

# What Do Emergency Department Patients and Their Guests Expect From Their Health Care Provider in an Active Shooter Event?

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## ABSTRACT

**Background:** “Run-Hide-Fight” is the summative life-saving mantra taught by governmental and private agencies in active shooter training. Initial research focused on patient expectations of health care provider responses in life-threatening situations suggests patients believe health care providers will take significant action to protect patient well-being. The potential disparity between expectations of the public and health care practitioner training must be examined, as conflict, confusion, and delays may have mortal consequences in active shooter situations.

**Objective:** Public perceptions of the extent of health care practitioners’ duties and responsibilities to themselves and their patients during an active shooter event were investigated.

**Methods:** A survey that queried perceived expectations of health care provider response efforts in 4 emergency department patient case scenarios interrupted by an active shooter event was developed and implemented to patients and retinue of the University of Toledo Emergency Department. Responses were grouped into provider-centric or patient-centric actions.

**Results:** One hundred twenty-seven participants responded to the survey and were included in the analysis: 82 patients and 45 guests. In all 4 scenarios, a mean of 87.4% responses was patient-centric. Frequency of patient-centric responses differed significantly by scenario, and women were more likely to have patient-centric expectations.

**Discussion:** The public has significant expectations that the health care provider will assist them during active shooter situations. Providing for the security of the health care provider and patient simultaneously is in conflict with common hospital crisis training. Efforts must be taken to bring patient expectations and provider training into greater alignment.

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## INTRODUCTION

Active shooter and mass casualty events have increased in both frequency and severity throughout the United States over the past several decades.<sup>1-3</sup> Unfortunately, this has been accompanied by an associated increase in the number of shootings that occurred in hospital or clinical settings.<sup>2,4,5</sup> Annual rates for active shooter incidents in a hospital setting increased from 9 per year in 2000-2005 to 16.7 per year in 2006-2011, respectively, with a total of 161 lives lost.<sup>1,2</sup> Additionally, there were reports of 154 shootings at American hospitals during 2000-2011, primarily in outdoor areas on hospital campuses, the emergency department (ED), or on inpatient units. One study found that 75% of perpetrators had a prior connection with the individual or multiple individuals that were targeted, and more than a quarter of the events involved a shooter with a grudge as the primary motivation.<sup>6</sup> Other instances were motivated by suicide, assisted suicide of a sick relative, or

even prisoner escape, while “ambient society violence or mentally unstable patients were comparatively infrequent.”<sup>6</sup> While these events are rare, they are at odds with the general public perception that a hospital setting is one of sanctuary where the risk of external harm is minimized.<sup>2,5</sup>

Health care facilities face unique challenges in the prevention, response to, and management of active shooter situations. The hospital environment serves as a mixing bowl for the local community in which members of diverse socioeconomic strata are interposed in ways otherwise unseen in other settings. Patients

and visitors are more vulnerable than the general population.<sup>2,6</sup> Patients exhibit a wide variety of morbidities that may reduce or limit mobility or the ability to follow directions in a crisis. Additionally, patients and visitors disproportionately evidence psychiatric conditions that may predispose them to violent confrontations.<sup>4,7</sup> Health care facilities often have multiple points of ingress, with a wide variety of visitors, adding further difficulty to regulating security.<sup>4,6</sup>

Coordinated efforts in response to these circumstances have resulted in the development and implementation of standardized active shooter guidelines. They present a simplified response system that is implemented across various public health facilities, with the summative catchphrase “Run-Hide-Fight” when confronted with an active shooter situation.<sup>8</sup> No single response fits all active shooter situations, as these situations depend on a variety of factors, including medical state of the patient, number of people in the room, location of the event, proximity to the shooter or a potential exit, and how secure a room can be made. “Although many variables...will ultimately dictate which of the responses should be selected, the first recommendation has been to run.”<sup>9</sup> By minimizing exposure to a shooter and only directly engaging with them “as a last resort and if your life is in imminent danger,”<sup>8</sup> this approach necessarily reduces an individual’s risk for personal harm. The option to “hide” is reserved for when fleeing the danger area safely is not possible, and electing to “fight” is done only as a last resort when directly confronted by the shooter. Training focuses on quick and appropriate reactions, as delays could mean the difference between life and death. The “Run-Hide-Fight” concept empowers individuals “to protect their own lives,”<sup>8</sup> where the care and protection of others is a secondary priority. Contrary to other settings, there is an inherent ambivalence within the health care profession and unique challenges in health care facilities.<sup>9</sup> This may feel like an abdication of responsibility by some health care providers. Furthermore, patients have trusted their care and wellness to health care providers. Those with limited mobility, who are weak or infirm, or who are otherwise incapacitated have trusted their care to others with an expectation of being brought to wellness when they are at their most vulnerable. They look to health care providers to care for them, even to the point of accepting “very high personal risk.”<sup>5,10-14</sup> This is in direct conflict with current institutional protocols.

