lifeline

2022-23 Volume 3

a forum for emergency physicians in california

THIS ISSUE'S TOPIC

PUBLIC HEALTH

ORIGINAL RESEARCH

Nonfatal Injuries Sustained in Mass Shootings in the US, 2012- 2019: Injury Diagnosis Matrix, Incident Context, and Public Health Considerations

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CALIFORNIA ACEP

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Valerie Norton,
MD, FACEP,
(She/Her)

PROCRASTINATION IS GOOD

I want to talk to you about my theory of procrastination, which is simple: PROCRASTINATION IS GOOD.

Here's my reasoning:

1. When you procrastinate, assuming you don't mess up and completely miss an important deadline, you are forced to be efficient—you can't allow a task to fill up hours and hours while you try to perfect it. You have to churn it out in a compressed amount of time. Often it turns out just as good if not better than if you chased down a bunch of meandering digressions.
2. When you procrastinate until the night before to prepare for a presentation/lecture/interview/wedding toast/eulogy, all the prep is fresh in your mind when you actually start talking. If you don't believe me, try delivering a lecture that you wrote a year ago and haven't looked at in a month—you'll see what I mean. ("Oh wait, I already talked about what's on this slide; sorry about that…")
3. The days and weeks leading up to the moment when you finally get something done are not wasted—the gerbils in your brain are busy running on their little wheels, thinking about the thing you have to do. The ideas are marinating, clarifying, and coalescing, even if you don't think they are
4. Best of all, sometimes you get lucky and the thing you had to do becomes unnecessary—your lecture gets canceled due to a Joint Commission visit, your sister decides she's not marrying that guy after all, or an employee quits a month before you had to do their annual review.

I procrastinated writing this column. I knew I had to do it, but there was a lot going on. I was in Sacramento in mid-April for the CalACEP Legislative Leadership Conference, where we talked to our legislators about hospital overcrowding and ED boarding. I was in Washington, DC at the beginning of May to lobby Congress about ED boarding and Medicare rates and workplace violence. Back at home, people came to visit, shifts had to be worked, and laundry had to be done.

So here I am at the last minute, thinking about my assignment, which is to talk about the intersection between emergency medicine and public health. As we've established in a previous President's Message, I am ~~burned out~~ suffering from moral injury, so I sort of felt like I had nothing intelligent to say except that obviously EVERYTHING WE DO in the ED is public health (in a broad sense). Also, it would be more fun to kill the ants in my family room than to think of something more specific than that.

"Try ChatGPT," my significant other suggested. After some grumbling, I tried it, and got back a perfectly fine and supremely boring five paragraph essay that essentially said, "The intersection between emergency medicine and public health is a critical area that deserves more attention and investment." The final paragraph actually started with, "In conclusion, …" For real.

So, listen. There are some really cool articles in this edition of Lifeline that are great examples of the intersection between emergency medicine and public health. They talk about pandemic response, the interaction between EDs and law enforcement, and the amazing work we're doing with MAT in EDs across the state.

At CalACEP, we're working on things in the EM/public health intersection that will make your work life better. We are sponsoring AB 1731 (bill info: t.ly/DSh2h) by Assembly Member Miguel Santiago (D-Los Angeles) that will remove the requirement to check CURES for Suboxone prescriptions, which will be nice for the 99% of patients who need more than a seven-day supply to bridge to their MAT appointment. We are supporting SB 357 (bill info: t.ly/sGYX) by Senator Anthony Portantino (D-Glendale) that removes the requirement to report all lapses in consciousness to the DMV and allows YOU to use your clinical judgment to decide who is likely to be a danger behind the wheel and who is not.

We're also working hard on the biggest public health crisis of all in emergency medicine: the ability of the public to access emergency care when they need it. WE know that we are at crisis levels in terms of hospital overcrowding and lack of capacity. WE see it in ambulance wall times, ED boarding times, and in "avoidable bed days" for inpatients who have no safe disposition. WE know that patients are suffering and sometimes dying because of the lack of capacity in our system. Our lawmakers mostly don't know it, however, so we're trying to educate them. We are sponsoring legislation AB 1164 (bill info: t.ly/chU0) by Assembly Member Josh Lowenthal (D-Long Beach) to address hospital overcrowding and will never stop fighting for safer conditions in our EDs.

We must fund our emergency healthcare system differently and BETTER to create more capacity. In future issues of Lifeline, you'll read about our plans to go after different funding sources to achieve this. We'll also keep fighting to ensure emergency physicians are adequately compensated for the difficult work we do.

Now that I'm done procrastinating for today, I'll leave you with my best story about procrastination. Years ago, one of my partners developed a rare intra-abdominal cancer and underwent a big and scary operation. About a year later, unfortunately, he had a surveillance scan and was told that the cancer had recurred. He called me and asked me to figure out his "buy-out" from our group, so he could stop working and spend his remaining days with his wife and young daughter.

I was devastated… and I procrastinated. I couldn't bring myself to accept this was really happening, so I put off figuring out the buy-out. A few weeks later, he called me. "I'm so sorry," I started to say, "I know I need to get your buy-out done."

He cut me off. "No," he said, "I went for a laparoscopy, and it turned out it was all just scar tissue! I'm totally fine; I don't need to buy-out!"

I promise you that CalACEP will never procrastinate on having your back and doing the hard work of advocacy, day in and day out. If you want me to write a wedding toast for you, though, I'm going to need a hard deadline. ■

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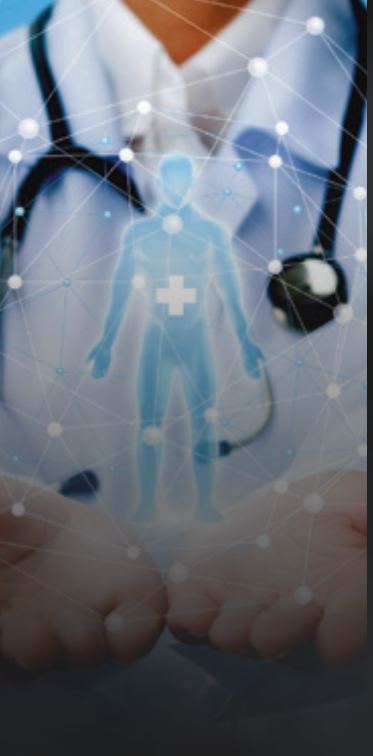


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TO CHECK OR TO NOT CHECK CURES?

THAT IS THE QUESTION FOR BUPRENORPHINE.

By Lauren Murphy (she/her) and Elena Lopez-Gusman (she/her)

The emergency department (ED) plays a critical role in public health, serving as a safety net for the most vulnerable populations and connecting at-risk patients with lifesaving medical and social support services. The role of the ED in public health has grown as our members increasingly provide treatment to patients struggling with substance use disorders.

According to a 2018 Centers for Disease Control and Prevention Study, ED visits for suspected opioid overdose rose 30% nationwide. These ED visits offer the opportunity for a "teachable moment". As you have likely experienced in your own practice, many patients are finally open to the idea of substance use disorder treatment after having an overdose.

In a time when ED throughput and boarding are at crisis levels, it is more critical than ever that you have the resources you need to help these patients efficiently and effectively.

California ACEP has a long record in support of safe prescribing and of ensuring greater access to treatment for substance use disorder. We started our efforts with safe prescribing, creating handouts and posters about the dangers of opioids and outlining what the ED would and wouldn't do in regard to pain treatment. California ACEP then worked to streamline CURES and Advocacy Fellows and Board Members participated in stakeholder groups to provide feedback to the Department of Justice on how to improve CURES. In the years that followed, we worked to increase access to naloxone, educate the public about the risk of overdose, and, more recently, expand use of buprenorphine in the ED.

After spending time educating our members about initiating treatment for substance use disorder in the ED, through toolkits and a podcast series, California ACEP began sponsoring legislation and budget items to increase substance use disorder treatment resources available to you in the ED and to decrease the administrative burden associated with providing those services.

In 2019, we sponsored a budget allocation to provide grant funding to place certified drug and alcohol counselors in EDs throughout California. This program has shown impressive results in reducing post-intervention ED utilization.

We are currently sponsoring AB 1731, by Assemblymember Miguel Santiago, which would remove the requirement to check CURES before prescribing buprenorphine. Stopping to check CURES before prescribing buprenorphine to patients who are seeking a safe means to detox from opiates while awaiting outpatient treatment is of no clinical value. Nothing in CURES will change your decision to prescribe buprenorphine, doing a lookup only adds to the time spent away from patients when your ED is already overburdened and overcrowded.

California ACEP will continue to advocate on your behalf to ensure that you are able to provide appropriate and efficient treatment to patients that present to your ED with substance use disorder. ■

GUEST ARTICLE |

DON'T WASTE THE COVID CRISIS: LESSONS LEARNED IN HEALTHCARE MANAGEMENT SHOULD BE MAINTAINED LONG-TERM

By Gary Tamkin, MD, FACEP (he/him)

"Never let a good crisis go to waste."
– Winston Churchill

Many of the initiatives adopted by hospitals, regulatory agencies, executives, and care providers in the face of the COVID-19 pandemic upset the status quo of standard rules, regulations, and approaches to care. The benefits of many of these changes can extend far beyond the crisis. With states around the country giving up on their pandemic responses, here are a few management lessons learned that hospitals and healthcare systems should keep top of mind.

MEET REGULARLY AS A LEADERSHIP TEAM

Hospitals are large complex organizations that can operate within large silos. In response to the pandemic, hospitals convened "COVID Command Centers." The executive leadership team and department heads spent most of their days together identifying challenges and creating innovative solutions. Roles were clearly delineated, frequently with reflective vests emboldened with name and title. Problems were identified, priorities were set, teams were organized, and timelines were declared. Similarly, state and county agencies, as well as hospital systems, met regularly online to coordinate resources on a regional scale in an unprecedented fashion.

We as healthcare leaders should continue to meet regularly as a team, addressing problems quickly, prioritizing efforts, and holding each other accountable.

TAKE DECISIVE ACTION TO PROVIDE PATIENTS ACCESS TO CARE

Emergency department and hospital overcrowding have been career-long challenges with few sustainable, effective solutions.

During the pandemic, CMS and state health departments waived many of the regulations that create tremendous barriers to utilizing non-traditional patient care space. Suddenly, tents were erected and hospital space not traditionally used for patient care was made available.

