Canadian Operational and Emotional Prehospital Readiness for a Tactical Violence Event

Daniel Kollek, MD, CCFP (EM);¹ Michelle Welsford, MD, ABEM, FACEP, FRCPC;² Karen Wanger, MDCM, FRCPC, FACEP³

- Clinical Associate Professor, Division of Emergency Medicine, McMaster University, Hamilton, Ontario Canada
- Associate Professor, Division of Emergency Medicine, McMaster University, Hamilton, Ontario Canada; Medical Director, HHS Centre for Paramedic Education & Research
- Clinical Associate Professor, Departments of Surgery and Family Practice, University of British Columbia; Regional Medical Director, British Columbia Ambulance Service, British Columbia Canada

Correspondence:

Daniel Kollek, MD, CCFP (EM) Clinical Associate Professor Division of Emergency Medicine McMaster University 4000 Creekside Drive, Unit 902 Dundas, ON, Canada L9H 7S9 E-mail: kollek@ceep.ca

Keywords: Canada; emergency medical services; emotional response; prehospital; readiness; tactical violence

Abbreviations:

CBRN = chemical, biological, radiological, or nuclear

CISD = critical incident stress debriefing EMS = emergency medical services

MCI = mass-casualty incident

Received: 23 December 2008 Accepted: 01 April 2009 Revised: 19 May 2009

Web publication: 29 March 2010

Abstract

Providing prehospital care poses unique risks. Paramedics are essentially the only medical personnel who are routinely at the scene of violent episodes, and they are more likely to be assaulted than are other prehospital personnel. In addition to individual acts of violence, emergency medical services (EMS) providers now need to cope with tactical violence, defined as the deployment of extreme violence in a non-random fashion to achieve tactical or strategic goals. This study reviewed two topics; the readiness of EMS crews for violence in their environment and the impact of violence on the EMS crew member. This latter also evaluated the access and effectiveness of emotional support available to caregivers exposed to violent episodes.

The results of the survey indicate a significant lack of preparedness for situations involving tactical violence. A total of 89% of respondents either had never had such training or had been trained more than one year ago. Thirty-six percent of respondents had never engaged in a field exercise with other responding agencies, and 4.5% of respondents were not aware of who would be in charge in such an event. In addition, this study indicates that EMS crews are exposed to events with significant emotional impacts without access to appropriate training and adequate support.

Kollek D, Welsford M, Wanger K: Canadian operational and emotional prehospital preparedness for a tactical violence event. *Prehospital Disast Med* 2010;25(2):164–169.

Introduction

The provision of prehospital care poses unique risks. Paramedics are essentially the only medical personnel who are routinely at the scene of violent episodes¹ and they are four times more likely to be assaulted while providing patient care than are firefighters.² Despite the fact that violence toward emergency medical services (EMS) crews is under-reported,³ up to 90% of EMS personnel have reported violence directed toward them.⁴ Outcomes of violence include sick leave, filing complaints, and the need for post-traumatic stress disorder therapy.^{2,5} In addition to violence directed toward them, EMS crews routinely treat patients affected by violence (8.5% of patient encounters). 6,7 The type and degree of violence witnessed and/or experienced by prehospital crews varies from verbal abuse to lethal force. While they differ in terms of approach, multiple studies have concluded that there is a need for formalized training to prepare staff for such events. 4,5,8 In addition to individual acts of violence, EMS providers now need to cope with tactical violence, defined as the deployment of extreme violence in a non-random fashion so as to achieve a tactical or strategic goal. 9-12 This includes terrorism and the deployment of more lethal weaponry, including chemical, biological, radiological, or nuclear (CBRN) agents. 13,14

While preparation for tactical violence has been a standard part of other responders' training (police and military), it has not been a routine part of EMS training. Some protocols have been written, but the use of these have not been validated. ¹⁵

Objective

This study reviewed the readiness of EMS crews to assess the risk of violence in their environment, cope with violence (tactical or otherwise with or without CBRN involvement), gauge the impact of violence on the EMS crew member, and evaluate the access and effectiveness of emotional support available to caregivers exposed to violent episodes.

