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Preparing for and Responding to Mass Casualty Burn Incidents

the EXCHANGE

ASPR
Administration for Strategic Preparedness and Response

TRACIE
Healthcare Emergency Preparedness Information Gateway

FOREWORD

Mass casualty burn incidents (MCBIs) are rare but can completely overwhelm emergency response and healthcare in a community, state, and region, depending on the nature and extent of the incident. Burn injuries can be complex and often need specialty care, and demand may exceed availability of burn units and the staff with the knowledge to treat these types of injuries. Further, in the event of a nuclear disaster, thousands of people in one region of the U.S. may need care.

The articles in this issue can help our stakeholders address the challenges associated with planning for and responding to MCBIs. One article focuses on the lessons learned since the 2003 Rhode Island Station nightclub fire. Another article highlights ASPR's National Disaster Medical System's Disaster Mortuary Operational Response Team's response to the wildfires that ravaged Maui in 2023. We highlight the role of the national Burn Watch Board in tracking burn bed availability across the U.S., and we feature an article on how ASPR's Biomedical Advanced Research and Development Authority (BARDA) is working to research and develop treatments for injuries sustained in an MCBI.

BARDA was established in 2006 under the Pandemic and All Hazards Preparedness Act. Our mandate from Congress is to support development of vaccines, therapeutics, diagnostics, and devices to address chemical/biological/radiological and nuclear threats, pandemic influenza, and emerging infectious diseases. BARDA bolsters this mandate by partnering with the private sector and academic institutions to support innovation of technologies, advanced research and development, late-stage development and manufacturing, initial procurements for stockpiling and U.S. Food and Drug Administration (FDA) licensure, and post marketing commitments for products that protect national health security. To date, BARDA and our partners have supported 96 FDA approvals, licensures, or clearances of products that cut across our threat space, improving national health security.

One of our key programs is our burn, blast, and trauma program. The mission of this program is to support integration of transformative medical countermeasures into routine care and to build national preparedness for MCBIs and other mass casualty incidents. These include both natural and man-made disasters ranging from forest fires to nuclear detonations and explosions. Our investments address resource constraints anticipated during an emergency. Our goal is to reduce bottlenecks in the delivery of care to facilitate more efficient management of burn and blast trauma injuries by developing life and limb saving treatments across the initial and definitive care continuum. More information on the specific areas of the program and accomplishments can be found on the BARDA website.

ASPR TRACIE develops resources in conjunction with partners, stakeholders, and other subject matter experts who have direct experience in the field. Please share your own promising practices, experiences, or requests for technical assistance so that others may learn from you. As always, we welcome your feedback.

Gary L. Disbrow
Ph.D., Deputy Assistant Secretary and Director for the Biomedical Advanced Research and Development Authority, ASPR

WELCOME TO ISSUE 20!

The last issue of *The Exchange* focused on extreme weather and healthcare and highlighted experiences and lessons learned by a hospital in central Vermont during an historic flash flood in 2023; the regional burn treatment landscape (with a focus on preparing to treat burn injuries as a result of extreme heat events and wildfires); a brief overview of injuries and illnesses treated in 2023 after the wildfires in Hawaii and extreme heat in Arizona and Nevada with links to burn planning resources; and an overview of Office of Climate Change and Health Equity and their focus on working with federal partners to bolster healthcare infrastructure and community resilience. In this issue, we shift our focus to lessons learned and planning and responding to mass casualty burn incidents (MCBIs) from local, regional, and federal perspectives.

ASPR TRACIE has had the honor of working with healthcare workers and other subject matter experts to gather and share timely information for close to 10 years. Our team has witnessed the impact of mass casualty incidents on our stakeholders across the nation, and we hope that the lessons learned and various strategies highlighted in these articles can help readers prepare for MCBIs and treating burn injuries.

Please also refer to our updated Burns Topic Collection, the new burn considerations appendix in our updated Medical Operations Coordination Centers Toolkit (Version 3.0), the report Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations, and our article Extreme Weather and Healthcare: Are You Ready for a Burn Disaster?

Your feedback is what makes us successful—please contact us with your comments, questions, technical assistance needs, and resources to share. We look forward to our continued collaboration.

Wishing you a safe, healthy new year!