The objective of this study is to expand on previously reported literature that investigates public consensus of provider obligations, specifically as they pertain to crisis scenarios such as an active shooter event.<sup>5</sup> We investigate perceptions as they relate to 4 common clinical encounters often seen in an emergency medicine setting to which respondents were asked to express their expectation of health care provider responses in a crisis event. These findings may also inform further development and design of mass casualty response efforts.

#### Box. Patient Case Scenarios

Your patient care room is 30 feet from the waiting room and 20 feet from the ambulance entrance.

- 1) Imagine you are an unaccompanied patient with a severely injured ankle (tripping over a crack in the sidewalk). Your vital signs are completely normal. You have no other medical problems. However, you are in pain (7/10), your ankle is swollen twice its size, and walking from Point A to Point B takes 2 times as long as usual. One health care practitioner is in your room examining your ankle when you both hear and identify gunshots close by, but no one can deduce the exact location of the shooter. What would you expect your health care professional to do?
- 2) Imagine you are an unaccompanied patient with a foreign body that just flew into your eye on a windy day. Your vital signs are completely normal. Your vision out of one eye is slightly blurred. You have no other medical problems. However, you are in some discomfort (3/10). One health care practitioner is in your room checking visual acuity when you both hear and identify gunshots close by, but no one can deduce the exact location of the shooter. What would you expect your health care professional to do?
- 3) Imagine you are a parent bringing your 10-year-old child to the ED because of RLQ abdominal pain, fever, and vomiting. His/her vital signs are unremarkable save for a fever of 101.2°F. Your child was able to ambulate, but slowly. He has no other medical problems. One health care practitioner is in your room telling you that the results of the ultrasound indicate your child has an acute appendicitis when you all hear and identify gunshots close by. None of you can deduce the exact location of the shooter. What would you expect your health care professional to do?
- 4) Imagine you are with a very close relative (parent, spouse, child) who has just been resuscitated from a catastrophic event (cardiac arrest, overdose, stroke, car accident). The patient is comatose, on a ventilator, and multiple medications are being administered to sustain life. You, on the other hand, have no medical impediments. One health care practitioner is in your room telling you that the ICU is ready to receive your loved one when you both hear and identify gunshots close by. Neither of you can deduce the exact location of the shooter. What would you expect your health care professional to do?

Abbreviations: ED, emergency department; RLQ, right lower quadrant; ICU, intensive care unit.

## METHODS

This cross-sectional study was approved by the Biomedical Sciences Institutional Review Board. Lay public opinion was investigated across the University of Toledo Medical Center (Toledo, Ohio) through implementation of a survey instrument involving 4 active shooter scenarios (Box).

### Instrument Design

Four case scenarios were developed, with input from simulation certified educators, that demonstrated diverse clinical triage severity consistent with commonly encountered emergency department diagnoses. The cases were developed to emphasize the patient’s ability or inability to assist with or even impede response efforts. Each scenario required the survey participant to assume the role of a patient or guest during which the participant (1) had a severely injured ankle, (2) incurred a foreign body to the eye, (3) was accompanying their 10-year-old child with appendicitis, or (4) accompanying a close relative with recently resuscitated status post catastrophic event. The setting of the scenarios was an exam