The following questions were posed:

- 1. Are Canadian EMS staff trained to cope with an event involving violence, terrorism, or a combination of the two?;
- 2. What is the emotional impact of exposure to violence on EMS caregivers?; and
- 3. What is the readiness to accept emotional support after an event with significant emotional impact?

Methods

Following a literature review, a survey was designed to address the theoretical and practical training of prehospital providers. The survey questions were reviewed for applicability, clarity, and validity by EMS staff in Ontario and British Columbia, Canada. Technical terms that might have been open to misinterpretation by responders were defined formally before technical questions were posed.

The survey posed questions related to preparedness for CBRN and tactical violence episodes. The results related to CBRN are reported elsewhere.¹⁶

The final survey was posted on a Website that only was accessible by individuals knowing its complex address. Emergency medical services providers were invited to complete the survey using e-mail and posters. In Ontario, the survey invitations were distributed via e-mail by the Ontario Paramedic Association, and posters were displayed in ambulance bases across the province. In British Columbia, the survey was distributed to paramedics and fire first responders. Paramedic members of the British Columbia Ambulance Service were reached through the provincial e-mail system. For first responders, the survey invitation was sent to the Fire Chief's Association of British Columbia who then distributed the information to its members. Chiefs of each Fire Department then circulated the information to its members.

This method of data collection has been shown to be effective in collecting and collating data from individuals at distant sites.² It allowed the crew members to provide information while away from the workplace (in case there may be a bias in responses provided while supervised), and at any time of day or night so as to capture as much data as possible, keeping in mind that the vast majority of EMS personnel are shift workers.

Upon logging in to the Website, the respondents were asked to provide the following demographic data:

- 1. Age;
- 2. Gender;
- 3. Credentials;
- 4. Years of practice; and
- 5. Experience.

In addition, in order to identify any duplicate entries while still maintaining responder anonymity, the first half of their postal code and the last three digits of their telephone number also were collected.

After the demographic data had been entered, the respondents were presented sets of questions on the following topics:

- Training for response to a tactical violence or terrorist event;
- 2. Level of comfort responding to a complex event (mass casualty, violent scenario, etc.);
- 3. Level of comfort in detecting and coping with the emotional impact of providing care; and
- 4. Added emotional impact caused by multiple casualties, violence, and child injuries.

The emotional impact was assessed by presenting the participants with six clinical scenarios in which the severity of injury and number of patients involved gradually increased. Other factors also modified were the age of the patient (adults or children) and the presence or absence of intentional violence. The choice of all of these variables was based on prior research showing their relevance as factors affecting mental health in disasters. ^{17,18}

For each scenario, respondents were asked to quantify their degree of distress on a scale of 1 to 5 where 1 was "not distressing to any significant degree", and 5 was "distressing to the degree that you would not be able to deliver care" at the scene. The results were weighted with "not distressing" given a weight of zero, up to a weight of four for inability to deliver care. The weighted score was used to derive an emotional impact value for comparison between scenarios.

In addition to ranking the degree of distress, participants were asked to choose the most distressing scenario to them, and for that case, to state how long they would feel that the event could lead to intrusive thoughts or memories. The choice of this question was based on prior research and validation of intrusive thoughts and memories being part of the post-traumatic stress disorder.¹⁸

Next, participants were asked to grade their degree of comfort in responding to the following events, each of which posed a risk to their safety and health:

- 1. Fire;
- 2. Response to an unstable building;
- 3. Response to a terrorist event;
- 4. Response requiring the use of personal protective equipment at a level higher than standard universal precautions; and
- 5. Response to a tactical violence situation.

Lastly, participants were asked about their ability to recognize the emotional distress in themselves or in colleagues and their comfort with Critical Incident Stress Debriefing (CISD), if such discomfort is recognized.

Data were collected over six months from 09 January 2006 to 15 June 2006.