The power of the personal communication device in the provision of medical care was never more apparent than during the peak of the pandemic. We saw this in the way that hospital staff used cell phones to communicate with emergency department patients in the hospital parking lot; in the families who stayed connected to loved ones in the ICU via iPad; and in the rapid expansion of telehealth.

We should continue to create non-traditional means to connect our patients most efficiently with providers.

MAKE HOSPITAL THROUGHPUT A PRIORITY

The issue of hospital overcrowding is not only about space, but process. The emphasis to move patients immediately to their appropriate location to prevent COVID spread illustrated that when there is a will, there is a way.

Patients were screened for COVID, and in many cases immediately accepted by the admitting hospitalist, with evaluations still in progress.

Lack of Skilled Nursing Facility beds is a significant obstacle to the discharge of a medically stable patients from a tertiary care facility. During the pandemic, alternative care facilities were erected to care for stable COVID-positive nursing home patients who had minor medical needs but who were unable to return to their home facility. These alternative care sites decompressed the tertiary care hospital.

EMS agencies created protocols for paramedics to treat and release patients with minor medical complaints and created alternate transport destinations that were appropriate to a patient's condition.

The urgency seen during the pandemic to "get the right patient to the right location" must be sustained far beyond the pandemic.

IMPLEMENT INNOVATIVE WORKFORCE STRATEGIES

The preparation for COVID surges and the realities of staffing in the face of provider illness led to innovation in staffing patterns not seen prior to the pandemic. For example, an increased number of shorter shifts with increased on-call back up were instituted at our facilities.

State medical boards recognized medical licensure from other states so that providers could be immediately utilized where the need was greatest.

Existing barriers preventing the flexible and efficient use of our care providers must be removed.

PRIORITIZE PROVIDER SAFETY AND WELLNESS

The issue of provider safety will forever be associated with the consequences of the pandemic response. The image of "healthcare heroes," entering hospitals without appropriate Personal Protective Equipment (PPE) while communities applauded from their windows, will always be associated with this pandemic. Appropriate reserves of PPE, equipment, and medications must be a top priority.

Professional burnout among healthcare providers was already at an all-time high prior to the pandemic. In response, progressive healthcare organizations responded with interventions such as frequent rounding by leaders, the provision of formal mental health resources, increased on-line roundtables to share feelings and provide support, and the flexing from exhausted providers. Expanding use of these initiatives is essential, especially as we face growing shortage of doctors.

ADVOCATE FOR SOCIAL JUSTICE

Finally, the COVID-19 pandemic shined a light on many of the social ills we have failed to address as a nation. When looked at through the lens of the pandemic, the need to address these issues -- from homelessness to poor mental health to social inequality to poverty to the unequal justice system -- takes on a new urgency. We are only as healthy as our most vulnerable and we, as healthcare providers have a unique role in instituting social change.

The response to the COVID-19 pandemic has highlighted the importance of these critical healthcare management principles. The U.S. may be moving back toward a more "normal" day-to-day in society broadly, but we should never go back to the old way healthcare system was run. Don't let this crisis go to waste. ■

This article was originally featured on MedPage.

Gary Tamkin, MD, is the vice president of provider development for US Acute Care Solutions, which provides emergency department, hospitalist, and intensivist services nationwide. He is a volunteer associate clinical professor of emergency medicine at UCSF, a past president of the California Chapter of The American College of Emergency Physicians, and currently serves as the statewide medical director of the California Highway Patrol.

GUEST ARTICLE |

THE INTERSECTION OF EMERGENCY MEDICINE, LAW ENFORCEMENT, AND HEALTH EQUITY

By Sally Mahmoud-Werthmann, MD (She/Her)

The ubiquitous presence of law enforcement in the emergency department (ED) is a health equity issue that impacts the delivery of emergency care, jeopardizes patient trust in the health care system, and may infringe on a patient's privacy and constitutional rights.

Hospitals treating a disproportionate share of patients with social and structural vulnerabilities (e.g., county hospitals, trauma centers, and academic hospitals in metropolitan areas) are no stranger to the presence of law enforcement. Law enforcement may have a police substation located on hospital grounds, provide on-site security, and, in some cases, patrol the ED waiting room. Like policing patterns in the USA, this disproportionately exposes Black, Indigenous, and Latinx patients to law enforcement when seeking medical care in the ED.

From a patient's perspective, seeing police officers in the ED may be distressing, especially for individuals with previous traumatic experiences and for those with negative perceptions of law enforcement. A noticeable policing presence in the hospital may deter individuals from seeking health care. Patients may also withhold critical medical information if they suspect it will be shared with law enforcement. This makes sense when considering the significant racial disparities in the criminal justice system. Police use of force is one of the leading causes of death for Black men.[1] Black men are 2.5 times more likely to be killed by police than white men, Native American men 1.5 times, and Latino men 1.3 times more likely. Black people represent nearly 40% of the incarcerated population. These groups also face substantial discrepancies in care in the ED, and the experience of policing in the ED can exacerbate these inequities.

Law enforcement need to enter the hospital for various reasons, including accompanying and preventing the escape of patients in custody and investigating crimes by collecting evidence and documenting injuries. But officers are not in the hospital to protect patient confidentiality. It is our duty to protect patient confidentiality in compliance with the Health Insurance Portability and Accountability Act (HIPAA). Confidentiality breaches may jeopardize the patient-provider relationship and lead to significant repercussions.

The ED occupies a unique position within the healthcare system, representing a critical safety net for the most vulnerable patients in our society. The ED should be a safe and healing space for our patients. As emergency physicians, we are uniquely positioned to provide trauma-informed care while safeguarding our patient's privacy and confidentiality. We should also advocate for equitable policies at our hospitals that address the presence of

law enforcement in the ED. Their unregulated presence results in breaches in patient confidentiality, compromises patient care, and disintegrates the very foundation of the patient-provider relationship built on vulnerability and trust.

When interacting with law enforcement in the ED, clinicians should consider the following:

1. The well-being of our patients must take precedence over a police investigation. If a patient is medically unstable, law enforcement should be asked to wait outside the treatment area until the resuscitation is complete. If law enforcement fails to comply with this request, document their badge number and file a safety report at your hospital.
2. When caring for a patient in custody, ask law enforcement to step out of the room during the history and physical exam. The officer can be within view if needed but should not be within earshot range. Every patient has a right to privacy, including patients in custody, who represent a particularly underserved population. Patients in custody have many legal rights in the emergency care setting, including the right to confidentiality.
3. Let patients know that the medical care team is separate from law enforcement. If there is a noticeable law enforcement presence in your ED, patients may feel confused about the relationship between the ED and the police.
4. Develop familiarity with state laws around the issues of law enforcement and patient privacy. State laws may require us to disclose protected health information to law enforcement without a court order or warrant in certain situations (e.g., firearm violence). Even in these scenarios, the disclosure is limited to a very specific set of demographic and medical information.
5. Advocate for the development of equitable hospital policies that include the perspectives of key stakeholders (e.g., frontline workers, patients, community advocates, law enforcement personnel, and hospital leadership). The policies should emphasize the protection of patients' privacy and autonomy and clearly define the role of law enforcement in the emergency care setting. The policies should also discourage the use of body cameras in areas where care is being rendered.
6. Advocate for non-carceral, trauma-informed solutions to de-escalation and crisis management in your hospital (e.g., increasing unarmed hospital security and behavioral emergency response teams). Clinicians should also advocate for the development of hospital-based violence intervention programs, designated waiting areas for law enforcement, and for patient advocates and/or legal advocates that help patients understand their rights in the emergency care setting. ■

[1] https://www.pnas.org/doi/full/10.1073/pnas.1821204116

For more information on trauma-informed care and Community Based Violence Intervention and Prevention Initiatives (CVIPI), visit: https://bja.ojp.gov/program/community-violence-intervention/overview#:~:text=Definition%3A,initiatives.

Dr. Sally Mahmoud-Werthmann is an emergency medicine physician at Stanford Medicine. She is also a part-time emergency physician at Zuckerberg San Francisco General Hospital. She specializes in social emergency medicine.

EFFECTS OF AN ONLINE COMMUNITY PEER-SUPPORT INTERVENTION ON

COVID-19 VACCINE MISINFORMATION AMONG ESSENTIAL WORKERS:MIXED-METHODS ANALYSIS

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INTRODUCTION: Public health efforts to reduce the spread of coronavirus disease 2019 (COVID-19) have been plagued by vaccine hesitancy and misinformation. Social media has contributed to spreading misinformation by creating online environments where people find information or opinions that reinforce their own. Combating misinformation online will be essential to prevent and manage the spread of COVID-19. It is of particular urgency to understand and address misinformation and vaccine hesitancy among essential workers, such as healthcare workers, because of their frequent interactions with and influence upon the general population. Using data from an online community pilot randomized controlled trial designed to increase requests for COVID-19 vaccine information among frontline essential workers, we explored the topics discussed on the online community related to COVID-19 and COVID-19 vaccination to better understand current misinformation and vaccine hesitancy.

METHODS: For the trial, 120 participants and 12 peer leaders were recruited through online advertisements to join a private, hidden Facebook group. The study consisted of an intervention and control arm, each with two groups of 30 randomized participants each. Peer leaders were only randomized into one of the intervention-arm groups. Peer leaders were tasked with engaging the participants throughout the study. Posts and comments of only participants were coded manually by the research team. Chi-squared tests assessed differences in the frequency and content of posts between intervention and control arms.

RESULTS: We found significant differences in the numbers of posts and comments focused on topics of general community, misinformation, and social support between intervention and control arms (6.88% vs 19.05% focused on misinformation, respectively, (P <0.001); 11.88% vs 1.90% focused on social support, respectively, (P <0.001); and 46.88% vs 62.86% focused on general community (P <0.001)).

CONCLUSION: Results suggest that peer-led online community groups may help to reduce the spread of misinformation and aid public health efforts in our fight against COVID-19. [West J Emerg Med. 2023;24(2)264–268.]

