As one of the section chiefs in our hospital's ICS, I'm a big fan of job action sheets, and we have sheets that roll down to the pharmacy that specify who does what depending on level of response. We also have associated color-coded vests to help identify roles. Depending on our level of response, we establish a specific chain of command through pharmacy. Duties include managing staff recall, managing the mobile pharmacy, replenishing surge areas, focusing on core operations, divvying up assignments, and the like.

LK: We don't have a formalized job action sheet. We do have a call back sheet. The majority of our staff is fairly cross-trained. It's usually up to the charge pharmacist to make the call decision. We have included in our call-back plan how long it takes staff to return; those who can get there fastest are called back first. We also try to match pharmacists' skill with incidents; if it were a school bus accident, for example, they'd first call the pediatric pharmaceutical team. In this particular incident, we had staff stay over, and called people in early to provide relief. I do wish the process was more regimented—that is a future endeavor. ■

The Advancing and Evolving Role of Pharmacy in Preparedness and Response

By Dr. Nicolette Louissaint, Executive Director, Healthcare Ready

The role of pharmacies and pharmacists in preparing for and responding to disasters has evolved markedly since Hurricane Katrina. A myriad of novel programs and initiatives—along with a recognition of pharmacists as essential responders—have helped position the field to better protect patient access to medications during disasters and strengthen the preparedness posture of the healthcare and public health sector.

Advances in the field have contributed to patients and emergency planners alike appreciating pharmacies as more than "just a place to get medication refills." Pharmacies, pharmacists, and pharmacy technicians are recognized and trusted sources of public health information, healthcare services like vaccines, and more. Pharmacists are routinely ranked among the most trusted healthcare professionals. Pharmacies are often considered among the most accessible part of the healthcare system and these findings have had an important impact in emergency preparedness and response. Notable advances and contributions to the field are included below.

In Preparedness

- "Refill-too-soon" overrides can be implemented by jurisdictions during declared states of emergency, allowing patients to obtain early refills of prescriptions before an event.
- Text message notifications have been shown to encourage patients to obtain refills and other needed medications before an event.
- Expansions to pharmacists' scope of practice, such as statewide protocols and standing orders, authorize pharmacists to contribute more broadly to preparedness and prevention efforts, like administering select vaccinations.

In Response

- Expanded use and adoption of e-prescribing systems, and partnerships between these technology providers during times of emergencies, are helping to make prescription medication history information available to healthcare responders.
- Maps displaying available pharmacy resources, like Rx Open and Vaccine Finder leverage partnerships to make important information available to the public and responders.
- Across the country, pharmacy stakeholders are an important member of local, state, and federal business emergency operations centers during disaster responses.

As recent hurricane seasons and other events such as the California wildfires have underscored, pharmacies continue to play an important role in diminishing surge on hospitals and helping meet the health and medical needs of shelters in impacted areas. For example, the Rx Open pharmacy status reporting map can help providers locate operational pharmacies able to receive patients and provide supplies to nearby shelters. Using locally available resources at pharmacies in disaster areas is often a faster solution during times of crisis and can save time and resources needed to move supplies.