The study was approved by the McMaster University Research Ethics Board and sponsored by the Centre for Excellence in Emergency Preparedness (www.ceep.ca).

Results

There were 1,028 respondents to the survey. Demographic information on these respondents is in Table 1. The largest group of respondents was male, 36–50 years of age, with

Age range (years)	Response Total	Response Percent
18–25	75	7
26–35	285	28
36–50	493	48
50+	173	17
Other	1	<1
Did not respond	1	<1
Total	1,028	10
Gender	Response Total	Response Percent
Male	768	75
Female	245	24
Did not respond	15	1
Total	1,028	100
Credentials	Response Total	Response Percent
EMR	68	7
PCP	566	55
ACP	127	12
CCP	5	<1
Other	237	23
Did not respond	25	2
Total	1,028	100
Years of Practice	Response Total	Response Percent
1–4	206	20
5–10	175	17
11–15	161	16
16–22	240	23
22+	233	23
Did not respond	13	1
Total	1,028	100
Experience	Response Total	Response Percent
Manager- Supervisory	84	8
+-F+:::,		65
Front-line	671	
	671 280	27
Front-line		

Table 1—Survey Respondents (ACP = American College of Physicians; CCP = Canadian College of Physicians; EMR = emergency medical responder; PCP = primary care provider)

16–22 years of experience. Respondents were predominantly frontline personnel.

When questioned about frontline provider training "...in procedures to follow in responding to a tactical violence scene where there may be further violence", 77% of 876 respondents stated they had received no training. These respondents were directed to skip the rest of the tactical violence questions and move on to the next section of questioning.

I never have unwanted memories of distressing events			
I would process the event immediately and it would not bother me for any significant length of time	26.4%		
It will take me up to a week to process this event			
It will take me up to a month to process this event	13.2%		
It will take me over a month to process this event	11.5%		
I do not think I would ever get over witnessing such an event	15.1%		

Kollek © 2010 Prehospital and Disaster Medicine

Table 2—Duration of emotional impact

Of 289 respondents to the question, "Who is in control of site access in the event of tactical violence in your system?", 92% stated the police, and 4.5% of responders "did not know" who would be in control of such a scene. When asked when they were "...trained to function under conditions of tactical violence", of 288 respondents, 89% answered either "never" (46%) or "more than a year ago" (43%).

Only 27% of 291 respondents had "...any field exercise with other (non medical) first responders". Thirty-seven percent had engaged in such an exercise more than one year ago, and 36% had never exercised in this fashion. A total of 70% of 289 respondents never had reviewed the tactical violence plan in the community s/he serves, 10% had reviewed the plan in the past year. Fourteen percent of 322 respondents to the question, "Were you aware that any EMS first responders were involved in developing the tactical violence plan in the community you serve?"; 24% responded "no"; and 62% did not know.

The results for the sections assessing emotional impact are in Tables 2 and 3. The emotional impact values of scenarios ranged from 0.63 (an accident with one adult injured and one adult dead), to 2.20 (malicious mass-casualty incident), with no impact having a value of 0. The number of victims, age of victims, and presence of tactical violence all increased the impact of the event.

When asked to reflect on the scenario they found most distressing, 97% of respondents stated that they have had occasional unwanted memories of distressing events, with 31% stating it would take up to a week for them to process the event, and 15% stating they did not think they would "ever get over witnessing such an event". Only 26% stated they would "process the event immediately and it would not bother (them) for any significant length of time".

Using a modified Likert scale, respondents were asked to rank their distress when presented with scenarios involving increasing numbers of casualties, the involvement of children and the presence of malice. Their responses are listed in Table 4. They also were asked to score their comfort levels in responding to different types of events such as unstable buildings, fire or terrorist events and these results are listed in Table 5. Finally they were asked to rate their level of comfort identifying distress in themselves and oth-

