Domestic Preparedness Journal

REAL-WORLD INSIGHTS FOR SAFER COMMUNITIES

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Eric Epley is the executive director of the Southwest Texas Regional Advisory Council for Trauma (STRAC) in San Antonio, Texas. STRAC serves 22 counties that stretch over 26,000 square miles, whose membership includes 55 hospitals, 75 emergency medical services (EMS) agencies and 14 helicopter bases. He is a Certified Emergency Manager with nearly 35 years in public safety response and administration, a nationally registered paramedic for over 30 years, and a licensed police officer for 13 years, serving as a tactical paramedic at the Branch Davidian standoff, the Republic of Texas standoff, and other high-profile Texas incidents.

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Alexis Joiner is a senior technical staff member at Sandia National Laboratories supporting homeland and defense customers in technical areas such as pandemic planning, biological detection systems, health, food, and agriculture systems resilience, scenario planning, and stakeholder engagements. She acquired 20 years of diverse experience working across government, private, and international non-governmental organization sectors. She deployed to Liberia, West Africa during the Ebola Emergency Response as a World Health Organization consultant. She formerly worked as a government technical consultant on biodefense and S&T projects for homeland, defense, and national security clients and led technical business development for procurements. After the 9/11 attacks, she worked in the first civilian cadre of WMD national security analysts at FBI Headquarters. As a small business start-up founder, she was Computer Sciences Corporation's Emerging Small Business of the Year in 2014. She has international field experience working with culturally diverse communities in austere environments before, during, and after protracted crises and disaster events (e.g., Liberia, Kenya, Ghana). She has worked in the Former Soviet Union to enhance human and animal disease surveillance reporting.

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As assistant chief, Bob Royall was responsible for the overall operation of the Harris County Fire Marshal's Office (HCFMO) Emergency Operations, reporting directly to the fire marshal. He began his career in the fire service in 1973 with the City of Houston Fire Department, retiring as a senior captain after 31 years, over one-third of which as a coordinator of the hazardous materials response team. He began his tenure with HCFMO in 2005 as assistant chief. He also served as HCFMO's chief of staff, chief of risk management, chief financial officer as well as in leadership roles on numerous local, state, and national committees. Bob is a principle member of the NFPA 470 and NFPA 475 Technical Committees, Chairman of the International Association of Fire Chiefs (IAFC) HazMat Committee, and Chairman of the Texas Emergency Management Advisory Executive Committee.

Click here to meet the rest of our advisors

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Close to Home

By Catherine L. Feinman

The devastating wildfires in Maui demonstrate the extreme dangers the wildland-urban interface (WUI) poses to lives and property. According to a Federal Emergency Management Agency and U.S. Fire Administration June 2022 report, about one-third of the U.S. population (99 million people in 46 million homes) live in the expanding WUI zone. As the frequency and intensity of natural threats increase, and urban areas expand, communities must plan for new and unexpected events.

In any community, many activities abound, such as children going to school, adults working, and families and friends attending sports games and other special activities. Some people are interactive, while others are less socially involved. The daily routines and activities can lull communities into a false sense of security about the risks, hazards, and threats they could encounter at any moment.

This August 2023 issue of the *Domestic Preparedness Journal* focuses on several ways disasters can suddenly hit close to home and suggestions for mitigating potentially devasting consequences. To protect the whole community, working with all key stakeholders on building awareness, expanding training, and responding effectively is critical:

- Be aware of the potential needs of anyone in the community and the evolving threats that may require new approaches to counter them.

- Recruit and train those who work in hazardous conditions or may find themselves in preparedness and response roles to protect schools, special events, and other daily activities.

- Plan to ensure resources are in place and responders are fully equipped to go into dangerous situations and rebuild communities when necessary.

The world is different than it was even five years ago. Naturally occurring events that used to happen elsewhere are now hitting closer to home – like a hurricane making landfall in Southern California coupled with a 5.1-magnitude earthquake. As such, whole community preparedness is more important than ever when protecting families, homes, and ways of life.

Catherine L. Feinman, M.A., joined Domestic Preparedness in January 2010. She has more than 30 years of publishing experience and currently serves as Editor of the *Domestic Preparedness Journal*, www.DomesticPreparedness.com, and the DPJ Weekly Brief, and works with writers and other contributors to build and create new content that is relevant to the emergency preparedness, response, and recovery communities. She received a bachelor's degree in international business from University of Maryland, College Park, and a master's degree in emergency and disaster management from American Military University.

Source: U.S. Navy photo by Chief Mass Communication Specialist Ryan J. Courtade/Released

7 Best Practices for Implementing Housing Recovery Programs

By Daina Ruback

Community Development Block Grant-Disaster Recovery (CDBG-DR) housing recovery programs are an essential tool for rebuilding and revitalizing communities affected by natural disasters. Funded by the U.S. Department of Housing and Urban Development (HUD) to state and local governments, these programs offer much-needed financial assistance to homeowners and renters to rebuild or repair their homes and support infrastructure and economic development. However, implementing CDBG-DR housing recovery programs can be complex and challenging and, if not done correctly, can result in delays, inefficiencies, and inequitable outcomes.

With experience working on housing programs across the country, including in Texas after Hurricane Harvey, New York City after Hurricane Sandy, and Louisiana after Hurricane Katrina, this author developed best practices for implementing CDBG-DR housing recovery programs, including planning, community engagement, program design, implementation, and monitoring. These recommendations are based on years of experience and lessons learned from CDBG-DR

programs across the country. To avoid common program pitfalls, CDBG-DR grantees should consider these seven best practices when designing and developing programs.

1. Streamline Eligibility Processes for Efficient Program Delivery and Overall Program Compliance.

Developing and launching an applicant survey and/or registration page well before the program intake begins is crucial. This step serves multiple purposes, allowing the grantee to gather valuable information about the most vulnerable populations and prioritize the distribution of application invitations. Providing various methods – such as an online registration option through the grantee's website, a call center, and outreach events tailored to reach relocated residents effectively – make registration accessible to all affected residents. During registration, inform applicants about the documents they must submit with their application.

The establishment of separate intake and eligibility teams streamlines the process and minimizes waiting times for applicants. By running these functions concurrently, applicants can have their eligibility assessed

promptly, expediting the overall process. This approach not only reduces waiting times but also enhances the efficiency of the program.

Additionally, it is essential to create an Eligibility Appeal Review Team. This specialized team would be responsible for processing appeals from applicants who may have been initially deemed ineligible. Handling these appeals in a timely manner maintains transparency and fairness throughout the process. Following these guidelines would ensure a well-organized program-intake process, allowing the grantee to efficiently serve those in need and effectively fulfill the program's objectives.

2. Create Wrap-Around Public Services to Support Homeowners and the Community.

Establishing preliminary programs that offer temporary support to low- to moderate-income individuals and households is imperative. These programs extend assistance beyond construction-related matters, encompassing provisions such as relocation aid, rental assistance, and even mortgage payment support.

Another crucial aspect of planning involves fostering workforce development opportunities within the community. By doing so, planners can create pathways for residents to access the jobs that emerge as a result of the program's implementation. This approach bolsters the community's economy and promotes a sense of empowerment and inclusion for its members.

Cultivating strategic partnerships with key organizations would help maximize the program's impact. Among these collaborators are legal aid agencies and housing counseling non-profits. Their involvement ensures that community members have access to vital resources, legal guidance, and expert counseling related to housing matters, further fortifying the endeavor's success. These outlined steps lay the groundwork

for a comprehensive and sustainable approach that uplifts the community and empowers its residents for a brighter future.

3. Provide Clear and Consistent Messaging to Homeowners.

Successful programs include clear and concise policies, eligibility criteria, and lists of eligible and ineligible expenses, all written in easily understandable language. This ensures that participants can readily comprehend the program's guidelines and requirements.

Effectively sharing information and ensuring transparency help avoid misunderstandings and sets appropriate expectations. For example, homeowners may not know that any personal expenses incurred after applying to the program would not be reimbursed. Instead, they should patiently await program funds before making any additional expenditures.

Dissemination of program-related information through various channels facilitates a transparent and accessible process. These include program websites, frequently-asked-questions pages, webinars, public meetings, and intake centers. By doing so, program organizers can ensure that the details and updates are accessible to a wider audience, increasing awareness and participation in the program. Adopting these practices helps create an inclusive and well-structured program that promotes understanding, fairness, and accountability among all stakeholders.

> **By applying these seven best practices, communities can maximize the impact of grant funds and ensure a more equitable and resilient recovery from disasters.**

4. Invest in a Robust and Well-Designed Data and Document Management System.

It is important to establish a resilient system for handling extensive applicant documentation. Additionally, building a user-friendly interface that connects with reporting dashboards and other stakeholder resources helps facilitate program insights. Moreover, when the grants management system is meticulously designed, users can take into consideration future audits and ensure compliance with regulations.