**Table 1.** Demographic Characteristics of Survey Participants

	N	%
Sex		
Female	79	62.2
Male	48	37.8
Race		
White	80	63.0
African-American	36	28.3
Hispanic	5	3.9
Asian	1	0.8
Arab-American	2	1.6
Mixed	2	1.6
Other	1	0.8
Marital status		
Single/never married	51	40.2
Married	50	39.4
Divorced	15	11.8
Widowed	9	7.1
Separated	1	0.8
Divorced/Widowed	1	0.8
Highest completed education level		
Professional or doctoral	2	1.6
Master's degree	5	3.9
Bachelor's degree	28	22.0
Associate's degree	8	6.3
High school	74	58.3
Elementary or junior high	10	7.9
Household yearly income		
Less than \$20,000	41	32.3
\$20,000-\$34,999	34	26.8
\$35,000-\$49,999	21	16.4
\$50,000-\$74,999	11	8.7
\$75,000-\$99,999	11	8.7
Over \$100,000	8	6.3
Missing	1	0.8
Hospital role		
Patient	82	64.6
Family	35	27.5
Friend	5	3.9
Other	2	1.6
Missing	3	2.4
Active/former military		
Yes	6	4.7
No	121	95.3
Ever victim of targeted violence?		
Yes	18	14.2
No	109	85.8
Ever received training in active shooter defense?		
Yes	12	9.4
No	115	90.6
	<b>Mean</b>	<b>Range</b>
Age (years)	46.85	21-87

room in the emergency department (ED), with the health care provider in the room with the subject. Within each scenario, the location of the shooter was left deliberately ambiguous to reflect the uncertainty and multiple factors to consider. Clinical case scenarios varied in criticality from levels 1 to 5 on the Emergency Severity Index, emphasizing degree of patient ability to assist with or impede response efforts.<sup>15,16</sup>

There were 4 responses to each scenario, with the optional

opportunity to select “other” if none of the responses reflected participants’ expectations. The 4 responses were further categorized as either provider-centric or patient-centric actions. Provider-centric responses collectively described answers in which the provider elects to escape alone, either immediately or after initially giving some instruction to the patient on how to protect themselves while remaining alone in the room. Patient-centric responses were those in which the health care provider either escapes alongside or remains in the room with the patient.

The resulting questionnaire surveyed perceived clinician responsibilities in these crisis scenarios, as well as collecting patient demographic data. Demographic information included age, sex, race, marital status, highest level of education, annual household income, military status, past history of targeted violence, and past history of active shooter defense training. Responses to the aforementioned clinical scenarios included options for the clinician to escape without the patient, escape after conferring with the patient, escape alongside the patient, or to remain with the patient and barricade the room in anticipation of a confrontation.

In accordance with our best research practices, we attempt to utilize previously established and externally validated survey instruments when possible; however, this instance represents a situation in which novel investigation required the design of our own patient assessment tool. In adherence to research principles outlined in McColl et al, the design and creation of this instrument addresses all of the specific areas of study.<sup>17</sup>

### Survey Implementation

Survey administrators received consistent training in wording and explanation of instrument questions. Questionnaires were distributed to a convenience sample of patients and accompanying guests who consented during a clinical encounter in the ED of a Level I Trauma Center at an academic hospital, the University of Toledo Medical Center. Responders were 18 years old or older, spoke and read English, and agreed to participate. (Data were not collected on how many individuals declined to participate.) Responders were deemed appropriate candidates by the objective clinical team and were physically and mentally fit to answer questions. In addition to electing not to participate, exclusion criteria included those for whom English was not a native or proficient language as determined by patient self-identification, those with high acuity triage status (level 1 and 2), or those who were determined too unwell by their health care provider. Survey responses were deidentified for analysis to ensure patient anonymity. Participation had no influence upon quality of medical care received.

Survey administrators read questionnaires to respondents, who were instructed that the term “health care provider” (HCP) had broad application and included physicians, physician assistants (PA), nurse practitioners (NP), and nurses. With each scenario,

participants were provided with the HCP's possible response options and asked to select which option they expected the HCP to choose. If necessary, the term "expect" was differentiated from "hope" or "would like." Respondents also were provided space to add free text comments as needed.

### Analysis

Convenience sampling was utilized to construct total patient cohort. The division into patient-centric and provider-centric categories was done to facilitate the binomial analysis of the nominal data. The primary outcomes measured were frequencies of selected responses. Secondary outcomes were correlations with responses by population subsets. SPSS was used to conduct a cross-tab analysis with chi-square values, as well as a nonparametric binomial test.