		Not distressing	Slightly distressing	Moderatley distressing	Would not be able to resume work	Would not be able to deliver care at the scene	Total Emotional	Average Emotional Impact Value
ļ		(weight 0)	(weight 1)	(weight 2)	(weight 3)	(weight 4)	impact value	
1	1 adult injured 1 adult dead	342 (0)	492 (492)	0 (0)	12 (36)	1 (4)	532	0.63
2	1 adult injured 1 child dead	51 (0)	211 (211)	512 (1,024)	75 (225)	1 (4)	1,464	1.72
3	1 adult attacked 1 child dead	34 (0)	177 (177)	541 (177)	99 (297)	1 (4)	1,560	1.83
4	adult injured child attacked and dead	27 (0)	137 (137)	520 (1,040)	172 (516)	3 (12)	1,705	1.98
5	20 adults killed accidentially, five injured	39 (0)	136 (136)	456 (912)	224 (672)	1 (4)	1,724	2.01
6	20 adults killed purposely, five injured	31 (0)	84 (84)	432 (864)	297 (891)	12 (48)	1,887	2.20

Kollek © 2010 Prehospital and Disaster Medicine

Table 3—Scenarios. Raw data with weighted scores in parentheses

	Very uncomfortable n (%)	Slightly uncomfortable n (%)	Unsure n (%)	Reasonably comfortable n (%)	Very comfortable n (%)
Fire	57 (7.0)	61 (7.4)	52 (6.3)	224 (27.4)	425 (51.9)
Unstable building	113 (13.8)	126 (15.4)	173 (21.1)	275 (33.6)	132 (16.1)
Terror event	153 (18.7)	154 (18.8)	266 (32.5)	186 (22.7)	60 (7.3)
In PPE	103 (12.6)	136 (16.6)	166 (20.3)	247 (30.2)	167 (20.4)
Tactical violence	103 (12.6)	157 (19.2)	196 (23.9)	264 (32.2.)	99 (12.1)

Kollek © 2010 Prehospital and Disaster Medicine

Table 4—Comfort responding to event by event type (PPE = personal protective equipment)

	Very uncomfortable n (%)	Slightly uncomfortable n (%)	Unsure n (%)	Reasonably comfortable n (%)	Very comfortable n (%)
Recognising self distress	31 (3.8)	57 (7.0)	124 (15.1)	353 (43.1)	254 (31.0)
Recognising distress in others	21 (2.6)	50 (6.1)	100 (12.2)	441 (53.8)	207 (25.3)

Table 5—Comfort in ability to recognize distress

ers and these results are in Table 6. In regard to event types, half or more of respondents felt reasonably comfortable or very comfortable responding to most events, the exception being terrorist events and tactical violence where comfort levels were significantly lower. When questioned about scenarios the emotional impact was most heightened by a multiple casualty incident (MCI was defined in the scenario as 20 casualties) increasing the event's emotional impact score from a non-MCI by a factor of 3.19. The next

highest was the involvement of a child (by a factor of 2.73) followed by the presence of malicious injury (by a factor of 1.08). When multiple casualties and malice were combined, the impact was measured by a factor of 34.49, which is fractionally more than the multiple of each individual factor alone.

Discussion

While not all disasters involving mass casualties involve violence, there is ample historical precedent of violence,

Kollek © 2010 Prehospital and Disaster Medicine

	Very uncomfortable n (%)	Slightly uncomfortable n (%)	Unsure n (%)	Reasonably comfortable n (%)	Very comfortable n (%)
Receiving anonymous counseling	55 (6.7)	81 (9.9)	98 (12.0)	247 (30.2)	338 (41.3)
Receiving group counseling	67 (8.2)	87 (10.6)	103 (12.6)	266 (32.5)	296 (36.1)

Table 6—Comfort accepting support

Kollek © 2010 Prehospital and Disaster Medicine

specifically in the case of civil unrest, leading to mass casualties, and of violent outbursts from panicking populations desperate for care during a disaster.

The addition of tactical violence to a MCI changes the flavor of that situation and therefore, changes the reactions of personnel at the scene.