5. Create a Tiered and Integrated Environmental Review and Damage Assessment Process for Maximum Efficiency.

To streamline the assessment process and minimize disruptions to homeowners, program designers should compile a Tier I (site-specific) Review that encompasses regions sharing similar geographies, demographics, and social features. This review enables the efficient utilization of survey and registration data to prioritize Tier II (area-wide) and Damage Assessment requests. To further expedite the process, Tier II inspections could be carried out simultaneously with damage assessments, including Lead Paint and asbestos assessments. Combining these evaluations makes it possible to optimize efficiency and provide a more effective response to the needs of homeowners while ensuring thorough and accurate assessments are conducted.

6. Stand Up a Construction Management Team, Separate From the Homebuilders, Who Are Responsible for Activities.

By adhering to the following checklist of crucial measures, program designers can foster a successful, reliable, and smooth homebuilding process, benefitting both builders and homeowners alike:

- Carefully assign projects to homebuilders based on their capacity, past performance, and demonstrated commitment to maintaining construction standards and quality.

- Provide all homebuilders with a comprehensive and mandatory training program. This training covers essential aspects such as expectations, policies, warranties, payment request processes, construction standards, safety measures, and compliance with local municipalities and utilities.

- Perform cost estimates and reasonableness analyses to maintain financial accountability, ensuring that projects remain within budget and cost-effective.

- Closely monitor crucial program deadlines to ensure that homebuilders obtain the necessary permits and complete their projects promptly and in accordance with the specific requirements for each construction type.

- Conduct thorough walk-throughs with homebuilders before initiating work to minimize complications and unexpected adjustments. This step identifies any areas that might have been overlooked during the damage assessment, thus reducing the need for change orders (i.e., modifications to the construction contract, likely updates to scope or pricing, that can increase costs if initial needs are missed).

- Maintain vigilant oversight of change orders, verifying their validity and necessity to prevent potential misuse

7. Create a Tiered and Integrated Environmental Review and Damage Assessment Process for Maximum Efficiency.

Homeowners should receive a construction contract template. Tip sheets also can be created for both the homebuilder and homeowner, offering valuable advice on topics like avoiding fraudulent contractors, meeting HUD's Energy Star Requirements, and safe disposal of hazardous materials.

Under the CDBG-DR housing recovery program, eligible households may receive financial assistance for activities such as home repairs, reconstruction, or new construction. The program may also provide rental assistance, downpayment assistance, and other forms of support to help households secure safe and affordable housing. By applying these best practices, communities can maximize the impact of CDBG-DR funds and ensure a more equitable and resilient recovery from disasters.

Daina Ruback is a director on the Housing, Community Development & Infrastructure (HCDI) team at Tidal Basin Group. She oversees a portfolio of programs, including CDBG-DR, CDBG-MIT, Homeowner Assistance Fund, and Technical Assistance contracts, and serves as a subject matter expert on federal grants management. Prior to her time at Tidal Basin, she worked for the city of New York's Office of Management and Budget, leading program and policy for their Community Development Task Force after her role as lead for the city's $3 billion CDBG-DR housing recovery portfolio. After working as a trainer and educator with the Peace Corps in Nicaragua, she held positions promoting small business and entrepreneurship with the Women's Enterprise Development Center in New York and the Aspen Network of Development Entrepreneurs in Washington, DC.

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Sports Celebrations – Expect the Best, Plan for the Worst

By Robert Leverone

Sports celebrations can be anything but celebratory. Many cities around the nation and the world have seen peaceful celebrations of their team's success turn violent. In Boston, three people have died during sports celebrations in recent years. The June 2023 mass shooting in Denver, Colorado, at a championship celebration for the Denver Nuggets of the National Basketball Association (NBA) is another stark reminder of how things may go awry at such events. Denver Police and other municipal agencies planned for the celebration, which ensured they had enough staff to assist the victims and arrest two suspects. That event shows how proper pre-planning by law enforcement and other stakeholders in the community can help mitigate potential problems that may arise.

Planning for post-championship celebrations, or any mass gathering of people where emotions may run high, is critical to public safety. Failing to plan can lead to an ineffective response when crowds get caught up in a contagion of excitement, which may lead to widespread lawlessness. Proper planning with built-in flexibility to address issues as they arise leads to more positive outcomes for law enforcement and revelers alike. While there are many things to focus on when planning for such events, this article focuses on six

important planning elements to consider, which are critical to mission success: command and control, incident objectives, intelligence, resources, training, and a whole-of-government/community approach.

Command and Control

Assigning one person as an incident commander, with authority to establish incident objectives, make decisions, and delegate tasks and responsibilities, is crucial to responder command and control. For this purpose, utilizing the Incident Command System (ICS) established in the National Incident Management System is highly recommended. ICS facilitates lines of communication and the assignment of tasks and responsibilities down through a chain of command to front-line personnel. ICS also provides an organizational structure for collaboration, communication, cooperation, and coordination among government services in a multi-agency response. Such a system ensures the following:

- All personnel assigned to the event or incident clearly understand what to do, where to do it, and to whom they report (i.e., unity of command); and

- The response to unexpected issues that may arise during planned events and unplanned incidents is more organized and rapid.

Incident Objectives

Despite the best intentions, without establishing incident objectives in planning, dealing with a large celebratory crowd can get messy. Therefore, creating formalized incident objectives – which is the job of the incident commander – should be approached methodically. SMART planning is one such method of developing actionable incident objectives. The SMART acronym can mean different things depending on the topic and source. For ICS purposes, SMART translates into specific, measurable, action-oriented, realistic, and time-sensitive, which means formulating incident objectives that:

- Are specific and unambiguous,

- Can be measured in a meaningful way,

- Are realistically achievable through the tasks and resources assigned, and

- Yield results in a defined timeframe.

The above is just one way of approaching the formulation of incident objectives. However, establishing incident objectives is vital to planning regardless of which interpretation of SMART or another paradigm is used.

Intelligence

Knowing what to expect in a large celebratory crowd event helps facilitate proper planning. To that end, a robust intelligence component to planning assists risk assessment efforts that yield insight into the necessary depth and complexity of planning. Most, if not all, law enforcement agencies have some level of intelligence gathering and analysis capabilities. For example:

- Larger agencies often have greater capabilities, which they must include in the planning process, than mid- to small-sized agencies.

- Small- to medium-sized agencies may have a solid understanding of what occurs within their immediate jurisdiction but may lack the ability to reach beyond their local area for in-depth analysis of needed intelligence.

- The various state-run fusion centers and nodes of the Regional Information Sharing System around the country can be of great value to law enforcement agencies of any size by enhancing or providing the capacity to collect and analyze intelligence relevant to an upcoming event or unplanned incident.

Resources

The resources necessary to successfully handle a large celebratory crowd depend on the incident objectives identified after considering intelligence analysis and a threat assessment. The number of personnel and their capabilities rely on this process. Intelligence-driven risk assessments that do not identify potentially unruly elements in the crowd may call for fewer personnel with basic crowd management qualifications. Risk assessments that identify potential risks call for a different approach. For example:

- If potentially unruly threats are identified, responding public safety agencies should consider a tiered response featuring larger, more mobile personnel groupings with specific skills for handling escalating civil unrest in addition to personnel with basic qualifications. Emergency management and emergency medical services are necessary adjuncts to integrate at this stage.

- A recently released publication from the National Tactical Officers Association entitled *Public Order Response and Operations Standards* details the law enforcement capabilities recommended for a tiered response to unruly crowds.

Other resource considerations include venue selection and security, and transportation. Where to hold a large-crowd event of any kind and how to ensure the safety of attendees is of paramount importance. A venue large enough to accommodate the expected crowd, with controlled access points and amenable to a diversity of transportation options, is essential to the managed flow of people. Equally important is ensuring approaches that provide unfettered venue ingress and egress for emergency vehicles and personnel should they be needed.

Where to position a command post with representatives from multiple agencies is another resource consideration. That venue must be able to accommodate the expected number of personnel and their secure communications and cyber-infrastructure

> **Public safety stakeholders in the community can help mitigate potential problems that may arise when they properly pre-plan for large celebratory crowd events.**

needs. Like the event venue, it must have controlled access points to ensure physical security. It is not recommended the command post be located inside the event itself, but in proximity to avoid physical security issues should the crowd become unruly.

Training

Training personnel is an often-overlooked facet of preparing for large-crowd events. A large celebratory event, where high emotions and potential unrest exist, is no exception. Key training considerations include:

- Regardless of their size, law enforcement and other local government agencies must train to manage a peaceful crowd and control an unruly one.

- In a whole-of-government approach, it is imperative that agencies, especially law enforcement, fire services, emergency management, and emergency medical services, train together to ensure continuity of effort.