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AT A GLANCE

5 Injuries Sustained and Lessons Learned from the 2003 Station Nightclub Fire

The 2003 Station nightclub fire in West Warwick, Rhode Island was one of the deadliest in American history and resulted in over 200 injuries and 100 deaths. At the time, Dr. Colleen Ryan was serving as the co-director of the Sumner Redstone Burn Center at Massachusetts General Hospital (MGH), where she provided care to numerous burn patients after this MCBI. We interviewed Dr. Ryan to learn more about the incident, the injuries, and the progress that has been made in the MCBI and burn injury fields since 2003.

7 The Big Picture: Using the Nevada Hospital Association's Burn Watch Board to Understand Capacity

Tracking the number of hospital beds available at any given time is a daunting task, and burn beds are no exception. ASPR TRACIE met with Dr. Christopher Lake, who has worked at the Nevada Hospital Association for more than a decade, developing programs that can help healthcare facilities better prepare for and respond to disasters. He provided a tour of the Burn Watch Board—launched just prior to the wildfires that devastated Maui and now used by more than 350 users per day across the U.S.—describing its features and future.

9 Managing Mortuary Services after the Maui Wildfires

When fires ravaged Maui and took the lives of 102 people, personnel from the National Disaster Medical System (NDMS), Disaster Mortuary Operational Response Team (DMORT) were deployed to help identify victims and respectfully process human remains. Robert Vigil, Deputy Team Commander for DMORT Region 9, and Josh Gore, Supply Management Officer/Logistics Section Chief with ASPR's Logistics Response Assistance Team, discussed the logistics work that contributed to this award-winning response.

10 Burn and Blast Medical Countermeasures Program: The Federal Perspective

The mission of ASPR's Biomedical Advanced Research and Development Authority (BARDA) is to develop medical countermeasures that address the public health and medical consequences of chemical, biological, radiological, and nuclear (CBRN) accidents, incidents, pandemic influenza, and emerging infectious diseases. In this article, Dr. Narayan Iyer, BARDA's CBRN Burn and Blast Medical Countermeasures Program Director, shares more about research into and development of treatments for injuries sustained in an MCBI.

ASPR Administration for Strategic Preparedness & Response

WHAT'S NEW WITH ASPR?

Since its creation in 2006, ASPR has been tasked with helping the country prepare for and respond to public health emergencies (PHE) – both naturally occurring, and human caused. Since the last issue of *The Exchange* was published in June 2024, HHS declared public health emergencies in eight states due to several hurricanes. HHS also renewed public health emergency declarations for the State of Hawaii due to wildfires (renewed on August 1, 2024) and the national opioid crisis (renewed on December 20, 2024). The most current PHE information can be found on ASPR's Declarations of a Public Health Emergency webpage.

In June, BARDA awarded close to $500 million in Project NextGen funding for vaccine clinical trials and $24 million for clinical trial of novel COVID-19 vaccine candidate that may provide broader, longer protection. ASPR released their Pandemic Influenza Preparedness and Response Strategy then awarded $240 million to 62 recipients through the Hospital Preparedness Program in July to boost healthcare system readiness.

Also in July, ASPR marked the 20th anniversary of Project Bioshield and the 35th anniversary of the National Disaster Medical System (NDMS). Assistant Secretary for Preparedness and Response Dawn O'Connell's blog highlighted how NDMS is prepared for today's threat landscape. ASPR's Brian Mazanec and Dan Dodgen shared how ASPR is protecting patient care through cybersecurity. ASPR's Center for Industrial Base Management and Supply Chain funded a study with the U.S. Department of Commerce's Bureau of Industry and Security to understand how the domestic supply chain changed during COVID, then announced partnerships with U.S. companies to expand the local production of key ingredients for essential medicines.

In September, ASPR announced mpox vaccine donations, boosting domestic and international supply. In October, ASPR announced steps to prepare vaccine against H5 influenza, activated the Emergency Prescription Assistance Program in Georgia, Tennessee and North Carolina after Hurricane Helene, and supported the response to the Marburg outbreak in Rwanda.

In November, ASPR announced initiatives to strengthen the U.S. – Canada and U.S. – Mexico partnerships and shared how ASPR's Office of Community Mitigation and Recovery supported the Hoopa Valley Tribe in recovery and resilience during Native American Heritage Month.

In early December, ASPR announced partnerships with Tribal Nations to improve access to Strategic National Stockpile Resources and renewed the Medical Reserve Corps' agreement with the American Red Cross, bolstering collaboration and cooperation across both national networks. Also in December, ASPR coordinated an airlift to increase access and supply of IV fluids after a plant in North Carolina was damaged by Hurricane Helene.