INTRODUCTION

Misinformation has continued to plague efforts to address coronavirus disease 2019 (COVID-19)[1,2] and exacerbated vaccine hesitancy due to the politicization of COVID-19.[3-5] Social media has been a driver of misinformation, creating environments where people may only find information that reinforces their own.[6-8] Even those in the healthcare field have been affected by this problem,[7,9] but it is important that healthcare workers set an example for the public on scientifically proven options for reducing the spread of COVID-19.[10] The Harnessing Online Peer Education (HOPE) intervention has successfully created attitude and behavior change in multiple locations and medical conditions[11-13] and this intervention may be applied to reduce misinformation and promote vaccination. The HOPE tool uses trained peer leaders to help provide support to others online.[11-13]

To better understand the growing problems around misinformation and vaccine hesitancy, we used data from a HOPE pilot randomized controlled trial designed to increase requests for COVID-19 vaccine information among frontline essential workers. In this study we sought to explore the topics discussed on the online community related to COVID-19 and assess differences in conversation topics and frequency between study arms.

Population Health Research Capsule

What do we already know about this issue?

Combating vaccine hesitancy and misinformation online will be essential to prevent and manage the spread of coronavirus disease 2019 (COVID-19).

What was the research question?

Can peer-led online communities reduce COVID-19-related misinformation and vaccine hesitancy?

What was the major finding of the study?

Compared to the control group, the intervention group had less misinformation (6.9% vs 19.1%) and more socially supportive comments (11.9% vs 1.9%, both P <0.001).

How does this improve population health?

The Harnessing Online Peer Education (HOPE) intervention is a promising tool to reduce vaccine hesitancy misinformation and create a supportive community environment.

METHODS

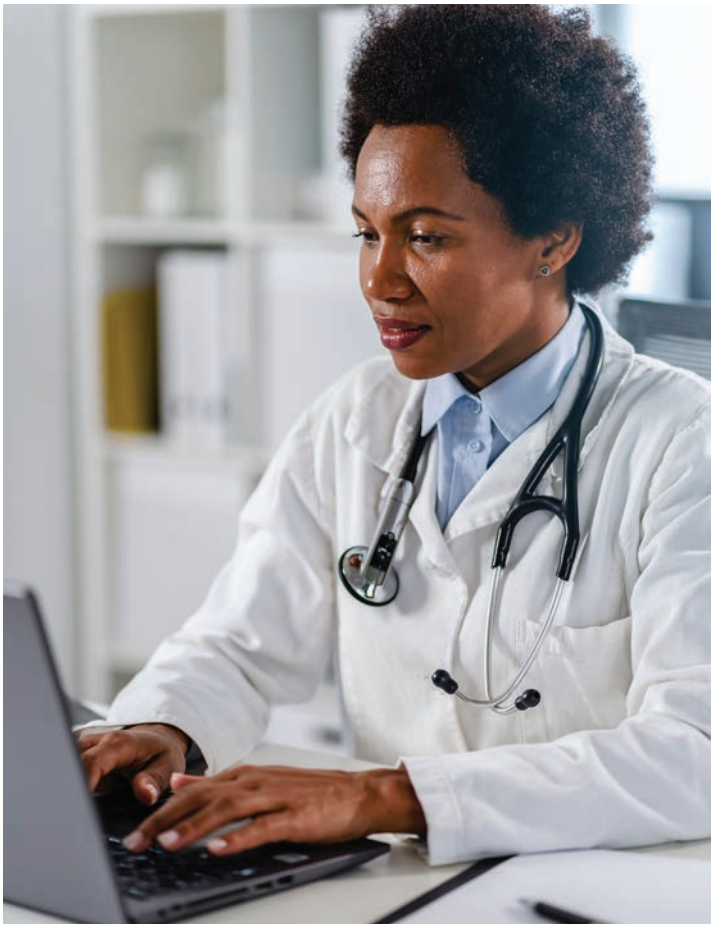
Recruitment

From July 23–August 20, 2021, participants and peer leaders were recruited online to join a Facebook group for a research study. Those who clicked on the advertisements were routed to a screening survey and, if eligible, were called by the study team to verify they were a unique person and friend us on Facebook. Participants were eligible for the study if they were ≥18 years, a US resident, an English speaker, part of phase 1a or 1b of the COVID-19 vaccine rollout (eg, healthcare workers or teachers), and someone who has not received a COVID-19 vaccine. Peer leaders matched participants in eligibility criteria and had initially been vaccine hesitant (when asked, they mentioned a reason they did not want the vaccine) but had eventually received at least the first dose of any COVID-19 vaccine (and showed us a picture of their vaccination card). Peer leaders were also required to attend three virtual training sessions (Zoom Video Communications, Inc, San Jose, CA).

Table 1. Example quotes of each topic. Each topic category is non-exclusive; so, posts and comments can potentially be labeled as all topics. Example quotes were shortened to the relevant text that represented a topic.

Topic	**Example quote**
General community	Hello! My name is [] and I'm a CNA in Kentucky
Social support	We would be so hosed without CNAs, ya'll rock!
COVID-19	Now there is talk about a new strain of covid called MU?
COVID-19: fact	Their are several and possibly more to come…the vaccines are waning and/or the new variants can evade the vaccine. Booster shots are planned to start in next few weeks https://www.who.int/.../act.../tracking-SARS-CoV-2-variants/
COVID-19: misinformation	When I start back in the ICU I will be taking ivermectin weekly prophylactically
COVID-19: experience	Looks like my employer is requiring the vaccine by oct 31st now. But I have antibodies still, I've had them since March when I had Covid.
COVID-19: opinion	My body my choice as to what I put in it and when. Period. That is one thing I will never change my mind on.
COVID-19: question	Has anyone been mandated by their employer yet?
Other: misinformation	I believe in the power of herbal remedies too.
Facts misinterpreted	That study shows a great several folds reduction of both infection and symptomatic disease in people with natural immunity. http://www.medrxiv.org/.../2021.08.24.21262415v1.full-text [link goes to a non-peer reviewed study]

COVID-19, coronavirus disease 2019; CNA, certified nursing assistant; ICU, intensive care unit.



Peer Leader Training

Each session was approximately three hours. Session one focused on background information of COVID-19 and current misinformation. Session two introduced components of communication and various ways of communication online. Stigma and politicization of COVID-19 and how to address these polarizing topics were discussed. Suggested weekly topics were also introduced. We informed peer leaders that the groups were free-flowing and conversations would depend on how participants reacted and interacted with each other. Session 3 focused on the study design. Throughout training, peer leaders participated in group activities to practice using Facebook features and engaging others. After each session, peer leaders were given homework to help reinforce what they learned (eg, post a video about COVID-19 vaccine education).

Intervention

A total of 120 participants were randomly assigned to intervention or control arms. Twelve peer leaders were randomly assigned to an intervention group. Each arm consisted of two private, hidden Facebook groups with 30 participants each. The groups in the intervention arm had six peer leaders each. The four-week study started on August 21, 2021. Twelve participants were later removed from analysis as it was discovered they had been vaccinated before the study began (six from the intervention and six from the control). Participants completed surveys at baseline and post intervention. They were told to use Facebook as they would normally and were also reminded each week that they could request information about the

Table 2. Coded conversation topics of participant posts and comments.

Group	1 (%)	2 (%)	Total Intervention (%)	3 (%)	4 (%)	Total Control (%)	Total Intervention vs Total Control P-Value
Participant posts + comments (n)	67	93	160	61	254	315	<0.001
Number of reactions	60	137	197	43	142	185	
General community	22 (32.84%)	53 (56.99%)	75 (46.88%)	21 (34.43%)	177 (69.69%)	198 (62.86%)	<0.001
Social support	6 (8.96%)	13 (13.98%)	19 (11.88%)	2 (3.28%)	4 (1.57%)	6 (1.90%)	<0.001
COVID-19	43 (64.18%)	38 (40.86%)	81 (50.63%)	45 (73.77%)	126 (49.61%)	171 (54.29%)	0.45
COVID-19: fact	0 (0.00%)	3 (3.23%)	3 (1.88%)	5 (8.20%)	5 (1.97%)	10 (3.17%)	0.67
COVID-19: misinformation	8 (11.49%)	3 (3.23%)	11 (6.88%)	20 (32.79%)	40 (15.75%)	60 (19.05%)	<0.001
COVID-19: experience	25 (37.31%)	15 (16.13%)	40 (25.00%)	11 (18.03%)	46 (18.11%)	57 (18.10%)	0.08
COVID-19: opinion	21 (31.34%)	23 (24.73%)	44 (27.50%)	15 (24.59%)	73 (28.74%)	88 (27.94%)	0.92
COVID-19: question	3 (4.48%)	6 (6.45%)	9 (5.63%)	3 (4.92%)	6 (2.36%)	9 (2.86%)	0.14
Other: misinformation	3 (4.48%)	2 (2.15%)	5 (3.13%)	0 (0.00%)	7 (2.76%)	7 (2.22%)	0.55
Facts misinterpreted	0 (0.00%)	3 (3.23%)	3 (1.88%)	4 (6.56%)	4 (1.57%)	8 (2.54%)	0.65

COVID-19, coronavirus disease 2019.

COVID-19 vaccine, including where to receive it. Peer leaders were responsible for reaching out to their assigned participants at least three times per week and completing a tracking sheet that documented which participants they had reached out to and whether there was any response. Each week, peer leaders also met with the study team to discuss questions or problems. Please see references for further details about HOPE studies.[11-13]

Analysis

We manually coded posts and comments from August 21–September 17, 2021. Using a subset of 20 posts, interrater reliability for each category was calculated between the first author and another research associate in the lab to be an average Cohen's $\kappa = 0.59$. Discrepancies were discussed and resolved and the remaining posts and comments were labeled by the first author.[11,14,15] Post or comments could be labeled as follows; "social support" (supportive words to another member); COVID-19 (any topic about COVID-19); COVID-19 facts (scientific facts about COVID-19); COVID-19 misinformation (false or misleading information about COVID-19); COVID-19 experiences (any topic that described a participant's or their family's/friend's experience around COVID-19); COVID-19 opinions (any opinion about COVID-19); COVID-19 questions (any questions about COVID-19); other misinformation (false or misleading information about a topic besides COVID-19;, misinterpreted facts (referencing an actual COVID-19 fact or research study but arriving at the wrong conclusion), and "general community" (any topic that didn't fit in the other categories) (Table 1). For each category, respectively, Cohen's $\kappa = 0.64, 0.88, 0.62, 0.46, 0.38, 0.29, 0.46, 1, 0.64, 0.50$. Categories were not mutually exclusive. Data were extracted and analyzed by the first author. Only posts or comments made by participants (not peer leaders) were coded and included in the analysis. We used Poisson distribution to assess differences in counts of posts and comments between arms. Chisquared tests assessed differences in types of posts and comments. All analyses were conducted in Microsoft Excel version 1808 (Microsoft Corporation, Redmond, WA).