- Regardless of agency, all responders should be trained in de-escalation and dialogue techniques if they may be in contact with the crowd.

- Agencies should also prepare for a worst-case scenario, where a multi-agency tactical response is necessary to quell a disturbance or respond to a mass casualty event, such as the Denver shooting incident.

- If non-government organizations are expected to assist governmental efforts, joint training between these entities and governmental agencies is recommended to ensure coordinated efforts.

Whole-of-Government/Community

When planning for a large celebratory event, it is critical to remember that more stakeholders may be affected in the community than law enforcement, fire services, emergency management, and emergency medical services. A whole-of-government/community approach should be adopted for such events:

- Political leadership and other government entities – such as public works, public health, public transportation, licensing and permitting agencies, legal departments, and more – may be impacted and should be included in planning. Their vital role in these events should be welcomed and not overlooked.

- Non-governmental organizations such as business groups, faith-based institutions, civic groups, cellphone service providers, commercial sanitation services, private venue security personnel, and others whom a large-crowd event may impact should be queried for their input into planning.

- Even the team around which the celebration is centered could play an essential role through messaging from its influential star athletes.

This whole-of-government/community approach ensures all facets of the community that the event may impact have a say in how the community responds while enhancing communications and coordination efforts across the broad spectrum of stakeholders before, during, and after an event or incident.

Key Takeaway

Large celebratory events, especially after a professional sports team's championship win, necessitate a coordinated response from municipal government agencies and the community. Thorough planning, enhanced by intelligence-based risk assessments and input from all potentially impacted stakeholders, ensures an effective, coordinated response to peaceful or unruly events. Although other aspects of planning are certainly applicable, command and control, incident objectives, intelligence, resources, training, and the whole-of-government/community approach are critical components of any comprehensive plan that planners should embrace.

Robert Leverone retired as a lieutenant from the Massachusetts State Police after thirty-one years of service. He was commander of the Special Emergency Response Team, an arm of the agency tasked with crowd control and homeland security-related missions. He holds a Bachelor of Science in Business Administration from Northeastern University, a Master of Science in Criminal Justice from Westfield State University, and a Master of Arts degree in Homeland Security Studies from the Naval Postgraduate School, where he wrote his thesis entitled, Crowds As Complex Adaptive Systems: Strategic Implications for Law Enforcement. Mr. Leverone is the owner and president of Crowd Operations Dynamix, Inc., specializing in training and consulting law enforcement and private industry in crowd management and control issues.

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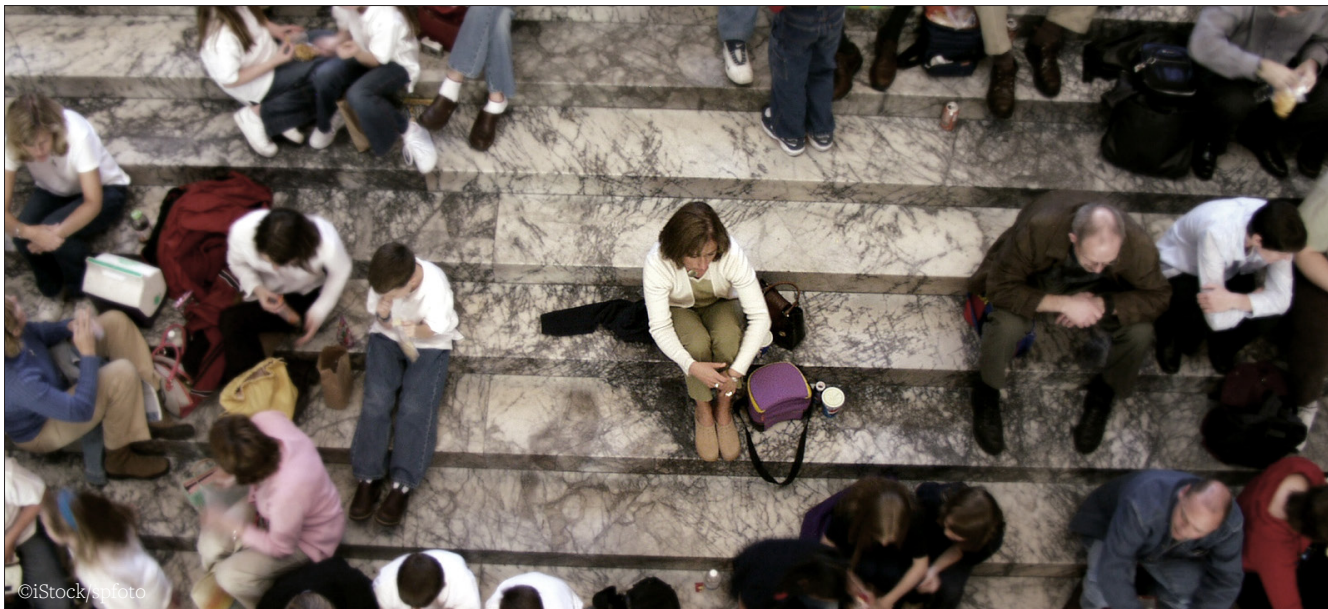
Community Preparedness for the Socially & Civically Isolated

By George Schwartz

In May 2023, the U.S. Surgeon General released an advisory entitled "Our Epidemic of Loneliness and Isolation," which finds that, even before the COVID-19 pandemic, about half of American adults reported feeling lonely. The advisory states that a lack of social engagement with others, which for some people includes friends and family, can have serious health effects for socially isolated individuals. This trend of social isolation and attendant civic disengagement could also have implications for the work of emergency management professionals – both from a public health standpoint and in regard to the whole community approach to preparedness.

Public Health Considerations

The first to consider is, of course, the serious public health impacts. The Surgeon General felt compelled to issue the advisory because loneliness and social isolation increase the risk of premature death by 26-29%. Other possible impacts may include an increased risk of dementia and communicable respiratory diseases.

Loneliness and isolation likely increase as a population gets older. For example, Japan has the highest proportion of senior citizens of any country in the world. So many thousands of older citizens

die without anyone knowing of their passing for days, weeks, or months that the phenomenon has coined a new word, kodokushi, meaning "lonely death." Consider if something similar were to occur in the U.S., where 70 million Baby-Boomers – about 20% of the American population – will soon reach their 80s. In addition, about 30% of households are already single-person, and that percentage is expected to rise.

The Challenge for a Whole Community Approach

More important is the impact social isolation and civic disengagement may have on emergency preparedness. The downturn in social engagement echoes the steep decline of Americans' civic engagement over the last 30 years and was most notably identified by Robert D. Putnam in his work, Bowling Alone: The Collapse and Revival of American Community. The nation's approach to emergency management is based on engaging and empowering the whole community. However, the success of such efforts is questionable when a significant portion of a population is not engaged.

A majority of Americans (almost 60%) feel some attachment (which includes social connection) to their local communities. But no matter where they live – urban, suburban, or rural – roughly 4 in 10 Americans feel very little or no attachment at all to the

places where they live. Therefore, direct outreach by emergency management professionals may only reach a slim majority of citizens.

The whole community approach is also somewhat dependent on peer influence, when people base their decisions – for example, preparing their household for a disaster – on the decisions and behavior of those around them. Again, while emergency managers may be able to leverage peer influence to increase the preparedness of a community, it will still not be the whole community if almost half of the population does not feel a part of it and has little contact with others.

Social creatures have historically relied on each other to survive. However, Pew Center research shows that the level of trust in each other has also eroded over the last several decades – perhaps contributing to the decline in social and civic engagement. Of the 7 in 10 Americans who believe there has been a decline in interpersonal trust over the last 20 years, 14% attribute it to loneliness and social isolation. Historically, the first people to respond after a disaster have been other survivors – one's neighbors. Although 75% of those polled believe people will cooperate during a crisis, they may still not trust them.

The Value of Social Capital

A community where its citizens are trusting and civically and socially engaged is a community that is rich in *social capital*. Although difficult to define, social capital is considered the value of social networks – *bonding* between similar people and *bridging* between diverse people – with some zexpectation of reciprocity. It can be measured in a myriad of seemingly benign ways, including voter turnout, blood donation rates, volunteer hours, and public meeting attendance.

Before, during, and after a disaster strikes, there is evidence that communities with an active civil society and high social capital prepare, respond, and recover better. Such communities have more public involvement at every phase of the disaster management cycle, reducing risks, making efforts to prepare, and

responding to help neighbors. After a disaster, tight-knit communities share resources (like fuel for generators), work collectively to clear debris, and even open their homes to shelter their neighbors.

What Can Be Done

Perhaps the most important first step for emergency management professionals is understanding the level of social capital (and social isolation) in the communities they serve. But better data on these factors are needed for effective emergency management planning.

In the U.S., a community's risk is partly determined by the Community Risk Factor, which is a function of its social vulnerability and community resilience values.