Insofar as the emotional aspect of EMS disaster work is concerned, the current data clearly validate previous research in that the involvement of children, the presence of malice, or the existence of multiple victims increase the emotional distress in the responder. The most distressing scenario combined two of these factors, namely a malicious, mass-casualty scenario such as a terrorist event. A combination of all three factors, the option of a malicious, mass-casualty, pediatric event, was not offered in this survey. While terrorist attacks on children's facilities have occurred in Beslan, Russia and Maalot, Israel, it was felt at the survey design stage that this would be perceived by Canadian EMS staff as too unlikely to occur in their environment, and as a result, their responses may be less accurate.

With the exception of malice, even the lesser of these factors more than doubled the emotional impact of the event on the healthcare provider. This is even more significant when one takes into account that child injury and assaults can be seen daily by responders.

Emotional self-care is not part of the standard training of paramedics in Canada. Monitoring the psychological impact of work on the EMS caregiver is not routinely performed, although there are services that have initiated post-incident debriefing. Data in this study suggest a significant vulnerability to emotional trauma among paramedics in Canada, yet emotional self-care is not part of their standard training. Monitoring the psychological impact of work on the EMS caregiver is not routinely performed, although there are services that have intiated post-incident debriefing.

Half or more of respondents felt reasonably comfortable or very comfortable responding to most event types, with the exception of terrorist events and tactical violence where comfort levels were significantly lower. This is not unreasonable, since these events are uncommon in Canada, and EMS crews are unlikely to develop the comfort that comes with experience. The majority also felt comfortable recognizing the signs of stress in themselves and others, as well as receiving emotional support either individually or in groups. This frontline readiness to accept help is of significance since there has been some reluctance in Canada to endorse emotional support programs for post-traumatic stress. This is likely not due to lack of caring about the issue but more likely because of past controversy about formal CISD.

Limitations

A key limitation was the inability to determine the true denominator for the results. There is no national registry for EMS personnel, nor do most provinces have local registries. As such, the survey was dependent on the support of the EMS leadership, since they provided access to regional e-mail lists for EMS crews, the number of which is not known to the authors.

Only 204 respondents said they had been trained to cope with tactical violence, yet >204 respondents replied to the subsequent questions in the section. These may have included portions of the 152 who skipped the initial question of the section, or some of those who were directed to skip.

The project was restricted to Ontario and British Columbia because in some cases, EMS leaders in other provinces objected to the collection of this information. The reasons for their objection included a concern that disseminating questions about a controversial process such as CISD might create a perception of organizational support for the process on the part of the responders, a hurdle that was anticipated in view of the sensitivity of some of the questions. Emergency medical services leaders also were concerned that questions about preparedness might trigger demands for increased training and equipment and run counter to the plans of the organization.

This survey describes the responders' perception of their training. The actual training programs delivered to each group of responders was not investigated. However, a responder's perception of her/his training may be more accurate, and therefore more important than the on-paper description of the training within the organization. This could be thought of as a limitation, but may in fact be a strength of the study.

Conclusions

This study showed that, despite paramedics' high risk of exposure to violence (both tactical and random), there is a significant lack of preparedness for these situations. In addition, the study documented the significant emotional impact of tactical violence and of violence in general on the care providers coupled with inadequate access to appropriate training and resources.

All EMS crews should have some formal training in the recognition of violence risks in their environment and, in the event of risk, their local response plan. The impact of violence on the caregiver must be recognized, and EMS crews should be provided access to timely and appropriate support.