Ethics Statement

This study was exempted by the University of California, Irvine Institutional Review Board.

Results

The focus of this analysis was the online conversations. For data about the full intervention, please see our paper about the full study.[12]

During the study, there were more posts and comments in the control arm (315 vs 160 in intervention; P <0.001) (Table 2). Most posts and comments were about COVID-19 in both the intervention and control arms (50.63% and 54.29%, respectively) (Table 2). We found significant differences in the amounts of general community, misinformation, and social support between arms. Misinformation was 6.88% of participant posts and comments in the intervention and 19.05% of participant posts and comments in the control (P <0.001) (Table 2). Social support was 11.88% of participant posts and comments in the intervention arm and 1.90% of participant posts and comments in the control arm of the study (P <0.001) (Table 2). General community was 46.88% of participant posts and comments in the intervention and 62.86% of participant posts and comments in the control arm (P <0.001) (Table 2).

For the intervention arm, 33 participants were engaged (defined as reacted, commented, or posted) in week one, 29 in week two, 11 in week three, and 21 in week four. For the control arm, 30 participants were engaged in week one, 15 in week two, 16 in week three, and 7 in week four.

DISCUSSION

As demonstrated by the decreased amount of misinformation in the intervention vs control group, results suggest that HOPE has the potential to reduce misinformation in social media groups with peer leaders. While this study looked to address COVID-19 vaccine misinformation, HOPE could be adapted to address misinformation for other public health issues. This has immediate public health implications as it can be used to both combat misinformation and disseminate information during public health crises.

LIMITATIONS

Limitations include small sample size and short study duration. Our previous studies that used this intervention generally operated for 12 weeks. Neither the intervention nor control group participants posted much about facts, and what was posted was generally misinterpreted. This may be due to the peer leaders being the ones generally posting factual information. The short duration may also have been a factor in what participants could learn during that time. Future studies might explore ways to increase conversations about factual information.

There were also more posts and comments made by participants in the control group. This may be due to one outlier in group 4, who posted heavily (approximately 170 posts and 80 comments, which is more than the total of groups 1-3 combined). While this participant was later one of the ones removed from analysis, other people's comments on their posts remained in the analysis. It is difficult to know whether the reduced misinformation in the intervention groups may have been due to them not wanting to post as much in groups with peer leaders. Past HOPE studies have found the intervention arm to generally have more posts and engagement compared to the control group,[11,15] making it of interest to explore reasons for the control group having more in this study. Recruitment also targeted people who use Facebook and were employed as a frontline essential worker. This demographic may not necessarily represent the general population.

CONCLUSION

Overall, results suggest that peer-led social media groups can be a powerful tool to help combat misinformation online and aid in addressing public health needs. Peer leaders can help shape the social norms within the group, reduce the spread of misinformation, and create a supportive community environment. ■

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NONFATAL INJURIES SUSTAINED IN MASS SHOOTINGS IN THE US, 2012-2019: INJURY DIAGNOSIS MATRIX, INCIDENT CONTEXT, AND PUBLIC HEALTH CONSIDERATIONS

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INTRODUCTION: The epidemic of gun violence in the United States (US) is exacerbated by frequent mass shootings. In 2021, there were 698 mass shootings in the US, resulting in 705 deaths and 2,830 injuries. This is a companion paper to a publication in JAMA Network Open, in which the nonfatal outcomes of victims of mass shootings have been only partially described.

METHODS: We gathered clinical and logistic information from 31 hospitals in the US about 403 survivors of 13 mass shootings, each event involving greater than 10 injuries, from 2012-19. Local champions in emergency medicine and trauma surgery provided clinical data from electronic health records within 24 hours of a mass shooting.

We organized descriptive statistics of individual-level diagnoses recorded in medical records using International Classification of Diseases codes, according to the Barell Injury Diagnosis Matrix (BIDM), a standardized tool that classifies 12 types of injuries within 36 body regions.

RESULTS: Of the 403 patients who were evaluated at a hospital, 364 sustained physical injuries—252 by gunshot wound (GSW) and 112 by non-ballistic trauma—and 39 were uninjured. Fifty patients had 75 psychiatric diagnoses. Nearly 10% of victims came to the hospital for symptoms triggered by, but not directly related to, the shooting, or for exacerbations of underlying conditions. There were 362 gunshot wounds recorded in the Barell Matrix (1.44 per patient). The Emergency Severity Index (ESI) distribution was skewed toward higher acuity than typical for an emergency department (ED), with 15.1% ESI 1 and 17.6% ESI 2 patients. Semi-automatic firearms were used in 100% of these civilian public mass shootings, with 50 total weapons for 13 shootings (Route 91 Harvest Festival, Las Vegas. 24). Assailant motivations were reported to be associated with hate crimes in 23.1%.

CONCLUSION: Survivors of mass shootings have substantial morbidity and characteristic injury distribution, but 37% of victims had no GSW. Law enforcement, emergency medical systems, and hospital and ED disaster planners can use this information for injury mitigation and public policy planning. The BIDM is useful to organize data regarding gun violence injuries. We call for additional research funding to prevent and mitigate interpersonal firearm injuries, and for the National Violent Death Reporting System to expand tracking of injuries, their sequelae, complications, and societal costs. [West J Emerg Med. 2023;24(X)XXX–XXX.]

INTRODUCTION

Civilian public mass shootings (CPMS) are increasing in frequency and are the leading cause of potential years of lost life in the United States (US).[1] Nonfatal interpersonal firearm injuries outnumber deaths two- to threefold.[2] As greater than 75% of all firearm deaths occur prior to hospital arrival, reports that focus on mass shooting deaths provide an incomplete picture of the medical resources required to care for injured victims and provide inadequate information for effective hospital and emergency department (ED) disaster planning.[2] While most research on firearm-related injuries, including reports on mass shootings, focus on deaths, less is known about injury patterns and outcomes among survivors, including those injured by non-ballistic means.

Mass shootings are a complex subset of the larger firearm violence epidemic in the US. Some are random, but others are associated with hate crime ideology or a response to bullying or social isolation.[3] One factor common to CPMS is the use of automatic or semi-automatic firearms (SAF).[3] "Assault rifles," generally defined as selective-fire rifles that use intermediate power ammunition fed from a detachable magazine (often high capacity), cause greater mortality and morbidity in mass shootings than non-automatic weapons.[4] The kinetic firepower and resulting damage of these SAFs is potentially orders of magnitude greater than that of a musket ball used in the late 18th century, at the time the Second Amendment was adopted, and is further compounded by the increased rate of fire of modern weapons.[5,6]

This is a companion manuscript to the *JAMA Network Open* paper entitled "Injury Characteristics, Outcomes, and Health Care Services Use Associated with Nonfatal Injuries Sustained in Mass Shootings in the US, 2012-2019."[7]

Population Health Research Capsule

What do we already know about this issue?

The firearm violence epidemic in the US is exacerbated by increasingly frequent mass shooting, involving significant deaths and a greater number of non-fatal injuries.

What was the research question?

We describe the morbidity (gunshot wounds and other) among mass shooting survivors and discuss the types of firearms used and public health implications.

What was the major finding of the study?

In 13 mass shootings, 887 nonfatal injuries were associated with semi-automatic firearm use. There were 2.88 GSW injuries, and 1.56 non- GSW injuries per patient.

How does this improve population health?

Law enforcement, EMS, and hospital disaster committees may use these insights into mass shooting morbidity for injury mitigation and public policy planning

Table 1. Incident demographics of the 13 civilian public mass shootings in the United States from 2012-19.

		Setting			Firearms used[b]			Hate crime association[c]	
CPMS Name	**Date**	**Location**	**Category[a]**	**Description**	**Quantity**	**Description**	**Legally purchased?**	**Prejudice(s)**	**Motive(s)**
Midland-Odessa	08/31/2019	Midland and Odessa, TX	Other	Interstate 20	1	One SAAR	Yes, Private sale	No	No
Dayton	08/04/2019	Dayton, OH	Bar/ Nightclub	Ned Peppers Bar	2	One SAAR (AR-15), one shotgun	Yes (All), Federally licensed dealer	Misogyny	No
Gilroy Garlic Festival	07/28/2019	Gilroy, CA	Concert/ Festival	Gilroy Garlic Festival	1	One SAAR (AK-47)	Unavailable	Unavailable	Unavailable
Pittsburgh Synagogue	10/27/2018	Pittsburgh, PA	Religious locale	Tree of Life – Or L'Simcha Congregation	5	Three SAPs (Glock .357), one SAAR (AR-15), one shotgun	Unavailable	Racism (Jewish), Religious Hatred, Misogyny	Targeting racial/ ethnic group, Anti- Semitism
Jacksonville Landing	08/26/2018	Jacksonville, FL	Bar/ Nightclub	Good Luck Have Fun Game Bar, Videogame tournament	2	Two SAPs (.45-caliber & 9mm)	Unavailable	Unavailable	Unavailable
Marjory Stoneman Douglas High School	02/14/2018	Parkland, FL	School	Marjory Stoneman Douglas High School	1	One SAAR (M&P15)	Yes, Federally licensed dealer	Racism, Religious Hatred, Homophobia	Unavailable
Marshall County High School	01/18/2018	Benton, KY	School	Marshall County High School	1	One SAP (.22-caliber)	Unavailable	Unavailable	Unavailable
Sutherland Springs Church	11/05/2017	Sutherland Springs, TX	Religious locale	First Baptist Church	3	Two SAPs 22-caliber & 9mm), one SAAR (AR-556)	No (All), Unlawful purchase	No	No
Las Vegas	10/01/2017	Las Vegas, NV	Concert/ Festival	Route 91 Harvest Music Festival	24	22 SAARs (AR-15 & AK-47), one bolt-action rifle, one revolver handgun	Yes (All), Federally licensed dealer	No	Mo
Burnette Chapel	09/24/2017	Antioch, TN	Religious locale	Burnette Chapel Church of Christ	2	Two SAPs (.40-caliber & 9mm)	Unavailable	Unavailable	Unavailable
Little Rock Nightclub	07/01/2017	Little Rock, AR	Bar/ Nightclub	Power Ultra Lounge nightclub	3	Two handguns, one SAAR (AK-47)	Unavailable	Unavailable	Unavailable
Fort Lauderdale Airport	01/06/2017	Fort Lauderdale, FL	Other	Fort Lauderdale-Hollywood International Airport	1	One SAP (9mm)	Unavailable	No	No
Aurora Theater	07/20/2012	Aurora, CO	Other	Century 16 movie theater, Midnight screening of Dark Night Rises	4	Two SAPs (.40-caliber), one SAAR (M&P15), one 12-gauge shotgun	Yes (All), Federally licensed dealer	No	No
13 CPMS Incidents	2012-2019	US States	3 religious locales, 3 bars/ nightclubs, 3 other settings, 2 schools, 2 concerts/ festivals			30 SAARs, 13 SAPs, 3 shotguns, 3 other handguns, 1 other rifle	32 (64%) legal firearms	3 CPMS associated with prejudice	1 CPMS associated with antisemitic motive

a. Setting categories and descriptions are based on information from Mother Jones (MJ) and The Violence Project (TVP), public databases, and lay press sources/public domain.

b. All firearms used by the perpetrator(s) including those used to target victims and those found on scene even if not discharged. Information abstracted from TVP, MJ, and the public domain. Legal vs nonlegal ownership abstracted only from TVP.

c. Information about the perpetrator(s)' prejudice and motive(s) were abstracted directly from TVP. Mass shootings listed as "Unavailable" were not recorded in the TVP. CPMS, civilian public mass shootings; SAAR, semi-automatic assault rifle; SAP, semi-automatic pistol.