> It is critical to understand social capital and social isolation levels in communities, but better data are needed for effective emergency management planning.

The most commonly used social vulnerability models include variables such as people age >65 and single-parent households but do not include social capital or even such measures as single-individual households or the socially disengaged. Considering the health risks inherent to the socially isolated, the disconnectedness from their community (which probably includes news and public information), and their general distrust, the argument could be made that they should be considered among the most vulnerable category.

The Baseline Resilience Indicators for Communities include human well-being/cultural/social capital as one of its six broad categories. But again, the variables (e.g., educational attainment equality, pre-retirement age, health insurance) do not lend themselves to studying social and civic engagement and are anyway normalized to provide a simple indicator between zero and one for every county in the country.

Efforts can still be made to increase a community's social capital while waiting for better data to catch up with the planning needs. However, it should not just be the responsibility of emergency management professionals alone. It will take a "whole community" of public-private partners to fully engage the community socially and civically. As the nation continues to recover

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Neighbors Helping Neighbors programs that assist the socially vulnerable in neighborhoods.

- Enact Pro-Connection Policies – Northeastern University Professor Daniel Aldrich, an expert on social capital, recommends tools such as time banking and community currency to get people civically engaged. People who agree to volunteer in the community are rewarded with vouchers that they can spend in local stores.

- Start Conversations – Social media has tremendous value for connecting with community members, but it should be used to bring people together and further conversations about emergency preparedness face-to-face. As mentioned, peer households can positively influence other families' disaster preparedness.

- Strengthen Social Infrastructure – Find ways to link to existing groups in the area (e.g., social clubs, fraternal organizations, church groups) and help them strengthen their bonds while building bridges between different groups. Community social events can also help reach people who do not feel connected to their communities.

from the social isolation caused by the pandemic, now might also be the best time to get started.

The Surgeon General's advisory presents a national strategy to build social connections that can be adapted into a potential approach for emergency managers at the local level.

- Build a Culture of Connection – Local leaders should model and speak to the value of social connection through public service announcements, opinion articles, and media interviews. Putting words into action, some communities have started

In conclusion, being socially isolated and civically disengaged makes these members of communities among the most vulnerable to disaster. Until there are better methods for identifying and reaching out to them, they may be overlooked in emergency planning and recovery efforts. It may be up to emergency management professionals to raise concern about social disengagement and start promoting the value of social capital for their communities.

Dr. George Schwartz is an associate professor at Immaculata University and has been the director of the bachelor's degree in Emergency Planning & Management program since 2014. He is also a retired senior Army officer with more than 30 years of service overseas and in the homeland, including leading National Guard units during domestic response operations.

Domestic Preparedness Presents

THE RECRUITMENT & RETENTION WEBINAR

Recruitment and Retention Panel Discussion

By Domestic Preparedness

Emergency management draws people from many different industries and professions. It also attracts young adults as their first profession. On August 3, 2023, Domestic Preparedness hosted a panel discussion with five emergency management professionals who entered their careers differently and at different life stages. For example, one got his first look into emergency management as a youth earning a merit badge. In contrast, another found a second career after missing the adventure found as a U.S. Marine for 23 years. Volunteering in the community as a firefighter or in a response organization for earthquakes and other emergencies gave others a glimpse into the emergency management world.

Finding a Niche in Emergency Management

Although many people get into the field through their previous response experiences, emergency management depends on many other areas beyond emergency preparedness fields. Emergency management also requires skillsets from those involved in global information systems, information technology, transportation, project management, communications, and many others involved (e.g., nontraditional tasks, sending teams to incidents in other areas). In high-stress careers, priorities include preventing burnout, minimizing turnover, and managing work-life balance. A positive servant-leadership culture can help manage

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stress and retain personnel. Good leadership involves creating a collaborative and cooperative environment that motivates individuals and builds teamwork.

Retention in socially impactful careers benefits from a healthy employer-employee relationship. Characteristics of this relationship include: speaking up, sharing knowledge, having empathy for others' needs and goals, building a solid support system (at home and work), listening to others and valuing their opinions, and motivating both self and others.

There are a variety of events that communities face (natural, human-caused, and technological). When managing these emergencies or disasters and restoring a community, emergency managers often start by empathizing with others and their numerous unmet needs. That same empathy would drive positive change within an organization or agency. The panelists in this webinar urge leaders to prioritize recruitment and retention because the return on investment is more significant than any other investments they can make.

Panel Participants

Aaron Alvarez

Aaron Alvarez is TDEM's Advance Representative, working closely with the Media & Communications team and agency leadership to support public engagements and events across the state.Aaron is a graduate of the inaugural Texas Emergency Management Academy, where he received his FEMA National Emergency Management Basic Academy Certificate of Completion as well as NREMT Emergency Medical Technician Basic Certification. The Academy provided him with over 1,400 hours of instruction, training, and knowledge in a variety of aspects of emergency management, including the fields of emergency preparedness, disaster response, recovery, and hazard mitigation.After graduating high school and attending college, Aaron worked as a project manager for a general contracting company in Austin, TX. During his free time, he spent many hours volunteering for the local Fire Department and learning about Fire and Emergency Services.

Nathan DiPillo

Nathan DiPillo currently serves as a California Governor's Office appointee assigned to the California Office of Emergency Services as a Critical Infrastructure Analyst in the State Threat Assessment Center. Before state service, he functioned as a critical infrastructure specialist with the Department of Homeland Security, Cybersecurity and Infrastructure Security Agency (CISA). He also spent over 15 years with the Transportation Security Administration, where he assisted in standing up the agency with policy development, training, and recruitment. He has over 25 years in the emergency management and security industry, beginning as a resident firefighter/emergency medical technician. He also served with the California State Military Department, and Army National Guard in the 223rd Training Command ending his career as a Sergeant First Class. During that time, he served in many units, finishing his career attached to the 102nd Military Police Training Division in an Opposition Force Unit. He currently serves on a small-town planning commission and assisted in coordinating an emergency family communications group in his local area. He possesses a Master of Emergency Management/Homeland Security from the National University and other Federal Emergency Management Agency (FEMA), U.S. Department of Homeland Security (DHS), and military certifications. He currently serves as an advisor to the Domestic Preparedness Journal.

Anthony S. Mangeri

Anthony S. Mangeri, MPA, CPM, CEM, has more than 30 years of experience in emergency operations and public safety. During the terrorist attacks of 9/11, he served as operations chief at the New Jersey Emergency Operations Center, coordinating that state's response to the passenger-aircraft crashes into the World Trade Center. He has served his community as a volunteer firefighter and an emergency medical technician (EMT) for more than 25 years, ultimately earning the rank of assistant chief/safety officer and serving as the fire department's health and safety officer for many years. Currently, he is a consultant focusing on emergency management, planning, training, and exercising. He is also on the faculty of several universities. He serves on several professional committees, including the ASIS Fire and Life Safety Council, and is president of the International Association of Emergency Managers (IAEM) Region 2. He earned a Master of Public Administration from Rutgers University. He is a Certified Public Manager and has received the IAEM's designation of Certified Emergency Manager.

Elizabeth Saunders

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Photo provided by NextGen Interactions.

Training for Hazardous Tasks in Virtual Environments

By Ryan Putman

Public safety trainers have been using simulations for as long as public safety has been training. Firefighters do not learn how to pull a hose, raise a ladder, or rescue a child from a window at their first house fire. Paramedics do not acquire the skills to intubate when encountering their first unconscious patient. And police officers do not learn how to make high-risk traffic stops by pulling over their first speeding car. Instead, public safety instructors have used various methods to teach skills and evaluate candidates in simulated exercises. Advances in computerized training, particularly in virtual and augmented reality systems, give instructors new tools to train the next generation.

Background

According to 2022 research by Eduardo Herrera-Aliaga and Lisbell D. Estrada at the Universidad Bernardo O'Higgins in Chile, the first full-body simulator used for training nurses debuted in 1911. CPR class participants are likely familiar with the modern-day equivalents of that first simulator. The aviation industry has been using flight simulators for nearly a century. The Link Trainer is often credited as the first commercially built flight simulator, with more than half a million airmen learning to fly in a Link Trainer during WWII. However, the first customers of the Link Trainer were not the military but amusement parks, which used these simulators as rides to attract customers seeking new and thrilling

entertainment experiences. Today, it is easier to find a virtual reality (VR) system at an arcade than at the local training grounds.

HazMat Training in Virtual Reality

In 2019, the Hazardous Materials Section of the Utah State Fire Marshal's Office ("the office") learned about a hazardous materials training program that 360 Immersive created for the Rocky Mountain Center for Occupational and Environmental Health. This mobile app program simulated walking through several locations with various hazards, including hazardous materials. By turning the mobile device, the user scanned areas of the scene to spot the dangers.