### RESULTS

This analysis consists of 127 complete responses representing all individuals surveyed, of which 82 (64.6%) were patients and 45 (35.34%) were guests (Table 1). The respondents ranged in age from 18 to 88 years (mean=46.14), with an approximate 2:1 female to male distribution. In each of the 4 patient case scenarios (Box), at least 86.6% of respondents expected the health care provider to have a patient-centric response to an active shooter in their facility (range: 86.6%-94.4%, catastrophic scenario vs ocular foreign body scenario, respectively). Statistically significant differences were observed between provider-centric and patient-centric answer choices for all scenarios ( $P < 0.1$ ). In scenario 1, in which subjects imagined having a severely injured ankle and slow mobility, 91.3% ( $n = 116$ ) expected their health care provider to make a patient-centric response. Scenario 2 described an ocular foreign body obscuring the subject's vision; 94.4% ( $n = 118$ ) expected a patient-centric response. In scenario 3, in which the subject was not the patient but instead was with a child with appendicitis associated with abdominal pain, 91.7% ( $n = 110$ ) expected their health care provider to take a patient-centric response. In the 4th scenario, the subject was in the room with a family member who had a catastrophic injury and was on a ventilator. The expectation of a patient-centric response was lowest for this scenario (86.6%,  $n = 103$ ).

These differences were further supported by analyses within patient-centric responses. Escape with the patient was selected more frequently in scenario 2 (ocular foreign body) and least in scenario 4 (catastrophic). This pattern was inverted for respondents, selecting more commonly instead barricading the room with the patient in scenario 4.

Significant gender differences in responses to patient-centric

**Table 2.** Responses to Active Shooter Case Scenarios

Response	Sprained Ankle		Ocular Foreign Body		Child With Appendicitis		Family Member in Coma	
	N	%	N	%	N	%	N	%
Escape and leave you to your own devices	3	2.4	1	0.8	1	0.8	2	1.6
Escape but tell you what you should do to protect yourself in the room	8	6.3	6	4.7	9	7.1	14	11.0
Escape with you	63	49.6	84	66.1	59	46.5	21	16.5
Barricade the room with both inside and prepare to fight	50	39.4	34	26.8	51	40.2	82	64.6
Other	3	2.4	2	1.6	6	4.7	7	5.5
Missing					1	0.8	1	0.8
<b>Total</b>	127	100	127	100	127	100	127	100

clinician expectations were seen in scenario 3: Child with appendicitis, where female respondents were more likely to select patient-centric answers ( $\chi^2 = 5.022$ , d.f. = 1,  $P = 0.022$ ).

The breakdown of responses to each patient case scenario is reported in Table 2.

### DISCUSSION

The analysis of the survey responses suggests that of the subjects interviewed, there was an overwhelmingly and statistically significant expectation that health care providers would respond to an active shooter situation with a patient-centric response, taking deliberate steps to protect their patient.

This study further substantiates and expands upon results previously presented in the literature in which the public has an expectation of ensured safety during such crises.<sup>5</sup> Collaboration through the American College of Surgeons has established the Hartford Consensus, a result of the Joint Committee to Create a National Policy to Increase Survivability in Intentional Mass Casualty and Active Shooter Events.<sup>5,10-14</sup> Their findings reported that respondents believe the health care provider's responsibility constitutes a special duty to protect the public, similar to police officers and firefighters.<sup>5</sup> Our findings are in agreement with those identified in the Hartford Consensus and are able to further contextualize which, if any, variables may affect perceived clinician obligations. Administering this study in an ED added a certain sense of immediacy and urgency to participants' responses, while the case scenarios added texture, specificity, and granularity lacking in previous research and enhanced by these results.

In each of the 4 scenarios presented, the clinician is with the patient and any friends, family, or other visitors in a typical ED exam room. The shooter's location is intentionally ambiguous. There is no stipulation in current literature suggesting certain actions are more appropriate in certain locations. This is by design, as every situation is unique and generalized protocols allow for flexibility. For instance, in the Federal Emergency



Management Agency educational program IS-907,<sup>8</sup> there is no well-defined exclusion criteria for when to take one action over another.

Authors previously have suggested alternative paradigms to “Run-Hide-Fight” in mass casualty events, as hospital environments may be uniquely suited to fail implementation of this protocol.<sup>9</sup> Their counsel advises that a new paradigm be instituted in certain parts of the hospital where patients are at their most vulnerable (eg, surgery, intensive care unit, emergency department). In those areas, the “Run-Hide-Fight” paradigm may not be a viable option, and the more patient-centric approach of “Secure-Preserve-Fight” would be more consistent with health care providers’ moral and ethical precepts.<sup>4,9</sup> Both our research and the Jacobs’ survey validate Inaba’s and McSwain’s treatise that when caring for vulnerable patients, alternative guidelines should be a topic for a frank and open discussion between provider and administration.<sup>5,9</sup>

There is conflict between what typical active shooter training suggests is appropriate action (specifically, Run-Hide-Fight), what clinicians feel is appropriate, and what patients expect. This conflict increases the risk for confusion in an already dire situation wherein rapid decision-making and action is required to prevent injury and loss of life.