Our report provides a greater level of detail on the injury epidemiology of the 13 mass shootings previously analyzed, by organizing all traumatic diagnoses according to the Barell Injury Diagnosis Matrix (BIDM).[8] We also present atraumatic diagnoses and illnesses, including sequelae of trauma. Lastly, this report addresses mass shooting settings, firearm type and legality, and hate crime associations, with expanded discussion of the research processes and limitations.

METHODS

This retrospective case series of 403 patients reports 13 CPMSs with greater than 10 injuries per event from 2012-19. The study design and data abstraction methods have been reported previously.[7] Briefly, we identified these CPMS incidents via public databases, The Violence Project (TVP),[9] and *Mother Jones*,[10] and contacted local champions to report data from 31 hospitals that received injured victims to report data to a central hub. The study was deemed exempt from institutional review board (IRB) approval at the central site. Data were abstracted from primary medical records of victims presenting within 24 hours after the CPMS, and IRB approval was obtained at each spoke center.

We used best-practice methods of retrospective chart review.[11] We excluded deaths at the scene, in the emergency department (ED), and in the operating room during initial surgery. We included all patients from the CPMS, including those not injured by GSW, as well as uninjured patients presenting for medical complaints. To add context to the injured victims, we summarize the incident-level data retrieved from *TVP* database on type, number and legality of firearms used, hate crime components, and reported motive.[9] We collected Emergency Severity Index (ESI) triage levels on 232 of 403 patient (57.6%). For the other 171 victims, we assigned an ESI based on diagnosis, injury type, and projected resources used as per the definition for each ESI level.[12]

We compiled patient-level data on ED and inpatient diagnoses from medical records according to the *International Classification of Diseases*, Ninth Revision, Clinical Modification (ICD-9-CM) and Tenth Revision (ICD-10-CM) codes.[13,14] We employed the BIDM, a standardized epidemiological tool that presents ICD-9-CM codes describing trauma in a two-dimensional array (matrix) of 36 body region rows and 12 nature-of-injury columns.[8] To deal with the ICD- 10-CM codes in our sample, we used an online converter tool to translate these codes into their ICD-9-CM equivalents.[15] For an additional layer of precision, we also referenced the Injury Mortality Diagnosis Matrix, which is a similar matrix using ICD-10-CM codes.[16] We chose to model this study's CPMS injury matrix on the BIDM given its widespread application on morbidity data, as opposed to mortality/cause-of-death data.[17]

We made several modifications to the BIDM to more appropriately present CPMS-specific traumatic diagnosis codes. In this study, the mass shooting injury matrix (MSIM) has an additional nature-of-injury column, "Gunshot Wound," to describe penetrating open wounds caused explicitly by GSWs. Therefore, non-GSW penetrating open wounds, lacerations, and abrasions are described in the column

"Laceration and Abrasion." Such a distinction is not possible in the unmodified BIDM. The BIDM also features three types of traumatic brain injuries (TBI): "Type 1" describes intracranial, and "Type 2" and "Type 3" describe extracranial trauma, with the latter distinguishable only by loss-of- consciousness status. The MSIM features only two types of TBI, "Intracranial" and "Extracranial." Next, we removed "Trunk" and "Burns" because our dataset did not contain any of these codes (ie, unspecified thorax trauma). Finally, we also removed "System-wide and Late Effects (Row 36)," as we reported these diagnosis codes separately from the MSIM.

For purposes of categorizing firearms used in CPMS in this report, we defined a SAF, whether pistol or rifle, as one that places the subsequent round in the chamber and then requires the user to depress the trigger again to fire the next round.[18] Non-SAFs require additional actions by the user to fire the next round, other than pulling the trigger.[18] The term "assault weapon" generally refers to a SAF with a detachable, large-capacity magazine and additional components that may include a pistol grip, a forward grip, and/or a flash suppressor.[19] We relied on descriptions of the weapons used in mass shootings by *TVP*[9] and did not independently verify the types of weapons used.

RESULTS

This study describes 13 CPMSs from 2012-2019 across nine US states (Table 1). Three of the mass shootings occurred at religious sites, three at bars/nightclubs, and two each at schools and concerts/festivals. All shootings featured SAFs: 9 of 13 (69.2%) involved at least one semi-automatic assault rifle (SAAR), and 4 of 13 (30.8%) only involved semi-automatic pistols (SAP). A total of 50 firearms (3.85 per CPMS) were used

Table 2. Mass Shooting Injury Matrix (classification of trauma by body region and nature of the injury) sustained by 364 patients injured in 13 civilian public mass shootings in the US (2012-19).*

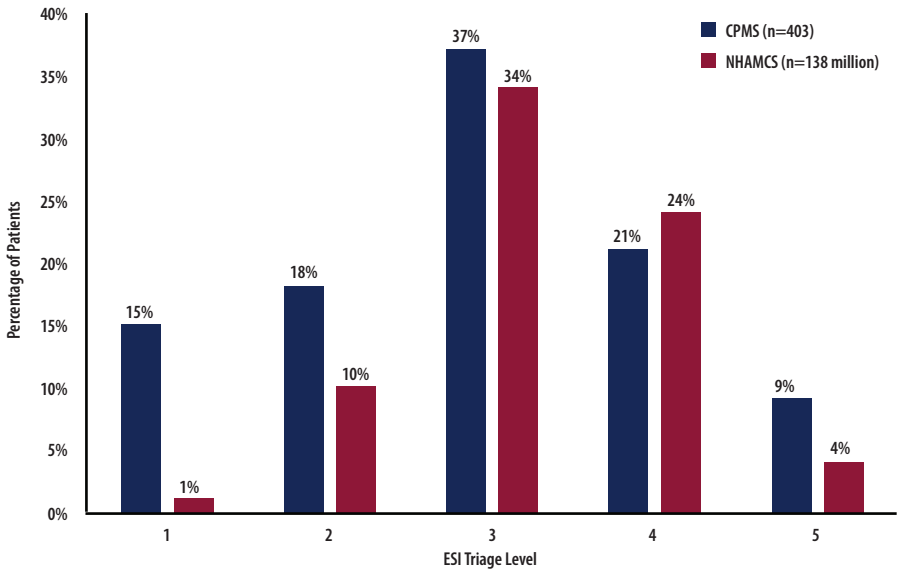
	Nature of Injury (12 Columns A-L)												
	A	B	C	D	E	F	G	H	I	J	K	L	
Body region (33 Rows)	Fracture	Dislocation	Sprain and strain	Internal organ trauma	Gunshot wound	Amputa-tion	Vascular trauma	Soft tissue contusion	Crush Injury	Laceration and abrasion	Nerve injury	Other and unspecified	Total diagnoses by body region
Traumatic Brain Injury (TBI)													
1 Intracranial	5[a]	-	-	13[b]	-	-	-	-	-	-	0	-	18
2 Extracranial	3[a]	-	-	0	-	-	-	-	-	-	-	-	3
Head Face and Neck													
3 Head and Scalp	0	-	-	-	13	-	0	5	0	3	0	13[c]	34
4 Face[d]	12	0	0	-	7	-	0	3	0	4	0	0	26
5 Eye and Eyelidd	-	-	-	-	8	-	0	3	0	0	1	0	12
6 Neck	0	-	4	-	4	-	1	0	0	1	0	0	10
7 Other and Unspecified	0	-	0	-	1[e]	-	0	0	0	0	0	2[f]	3
Spinal Cord Injury (SCI)													
8 Cervical SCI	0	-	-	0	-	-	-	-	-	-	-	-	0
9 Thoracic/ Dorsal SCI		0	-	-	0	-	-	-	-	-	-	-	-
10 Lumbar SCI	0	-	-	0	-	-	-	-	-	-	-	-	0
11 Sacral/ Coccygeal SCI	0	-	-	0	-	-	-	-	-	-	-	-	0
12 Unspecified SCI	0	-	-	0	-	-	-	-	-	-	-	-	0
Vertebral Column Injury (VCI)													
13 Cervical VCI	0	0	2	-	-	-	-	-	-	-	-	-	2
14 Thoracic/ Dorsal VCI	1	0	1	-	-	-	-	-	-	-	-	-	2
15 Lumbar VCI	3	0	2	-	-	-	-	-	-	-	-	-	5
16 Sacral/ Coccygeal VCI	0	0	0	-	-	-	-	-	-	-	-	-	0
17 Unspecified VCI	0	0	0	-	-	-	-	-	-	-	-	-	0
Torso													
18 Chest and Thorax	23[g]	0	2	45[h]	33	-	0	10	0	0	0	0	113
19 Abdomen	-	-	-	48[i]	33	-	2	4	1	1	0	0	89
20 Pelvis and urogenital	7	0	0	11[j]	9	-	0	0	1	0	0	0	28
21 Back and buttock	-	-	5	-	27	-	0	3	1	1	0	0	37
Upper extremity													
22 Shoulder, upper arm and axilla	17[k]	2	7	-	36	0	13	4	0	3	7	0	89
23 Forearm and elbow	14	2	1	-	22	0	3	5	0	9	4	0	60
24 Wrist, hand and fingers	30	0	8	-	23	2	1	4	0	8	3	0	79
25 Other and unspecified	0	0	0	-	15	0	0	1	0	1	0	0	17
Lower extremity													
26 Hip	8l	0	2	-	7	0	0	1	0	0	0	0	18

by the perpetrators. Excluding the Las Vegas CPMS, which featured 24 firearms, there were 26 firearms used in the other 12 incidents (2.17 per shooting). There were 30 SAARs, 13 SAPs, three shotguns, three other handguns, and one bolt- action (non-automatic) rifle.