Based on this experience, the office explored the potential virtual and augmented reality systems available to improve hazardous materials training. One reason the office recognized that hazardous materials training could benefit from virtual and augmented reality systems was due to the cost and complexity of staging simulated exercises. For example, to conduct training exercises on, say, a DOT-406 tank truck hauling gasoline, the office either needed a real DOT-406 tank truck or a mock-up at the training grounds. Even then, it is unlikely the office could set the truck on fire. And while live fire training on transportation props is available at some larger training centers, agencies need personnel and scheduling flexibility to cover shifts

in order to get their trainees there. Perhaps a virtual re-creation could help bridge the gap between training conducted during a regular work shift and full-scale exercises at a few specially equipped training centers.

The office explored similar solutions for industries already adopting virtual and augmented reality training. Reading through research papers, the office recognized several benefits: VR training was more effective in maintaining the trainee's attention and concentration (a real struggle for instructors), and immersive learners retained 75% of what the training taught in comparison to a 10% retention rate from reading and traditional presentations. Beyond the time and cost savings when trying to recreate complex hazardous materials incidents on the training ground, students could be better prepared using virtual and augmented reality.

The office looked at several VR companies already developing professional training programs. After going through its procurement process, the office started working with PIXO VR to further develop and adapt a proof-of-concept simulation it had created for Concordia University involving an overturned over-the-road tank truck on fire. That initial proof of concept put the trainee on the scene with the enflamed tank truck. No matter what the trainee did, the tank truck would explode at the end of the scenario.

The office and PIXO VR adapted that first scenario by adding a menu for the instructor to select the type of transport vehicle, chemicals involved, and other container types that might be involved. Then, they added the ability to choose a day or night scene with or without fire. Trainees are expected to don personal protective equipment, identify the material involved using clues such as the vehicle type, container type, size, and construction features, and placards, labels, and markings to identify the correct initial isolation distance and public protective measures from the DOT Emergency Response Guidebook (ERG). Trainees could even simulate a water application to control the fire. Up to four participants could be in the simulation simultaneously to work as a crew. After securing additional funding, they were also able to develop a train derailment scenario with standard references available.

Students who used the simulator provided revealing feedback. One interesting note was that many trainees, including experienced firefighters, felt too close to the scene (even though the scenario distances were based on the ERG). This revealed that many experienced responders may be unfamiliar with the initial isolation

distances in the ERG and tended to stage much farther away from the scene than recommended.

Another apparent issue of concern is that not everyone is comfortable wearing VR goggles. Problems included the discomfort of having screens strapped to their faces, general aversion toward technology, nausea, motion sickness, and other effects. The VR training roll-out, which coincided with the emergence of the COVID-19 pandemic, compounded problems. Sterilizing the VR goggles between uses became a major deployment factor.

The office also faced difficulty deploying the simulator to other training sites. Because of the limitations of early VR hardware systems available in 2019, the office had to use VR headsets tethered to gaming PCs. This process involved setting up tracking sensors, headsets, and gaming PCs for each training session in a new location, and each training system required a fair amount of space and setup time. The latest generation, which utilizes stand-alone headsets, is much more capable and adaptable. There are trade-offs though. The resolution in the simulation is not as robust. The systems do cost less, and the setup is much simpler.

Looking Ahead

Virtual and augmented reality training for first responders continues to grow. The office partnered with BadVR Inc. on the CommanDING Tech Challenge, an open innovation prize competition sponsored by National Institute of Standards and Technology (NIST), helping advise on their Augmented Reality Operations Center product. The challenge tasked participants with creating an incident command dashboard that integrated video feeds, live tracking of responders, building information systems and 3D LIDAR point clouds, and combining it into a single interface for incident commanders. One potential use case for these digital incident command dashboards is tabletop exercises, as they provide an excellent tool with which to do them. Instead of exercise injects utilizing presentation slides, the incidents can be programmed to occur at pre-set times or after certain actions are taken (or not taken). Several exercise participants can view the scene in real-time together, with the incident progressing in the background as it would in real life.

NextGen Interactions has also participated in prize challenges from NIST, and NIST funding has created HazVR. Participants in HazVR are given a handheld multi-gas meter and must identify sources and
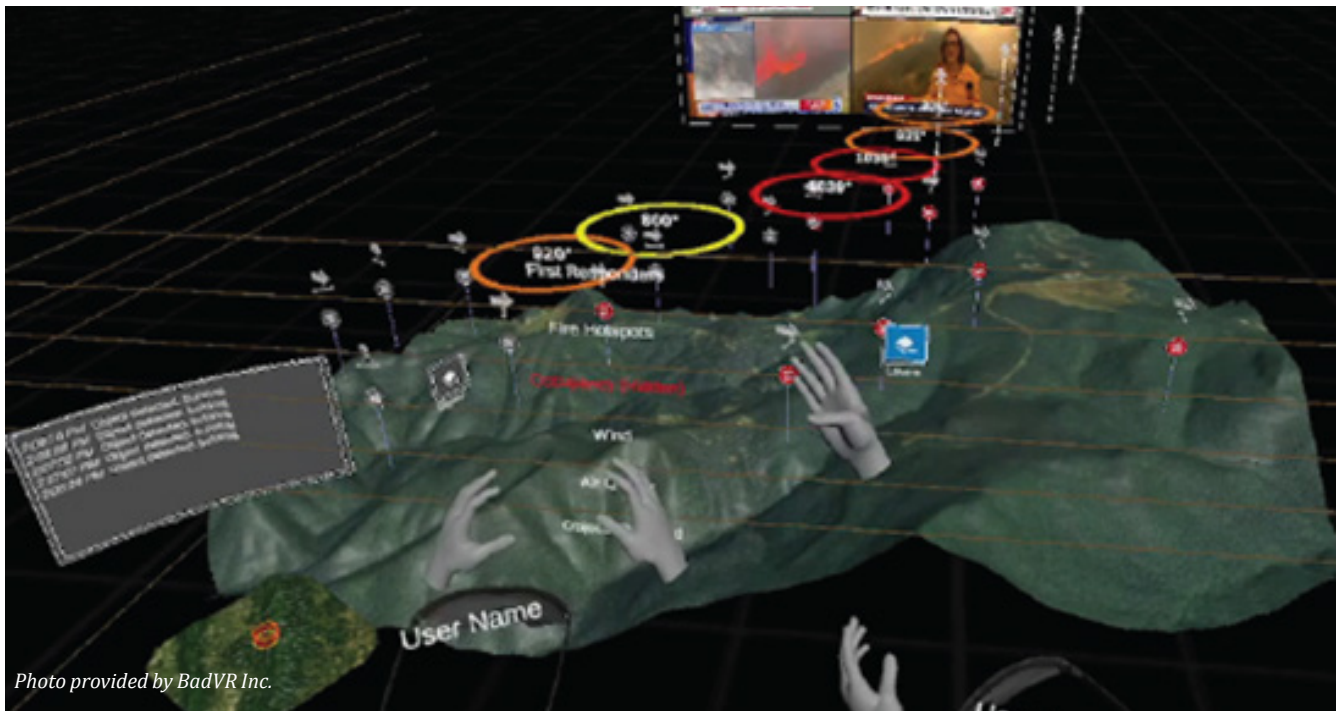
Photo provided by BadVR Inc.

concentrations of gas releases. The behavior of gasses released in the simulation is based on the same models that hazardous materials planners currently use for consequence analysis for chemical facilities. Hence, the concentrations and locations are realistic. The handheld multi-gas meters are tracked and can be played back later to show where participants were holding their meters and for how long. During playback, the gasses can also be visualized (even if they were not visible during the training).

Participants have told NextGen Interactions that they now understood after using the system that "low to the ground" meant inches off the ground, not waist level like they had been doing throughout their careers. Tracking how long a meter was held in one location can help teach trainees to slow down as they use their meters. Most people move and walk faster than their meters can accurately measure the atmosphere. This means they could be well into a hazardous atmosphere before their meters tell them it is unsafe.

Conclusion

Virtual and augmented reality systems offer new tools to improve the training experience for first responders. Commercial off-the-shelf solutions are available. As more people accept and adopt virtual and augmented reality as a training tool, more solutions are sure to follow.

Like any other technology or training device, virtual and augmented reality systems have advantages and disadvantages. How these technologies improve training will depend on the solutions available to the training agencies and input from the instructors and training programs. These training devices are not a replacement for gifted and competent instructors, hands-on skills development, or traditional practical exercises. Rather, virtual and augmented reality systems provide another tool in the instructor's toolbox. The success of these training platforms depends on quality instructors who understand how to best leverage new technology to complement their training programs.