Change that recognizes the unique needs, vulnerabilities, and conflicts inherent in health care facilities is necessary. Safety guidelines and teaching response protocols should incorporate the unique challenges facing clinicians and their patients, while recognizing the limitations of typical standardized protocols for public spaces. A clear and deliberate appreciation of patient expectations also must be taken into consideration, without which there is an increased risk for harm in mass casualty events. This also will reduce potential psychological trauma experienced by health care providers torn between self-preservation and obligations to their patients. Hospital administrators should conduct frequent Hazard and Vulnerability Assessments, guided by recommendations from the Department of Homeland Security.<sup>18</sup> These steps, in conjunction with a more patient-centered frame of mind, will help craft more meaningful policy that will better protect patients and health care providers alike.

Future studies are recommended to further investigate health care providers and their perceptions of their role during a crisis situation, such as an active shooter scenario. An initial survey study<sup>19</sup> was conducted with a multidisciplinary group of health care students (N=245). Most students surveyed preferred “patient-centric” actions to “provider-centric” actions (range: 66%-94% and 4%-17%, respectively). An additional opportunity for research is to survey hospital security sites and investigate what actions they will take during an active shooter scenario. However, it is worth noting that some training protocols, such as ALICE training,<sup>20</sup> suggest that in an active shooter scenario, security will be primarily directed towards neutralizing the perpetrator. Assistance to others will be delayed until the perpetrator is neutralized.

## Limitations

This study is limited by the small size of the study population, which was constructed by convenience sampling. This allowed researchers to conduct the survey when ED resources were at their maximum, thereby minimizing any adverse impact on any logistical issues relative to the department. And while a convenience sample may introduce bias, the difference in percentage between the patient-centric and provider-centric responses was large enough that the authors thought enlisting additional subjects would not change the significance of the data.

Those who consented to participate were present only when surveyors were available to conduct research. However, the study sampling was conducted during both day and night shifts at all hours to reflect the usual patient influx during each time period.

As this sample was not randomly selected and was constructed from a regional medical center, there may be demographic variability that limits generalization to the wider public. For instance, the convenience sample did not reflect the desired sex and racial diversity of the population at-large. Some demographic variables were included, and their influence could be investigated further. Additional studies also could include wider recruitment of subjects. However, using this population in the ED setting shifted the results from the theoretical category to more concrete, and provided more gravitas to the results.

Further research is advisable to determine whether the results and attitudes are similar in other hospitals in other parts of the nation. Additionally, while survey administrators received training in consistent language to use during patient encounters in an effort to maintain standardization, it is possible distortions could have occurred. To address this matter, efforts to further validate the survey instrument are underway.

## CONCLUSIONS

The general public has an expectation that health care providers will take steps to ensure patient and guest safety in the event of an active shooter situation. This remains at odds with the central tenet of active shooter training. “Run-Hide-Fight” may not apply adequately in health care facilities where the sick or infirm have placed trust in their clinical provider team and are uniquely vulnerable.<sup>9</sup>

The public’s perception of a health care provider’s duty in these extraordinary circumstances, coupled with the clinicians’ ethical conundrum, support the importance of continued development of health care-specific training for active shooter scenarios and exploration of alternative protocols, with “Secure-Preserve-Fight” as a possible answer. The difference between the 2 protocols is significant. In “Run-Hide-Fight,” for instance, the top priority is exiting the danger area, and other issues including patient safety become secondary. With “Secure-Preserve-Fight,” the focus is on the health care provider-patient dyad, working to make the area they are in “secure.” Clinicians, including phy-

sicians, nurses, physician assistants, and nurse practitioners, in conjunction with hospital administrators, should strive for better educational resources and develop improved strategies specific to their own institution to ensure the safety of both health care providers and their patients.

The issues we present cross multiple boundaries: medical, ethical, moral, psychological, and legal. Without further investigation and development of safety protocols unique to a health care setting that also takes into account complicating elements such as conflict between provider training and patient expectations, there will continue to be an elevated risk for confusion and potentially mortal harm to both health care providers and the patients in their care.

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