Visit the ASPR homepage and blog and follow us on LinkedIn, Facebook, X, and Instagram to learn more about how we are working to keep our communities safe, healthy, and resilient.

HHS ASPR responds to Hurricane Helene

Injuries Sustained and Lessons Learned from the 2003 Station Nightclub Fire

SUMMARY

The 2003 Station nightclub fire in West Warwick, Rhode Island was one of the deadliest in American history and resulted in over 200 injuries and 100 deaths. At the time, Dr. Colleen Ryan was serving as the co-director of the Sumner Redstone Burn Center at Massachusetts General Hospital (MGH), where she provided care to numerous burn patients after this mass casualty burn incident (MCBI). We interviewed Dr. Ryan (currently a Professor of Surgery at Harvard Medical School, and Staff Surgeon at both Sumner Redstone Burns Center and Shriners Children's-Boston in Boston) to learn more about the incident and the progress that has been made in the MCBI and burn injury fields since 2003.

KEY TAKEAWAYS

- *Education with regards to burn care and burn resuscitation is critical. Administering too much fluid, for example, can cause compartment syndrome, but too little can result in kidney failure.*
- *Load-balancing patients during an MCBI can ensure that the sickest patients get the most specialized care.*
- *Burn treatment supplies (particularly for fasciotomies and initial dressings) are important to keep stocked.*
- *Burn patients benefit from having an advocate both in the immediate and longer-term, as their injuries may complicate ongoing medical care (e.g., mammograms and colonoscopies).*
- *Responding to an MCBI requires a team approach.*

RELATED ASPR TRACIE RESOURCES

- Burns Topic Collection
- Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations
- DASH Tool (Burn Supply Module)
- Mass Burn Event Overview
- Pre-Hospital Mass Casualty Triage and Trauma Care Topic Collection

RELATED ABA RESOURCES

- Disaster Response
- Educational Resources for Healthcare Providers
- Guidelines for Burn Patient Referral

OTHER RELATED INCIDENT-SPECIFIC RESOURCES

- Lessons Learned from a Nightclub Fire: Institutional Disaster Preparedness
- Normative Collective Behavior in the Station Building Fire
- Psychological Sequelae of the Station Nightclub Fire: Comparing Survivors With and Without Physical Injuries Using a Mixed-Methods Analysis
- Report of the Technical Investigation of The Station Nightclub Fire (NIST NCSTAR 2), Volume 1 and Volume 2
- The Long-Term Impact of Physical and Emotional Trauma: The Station Nightclub Fire

The Big Picture: Using the Nevada Hospital Association's Burn Watch Board to Understand Capacity

SUMMARY

Tracking the number of hospital beds available at any given time is a daunting task, and burn beds are no exception. ASPR TRACIE met with Dr. Christopher Lake, who has worked at the Nevada Hospital Association for more than a decade developing programs that can help healthcare facilities better prepare for and respond to disasters. He provided a tour of the Burn Watch Board—launched just prior to the wildfires that devastated Maui and now used by more than 350 users per day across the U.S.—describing its features and future.

KEY TAKEAWAYS

- *Standardized definitions for patient severity and for determining the age at which a patient is deemed "pediatric" are key to managing scarce burn beds effectively.*
- *Burn surgeons or designated nursing leaders should routinely update the numbers themselves. Open beds mean nothing without any context as hospitals may have an open bed, but they may not have the staff necessary to provide patient care.*