Ryan Putman is a deputy fire marshal for the Utah State Fire Marshal's Office. Ryan has over 16 years of public safety experience, working for private emergency medical services (EMS) agencies, and volunteer, part-time/full-time combination, and career fire departments. He started with the State Fire Marshal's Office in 2016 as a hazardous materials instructor and now performs hazardous materials code enforcement and fire investigations for the fire marshal's office. Ryan started the fire marshal's uncrewed vehicle program and is a nationally recognized expert on the use of uncrewed vehicles in hazardous environments, with several published papers and speaking invitations across North America. He also started the virtual reality training program at the fire marshal's office and was a public safety partner for NIST's Public Safety Communications Research CommanDING Tech Challenge. Ryan earned his Associate of Science from Weber State University, Bachelor of Science in Environmental Management from Columbia Southern University, and Master of Science in Management and Leadership from Western Governors University.

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Deploying With Adult Non-Prescription Medication Kits

By Richard (Kirk) Higgins

Deploying as a responder to a disaster may result in minor illnesses (upper respiratory infections, stomach upset, rashes, allergies) or injuries (sprains, strains, insect bites). For instance, those deploying to unfamiliar areas could experience previously unknown environmental allergies, such as "cedar fever" (generalized allergic reaction to the pollen of the mountain cedar tree) in Central Texas. It is even worse to discover the uncomfortable rash of poison oak, ivy, or sumac (Toxicodendron dermatitis) or the intense itching of chiggers (Trombiculid mite bites) while working outdoors. Also, large numbers of responders sleeping and showering in makeshift quarters (tent base camps, church gyms, or schools) can result in "camp crud" (viral bronchitis) and athlete's foot (tinea pedis).

Under normal circumstances, these conditions are treatable at home with non-prescription medications. However, these treatments may not be available while deployed unless they are part of the pre-deployment planning. In certain circumstances, the availability of non-prescription medications may mean the difference between a successful deployment and needing to return home ahead of schedule. In addition to first responders, the following information is also useful to individuals and families preparing for disasters (e.g., hurricanes, tornados, blizzards, wildfires) at home.

Pre-Deployment Considerations

Before selecting the medications for a deployment medication kit, consider the following categories:

- *Allergies* – If a kit is for personal use, the kit user should consider any known medication allergies. In this case, there is no reason to waste money and space on a medication known to cause the intended user an allergic reaction. However, if a group plans to use the kit, these medications may need to be available for other group members.

- *Generic vs. Brand-Name Medications* – By law, all Food & Drug Administration (FDA) approved medications must meet the same performance criteria as brand-name products. They may have differences (i.e., colors, shapes, or tastes), but they must have the same effectiveness as the brand-name product. One significant advantage of generic medications is that they usually cost less than their brand-name counterpart (sometimes much less). However, if it is known from an earlier experience that a brand-name product works better for a

particular individual than a generic, its inclusion would be appropriate despite the increased cost.

- *Medication Forms* – Non-prescription medications come in a variety of forms. Liquids, tablets, capsules, creams, and ointments are the most common. Of these, liquids, creams, and ointments should be avoided if possible due to the potential for leakage or freezing. Also, depending on the medication, tablets may be enteric coated to decrease the possibility of causing stomach upset. This desirable feature makes tablets less likely to disintegrate during storage and transport. Scored tablets are also preferred as they are easier to cut in half to individualize the dosage.

- *Medication Quantities* – Various factors will influence how much of each medication to include in a kit. For individual use exclusively, the quantities should be sufficient to last for the duration of the deployment. For example, a single-tablet allergy medicine taken daily would require a minimum of 14 tablets for a two-week deployment. To support more than one person, increase the quantities accordingly. However, other considerations also come into play. For instance, a package of 24 tablets may come in the same size child-proof bottle as a package containing 100. Depending on the cost, it may be reasonable to include the 100-tablet bottle, especially if it is a commonly used medication.

- *Medication Packaging* – The ideal answer is to keep all the medications in their original packaging. Unfortunately, the original packaging may consist of a child-proof plastic bottle inside a cardboard box (which takes up extra space and retains moisture). If it is necessary to replace the original packaging, child-resistant medication bottles of assorted sizes are readily available online. Also, avoid glass containers due to possible breakage. And, like traveling on commercial airlines, do not mix multiple medications in one package; each should have its own bottle or plastic bag. Lastly, if the kit has any liquids, creams, or ointments, they should be placed in a zip-top plastic bag to prevent damage to kit contents in case of leakage.

- *Medication Labeling* – If it is necessary to remove the original packaging, all information on the discarded packaging (indications, dosage instructions, warnings, contraindications, expiration date) should also appear on the new label. If not, this information must be duplicated and kept with the kit for future reference.

- *Kit Container* – The container chosen for the kit must be durable and waterproof. If space is critical (for instance, inside a deployment bag or in a carry-on bag), use a zip-top plastic freezer bag for storage. However, these types of bags are not child-resistant and require protection from unwanted access. A better choice would be a watertight plastic household storage container. If possible, choose a size large enough to keep the medications in their original child-proof containers. A larger waterproof storage case may be more suitable for kits supporting a team of responders.

- *Medication Sources* – When buying the medications for the kit, choose a reputable source. A large retail pharmacy may be the best option to get the most competitive price and comprehensive selection. Because none of these medications require a prescription, they may be easy to purchase online. However, buying locally allows purchasers to examine the packaging and confirm the expiration dates. Avoid outlets selling medications with short (or expired) expiration dates, regardless of how amazing the price is.

Assembling the Kit

The last step is to select the medications to put in the kit. If individuals use any non-prescription medicines regularly, they should include them in their personal kits. To help with this process, the following extensive, yet not all-inclusive, list of non-prescription medications includes an assortment that would be useful on a deployment. The various categories have up to three options for each, with the dollar-sign ($) markings indicating cost comparisons for generic medications. Do not hesitate to discuss these and other options with a healthcare provider or pharmacist.

Hopefully, all responders will return home healthy following a rewarding deployment in response to a disaster. With some pre-planning, non-prescription medications to treat minor illnesses and injuries will be readily available to keep responders comfortable and working at their peak performance during often difficult times.

Adult Non-Prescription Medication Kit		
Category	**Medication Options**	
Analgesic & Antipyretic	Acetaminophen (Tylenol) 325 mg Oral Tablets/ Capsules ($)	Acetaminophen (Tylenol) 500 mg Oral Tablets/ Capsules ($ $)	
Analgesic, Antipyretic & Anti-Inflammatory	Aspirin (Ecotrin) 325 mg Oral Tablets ($)	Ibuprofen (Advil & Motrin) 200 mg Oral Tablets/ Capsules ($ $)	Naproxen (Aleve) 220 Mg Oral Tablets/ Capsules ($ $ $)
Antacid	Calcium Carbonate (Tums) 1000 mg Chewable Oral Tablets ($)	Famotidine (Pepcid) 20 mg Oral Tablets ($ $ $)	Omeprazole (Prilosec) 20 mg Oral Tablets ($ $)
Antidiarrheal	Bismuth Subsalicylate (Pepto Bismol) 262 mg Chewable Oral Tablets ($)	Loperamide (Imodium) 2 mg Oral Tablets/ Capsules ($ $)	
Antiemetic	Meclizine (Bonine) 25 mg Oral Tablets ($)	Sodium Citrate Dihydrate (Emetrol) 230 mg Chewable Oral Tablets ($ $)	
Antihistamine (Non-Sedating)	Cetirizine (Zyrtec) 10 mg Oral Tablets ($ $)	Fexofenadine (Allegra) 180 mg Oral Tablets ($ $ $)	Loratadine (Claritin) 10 mg Oral Tablets ($)
Antihistamine (Sedating)	Chlorpheniramine (Chlor-Trimeton) 4 mg Oral Tablets ($ $)	Diphenhydramine (Benadryl) 25 mg Tablets/Capsules ($)	
Decongestant	Oxymetazoline (Afrin) 0.05% Nasal Spray ($ $)	Phenylephrine (Neo-Synephrine) 1% Nasal Spray or Oral Tablets ($)	Pseudoephedrine (Sudafed) 30 mg Oral Tablets ($ $ $)
Expectorant & Cough Suppressant	Guaifenesin/ Dextromethorphan (Mucinex DM & Robitussin DM) 600 mg / 30 mg Oral Tablets ($ $)		