References

- Lucas R: Violence in the prehospital setting. Emerg Med Clin North Am 1999;17(3):679-683, vii.
- Mechem CC, Dickinson ET, Shofer FS, Jaslow D: Injuries from assaults on paramedics and firefighters in an urban emergency medical services system. Prebosp Emerg Care 2002;6(4):396–401.
- Mock EF, Wrenn KD, Wright SW, Eustis TC, Slovis CM: Prospective field study of violence in emergency medical services calls. Ann Emerg Med 1998;32(1):33-36.
- Pozzi, C: Exposure of prehospital providers to violence and abuse. J Emerg Nurs 1998;24(4):320–323.
- Duchateaux FX, Bajolet-Laplante MF, Chollet C, Ricard-Hibon A, Marty J: Exposure of French emergency medical personnel to violence. Ann Fr Anesth Reanim 2002;21(10):775–778.
- Grange JT, Corbett SW: Violence against emergency medical services personnel. Prehosp Emerg Care 2002;6(2):186–190.
- Corbett SW, Grange JT, Thomas TL: Exposure of prehospital care providers to violence. Prehosp Emerg Care 1998;2(2):127–131.
- Tintinalli JE, McCoy M: Violent patients and the prehospital provider. Ann Emerg Med 1993;22(8):1276–1279.
- Maniscalco PM, Christen HT, Rubin DL, Kim P: Terrorism. Part 1: Calibrating your risks and response. JEMS 1998;23(11):38-40,42-44,46-51.
- Heiskell LE, Carmona RH: Tactical emergency medical services: an emerging subspecialty of emergency medicine. Ann Emerg Med 1994;23(4):778–785.

- Denney JP: Public Safety Target Acquisition: The 911 Solution. Excerpted from: Erri Emergency Services Report-EmergencyNet NEWS Service, 11 May 1998. Vol. 2, p 131.
- Denney JP, Lee D: The Emergence And Employment Of Strategic Ultraviolence in the Management of Criminal Enterprise. Excerpted from: Erri Emergency Services Report. EmergencyNet NEWS Service, 20 March 1997.
- Thomsen TW, Sayah AJ, Eckstein M, Hutson HR: Emergency medical services providers and weapons in the prehospital setting. *Prehosp Emerg Care* 2000;4(3):209–216.
- 14. Eckstein M, Cowen AR: Scene safety in the face of automatic weapons fire: a new dilemma for EMS? *Prebosp Emerg Care* 1998;2(2):117–122.
- Maniscalo P, Christen H: Understanding Terror and Managing the Consequences. Prentice Hall Publications, 2002, pp 41-92.
- Kollek D., Welsford M., Wanger K: Chemical, biological, radiological and nuclear preparedness for emergency medical providers. CIEM In press 2009.
- [Must cite author]. Disaster Mental Health Response Handbook, July 2000, Centre for Mental Health, NSW Institute of Psychiatry, State Health Publication No: (CMH) 00145, ISBN: 07347 32139.
- Ursano RJ, Fullerton CS, Kao, Bhartiya VR: Longitudinal assessment of post-traumatic stress disorder and depression after exposure to traumatic death. J Nerv Ment Dis 1995;183:36-43.

Editorial Comments—Canadian Operational and Emotional Prehospital Readiness for a Tactical Violence Event

Ashley G. Anderson Jr., MD, MS

Clinical Professor-Division of Otolaryngology University of Wisconsin Medical School, Madison, Wisconsin, USA; Chief Medical Officer; Promega Corporation; Madison, Wisconsin USA

Correspondence:

E-mail: aganders@wisc.edu

Web publication: 29 March 2010

Dr. Kollek accurately identifies a gap in the training of our medical first responders. He points out that they are frequently the first on-scene, and that their training for situations involving tactical violence is almost always either non-existent, or not current. In addition, more than one-third of these personnel had never engaged in a field exercise with other agencies (police).

The development of tactical EMS (TEMS) support for high-risk operations has moved to close this gap. Training in conjunction with law enforcement agencies has created a higher level of coordination between agencies. Skills such as coordinated movement with the tactical teams, cover and concealment, and development of a survival mindset are critical, and can only be developed through rigorous, coordinated training. These programs make such operations safer for police and medical personnel, and for the populations we serve. Increasingly, agencies are being held to this standard.

The overwhelming majority of medical first responders have not received TEMS training, as pointed out by this article. Just as most law enforcement personnel receive basic medical training, medical first responders should all receive basic training to assist them in coping with situations involving tactical violence. First responders frequently deal with emotionally stressful situations, and programs for post-incident emotional assessment and care may or may not exist locally. Demands for such support will only increase following tactical violence.