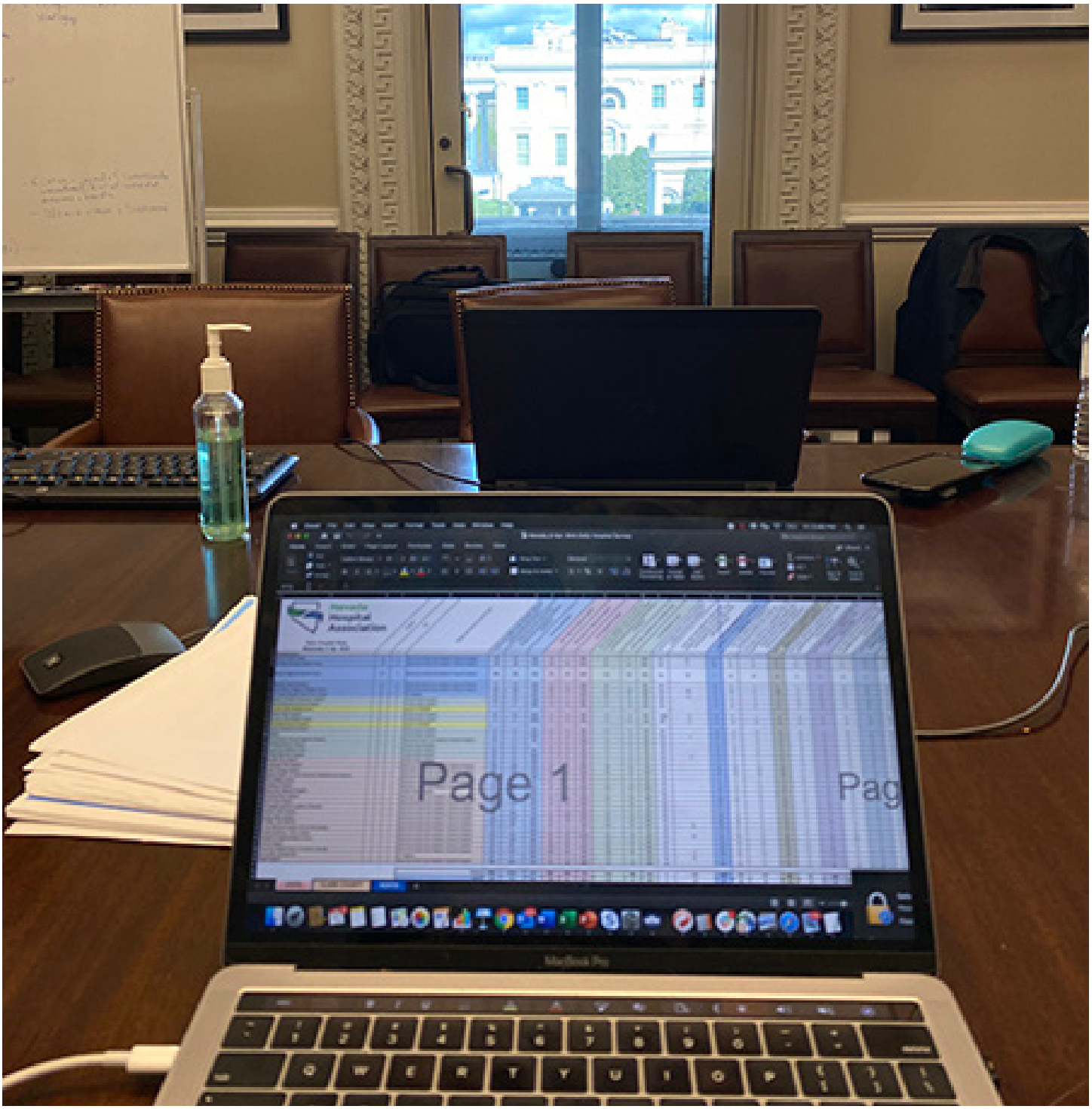
RELATED ASPR TRACIE RESOURCES

- Burns Topic Collection
- Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations
- Burn Considerations for MOCCs (Appendix D of the Medical Operations Coordination Centers Toolkit)
- Extreme Heat Events: Lessons from Seattle's Record-Breaking Summers
- Healthcare Coalition Burn Surge Annex Template
  - » Step-by-Step Guide to Implementing the Coalition Burn Surge Annex TTX Template (PDF)
  - » Using the ASPR TRACIE Burn Surge Templates to Enhance an HCC (PPT)
- Mass Burn Event Overview

- Natural Disasters Topic Collection
  - » Lessons Learned: Extreme Heat; Plans, Tools, and Templates: Extreme Heat
  - » Lessons Learned: Fire/Wildfire; Plans, Tools, and Templates: Fire/Wildfire

NEVADA HOSPITAL ASSOCIATION RESOURCES

- Email watchboard@nvha.net to request an account
- Burn Watch Board Training Videos: Burn Surge Board and Entering Burn Data



Managing Disaster Mortuary Services after the Maui Wildfires

SUMMARY

When fires ravaged Maui and took the lives of 102 people, personnel from the National Disaster Medical System (NDMS), Disaster Mortuary Operational Response Team (DMORT) were deployed to help identify victims and respectfully process human remains. Robert Vigil, Deputy Team Commander for DMORT Region 9, and Josh Gore, Supply Management Officer/Logistics Section Chief with ASPR's Logistics Response Assistance Team, discussed the logistics work that contributed to this award-winning response.