Table Continues

Adult Non-Prescription Medication Kit		
Category	**Medication Options**	
Laxative/Stool Softener	Docusate Sodium (Colace) 100 mg Oral Capsules ($)	Polyethylene Glycol 3350 (MiraLAX) 17 gm Packets Oral Powder ($ $)	
Topical Analgesic	Diclofenac (Voltaren) 1% Topical Gel ($)		
Topical Anesthetic	Benzocaine (Orajel) 20% Oral Gel ($)	Benzocaine (Americaine) 20% Topical Spray ($ $)	
Topical Antibiotic	Bacitracin (Bacitracin) Topical Ointment ($ $)	Bacitracin/Polymyxin B (Polysporin) Topical Ointment ($ $ $)	Bacitracin/Neomycin/ Polymyxin B (Triple Antibiotic Ointment) Topical Ointment ($)
Topical Antifungal	Clotrimazole (Lotrimin) 1% Topical Cream ($)	Miconazole (Monistat) 2% Vaginal Cream ($ $)	Terbinafine (Lamisil) 1% Topical Cream ($ $ $)
Topical Antihistamine (Ophthalmic)	Pheniramine/Naphazoline (Naphcon A) 0.3% / 0.025% Eye Drops ($)	Pheniramine/Naphazoline (Opcon-A) 0.315% / 0.02675% Eye Drops ($ $)	Pheniramine/Naphazoline (Visine Allergy Eye Relief Multi-Action) 0.3% / 0.025% ($ $ $)
Topical Antiseptic	Chlorhexidine Gluconate (Hibiclens) 4% Topical Solution ($)		
Topical Decontaminate	Deodorized Mineral Spirits (Tecnu Poison Oak & Ivy Cleanser) Topical Lotion ($)		
Topical Steroid	Fluticasone (Flonase) 50 mcg Nasal Spray ($ $)	Hydrocortisone (Cortizone-10) 1% Topical Cream ($)	

Richard (Kirk) Higgins, PA-C, has a 31-year history as a nationally certified physician assistant (PA-C), in addition to being actively involved in disaster response and emergency management. His experience as an emergency medical technician, U.S. Coast Guard hospital corpsman, paramedic, surgical technician, pharmacy technician, and physician assistant has served him well in his roles as a rural physician assistant, the deputy commander of the TX-4 Disaster Medical Assistance Team (DMAT), and a company commander in the Texas State Guard (TXSG) Medical Brigade. His latest position as the emergency management coordinator for a small city in rural North Texas has been the most challenging and rewarding thus far.

Phos-Chek drop during the 2013 Springs Fire, one of an ever growing list of wildfires in California due to hot, dry conditions and drought (*Source*: Ben Kuo, Unsplash).

Fireproofing the Future: Safeguarding Against Wildfires

By Roy Thun

According to historical records, July 2023 was the hottest month on Earth. With this extreme heat from climate change comes a surge in frequent, devastating wildfires. The smoke and smog from these events are damaging air quality in several parts of North America. In the United States, 68,988 wildfires burned 7.6 million acres in 2022. The United States alone has experienced $68.4 billion in wildfire damage from 2018-2022.

For decades, communities relied on wildfire suppression to combat these natural disasters. Now, the world needs new strategies to battle more frequent, severe, and year-round events. Wildfire risk is dynamic and requires an agile approach, recognizing that communities, industries, and agencies face simultaneous challenges. Expansive population growth into wildland-urban interface (WUI) areas, climate change, and more hazardous vegetation conditions drive these risks.

Relying on suppression alone no longer works. Communities in high-risk areas must now pivot toward proactive resilience, emphasizing preparedness, prevention, and mitigation to minimize risks. This article discusses three ways communities can adapt their approach to better cope with the growing wildfire threat.

Preparation With Risk Management and Technology

Preparation empowers at-risk communities to respond immediately when a wildfire approaches. The first step is to understand community vulnerability. The process begins with a comprehensive vulnerability assessment of the community structure (i.e., at-risk population), critical assets, infrastructure, and services.

The community must evaluate its existing emergency management measures and analyze data trends such as weather patterns, previous wildfires, proximity to WUI areas, traffic fluctuations, and community movements. This information can help community leaders and response agencies prioritize and implement the best actions for preventing or reducing wildfire impact through an integrated risk management plan. The risk management plan reflects the changing landscape and suggests proactive strategies.

Evacuation planning is one of the most important, yet often lacking, preparedness areas. Evacuations are resource intensive and can be chaotic. Artificial intelligence (AI) improvements have supported the advent of scenario-based evacuation modeling tools that simulate scenarios. These new "intelligent" models account for the unpredictable nature of wildfires and resulting traffic loading, allowing emergency management agencies and the community to envision evacuation options before an emergency happens. AI technology with drones, live camera feeds, and satellite imagery help detect wildfires early for faster responses.

Prevention and Mitigation Through Land and Waste Management

Effective wildfire preparedness extends beyond developing plans. Good land and waste management practices significantly prevent and mitigate the risks and impacts.

Managing the landscape to reduce wildfire risks is a good place to start prevention efforts. Fire-resistant landscaping practices significantly impact curbing wildfire spread. Implementing controlled burns, mechanical treatments, and fuel breaks can help decrease the likelihood of large, catastrophic fires.

Waste multiplies a fire's danger. Flammable materials create dangerous fire conditions. Proper waste classification, handling, and disposal in a permitted facility significantly reduce wildfire impacts. Waste can also wreak damage on a community trying to recover after an event. Burned trees, vehicles, equipment, structures, and debris can block roads, clog water bodies, release hazardous waste into soil and water, and delay rebuilding and recovery. The potential for generating wildfire-related wastes can be minimized by implementing appropriate waste identification, handling, storage, and disposal practices.

Wildfire debris often contains hazardous substances like asbestos and mercury, necessitating specialized and time-consuming clean-up processes. Most of this waste cannot be dumped in a landfill. The U.S. Environmental Protection Agency has new regulations for chemicals in landfills and water bodies. By proactively managing waste, communities can minimize the impact on drinking water sources and reduce delays in returning to their homes during clean-up operations.

Cooperation Through Partnerships With Businesses and Residents

Fireproofing the future requires everyone to work together: public and private sectors and residents. As populations move into the space between urban areas and wildlands, communities see an increased number of people, animals, homes, and infrastructure at risk of wildfire devastation.

Public sector resources, including firefighters and funding, are already limited. Local governments benefit by leaning on private sector expertise for support across the major emergency management areas of prevention and mitigation, preparedness, recovery, and response. For a community in a high-risk area, preparing for potential wildfires can substantially improve reaction and response times and understanding of how to react. Each community threatened should have comprehensive wildfire risk management measures covering everything from communication strategies to alternative access roads to forest management. To provide an example, GHD collaborated with a

Colorado community deeply concerned about various wildfire scenarios and their ability to manage them. In response, GHD actively supported the community by organizing a practice evacuation event and analyzing the community's performance during the exercise.

Environmental waste management and risk management professionals provide research-based precautionary measures and actions to avoid and mitigate potential wildfires. For example, scenario-based evacuation modeling tools, community response training, and hazard mitigation plans offer community outreach and support to first responders. Wildlands and infrastructure (such as roads and bridges) may need immediate assessment in the aftermath of a wildfire. Expert biologists and engineers can swiftly help communities resume critical operations and undertake environmental restoration measures.

Furthermore, communities must stay up to speed with the latest regulations and business practices and understand how to address them. For example, new legislation in California requires property owners in medium- to high-risk fire zones to assess their property's fire risks. Two of the largest insurers announced they were exiting California, leaving communities scrambling for coverage. Other companies are boosting premiums, limiting coverage, or retreating from areas susceptible to wildfires or other natural disasters.

These external factors add to the pressures faced by state and local governments to protect their communities, but the private sector can help. Educating residents and local businesses about preparing for wildfires is crucial. They can learn effective waste and land management techniques to protect their properties. Workshops, training sessions, and outreach programs will help them understand evacuation procedures, defensible space, and early warning systems. They can also learn the importance of advocating for policies that support resilience and address climate change, such as sustainable land use practices, forest management, and climate mitigation efforts.

Wildfires are no longer limited to a season. Understanding vulnerabilities and partnering with the private sector and residents can help safeguard communities from potential devastation. Community members and businesses embracing fire prevention and mitigation can bolster limited public sector resources. Working together, communities can reduce wildfire risk and improve their well-being.

Roy Thun is a senior environmental specialist at GHD and a climate resiliency and sustainability thought leader with over 35 years of experience in environmental consulting and industry. Roy is the North American Director of the Burntfields™ Wildfire Risk Management Solution, which addresses wildfire risks through early prevention and mitigation strategies, wildfire preparedness, response actions, and recovery strategies. The solution complements and supplements tightly stretched public sector resources. It helps residents and businesses understand and address wildfire risks and vulnerabilities to create more resilient communities. Roy has contributed to many technical guidance documents, including ASTM's Standard Guide for Remedial Action Resiliency to Climate Impacts, ITRC's Sustainable and Resilient Remediation, ITRC's Remediation Management of Complex Sites, and ASTM's Recognition and Derecognition of Environmental Liabilities.

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Targeted Violence in Schools: Are Future Educators Prepared?