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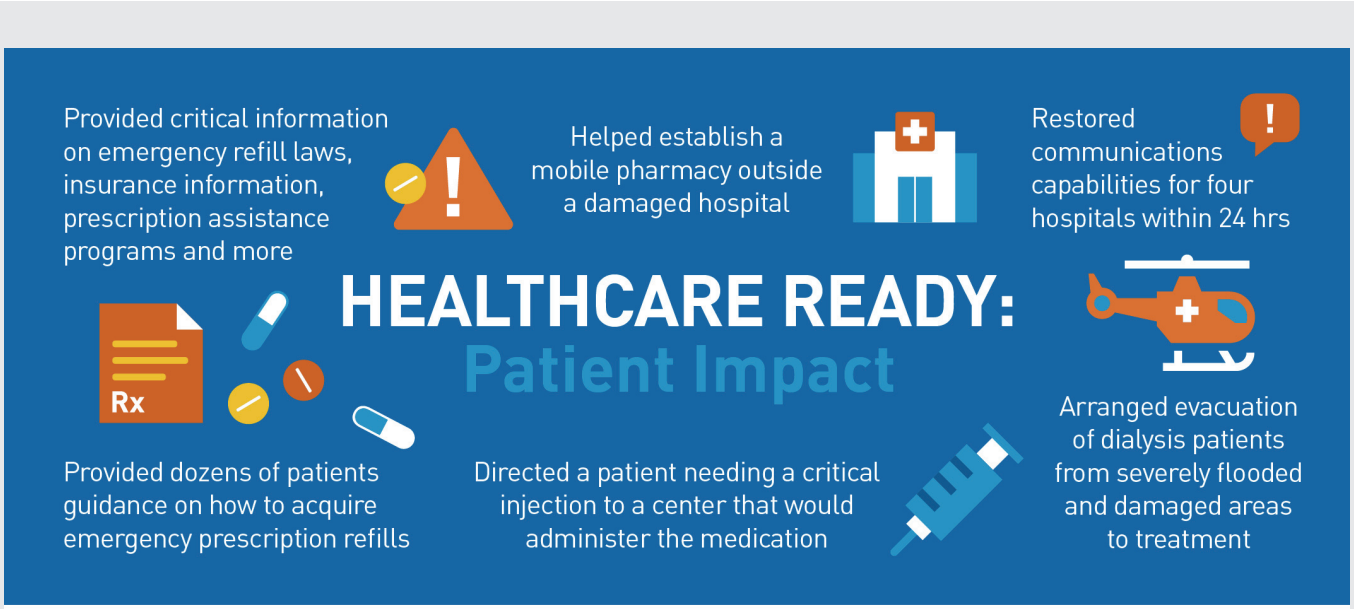
Healthcare Ready is a public-private partnership that works to improve access to medications and other services during disasters. Originally founded as Rx Response after Hurricane Katrina, we use relationships with government and the healthcare supply chain, particularly pharmacies, to enhance resilience and protect patient access to medicines and care during emergencies. In 2008, Healthcare Ready created Rx Open, a one-of-a-kind nationwide map that displays the operating status of pharmacies in areas impacted by a disaster. Over the past decade, record-breaking wildfires, record-breaking hurricane seasons, massive cyber-attacks on healthcare, and disease outbreaks (e.g., Zika, Ebola and influenza) have served as a reminder of the importance of their and their partners' work to build and maintain an agile and responsive healthcare and public health sector. These events can strain healthcare systems and prevent patients from getting the medication and care they need, when they need it. Healthcare Ready—positioned as a liaison between the private and public sectors—has contributed to the positive outcome that partnerships can have in strengthening the healthcare system and protecting patients. ■

Figure 1: Examples of Healthcare Ready's Response Work to 14 Disasters from 2017-2018



Ancillary Services are Anything But…

Contributed by John L. Hick, MD, Senior Editor for ASPR TRACIE, Hennepin Healthcare (Minneapolis)

During a disaster, large numbers of sick or injured patients can tax a healthcare facility's surge capacity. While space, staff, and supplies related to direct patient care are likely included in surge plans, facility support services may face an array of unanticipated challenges.

Examples of these include:

- **Security** – keep traffic moving, maintain access controls, support crowd control, direct media and family members to appropriate (and separate!) areas, and monitor and respond to potential secondary events.
- **Laboratory and Blood Bank** – process higher than usual numbers of clinical specimens (including many on unidentified patients), and provide large-scale transfusion support (in several recent mass shootings over 300 units of packed red blood cells have been used).
- **Radiology** – perform many imaging studies under significant time constraints (including CT, plain x-rays, and ultrasounds).
- **Pharmacy** – locate and provide appropriate medications in the quantities needed in all hospital areas affected by patient surge.
- **Nutrition** – provide food for patients (including specific dietary restrictions), staff, and family members as required, often on short notice and sometimes without power or potable water.
- **Central and Sterile Supply and Processing** – move disaster supplies to specific areas, restock trays and kits as quickly as possible, and reprocess sterile supplies as efficiently as possible.