KEY TAKEAWAYS

- *Distance matters—when planning what supplies to send, consider the amount of time it may take to receive back-up supplies, particularly if the incident occurs outside the contiguous 48 states.*
- *Local coroners and medical examiners should be part of disaster emergency management planning.*
- *Flexibility is key; if the victim information center is in an area that is difficult to access, for example, be prepared to relocate and notify the community of the change via local traditional and social media channels.*
- *Check in on your teammates and debrief on a regular basis.*

RELATED ASPR TRACIE RESOURCES

- Burns Topic Collection
- Disaster Mortuary Operational Response Teams in Action: The Role of DMORT in Natural Disasters, Pandemics, and Beyond
- Fatality Management Topic Collection

OTHER RELATED RESOURCES

- About Disaster Mortuary Operational Response Teams
- NDMS Turns 35: Prepared for Today's Threat Landscape
- Office of the National Disaster Medical System

Burn and Blast Medical Countermeasures Program: The Federal Perspective

SUMMARY

The mission of ASPR's Biomedical Advanced Research and Development Authority (BARDA) is to develop medical countermeasures (MCM) that address the public health and medical consequences of chemical, biological, radiological, and nuclear (CBRN) accidents, incidents, pandemic influenza, and emerging infectious diseases. In this article, Dr. Narayan Iyer, BARDA's CBRN Burn and Blast Medical Countermeasures Program Director, shares more about BARDA's research and development into treatments for injuries sustained in a mass casualty burn incident (MCBI).

KEY TAKEAWAYS

- *Expanding capacity of care (including the development of novel products that are easily used, reducing length of stay and the need for surgery, and enabling telemedicine) can help ensure a more efficient response to an MCBI.*
- *Lessons learned from military operations led to the use of silver-impregnated fabric dressings which can stay in place for up to seven days and reduce the amount of patient pain associated with bandage changes.*
- *Artificial intelligence-enabled software and communication technologies can help accelerate the proficiency curve for less experienced clinicians and boost the development of regulatory language.*

RELATED ASPR TRACIE RESOURCES

- Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations
- Burns Topic Collection
- Extreme Weather and Healthcare – Are you Ready for a Burn Disaster?
- Healthcare Coalition Burn Surge Annex Template
- Mass Burn Event Overview
- Mass Distribution and Dispensing/ Administration of Medical Countermeasures Topic Collection

OTHER RELATED RESOURCES

- BARDA's First 15 Years
- CBRN Burn and Blast Medical Countermeasures Program
- National Preparedness: Countermeasures for Thermal Burns
- Resource-Related Information & Tracking Medical Communications Application (RITCA)

RECOMMENDED RESOURCES

Since the last issue of *The Exchange* was published, ASPR TRACIE released the following new resources (listed alphabetically):

- Anesthesia in Disasters and Public Health Emergencies (Speaker Series Recording)
- Burn Mass Casualty Incidents: Triage, Assessment, and Treatment Considerations
- Crisis Standards of Care Considerations
- Healthcare Workplace Violence Speaker Series
- Hot Spots: Reflecting on the Summer of 2023
- Intravenous Fluid Shortage Strategies
- Medical Operations Coordination Centers (MOCCs) (New Resource Page)
- Pediatric Issues Informing Current and Future Disaster Planning (Webinar)
- Shortage Strategies and Resources: Peritoneal Dialysis Solution
- Supporting the Community through Historic Flooding: Central Vermont Medical Center's 2023 Experience

We also updated the following resources:

- Burns Topic Collection
- Communications Systems Topic Collection
- Considerations for the Use of Temporary Surge Sites for All-Hazards Incidents
- Information Sharing Topic Collection
- MOCC Toolkit (Version 3.0)
- Natural Disasters Topic Collection
- Volunteer Management Topic Collection
- Veterinary Issues Topic Collection
- Workplace Violence Topic Collection

We encourage you to review our recent requests for technical assistance on Collaboration Among Community Health Centers During Disasters, Intravenous Infusion Resources for Prophylaxis/Treatment of Special Pathogens, and our summary of responses to select TA requests. Check out this tutorial for assistance navigating the Assistance Center.

Did you know you can create a private group in our Information Exchange domain? Groups can share files and information in a password protected area in near real-time. Reach out to learn more!

ASPR TRACIE

Your Healthcare Emergency Preparedness Information Gateway

The Exchange is produced by the Administration for Strategic 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/register 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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