By Danielle Arias, Jesse Spearo, and Kelley L. Davis

Schools have historically been and continue to be targets of gun violence. According to Education Week's 2023 School Shooting Tracker, 51 school shootings on K-12 properties resulted in injuries or death in 2022. As of June 15, there were 23 shootings in 2023, including a six-year-old boy who shot and injured a teacher in a Virginia Elementary School classroom. Recent high-profile school shootings, such as the 2022 Robb Elementary School in Uvalde, Texas, and the 2018 shooting at Marjory Stoneman Douglas High School in Parkland, Florida, remind educators that schools are targets. Despite personal or political opinions about gun laws or the role of educators who rightfully claim, "This is not what I signed up for," it has become their reality.

Citizens and media nationwide have criticized the law enforcement and school district responses to the Uvalde and Parkland school shootings. For instance, responders in Uvalde were denounced for a long delay in entering the classroom and engaging the shooter. The 2019 Marjory Stoneman Douglas High School Public Safety Commission report noted, "Forty-eight minutes and two seconds after the first shots were fired, law enforcement had gained control of all the halls and stairwells inside building 12." The criticisms reinforce the criticality of preparedness, training, and exercises for school employees. While teachers historically have been taught to rely on law enforcement in an active assailant response, many incidents are over before law enforcement arrives. Additionally, the varied circumstances of individual jurisdictions make

it difficult to ensure rapid law enforcement response times and necessitate a shift toward training teachers to respond before law enforcement arrives.

Educators as First Responders

Students look to their teachers for safety, guidance, comfort, and leadership. Whether by choice or not, teachers are the first line of defense for students' safety. Despite only receiving traditional educator training, academic, administrative, and support staff are now tasked with serving as first responders to events such as school shootings. Educators must be mentally and physically prepared to protect themselves and their students from harm.

As school shootings increased, institutions implemented policies and technologies to secure schools and prevent intruders and violent incidents. However, technologies and procedures are only as effective as the trained personnel. Many teachers report minimal to no training on active shooter protocols. When training is provided, it is often infrequent and delayed until late into the school year, which is a significant concern on many levels.

For instance, the Government Accountability Office noted in its June 2020 K-12 Characteristics of School Shooters Report that the second-highest number of school shootings in the 2009-2010 through 2018-2019 school years occurred in September. When the statistic was narrowed to "school-targeted" shootings, September had the highest number. Since September marks the start of the school year in parts of the

country, the lack of knowledge, skills, and training for incoming teachers regarding school safety – particularly preventing and responding to an active shooter incident – is concerning. Teachers with minimal training likely need a refresher. New teachers entering the profession, and their students, are increasingly vulnerable.

A Critical Training Oversight

There is an apparent lack of formal discussion and training among preservice teachers concerning school safety. In this context, "preservice teacher" refers to a college student enrolled in a teacher education program who has not been employed as a teacher. In March of 2023, a fellow teacher at a public school in New Jersey directed student teachers – defined as students teaching in a classroom under the supervision of a certified teacher to qualify for a degree in education – to educator Danielle Arias to discuss school safety. The college students had several questions about school safety, none of which their veteran supervising teacher felt prepared to answer. They expressed fear of a safety situation occurring in their classrooms after becoming full-time educators and anxiety toward their current personal safety as students. When asked what their teacher program offered to prepare them for safety challenges as current students and future teachers, one of them replied, "They teach us nothing about this. It's disturbing, actually; it's like some big secret everyone is afraid to talk about. But we need to talk about it." Those same students experienced an active shooter threat on their college campus a few days after that conversation. They later explained that many of their professors did not know what to do when they received a text message regarding a potential violent threat on campus.

The avoidance of school discussions does not seem to be a new phenomenon. Throughout 21 years of teaching, Arias observed a pattern of student teachers in the district lacking knowledge of response procedures during school safety drills. Despite their serious concerns about preparedness and response, none of the student teachers she worked with had any training in their teacher education curriculum on school safety or active shooter response. A student teacher in the Fall of 2021 said she wished her college had given her a basic idea of how to respond in a safety situation. Another current student teacher also did not know about active shooter response when he began student teaching. Although school shootings have increased throughout the years, personal observation shows that there has been little or no increase in the education and preparation of preservice teachers.

Magnitude of Deficiency

In March 2022, a preliminary study by Arias in an unpublished master's thesis at Nova Southeastern University examined whether preservice teachers received active shooter training in their undergraduate teacher education program. The study analyzed the training's effectiveness by determining how prepared preservice teachers felt about responding to an active shooter threat in a K-12 classroom. A request to distribute a survey to undergraduate students in education programs who were currently enrolled or about to enter the student teaching part of their curriculum was sent to 15 accredited colleges and universities throughout New Jersey. The survey, which received responses from 63 individuals, was also sent to the superintendents of nine K-12 public school districts in New Jersey.

Most respondents (85%) had not received active shooter training in their education programs. However, several participants reported that the information they did learn regarding active shooter protocols was mentioned during their student teaching placement either by a cooperating teacher or by participating in a school drill. One student stated, "We participated in a lockdown drill during student teaching; however, this is the only training we get that is related to this topic." Another said, "I have received no training, and my cooperating teacher has not told me any protocols regarding emergencies." Moreover, only 38% of the respondents participated in an active shooter drill with students during their student teaching placement. The participants revealed a lack of active shooter education during this integral time in their teacher training.

A significant number of respondents (88.3%) did not feel prepared or confident in responding to an active shooter incident in a school. There was a small contingency of those who felt very confident and an even smaller number who felt completely confident. One student teacher stated, "I know what to do when asked, but I am not sure if the moment ever came, I would feel fully prepared." Another student teacher who felt very confident stated, "I guess I don't know what I don't know. I feel like it's not hard to close the lights and hide in the classroom." Comments like these lead to questions about the actual preparedness of the student teachers who believe themselves to be completely confident.

Recommendations for Action

Given the insufficient emphasis on safety in teacher training programs, incoming teachers often experience a sense of unpreparedness and would benefit from active shooter training before the school year commences.

- School districts should include targeted violence training, protective action training such as ALICE (Alert, Lockdown, Inform, Counter, Evacuate), Run, Hide, Fight, or Department of Justice produced guidance, and school crisis response training as part of the onboarding process for new hires before the start of the academic year. This training should also cover other types of crises, such as natural, technological, and human-caused disasters. Additionally, the training should extend beyond response strategies and incorporate prevention and detection aspects, focusing on threat assessment and observation skills to identify potential threats and intervene proactively to ensure a safer learning environment.

- Schools should prioritize conducting regular and developmentally appropriate drills involving all staff and students throughout the school year to ensure preparedness and reinforce safety measures.

- College and university teacher education programs should begin a program review and consider a school safety and security course, including violent assailant prevention and protection training, as part of its curriculum. Students that participated in the study felt that adding a course or unit of study would be most helpful in preparing to respond to an active shooter event in a school. They also believe regular participation in drills and workshops would help increase confidence and preparedness.

- Colleges should integrate a dedicated unit of study within a course or offer regular training opportunities through lectures delivered by public safety professionals, workshops, and practical drills.

The benefits of colleges offering training on active shooter span beyond the scope of the classroom. Gun violence is impacting many areas of the culture, including but not limited to public schools, college campuses, workplaces, supermarkets, shopping malls, nightclubs, movie theaters, places of worship, and public gatherings. College students who receive active shooter training in their programs would be better prepared for an incident in their future classroom and other areas of their lives.

Conclusion

Active shooter events continue to threaten staff and students' physical, psychological, and emotional well-being in public schools. The increasing frequency of school shootings raises concerns about the preparedness of incoming teachers and current staff to handle such incidents.

The timing, consistency, and adequacy of school exercises and training for in-service teachers seem to be limited, as none of the student teachers in the study stated they had a course or unit of study on school safety or active shooter during their education programs. They report feeling ill-prepared to respond should an incident occur in their school or classroom when they become employed teachers. Implementing a more robust and consistent approach to active shooter training in teacher education programs is crucial and will yield more confident, prepared teachers entering the workforce.

Educators and public safety professionals understand that providing training at an early stage and with greater intensity increases people's sense of preparedness. If teacher education programs made school safety and security – including active shooter response – mandatory, it would ensure that teachers are well-prepared to handle such incidents from the beginning of their careers. Preparing incoming teachers in advance would alleviate the burden on administrators to provide rushed training at the busy start of a school year. It would also enable administrators to plan more comprehensive training sessions, drills, and exercises for the staff and students as the year unfolds. It is imperative that training for preservice teachers be considered not as an option but as an essential component integrated into teacher training and education programs.

Danielle Arias, M.S., is an educator with 22 years of experience teaching in New Jersey public schools. Her passion for school safety led her to earn a master's degree in Disaster and Emergency Management from Nova Southeastern University. Ms. Arias actively researches and enhances school safety measures and preparedness within her school district and local community.

Jesse Spearo, Ph.D., is a 20-year veteran of public safety. He has served at every level of government and responded to dozens of disasters in a command or general staff role. He currently serves as assistant director for the Department of Emergency Management for Miami-Dade County.

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