According to available public data, at least 32 of 50 (64%) firearms were obtained legally for six mass shootings. Only three firearms used in one CPMS were known to have been obtained illegally. Most legally obtained firearms were purchased from a federal licensed dealer, including all 24 firearms used in the Las Vegas CPMS. One legal firearm was bought in a private sale.

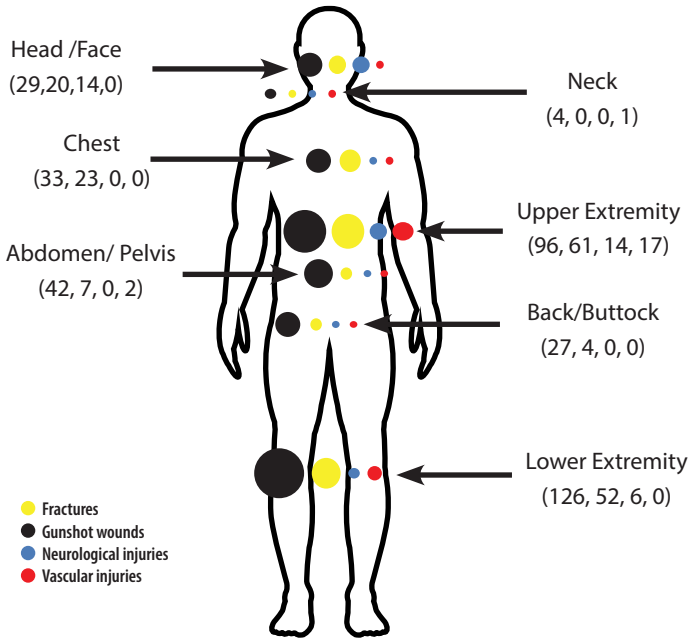
Figure 1 shows that the distribution of ESI categories in this study's 403 mass shooting survivors from disaster situations was skewed to the right, representing substantially higher acuity when compared to a national US sample of 138 million patients in 2017 from the National Center of Health Statistics.[20] Figure 2 shows the anatomic distribution of four trauma subtypes: GSW; fracture; neurologic; and vascular trauma, with colored-dot sizes proportional to frequency of injury at each anatomic location.

Figure 1. Distribution of Emergency Severity Index triage level at the primary receiving hospital for 403 survivors of 13 civilian public mass shootings in the United States (2012-19) compared to data from the 2017 National Hospital Ambulatory Medical Care Survey.



1. National Hospital Ambulatory Medical Care Survey: 2017 Emergency Department Summary Tables. Table 7. Triage status of emergency department visits, by selected patient characteristics: United States. 2017. https://www.cdc.gov/nnchs/data/nhamcs/web_tables/2017_ed_web_tables-508.pdf

Figure 2. Anatomic distribution of nonfatal gunshot wounds and other trauma sustained by 403 survivors of 13 civilian public mass shootings in the United States (2012-19).



Mass Shooting Injury Diagnosis Matrix

There were 897 traumatic diagnoses recorded in the MSIM (Table 2) in total, equating to 2.48 per injured patient (364). Of these diagnoses, 725 (80%) were caused by GSW- related trauma and 172 (20%) were from other blunt trauma (eg, fall, stampede, trampling). There were almost twice as many traumatic diagnoses per GSW patient than for non- GSW mass shooting victims, reflecting the complicated nature of these injuries. The 725 GSW-related diagnoses for 252 GSW patients equates to 2.88/patient vs 172 non-GSW diagnoses for 112 patients, or 1.56/patient. For GSW victims, the most common forms of trauma involved fractures (163) and internal organ injuries (113). For non-GSW victims, lacerations/abrasions (60), soft tissue contusions (55), and musculoskeletal strains (33) accounted for most injuries. For all patients, the most frequent anatomic regions of trauma involved the chest/thorax (113), followed by the abdomen (89), and shoulder/upper arm/axilla (89).

Internal Organs

The most common internal injuries from GSWs were 48 abdominal/retroperitoneal (including kidney), 41 thoracic, 13 intracranial, and 11 urogenital/pelvis. In addition, there were four myocardial infarctions, two injuries from blunt trauma, and two from pre-existing coronary artery disease. These injuries resulted in 64 diagnoses of organ failure and shock: 30 acute blood loss anemia; 11 hemorrhagic shock; 9 acute respiratory failure; and 14 other various organ failure diagnoses.

Musculoskeletal

There were 196 total musculoskeletal diagnoses. The most common were wrist/hand (30), ribs (23), lower leg and ankle (18), upper extremity

Table 2. Mass Shooting Injury Matrix (classification of trauma by body region and nature of the injury) sustained by 364 patients injured in 13 civilian public mass shootings in the US (2012-19).*

	Nature of Injury (12 Columns A-L)												
	A	B	C	D	E	F	G	H	I	J	K	L	
Body region (33 Rows)	Fracture	Dislocation	Sprain and strain	Internal organ trauma	Gunshot wound	Amputa-tion	Vascular trauma	Soft tissue contusion	Crush Injury	Laceration and abrasion	Nerve injury	Other and unspecified	Total diagnoses by body region
27 Upper leg and thigh	8l	0	1	-	39	0	3	1	0	3	4	0	59
28 Knee	4	0	1	-	7	0	2	5	0	4	0	0	23
29 Lower leg and ankle	18	1	7	-	32	0	5	3	0	6	1	0	73
30 Foot and toes	14	0	2	-	13	0	0	0	0	5	1	0	35
31 Other and unspecified	0	0	0	-	28	0	2	0	0	3	2	0	35
Multiple and unspecified													
32 Multiple body regions	1[m]	0	0	0	6[n]	0	0	3[o]	0	6[o]	0	0	16
33 Unspecified body region	6	0	0	0	0	0	2	0	0	2	1	0	11
Total diagnoses by nature of injury (Percentage of grand total diagnoses[N=897])	174 (19.4%)	5 (0.5%)	45 (5.0%)	117 (13.0%)	363 (40.5%)	2 (0.2%)	34 (3.8%)	55 (6.1%)	3 (0.3%)	60 (6.7%)	24 (2.7%)	15 (1.7%)	N=897
Diagnoses caused by GSW (Percentage of column total)	163 (93.7%)	0 (0.0%)	12[p] (26.7%)	113[q] (96.6%)	363 (100.0%)	2 (100.0%)	34 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (100.0%)	14[r] (93.3%)	725 (80.8%)
Diagnoses caused by non-GSW (Percentage of column total)	11 (6.3%)	5 (100.0%)	33[p] (73.3%)	4[q] (3.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	55 (100.0%)	3 (100.0%)	60 (100.0%)	0 (0.0%)	1[r] (6.7%)	172 (19.2%)

a Intracranial TBI, Fracture (1A) consists of 5 open skull fractures whereas Extracranial TBI, Fracture (2A) consists of 3 closed skull fractures.

b Intracranial TBI, Internal Organ Trauma (1D) consists of 6 cerebral lacerations/hemorrhages/infarctions, 4 subarachnoid hemorrhages, 2 subdural hemorrhages/ hematomas, and 1 epidural hemorrhage/hematoma.

c Head and Scalp, Other & Unspecified (3L) consists of 13 closed head injuries/concussions caused by falls and other non-ballistic trauma.

d Face, Fracture (4A) includes orbital fractures but Eye and Eyelid (Row 5) includes all other trauma to the orbital region: 8 orbital GSWs (5E), 3 orbital contusions (5H), and 1 optic nerve/visual pathway injury (5K).

e Other Head, Face and Neck, Gunshot wound (7E) consists of 1 GSW to the ear.

f Other Head, Face and Neck, Other & Unspecified (7L) consists of 2 dental fractures (1 each by GSW and non-GSW).

g Chest and Thorax, Fracture (18A) includes open and closed rib fractures counted individually for each rib in the event of multiple fractures.

h Chest and Thorax, Internal Organ Trauma (18A) includes pulmonary contusion, hemothorax, pneumothorax, diaphragm injury, and myocardial infarction.

i Abdomen and Retroperitoneum, Internal Organ Trauma (19D) includes visceral trauma to the abdominal and retroperitoneal compartments including stomach, small intestine, large intestine, rectum, anus, liver, gallbladder, pancreas, spleen, and kidneys.

j Pelvis and Urogenital, Internal Organ Trauma (20D) includes visceral trauma to the lower urinary tract (ureter, bladder, and urethra), gonads (ovaries, testes), external genitalia, and uterus.

k Shoulder, Upper Arm and Axilla, Fracture (22A) includes all humerus fractures (proximal, mid-shaft, and distal), clavicle, and scapula fractures.

l Hip, Fracture (26A) consists of femoral neck fractures, including pertrochanteric fractures (greater and lesser trochanter). Upper Leg and Thigh, Fracture (27A) consists of all other femur fractures distal to the femoral neck including mid-shaft and condylar.

m Multiple Body Regions, Fracture (32A) consists of a single diagnosis code describing multiple metacarpal fractures but the total number was unknown. Therefore, one hand fracture (24A) and one multiple fractures (32A) were entered into the matrix.

n Multiple Body Regions, Gunshot Wound (32E) consists of 6 diagnosis codes describing GSWs of multiple sites of the arm or leg but the total number of GSWs was unknown. Therefore, one GSW to unspecified region of arm (25E) or leg (31E) and one multiple GSWs (32E) were entered into the matrix.

o Multiple Body Regions, Soft Tissue Contusion (32H) and Multiple Body Regions, Lacerations and Abrasions (32J) include 3 and 6 discrete diagnosis codes describing multiple injuries, respectively. Unlike multiple fractures and GSWs, multiple contusions and abrasions were only entered into the matrix once.

p Sprain, Strain and Tendon Injury (Column C) consists of 33 musculoskeletal strains and sprains caused by non-ballistic trauma and 12 tendon ruptures/injuries caused by GSWs.

q Internal Organ Trauma (Column D) includes 4 myocardial infarctions, 2 associated with blunt force trauma, and 2 associated with exertion/preexisting coronary disease. Otherwise, all other visceral trauma was caused by GSWs.

r Other and Unspecified (Column L) consists of 13 closed head injuries from falls/non-ballistic trauma, 1 dental fracture from a fall, and one 1 fracture from GSW.