Several key focus areas emerged from the interviews we conducted with ancillary service providers:

- The members of these teams should be part of the disaster alerting system / callback system. Many times they are not, and particularly when an incident occurs at night, a skeleton staff may be challenged to keep up with the demand.
- The roles of the supplementary team members should be clearly defined (who goes where, who does what) in the facility's emergency plan (in addition to their department's plan).
- Specific supplies should be released and actions taken when a disaster is declared (e.g., specific quantities of appropriate medications may be automatically released to the ER and OR areas).
- Restrictions on services are implemented to focus staff and resources on critical aspects of the service line. For example, radiology may only perform chest and pelvis plain films and limit CTs. Lab may only perform blood typing on patients receiving transfusions, and should consider prioritizing select lab tests (e.g., CBC, electrolytes, lactate, and blood gases) ahead of other clinical laboratory work.
- Select personnel are cross-trained to be able to take on some of the workload (e.g., use greeters rather than security staff in some areas, use transporters instead of CT personnel to move patients).

In many cases, support services are critical to patient care and diagnosis, but if the impact on the services is not anticipated, the resources may be inadequate and patient care may suffer. Each service line should identify a point of contact for hospital emergency management and work collaboratively to determine needs and establish their role in the overall emergency plan. Necessary caches, job aids, call lists, and other resources should be developed and these plans should be exercised regularly, within the service line and hospital wide.

Finally, many ancillary service providers may take on tasks or be exposed to extremely traumatic situations during a mass casualty incident that are far from their daily practice and may place them at significantly higher risk of psychological impacts. Supervisors should ensure that all personnel involved in the response are supported with the same behavioral health resources that front line clinical staff may receive. ■

RECOMMENDED RESOURCES

TECHNICAL RESOURCES

In August 2018, ASPR TRACIE published our 57th comprehensively developed Topic Collection. Since then, we have worked with subject matter experts to refresh several Collections: Ambulatory Care and Federally Qualified Health Centers, Crisis Standards of Care, Disaster Ethics, and Hospital Surge Capacity and Immediate Bed Availability. We will continue to revise Collections; check back often. You can also learn more about rating, commenting on, and saving resources in this short tutorial.

ASSISTANCE CENTER

We encourage readers to access our summary of responses to select technical assistance (TA) requests. We recently responded to TA requests for Healthcare Coalition Best Practices and Communications and Information Sharing Resources; CMS EP Rule Exercise Requirements; Metal Detector Use in Hospitals; and Healthcare Coalition Funding Allocation. For assistance navigating the Assistance Center, check out this tutorial.

INFORMATION EXCHANGE

Register for the ASPR TRACIE Information Exchange, where you can click on the Responder Safety and Health threads and share your opinions and resources with us and your colleagues. Already have an account? Simply log in and share your feedback! Need help registering for the Information Exchange? Access our quick tutorial.

UPCOMING 2019 EVENTS

March

March 26–29, St. Louis, MO
Preparedness Summit

The 2019 Preparedness Summit will feature experts from the healthcare, emergency management, and public health fields to address the gaps between these life-saving industries in an effort to work more collaboratively and efficiently in the face of emerging threats. Check out the ASPR TRACIE demonstration session, *Tools to Improve Special Pathogen Readiness,* on March 27 from 3:30-5pm CT, and ASPR TRACIE poster session, *Engaging Non-Traditional Partners in the Disaster Healthcare Delivery System,* on March 28, 12:00-3:30pm CT.

April

April 22–25, 2019, New Orleans, LA
2019 National Hurricane Conference

The National Hurricane Conference is the nation's forum for education and professional training in hurricane and disaster preparedness.

April 23–24, 2019, Washington, DC
Joint Commission 2019 Emergency Preparedness Conference

This two-day event focuses on how compliance with Joint Commission standards will help prepare organizations for emergencies and disasters. Featuring nationally recognized experts and presentations, participants will be able to augment current strategies with demonstrated practices. Attendees will also receive a comprehensive overview of the latest research in the field of emergency management through poster presentations, courtesy of the Yale New Haven Health System.