(17), foot (14), face (12), and skull (8). There were three reported cases of compartment syndrome of the leg associated with GSW trauma.

Neurologic

There were 44 patients with 51 neurologic trauma diagnoses. Thirty-one of these patients (70.4%) had GSW, and 13 diagnoses were related to blunt head trauma (concussions). For GSW victims, there were 24 with peripheral nerve injuries and six patients with 13 intracranial TBIs (eg, epidural, subdural, subarachnoid, brain parenchymal). One patient had a traumatic spinal cord injury (not recorded in MSIM). The most common peripheral nerve injuries involved the lower extremity (of eight peripheral nerve injuries, four were to sciatic nerves and four were other leg nerve injuries), and the upper arm/axilla and forearm/elbow/wrist (seven each).

Vascular

Vascular injuries were most commonly paired with peripheral nerve injuries (22 with nerve injuries and 12 isolated). There were 34 patients with 34 vascular injuries, comprised of 17 upper extremity, 12 lower extremity, two abdominal, and one neck (two unknown).

Complications/Sequelae

There were 88 diagnoses related to complications and sequelae of trauma: 43 involving foreign bodies; 11 gastrointestinal with ileus/constipation (opioid-induced and other); six with venous thromboembolism; two with ostomies; and two with wound dehiscence during the index hospitalization.

Infectious/Metabolic

There were 20 reported infectious diagnoses among 144 admitted patients (13.9% of all victims) and 37 diagnoses involving metabolic derangements, most frequently hypokalemia (11).

Atraumatic

Thirty-nine patients did not sustain any physical injury, and 21 of these cases (53.8%) involved psychiatric diagnoses. The others had a combination of acute concerns associated with the shooting (ie, syncope, hearing loss from gunfire), exacerbations of pre-existing chronic conditions, and occupational exposure to blood products (first responders). Some injured patients concurrently had non-traumatic diagnoses, especially admitted patients. Four patients had asthma exacerbations, four had hearing loss, three had cardiovascular disease (two atraumatic myocardial infarctions and one hypertensive emergency), and three had obstetric concerns.

Psychiatric

Overall, 50 patients had 75 psychiatric diagnoses (1.50 per patient); Twenty-nine of these 50 patients (58.0%) also had physical trauma, and 21 (42.0%) did not have a physical injury. Thirty-five (46.7%) of the psychiatric diagnoses were anxiety/panic/adjustment disorders. Fifteen patients (20%) were diagnosed with acute stress disorder (ASD), seven (9.3%) with major depressive disorder/depressive symptoms, and six (8.0%) with post-traumatic stress disorder (PTSD), indicating a hospital stay longer than 30 days according to the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition.[21]

DISCUSSION

This report focuses on injuries and related CPMS conditions, rather than deaths, to broaden and further describe the morbidity of victims, along with the societal and healthcare sequelae. This study is an additional analysis of a prior publication, in which we now report further detail on mass shooting settings, firearm type and legality, reported hate crime association, non-GSW trauma and illnesses, and research processes and limitations.[7]

As per Table 1, mass shootings occur in a variety of settings, including concerts, schools, places of worship, social gathering sites like bars, military bases, hospitals, and workplaces.[22] Over 90% occur within one mile of places frequented by children (eg, school, park).[23] Figure 1 demonstrates that CPMSs survivors skew toward substantially higher acuity for triage severity and anticipated care resources compared with a national comprehensive sample of EDs in the US.[20]

Prehospital planning and mass casualty incident training simulations are key to preventing loss of life, especially given the shift toward higher acuity. There is ample evidence suggesting that prehospital training programs and tourniquet training for laypersons increase survival.[25,26,27] Some public gathering places now have "STOP THE BLEED" kits, analogous to previous deployment of cardiac defibrillators. For example, in 2022 the city of Chicago deployed 550 STOP THE BLEED kits in 350 locations throughout the city.[28]

Brown and Goodin[29] reported that 44% of fatalities and 62% of all CPMS victims were associated with SAAR use. In these 13 CPMSs, there were 157 deaths and 887 nonfatal injuries, all of which were associated

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with SAF use.[7] Nine incidents involved SAAR use, corresponding to 147 of 157 (94%) deaths and 810 of 887 (91%) nonfatal injuries, although approximately one-third of these were non-GSW trauma. The ability to fire many bullets from a high-capacity magazine of a SAF is a direct cause of multiple injuries and deaths, and their lethality far exceeds anything likely imagined by the authors of the Second Amendment.[5] Public policy recommendations include restriction on purchase of high-capacity magazines as an important plank in mitigating potential injuries and deaths of mass shootings.[30]

Policy Implications

High-capacity SAF (which include assault rifles) are used in 20-58% of all firearm mass murders, but are used in a particularly high proportion of public mass shootings.[3,4,29] Civilian public mass shootings with SAFs result in substantially more fatal and especially non-fatal victims due to their rapid- fire abilities, enabling the perpetrator to indiscriminately target victims in enclosed spaces or large gatherings.[3,4,29] The 1994 federal ban on assault weapons and large-capacity (>10 rounds) ammunition magazines had exemptions and loopholes that limited its short-term effects, but its expiration in 2004 was followed by an increase in the use of these weapons in mass shootings and other crimes.[31,32] Data suggests that policy measures involving state-level restrictions on large-capacity magazines may reduce mass shootings.[4]

Evidence from 130 studies in 10 countries demonstrates that, in other nations, the simultaneous implementation of laws targeting multiple firearms restrictions is associated with reductions in firearm deaths.[33] Laws restricting the purchase of (eg, background checks) and access to firearms (eg, safer storage) are also associated with lower rates of intimate partner homicides and unintentional firearms deaths in children, respectively.[33] Furthermore, laws requiring permits to purchase a gun are also associated with a lower incidence of mass public shootings, and bans on large-capacity magazines are associated with fewer fatalities and nonfatal injuries when such events do occur.[34]

Our findings from mass shooting events represent a subset of US national firearm injuries and deaths. The US Centers for Disease Control and Prevention established the National Violent Death Reporting System (NVDRS) in 2002, with six states reporting.[35,36] Currently all 50 states, the District of Columbia, and Puerto Rico report their data. This robust dataset tracks all types of firearm deaths, including intentional, unintentional, those from interpersonal violence, legal intervention, and undetermined intent. However, the NVDRS does not track *nonfatal* firearm injuries as described here.[36] Research funding to study important aspects of firearm death is now available and has been distributed to 16 projects to date. However, none of these currently funded projects focus on mass shooting intervention or prevention. Ten state government agencies have received funding to enhance death surveillance and reporting, again excluding firearm injuries.

The NVDRS applies the principles of public health research and intervention pioneered by Dr. William Haddon, the first director of the National Highway Safety Administration, whose use of the scientific approach led to dramatically reduced morbidity and mortality of highway crashes over decades. Application of these principles has promise to similarly reduce both injuries and deaths from firearm violence.[37]

Anatomic and Organ System Injuries in the Barell Injury Diagnosis Matrix

The BIDM is a reliable and useful format for describing trauma-related morbidity. There is already a NVDRS, and this matrix could form the backbone of an analogous national violent *injury* reporting system.[38] In this study, we modified the BIDM to distinguish between GSW and non-GSW open wounds and penetrating trauma. The ICD system is imperfect, as it was designed for billing purposes rather than clinical research. However, its use here as a clinical surrogate is widespread and relatively straightforward. We call for greater resources and funding to better capture CPMS data in trauma registries and to separate these data from other firearm violence. We also recognize the need for a universal definition for mass shooting for clinicians and public health workers. Finally, there is a need to separately track the GSW vs non-GSW injuries. Although we found most injuries were ballisticrelated, 19.1% of the injuries were not.

Mass Shootings Patient Conditions Apart from Trauma

While we did not collect long-term follow-up data, it is well known that victims of firearm injury and mass shootings suffer from higher rates of psychological illness.[39] Children and adolescents may be especially vulnerable, suffering from higher rates of post-traumatic stress, suicide, depression, substance abuse, and anxiety.[40] Hospitals should incorporate aftermath services that address the psychological sequelae of a CPMS into their emergency medical systems (EMS) disaster plans.

Psychiatric conditions were common among our patients from mass shootings. We found 12.4% of the victims presented for acute mental health issues; given the chaos of these incidents, the true proportion and impact on mental health is certainly higher. Fifteen patients were formally diagnosed with ASD, and six were diagnosed with PTSD by the time of hospital discharge. These 21 patients formed almost one-third (28%) of all psychiatric diagnoses. As a key difference between ASD and PTSD involves the duration of symptoms (3-30 days vs > 30 days),[21] it is plausible that some of the patients with ASD may have subsequently developed PTSD.

Furthermore, the incidence of psychiatric sequelae in our sample is likely under-reported, as some patients never presented with acute psychological distress, and 256 of all 403 patients (63.5%) were discharged from the ED before any detailed evaluation of their emotional state. Therefore, the incidence of 5.2% (21/403) should be considered a minimum proportion. In the acute post-disaster period, one study found 20% of men and 36% of women met criteria for PTSD, the most prevalent psychiatric disorder. One-half of women and one-fourth of men with PTSD also met criteria for other psychiatric diagnoses, most commonly major depression.[40]

Survivors of GSWs may experience negative psychiatric outcomes for years after.[41] The diagnoses not included in the MSIM speak to this point. We found 39 patients with only non-traumatic diagnoses (9.7%) and an additional 50 patients (12.4%) with 75 more psychiatric diagnoses, for a total of 22.1% with only or additional non-injury diagnoses. It is unlikely that all potential psychiatric diagnoses were contemporaneously captured due to the chaos and short evaluation time of many patients; therefore, this report likely underestimates the true number. Vela et al[41] evaluated GSW victims (not specifically from CPMS) and found that combined alcohol and substance use increased from 30.8% pre-to 44.0% post-GSW. Subjects up to five years after GSW had lower than comparison population scores on Global Physical Health (45 [11]; P < .001), Global Mental Health (48 [11] ; P = .03), and Physical Function (45 [12]; P < .001) on the National Institutes of Health's Patient-Reported Outcome Measure Information System.[42] Furthermore, they found 48.6% of their subjects screened positive for probable PTSD, far greater than the 12.4% found here.

Physical problems for victims of a CPMS last far beyond the acute care/initial hospitalization phase. Although we gathered systematic data on all injured patients during the index ED visit and subsequent hospitalization, and hospital charges for the following week, we recognize that healthcare costs and disability continue. An example from the dataset includes one patient from a CPMS who was shot in the extremity and presented for initial care the next day to his home hospital hundreds of miles away, with a complex long- bone fracture. His ongoing care included five major surgeries and follow-up visits for 2.5 years. until ultimately lost to follow-up. He accumulated $450,000 in medical charges, and, at the last documented visit, continued to suffer residual disability with work restrictions involving light duty only.

Victims of mass shootings have complex and ongoing care needs. Therefore, this report should be considered an accurate description of only the initial phase of injury care. Further work is needed to better understand the comprehensive consequences of physical and psychological injury.

Communities, individuals, and healthcare workers who fall victim to CPMS can benefit from mental health resources such as critical incident stress debriefing (CISD).[43,44] Per the US Department of Labor, CISD is a facilitator-led group process conducted soon after a traumatic event with individuals considered to be under stress from trauma exposure. In addition, psychosocial interventions, such as Psychological First Aid, Skills for Psychological Recovery, and Listen, Protect, and Connect: Psychological First Aid for Children and Parents, have been developed to aid victims.[45,46] These programs should be incorporated into hospital- and EMS-level disaster plans to help individuals cope with the aftermath of CPMS.

Emergency Planning

Our results also provide information for emergency planning and resource allocation preparation by community EDs in the event of a mass shooting. Any community ED could face, and should be prepared for, a mass casualty event from a civilian mass shooting. Injured victims couldquickly overwhelm the resources of community hospitals that lack the advanced resources of a tertiary trauma or regional referral center. (Community hospitals received 194/403 [48.1%] of the patients in the current study.) Although 14/403 (3.5%) patients were ultimately transferred to centers with advanced resources, the initial stabilization and much of the comprehensive care were provided in non-trauma centers. Therefore, it is critical that these facilities prepare for the types and frequencies of injuries described here.

Future Research

Important foci of research and public policy change include assessment of the potential impact of "smart guns," which can only be fired by the registered user; increased background checks and waiting periods (including closing so- called "gun-show loopholes" that avoid background checks); appropriate application of concealed weapon permits; removal of tort liability protections for gun manufacturers; restriction of semi-automatic and automatic weapons; and restriction of large-capacity magazines, which is specifically important to mitigate the harm from CPMS described here.

LIMITATIONS

Neighborhood Shootings/Public Databases

This study focuses on mass shootings with >10 injuries, but numerous shootings occur daily (698 in the US in 2021) with multiple victims sustaining considerable morbidity along with death. These daily shootings do not fit within the Congressional Research Service definition of mass shootings, which excludes gang violence and shootings involving criminal profit.[47] Furthermore, public databases have varying definitions of mass shootings.[48] While the definition used here was purposely narrow to identify a large number of victims at sites with high potential for engaged local champions (see Site Recruitment, below), the injuries from neighborhood gang violence and criminal profit are no less devastating. In fact, these neighborhood shootings have been shown to garner less public attention from the media, another indicator of health and safety inequities in minority communities.[49] The injury patterns, outcomes, and resource use reported here are likely generalizable to the larger firearm violence epidemic, with the caveat that neighborhood shootings may be less likely to involve SAFs with high-capacity magazines.

Site Recruitment

Mass shooting site recruitment for this study required local champions at hospitals that treated victims from CPMSs. Some institutions were unwilling to contribute data to the study for fear of public relations damage (personal communication). In addition, some patients presented to non-teaching hospitals, which lacked either research infrastructure or interest to participate. Data on 377 patients (45% of our potential sample) from the Las Vegas Route 91 Harvest Festival CPMS were unobtainable due to site-related limitations.[7] This reinforces our call for a national database of mass shooting deaths *and injuries*, not dependent on local cooperation.

Data Collection

The true number of patients who presented to EDs for 12 of the CPMSs reported here are generally lower than publicly reported databases. By contrast, for the Las Vegas CPMS, local treating physicians reported that many patients were never registered or had incomplete documentation, given the volume, pace of influx, acuity, and arrival without identification.[50] Chaos and communication breakdowns are common to all mass shootings, with one study finding that 13 of 17 (76.5%) incidents experienced a communication failure in the aftermath.[51] Public databases are based on lay media and have different definitions; thus, the challenges we encountered highlight the importance of accurate information. Data collection was also hindered by age of records, legacy medical records, and IRB-specific restrictions, such as the exclusion of children, pregnant women, and police officers at some sites. Despite the difficulties in site recruitment and discrepancies with reported statistics, the 403 victims described in this study represent real patients, as opposed to media estimates.

CONCLUSION

Mass shootings are common in the United States. In addition to further research on the human toll of these events, we call for additional study of the psychology of the perpetrators, the forensics of their weapons, abortive/ prevention strategies, and the long-term physical and emotional impact on survivors. We advocate for the addition of firearm-related injuries to the existing infrastructure of the National Violent Death Reporting System. Only with proper research and funding will we best inform public policy to mitigate the enormous consequences of mass shootings.

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CALIFORNIA ACEP
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ANNOUNCING THE 2023-24 BOARD OF DIRECTORS

TO BE INSTALLED ON SEPTEMBER 7, 2023

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Send CV to Drsmith@nvemg.com.

MEMBER Accomplishments

Anantha Singarajah, DO and **Mary Unanyan** joined the American Academy of Emergency Medicine Resident and Student Association's 2023-24 Board of Directors.

Mark I. Langdorf, MD, MHPE, FAAEM, FACEP received the Joe Lex Educator of the Year Award from American Academy of Emergency Medicine.

Joseph Chiang, MD, FACEP is now the Chief Medical Executive at Eden Medical Center, a Sutter Health Affiliate.

Gus Garmel, MD, FACEP received the American Academy of Emergency Medicine Resident and Student Association 2022-2023 National Faculty Mentor in Emergency Medicine Award, presented at the American Academy of Emergency Medicine's Scientific Assembly in New Orleans, Louisiana.

Benson Chen, DO was announced as Kaiser Permanente Central Valley Emergency Medicine's new Director of Simulation and Recruitment.

Kyle Herout, DO; **Li Ding, MD**; and **Eric Viquez, MD** were announced as Kaiser Permanente Central Valley Emergency Medicine's 2023-2024 Emergency Medicine Chiefs.

Karl Nimtz, MD and wife Abbie welcomed the arrival of their baby, Henry.

Noushafarin Nounou Taleghani, MD, PHD was named associate dean for academic advising for the Stanford School of Medicine.

Omid Boozarpour, Abigail Burr, Galen Bussmann, Amanda Foote, Katrin Jaradeh, Satkartar Khalsa, Caroline Lee, Anan Lu, Felipe Ocampo, and **Francesco Sergi** matched with University of California San Francisco-Zuckerberg San Francisco General Hospital Residency Program.

Jonathan S Warren, MD, incoming chief at Harbor-University of California Los Angeles Emergency Medicine, published "Narrowed Pulse Pressure Predicts Massive Transfusion and Emergent Operative Intervention Following Penetrating Trauma" in The American Journal of Surgery.

Did you get a new job? Get promoted? Get published? Achieve a goal?

Let California ACEP know and we will include it in this new section of Lifeline. Tweet your accomplishment or post it on Instagram and tag **@californiaacep** or submit your accomplishments at: **https://californiaacep.site-ym.comsurveys/?id=Accomplishments.**

CEMAF DONORS

The California Emergency Medicine Advocacy Fund (CEMAF) has transformed California ACEP's advocacy efforts from primarily legislative to robust efforts in the legislative, regulatory, legal, and through the Emergency Medical Political Action Committee, political arenas. Few, if any, organizations of our size can boast of an advocacy program like California ACEP's; a program that has helped block Medi-Cal provider rate cuts, lock in $500 million for the Maddy EMS Fund over the next 10 years, and fight for ED overcrowding solutions! The efforts could not be sustained without the generous support from the groups listed below, some of whom have donated as much as $0.25 per chart to ensure that California ACEP can fight on your behalf. **Thank you to our 2022-2023 contributors (in alphabetical order):**

- Antelope Valley Emergency Medical Associates
- Culver Emergency Medical Group
- Emergent Medical Associates
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September 8, 2023
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SUBMIT A *LIFELINE* ARTICLE

Looking for a way to share your emergency medicine experience? Want to share a story from your last shift? Or maybe career or life advice? We are looking for member and guest articles, including letters-to-the-editor. Please note that all articles and letters are reviewed and may be edited for grammar and content.

If you would like more information or would like to submit a guest article, email **info@californiaacep.org**.

UPCOMING *LIFELINE* TOPICS

Summer
Practice Impact: CalACEP Toolkits

Fall
TBD

Winter
TBD

Spring
TBD

CALIFORNIA ACEP UPCOMING MEETINGS & DEADLINES

For more information on upcoming meetings, please e-mail us at **info@californiaacep.org**; unless otherwise noted, all meetings are held via conference call.

JUNE 2023

30th	**Chapter Award Nominations Close** Online
27th at 10am	**Social Media Committee Meeting** Zoom

JULY 2023

6th at 10am	**Board of Directors Meeting** Zoom
11th at 9am	**Reimbursement Committee** Zoom

AUGUST 2023

8th – 9th	**Board of Directors Retreat** Sacramento, CA
17th at 10am	**Government Affairs Committee (GAC)** Zoom
29th at 9am	**Social Media Committee** Zoom

JUNE 2023

SUN	MON	TUES	WED	THURS	FRI	SAT
				1	2	3
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY 2023

SUN	MON	TUES	WED	THURS	FRI	SAT
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30	31					

AUGUST 2023

SUN	MON	TUES	WED	THURS	FRI	SAT
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