May

May 6–9, 2019, Nashville, TN
National VOAD Conference

The National Voluntary Organizations Active in Disaster (VOAD) Conference brings together volunteers, practitioners, and experts across disaster relief sectors. Professionals and volunteers in the emergency management field come to share their experiences, consider new concepts, and develop whole community solutions to build more resilient communities.

May 29–30, 2019, Phoenix, AZ
2019 Emergency Management Leaders Conference

EMLC serves emergency management professionals from the public and private sectors. This national forum allows experts in the field of emergency management and disciplines related to disaster preparation, response, recovery, and mitigation to convene for two days of policy discourse and problem solving, discussing recent events, current issues, best practices, and lessons learned while engaging in forward thinking.

July

July 9–11, 2019, Orlando, FL
National Association of County and City Health Officials (NACCHO) Annual Conference

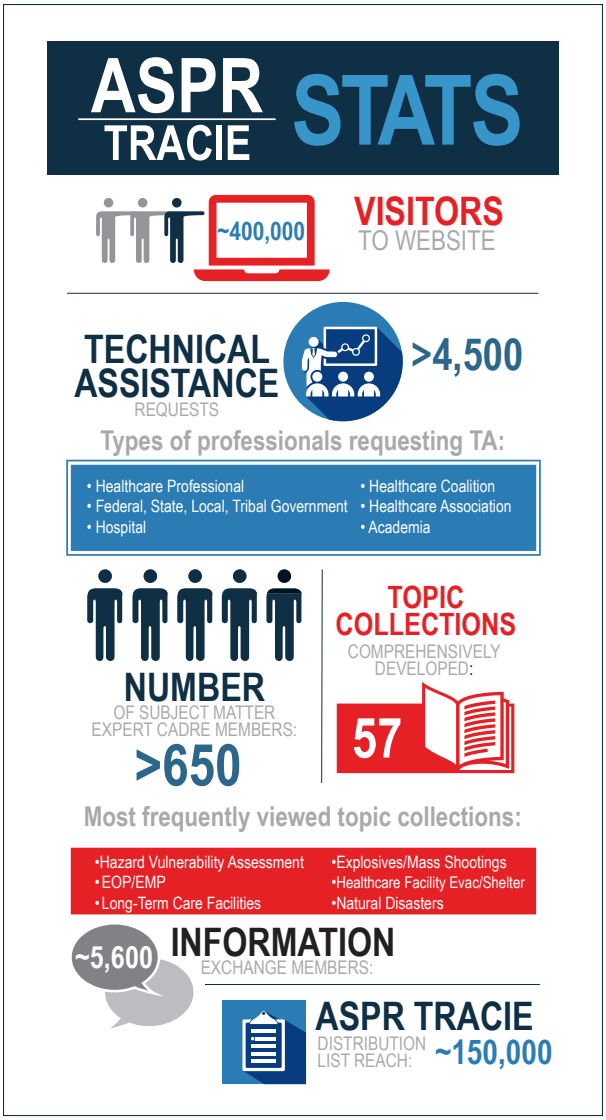
This annual conference offers an opportunity for local health department staff, partners, funders, and individuals invested in local public health to share the latest research, ideas, strategies and innovations.

ASPR TRACIE:

Your Healthcare Emergency Preparedness Information Gateway

The Exchange is produced by the Office of the Assistant Secretary for Preparedness and Response (ASPR) Technical Resources, Assistance Center, and Information Exchange (TRACIE). Through the pages of *The Exchange*, emergency health professionals share firsthand experiences, information, and resources while examining the disaster medicine, healthcare system preparedness, and public health emergency preparedness issues that are important to the field. To receive *The Exchange*, visit https://asprtracie.hhs.gov/listserv and enter your email address.

ASPR TRACIE was created to meet the information and technical assistance needs of ASPR staff, healthcare coalitions, healthcare entities, healthcare providers, emergency managers, public health practitioners, and others working in disaster medicine, healthcare system preparedness, and public health emergency preparedness. The infographic illustrates ASPR TRACIE's reach since launching in September 2015.



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